











# Responsibility and Digital Competence of Future Socionomic Professionals: Relationship and Features of Development

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**Abstract:** The article dwells on to the study of the relationship between responsibility and digital competence of future professionals in socionomic professions and the study of the features of their development. 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. The program of responsibility development as a component of digital competence of future specialists of socionomic professions and the results of its application are presented, which testify to the effectiveness of this program.


## 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. Today, the infrastructure of the metaverse is still evol-


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ing. Researchers, educators, policymakers and digital designers have the chance to use the potential of the metaverse as a three-dimensional, global, interconnected, exciting and online space in real-time. Therefore we need new ways to connect the physical virtual reality (VR) (Hirsh-Pasek et al., 2022). 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 2.2) contains 5 main blocks of competencies (Adz, 2016) (information literacy and data literacy; communication and interaction; digital content; security; problem-solving). Digital competence is especially important for specialists in socioeconomic 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 socioeconomic professions, providing their ability to navigate independently in the digital space, strive for self-regulation, search for professionally vital information, and be able to analyse and systematise, 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. (Soldatova et al., 2013, p. 5). However, scholars point to several specific difficulties coming from what was originally considered the upside of the whole idea – the lack of rigid rules, the lack of controlling teachers, and the lack of conditions forced upon students. Electronic training of future professionals, in many cases, are simply neither

ready nor even aware of their lack of readiness to take control over how what and when they learn (Postek et al., 2010, p. 105). Moreover, in our opinion, there is an additional confirmation of the development of responsibility as a vital component of future professionals' digital competence.

## 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, 2018; Balakhtar et al., 2022; Bondarchuk et al., 2022b; Meshko et al., 2020; Osadchyi et al., 2020); information personality culture of specialists (Voitovych et al., 2022); the problem of digital competence and its separate components (Balyk et al., 2019; Bezverbnyi and Shyshkina, 2022; Burov et al., 2020; Kartashova et al., 2018; Kiv et al., 2019; Klochko and Fedorets, 2022; Nosenko and Sukhikh, 2019; Semerikov et al., 2021; Shokaliuk et al., 2020; Yevtuch et al., 2021; Soldatova et al., 2013; Riezina et al., 2022), in general, and future specialists of various profiles: teachers (Mintii et al., 2021; Oleksiuk and Spirin, 2022; Spirin and Vakaliuk, 2019; Zaika et al., 2021), economists (Hlushak et al., 2020), specialists in agronomy (Yevstratiev, 2020).

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 (Vakulich, 2006; Yeung, 2019), including in the context of responsibility for the consequences of using digital technologies (Aguilera et al., 2007; Aguinis and Glavas, 2012; Rupp et al., 2013; Glavas, 2016).

There are studies of CSR (Corporate social responsibility) which are focused on the macro and institutional levels (Aguilera et al., 2007; Aguinis and Glavas, 2012; Rupp et al., 2013), and some studies are focused on how CSR influences employees – micro level (Glavas, 2016).

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, 2015; Meshko et al., 2021; Vinoslavskaya, 2002, 2005) et al. The Digital Competence Framework for Citizens (DigComp 2.2), mentioned in the Digital Competence Framework for Citi-

zens, 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 (Dig, 2021). This, in turn, requires the responsible use of ICT and includes issues of privacy and copyright, ethical issues and the ability to evaluate digital information (Hatlevik et al., 2021).

We read, write, listen and communicate differently than we did 500 years ago (Coiro et al., 2008). It is quite reasonable in our information society (Martin and Grudziecki, 2006) to understand digital competence as a basic need if we are to function in society (Chapman, 1999), as an essential requirement for life (Bawden, 2008) or even as a survival skill (Eshet, 2004).

The specificity of the professional activity of specialists of socioeconomic 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. Sociologists deal with social relations at different levels of their implementation in accordance with legal documents (Constitution, Law of Ukraine “On Information”, norms, rules, etc.), which define the concepts of information, information relations, objects of these relations, rights and responsibilities of their participants, information ownership (Law, 1992).

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 (Nazarov, 2005, 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 socioeconomic professions of responsibility, which will allow ensuring the regulation of activities based on ethical norms and principles (Papakitsya, 2014, p. 36). At the same time, it is digital competence according to the National Council on Curriculum and Assessment (NCCA) (National Council for Curriculum and Assessment, 2004) that contributes to learn-

ing, the growth of achievements and motivation of professionals, and the spread of technology in everyday life, which will allow all citizens to be functional in our knowledge society (Ferrari, 2012). Higher educational institutions should provide the necessary skills and knowledge to determine the social, ethical and environmental impacts of entrepreneurship (Bampton and Maclagan, 2005), moreover, integrate ethical and social responsibility aspects in curriculum design (Nelson et al., 2012; Stonkutė et al., 2018; Rodríguez-Gómez et al., 2020).

Modern psychological science has accumulated considerable theoretical and practical material on various aspects of personal responsibility, in general (Bezrukova, 2015; Kosulya, 2010; Nazarenko, 2016; Papakitsya, 2014).

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

### **3 THEORETICAL SUBSTANTIATION OF RESPONSIBILITY AS AN INDICATOR OF DIGITAL COMPETENCE OF FUTURE SPECIALISTS OF SOCIOECONOMIC 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 socioeconomic professions (Kartashova et al., 2018).

Scientists interpret the concept of responsibility in different ways, namely: the presence of freedom because only free beings can recognize a sense of responsibility (Agazzi, 2009); 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 (Dic, 2022); “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” (Prykhodko and Yurchenko, 2020, 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 (Kosulya, 2010; Prykhodko and Yurchenko, 2020). 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 (Lazorenko and Kolyshko, 2008). 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 Vinoslavskaya (Vinoslavskaya, 2002). Responsibility from the standpoint of action or not action, but conscious, is considered through a personal form of behaviour – an act (Bondarchuk et al., 2022a; Zinchenko and Meshcheryakova, 2003). Investigating the act, Rubinshtein (Rubinshtein, 2002) considered it as a special kind of action. 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 (Bakhtin, 1986). Romanets 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” (Tatenko et al., 1999, p. 181). An act is a “way

of personal existence in the world” (Romanets, 2006, 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 socioeconomic 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 (Rogozha, 2010).

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 socioeconomic 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” (Ferrari et al., 2012). 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 (Zaporozhtseva, 2019).

Thus, digital competence implies the continuous ability of future specialists of socioeconomic 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 (Soldatova et al., 2013). At the same time, responsi-



bility is correlated with the problem of the safety of modern technologies in the information world.

#### 4 RESEARCH METHODOLOGY

In order to study the characteristics of the responsibility of future specialists of socioeconomic 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 (Papakitsa, 2013) "Responsibility for the use of information" and the authors modified questionnaire "Information" (Law, 1992), aimed at determining the level of awareness of future specialists of socioeconomic professions, content and properties of information, responsibility for its dissemination, and adapted methodology "Index of digital competence" (Soldatova et al., 2013) – digital competence, blocks "Knowledge" and "Skills", which determine the cognitive and operational components of digital competence of the individual.

The observational stage of the study (2019-2020) was attended by 748 students – future specialists in socioeconomic professions of the 1st, 3rd and 5th courses. At the formative stage (2021) – 60 people, 29 of them formed an experimental group (divided into 2 subgroups of 14 people each for the convenience of training, providing and receiving feedback from all participants within the appropriate time frame) and 31 – control. The research was carried out based on the University of Education Management and the Yuriy Fedkovych National University of Chernivtsi. Respondents were distributed according to gender: 40.1% – men, 59.9% – women. Statistical processing of the obtained data was carried out using the computer program SPSS (version 23.0).

#### 5 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 socioeconomic professions of the content and properties of information, responsibility for its dissemination, and the like was found.

At the ascertaining stage of the empirical study based on the results of the analysis of the data of the questionnaire "Information" revealed an insufficient level of awareness of future specialists of socioeconomic

professions content and properties of information, responsibility for its dissemination and more.

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 (Gub, 2003), 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 Google search engine 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 socioeconomic 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  $\chi^2$ , the peculiarities of the responsibility of *future specialists of socioeconomic professions of different genders* are stated (table 2).

Table 2: Features of responsibility of future specialists of socioeconomic 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 socioeconomic 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 socioeconomic 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 (Burn, 1995).

The obtained data also correlate with those obtained by Pryadein (Pryadein, 2001). 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%) (Pryadein, 2001, p. 171).

Thus, according to the results of empirical research, responsibility needs special development for a significant number of future specialists in socioeconomic 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” – authors – (Soldatova et al., 2013).

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 socioeconomic professions by levels of development of cognitive component of digital competence.

Levels of development of the cognitive component of 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 socioeconomic 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 (“Check”) 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, Tumblr, Instagram), find the most profitable offers of goods and services on the Internet, interact with members of various Internet communities (via Twitter, forum, wiki, 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 socio-economic 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 socio-economic 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 socio-economic professions.

Thus, we can conclude that future specialists of socio-economic 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.

## 6 RESPONSIBILITY DEVELOPMENT PROGRAM AS A COMPONENT OF DIGITAL COMPETENCE OF FUTURE SPECIALISTS OF SOCIOECONOMIC PROFESSIONS AND RESULTS OF ITS APPROBATION

In our opinion, the development of digital competence and responsibility for the use of information dissemination in professional activities may be facilitated



by the creation of an educational environment taking into account this need in the modern education system, alongside the organization of specially organized training. The patterns and mechanisms of development of information competence and responsibility should be taken into account, defining the principles, content, methods and forms, as well as the expected result. In addition, the development of information competence requires the creation of special psychological conditions as a mechanism that takes into account and implements favourable psychological factors (figure 1).

Favourable psychological conditions for the development of responsibility and digital competence of future specialists in socioeconomic professions include:

- organization of special socio-psychological training with emotional comfort and creative freedom, which will expand awareness of the essence of the responsibility and digital competence, ways of their development and role in future professional activities;
- orientation of future specialists on the value attitude to digital competence and its development, alongside the responsibility for its use and dissemination;
- formation of beliefs about one's value, ability to use information resources responsibly;
- the desire for personal self-development, self-regulation of emotional state, reflexive and prognostic abilities;
- formation of motivation for search activities, focus on success in educational and professional activities;
- development of the ability to be reflective on the way to achieving information competence, understanding the possibilities and conditions of its development in today's challenging conditions;
- development of abilities to use information resources in educational and professional activities, be successful and independent in solving complex professional problems in the future professional activity area, purposeful and able to responsibly manage the information environment;
- the need for constant personal and professional growth, expanding the information, business and psychological field, enabling the emergence and development of complex subjective relationships, exchange of experience, knowledge, skills and abilities based on moral values of society and personality of the future specialist, according to his focus on self-realization (Onoprienko-Kapustina, 2021, p. 124);
- introduction of innovative forms and methods in the process of professional training of future specialists, modelling future professional activities in higher education, quality and effective cooperation with practice bases to reach the top of professional maturity as the main condition for self-realization, as an opportunity to realize their social potential (Sotska, 2017, p. 388).

The creation of such conditions in higher education institutions is carried out by implementing the process of training a psychological program for the development of responsibility and digital competence of future specialists in socioeconomic professions, built on the following basic principles:

- “taking into account the needs of the individual in self-organization, self-determination and self-development; recognition of the priority of individuality and self-worth of the individual” (Zeer, 2005, p. 269);
- reflexivity (self-analysis of their behaviour and activities, as well as the behaviour of other participants in the program, providing mandatory feedback during the completion of all stages of training and practical classes);
- purposefulness (observance of the purpose, awareness and perception by future specialists of the development of their information competence in the process of professional training);
- adherence to uniform ethical principles in the use of information resources (Dustin, 2007) because every person has the right to freedom, happiness, development and expression of all abilities, and good is a criterion for assessing social phenomena, equality, justice, humanity as a desirable norm in society;
- efficiency, predictability and control (Lyons and Lovelock, 2004, p. 37-54);
- creativity and creative position (openness to new experiences, generating innovative ideas, modelling, designing ways to develop information competence, responsibly using the features of interpersonal interaction, which approves and supports any initiative, expression of any position (Balakhtar et al., 2022), experimenting with personal resources, finding non-standard solutions);
- the principle of partnership (creating an atmosphere of security, trust, openness, which allows future professionals to experiment with their behaviour without being ashamed of mistakes);
- activity and autonomy (aimed at achieving success in educational and professional activities, self-realization and self-realization, developing

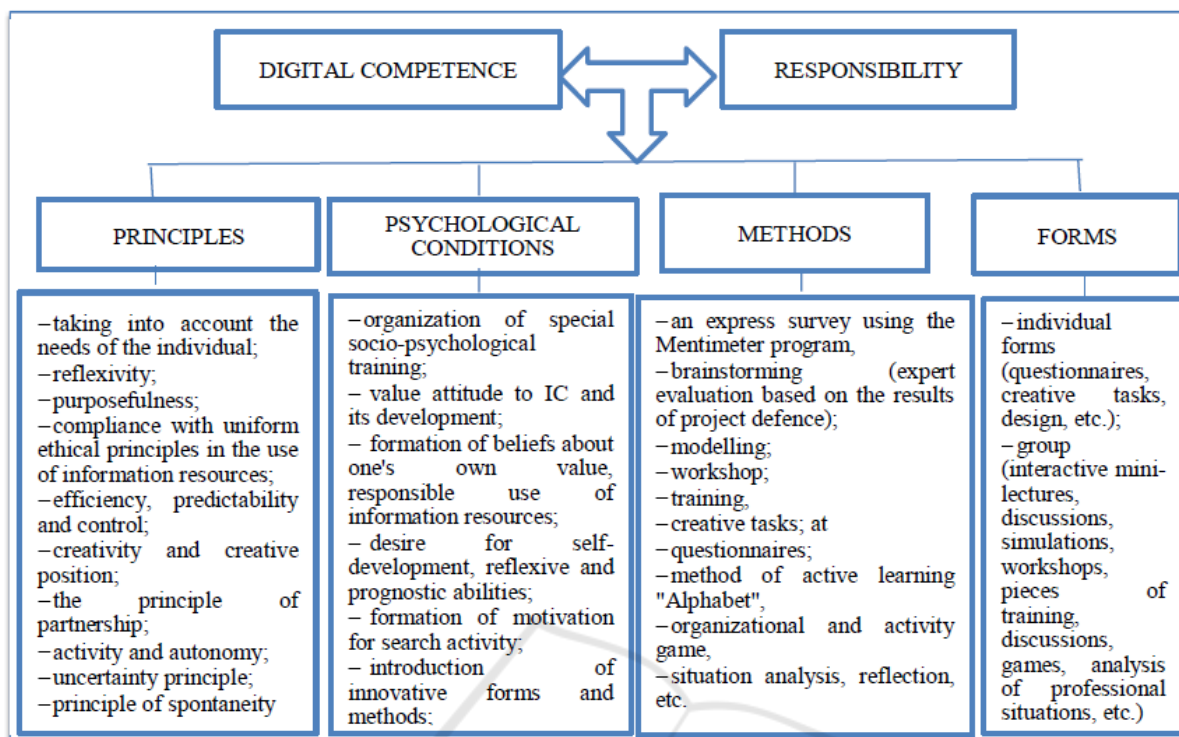


Figure 1: The program of development of responsibility as an indicator of digital competence of future specialists of socio-economic professions.

the ability to autonomy by performing specially designed exercises, playing situations that allow all members of the group to actively participate in them);

- the principle of uncertainty (set in the instructions, where in most cases there are no clear rules for the task, future professionals are free to find solutions);
- the principle of spontaneity (spontaneity makes it possible to change the usual behavioural stereotypes with further activation of the individual creative potential).

Among the forms and methods of development of responsibility and digital competence of future specialists of socio-economic professions, it is worth noting: express survey using the Mentimeter program, brainstorming (expert evaluation based on the results of project defence); individual and group exercises; modelling; practicum; training, creative tasks; questionnaires; method of active learning “Alphabet”, organizational and activity game, situation analysis, reflection etc.

Forms of development of responsibility and digital competence of future specialists of socio-economic professions: individual (questionnaires, creative tasks, design etc.) and group (interactive mini-lectures, dis-

cussions, modelling, discussions, games, analysis of professional situations etc.) as in general halls on the ZOOM platform and in session halls, as well as work on the online board (Google Jamboard, Padlet etc.).

Methods and forms of work were selected in such a way as to ensure the development of responsibility and digital competence of future specialists in socio-economic professions based on their individual qualities and abilities. They will develop mental strategies, search activities and motivation to carry out information retrieval activities as close as possible to the professional, alongside providing an opportunity to develop practical knowledge, skills and abilities to work with information in conditions of uncertainty.

This approach, in our opinion, will help ensure the development of digital competence of future socio-economic professionals and responsibility for the use and dissemination of information in professional activities due to the implementation of certain psychological conditions, principles, forms and methods and prove its effectiveness by predetermined criteria. The specifics of this work combined theoretical and practical-reflective components that allowed gaining new knowledge, master new tools and the experience their use in future practice. In particular, informing future specialists about the work procedures was carried out at the ZOOM conference, alongside – being

acquainted with the instructions for the use of digital services and ways to connect them.

The study of participants' expectations was carried out using an online board (Google Jamboard, Dashboard etc.), followed by a group discussion in ZOOM). Participants answer the following questions: "Why do I strive to develop information competence?"; "What is the importance for me of information for professional activities and personal life, in general, and the possibility of negative consequences during the process of finding and using information?"

Defining the rules of group work "Brainstorming" (group form of developing rules for the process of finding information as an opportunity to achieve a certain level of professional and personal development). Multimedia presentation: "What will our training be like? (definition of the purpose and tasks of training)".

Team building (5-7 people): grouping; announcement of tasks for presentation; immersing participants in the problem (micro discussion on the development of the ability to predict the consequences of the use of information, along with the willingness to take responsibility for it). Presentation of teamwork.

The theoretical aspect was an interactive lecture: "The essence of information and features of working with it: thinking and its styles, behavioural strategies, professional responsibility etc.", which allowed participants to be more active (argue on problematic issues, give interesting examples, draw conclusions etc.). For example, instructing and activating the knowledge of the group - participants were asked to express in one word "What does it mean to be responsible?" Clear instructions were provided to demonstrate the Mentimeter screen. The discussion took place after the exercise.

The practical-reflexive component included a workshop, training, the elements of which were: mini-presentations, diagnostic, analytical and psychogymnastic exercises, discussion, brainstorming (exercise "16 associations"), role play, project tasks, modelling, modelling, creative homework ("My responsibility: past, present and future", "What are the typical mistakes, problems that arise in the process of finding and using the information in professional activities?"), the method of active learning "Alphabet", organizational and activity game, situation analysis, reflection and others. The work was carried out in groups in the session halls on the ZOOM platform using an online board (Google Jamboard, Miro etc.). In particular, the diagnosis of responsibility, the search for opportunities and conditions for its development. To do this, future specialists were informed about the tasks and conditions of the activity: 1) to identify

the main contradictions and problems in the development of responsibility; 2) to analyze the possibilities of developing responsibility; 3) to determine the conditions for the development of responsibility. After the announcement of the tasks, the participants were divided into groups and the work was carried out in the session halls. The speakers of the teams presented the results of the work in the main hall (2 minutes for each team. Brainstorming in groups in session halls on the ZOOM platform using an online board (Google Jamboard, Miro etc.) involved the development of a program to empower and develop responsibilities as part of information competence.

Creative homework, such as "My responsibility: past, present and future", included an analysis of their life situations. Drawing up a summary table of factors which are conducive to the development of compliance and the following scheme: which you used in the past, use today and factors that could be used in the future.

In the process of program implementation, we paid considerable attention to future specialists' reflections on their actions, statements, actions, opinions, solving practical problems, analysis of the situations of educational and professional activities of future specialists in socioeconomic professions that require responsibility. After all, it is impossible to achieve success in professional activities without reflexivity as the most important regulatory component of personality, which allows him/her to consciously build his/her life. This encouraged us to use reflection, completing each exercise, action, session and training, in general.

Analysis of the results of the approbation of the program showed its effectiveness (table 5). In the experimental group, the implementation of the program of development of responsibility of future specialists was carried out following psychological conditions, principles, methods and forms of work that provided holistic and systematic work aimed at developing responsibility as part of information competence of the experimental group members.

In the control group, classes were conducted traditionally, according to the requirements of the educational-professional program and the curriculum of professional training of future specialists, with only two sections before and after the approbation of the program.

In both the experimental and control groups, sections were performed according to the same methods as at the ascertaining stage of the empirical study. Statistical processing of the results of approbation of the program "Development of responsibility as a component of digital competence of future professionals

Table 5: Distribution of respondents of experimental and control groups on the levels of responsibility development before and after the approbation of the program.

Levels of responsibility development	Groups, the number of respondents in %			
	Before the approbation (I stage)		After the approbation (II stage)	
	Control group	Experimental group	Control group	Experimental group
low	38.5	42.9	38.5	7.7*
average	53.8	53.6	50.0	65.4*
high	7.7	3.5	11.5	26.9*

\*– differences are statistically significant at the level  $p < 0.05$

of socioeconomic professions” was carried out using the SPSS version 23.0. Criterion  $\chi^2$  was used to compare the results between the experimental and control groups and the G-criterion of signs to assess the statistical significance of differences in the results separately in the experimental and control groups.

Table 5 shows that before the approbation (I stage) there were no significant differences between the experimental and control groups in the levels of responsibility development. After the approbation (second stage) in the experimental group, in contrast to the control. The expressed positive dynamics of levels of development of responsibility are fixed. Thus, the number of studied future specialists with a low level of responsibility decreased from 42.9% to 7.7%, and with a high level, on the contrary, increased from 3.5% to 26.9%.

It is equally important that positive trends in the development of the cognitive component of digital competence were identified. In particular, the positive, statistically significant dynamics of the levels of the cognitive component of digital competence of the participants of the experimental group after the approbation were noted (table 6).

Table 6 dwells on the statistically significant differences in the levels of the cognitive component between the results of the first and second stages in the experimental group participants.

In particular, it is an increase in the number of respondents with a high level of development of this component from 17.8% to 50.0%, and a decrease with a low level from 28.6% to 3.6% ( $p < 0.05$ ). Instead, in the control group according to the results of the first and second sections, small differences were found, which, in general, do not affect the levels of the cognitive component of the digital competence of the experimental group participants. Thus, the number of studied future specialists with a low level of self-efficacy decreased from 23.1% to 19.20%, and with a high level, on the contrary, increased from 19.2% to 26.9%. At the same time, the identified differences are not statically significant.

Such a positive dynamics of the levels of the cog-

nitive component was due to the growth of awareness of the essence of the component of digital competence, knowledge of late mobile applications and the possibilities of their use in socioeconomic professions, increasing opportunities to use the Internet.

There was also an increase in the number of participants in the experimental group with a high level of the operational component of digital competence (table 7).

Table 7 shows among the participants of the experimental group between the results of the first and second sections recorded statistically significant differences in the levels of the operational component of digital competence: a reduction of low from 50.0% to 15.4%, while an increasing high development from 7.7% to 23.1% ( $p < 0.05$ ).

In the control group, the results of the first and second sections showed minor differences: the number of low-level specialists decreased from 48.0% to 40.0% (although the differences are not statically significant) and generally do not affect the levels of operational competence of digital competence.

Thus, the comparative analysis of the results of approbation of the program allowed making conclusions about positive changes in the growth of 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.

## 7 CONCLUSIONS

Responsibility is an important indicator of the digital competence of future specialists in socioeconomic 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



Table 6: Distribution of respondents of experimental and control groups by levels of the cognitive component of digital competence before and after the approbation of the program.

Levels of the cognitive component of digital competence	Groups, the number of respondents in %			
	Before the approbation (I stage)		After the approbation (II stage)	
	Control group	Experimental group	Control group	Experimental group
low	23.1	28.6	19.2	3.6*
average	57.7	53.6	53.8	46.4*
high	19.2	17.8	26.9	50.0*

\*– differences are statistically significant at the level  $p < 0.05$

Table 7: Distribution of experimental and control groups by levels of operational component of digital competence before and after the approbation of the program.

Levels of the operational component of digital competence	Groups, the number of respondents in %			
	Before the approbation (I stage)		After the approbation (II stage)	
	Control group	Experimental group	Control group	Experimental group
low	48.0	50.0	40.0	15.4*
average	48.0	42.3	56.0	61.5*
high	4.0	7.7	4.0	23.1*

\*– differences are statistically significant at the level  $p < 0.05$

significant number of future specialists in socioeconomic 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 socioeconomic profession.

Men are more likely to be characterised with concepts of independence and initiative, and reinforced with the norms of “anti-emotionality” (Burn, 1995) which determines their greater autonomy and self-control.

The expediency of promoting the development of responsibility of future specialists of socioeconomic professions as a component of their digital competence, which can be provided in specially organized psychological training, is stated.

The program of responsibility development as an indicator of digital competence of future specialists of socioeconomic professions, which includes psychological conditions (organization of special socio-psychological training; values of IC and its development; formation of beliefs about self-worth, responsible use of information resources; desire for self-

development, reflective and prognostic abilities; gaining motivation for search activities, etc.), principles (taking into account the needs of the individual; reflexivity; purposefulness; adherence to uniform ethical principles in the use of information resources; efficiency, predictability and control; creativity and creative position; principle of partnership; principle uncertainties, etc.), methods (express survey using the Mentimeter program, brainstorming (expert evaluation of project defence results); modelling; workshop; training, creative tasks; questionnaires; method active learning “Alphabet”, organizational and activity game, situation analysis, reflection, etc.) and forms (individual forms (questionnaires, creative tasks, design, etc.) and group (interactive mini-lectures, discussions, modelling, workshops, trainings, discussions, game, analysis of professional situations, etc.) work.

The results of approbation of the program testify to its effectiveness: after the conduction of the formative experiment, the participants of the experimental group, in contrast to the control, recorded statistically significant positive dynamics of responsibility as an indicator of digital competence. Accordingly, it is possible to use the responsibility development program as an indicator of digital competence in the process of their professional training and refresher courses.

The study does not cover all aspects of the relationship between responsibility and digital competence of future specialists in socioeconomic professions and the peculiarities of their development. In our opinion, an in-depth study of the factors of develop-

ment of specialists' responsibility, as well as study of the psychological readiness of teachers of higher education institutions to responsibility and digital competence of future specialists of socio-economic professions in the process of training in the mental network, work in virtual environment and practical psychologists education – to the psychological support of such training.

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