

## Leveling Up the Information Culture of Social Work Bachelors

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### Summary

The article reviews the issue of formation of information culture of social work bachelors in the process of their professional training. The main internal / external factors that determine the need for the information culture formation of social workers-to-be have been identified. To determine the levels of information culture formed in bachelors of social work criteria and their indicators have been substantiated. The model of information culture formation in BSW has been developed and implemented in Ukrainian universities under the following pedagogic conditions: organized informational environment; interconnection between general and professionally-directed courses; curriculum includes course directed on IC formation. The model contained interconnected components: aim – to achieve higher level of information culture formed; specific principles; content, interactive methods and forms of organization of educational process, methods of control and correction; components of information culture. The implemented mastered learning procedure has contributed to the leveling up of information culture formed in social work bachelors.

### Key words:

*professional training, bachelor of social worker, informational culture, model of informational culture formation, modern information and communication technologies.*

### 1. Introduction

In the context of society global informatization modern information and communication technologies aimed at creating, maintaining and providing optimal ways

of presenting information have become one of the most important factors of social development and a means of increasing the effectiveness of all spheres of human life. Nowadays, one of the main tasks of higher education is to form the readiness in graduates to perform professional duties in the information society. A graduate is to acquire skills to: accumulate, store and transmit information; to apply it purposefully; learn technology to solve any professional issue based on knowledge, skills and abilities, which, in our opinion, reveal the essence of the concept of information culture (IC). This highlights the issues of updating of training in higher education of highly qualified professionals capable to effectively solve the professional tasks in the modern information environment.

Social worker's professional activity is multifaceted in its content and covers a wide field of social relations and processes existing in society. This is understandable, because the main function of social work is to regulate the development of human as a social individual, as well as adaptation to the conditions and requirements of modern society. The following objective factors require a qualitative change in the information processing technology within the system of social protection of population: (i) the need for operating information-analytical base to: develop addressed social programs; keep records and monitor the real needs of all vulnerable population groups; provide targeted social assistance; (ii) a large number of legal norms, lack of systematization of information, constant changes in the legal system, increasing relevance of legal information and the diversity of its application in practice. Taking this position into

account, the formation of IC of graduates of social work programs is of particular importance.

The aim of the paper is to introduce the social work education into the context of IC formation in BSW in Ukraine. The following research objectives have been formulated:

- To clarify the concept of “IC of a social worker”, to disclose its content and external / internal factors of its formation.

- To develop the model of IC formation in BSW.

- To substantiate the components, criteria and indicators for determining the levels of IC formed.

- To experimentally test the effectiveness of the mastered learning procedure directed on IC leveling up.

The rationale for this study rests on assumption that there is a society need for highly qualified social workers and the lack of educational programs to level up their IC.

## 2. Theoretical Consideration

It is very important for a specialist to embrace the idea of the value of using IC in the professional activities, since fruitful problems solving in social workers' practice depends largely on whether they are ready to make use of IC [19]. International Association of Schools of Social Work [12] finds IC to be the one of decisive components of BSW professionalism. Bachelor's Standard of Ukrainian Higher Education in the specialty 231 “Social work” [1] clearly states that the training programs are to develop competency to use IC in the professional activity.

Based on the generalization of scientific findings of N.Berman [3], O.Gladchenko [8], A.Hebalska-Berekets [11], Kh.Isupova [13], E.Komarova [16], N.Ostryanska and V.Vasyurenko [18], Yu.Rudenko [22], I.Trubnik et al. [24], A.Voitenko et al. [27], we defined factors that necessitate IC formation in BSW:

- External – conditioned by society trends: informatization and computerization process of society in general, as well as educational institutions, research centers, social protection institutions, etc.; complication of specialists' professional functions; the need to organize professional information environment by knowledge field;

- Internal – related to the need of solving issues arising directly in the process of social workers' training: intensification of the learning process; transition to person centered learning; advanced learning in the dynamic world of technology.

Based on the generalization of scientific findings of Yu.Branovskiy [5], B.Gershunskiy [7], R.Gurevych [10], the term “IC” in our research was interpreted in relation to content disclosure of:

- Knowledge, skills, and abilities that directly support activities in the information environment with the help of computer technology (technological approach);

- Culture of worldview as a component of personality culture (culturological approach);

- Individual's culture and the degree of mastery of social information, its processing, search, storage, and application in various fields (individual approach).

In our research we interpreted the concept of “IC of a social worker” as a component of general culture, which included: (i) ability to perceive and analyze information, navigate oneself in the modern information environment; (ii) readiness to make use of modern information-communication technologies based on knowledge and skills on: analysis, projecting and modeling of social phenomena; provision of social-psychological assistance, preventive and rehabilitation work using the whole arsenal of hard- and software.

Based on scientific research of D.Jonassen et al. [14], M.Zhaldak [28], we defined the content of IC of a social worker, as the one consisting of interrelated components of: general education (knowledge and skills of effective use of information; knowledge on modern information-communication technologies); knowledge and understanding of IC in society and prospects for its development; worldview (understanding the essence of information and information processes, its role in the process of learning; ability to anticipate the consequences of activity; ability to adapt to norms observed in society); professional (understanding the goals and directions of IC application in particular institutions and in the entire system of social protection of population; skills and abilities to work with software used in social institutions).

## 3. Materials and Methods

The survey sample was made up of 95 BSW who graduated from Ukrainian universities, of them 48 BSW – with the learning strategy to improve the level of IC formed during 2015/2016 – 2018/2019 academic years.

We carried out the research in stages: 1) conducted the pilot study of BSW training directed on the IC formation (October – December 2014); 2) developed the criteria, indicators and levels of IC formed in BSW (January – March 2015); 3) drew up the program of pedagogical experiment on implementing the learning procedure; mastered the content of general and professionally-directed courses; selected control group (CG) and experimental group (EG); delivered the learning procedure; determined the levels of IC formed in CG and EG before and after the pedagogical experiment, processed the data obtained (April 2015 – August 2019).

We used a combination of research methods: analysis of normative documents and curricula; observation of students' academic performance; interview with educators involved in BSW training; questionnaire and testing to determine the state of the problem under

consideration; pedagogical experiment to check the effectiveness of the developed and implemented learning procedure; modeling for projecting the process of IC forming and determining of ways to implement it.

#### 4. Results

##### The pilot study

At the first stage of research we analyzed the BSW curriculum on the subject of IC development of the following Ukrainian universities: Bohdan Khmelnytsky Cherkasy National University; Ivan Franko Drohobych State Pedagogical University; Oles Honchar Dnipro National University; Uzhhorod National University; Zaporizhzhya National University.

We also collected data from 208 BSW – graduates of the same universities, enrolled to 2011/2012 – 2014/2015 social work baccalaureate. To do so the questionnaire was developed: Where do you acquire knowledge on IC? What do you expect from IC formed? What intellectual abilities should a social worker acquire to demonstrate IC formed in professional activities? Have you acquired them during studies at university? Will knowledge and skills on IC be useful in further professional activity? How do you assess your level of IC? What aspects of IC need to be covered during studies?

The pilot study results revealed in BSW a high level of understanding of importance of IC formation. 79.7% of respondents believed that IC was a necessary skill component. At the same time, only 24.4% of BSW were skilled enough to apply software with educational purpose. 9.9% of BSW could not name any software used in the professional activities of social workers.

The collected data from 43 educators also indicated that 46.5% of educators involved in teaching computer science to BSW did not see the formation of IC as a separate object of pedagogical influence, i.e. the process was of spontaneous character. Nevertheless, 90.7% of all educators believed that the formation of IC of BSW was to be addressed not only when studying the computer cycle courses, but also in the process of studying other general and professionally-directed courses.

Overall, the conducted analysis demonstrated: the uncertainty of the system of educational activity directed on IC formation; underestimation of the role of elements of worldview culture that meet the requirements of information society in professional activities; narrowing of tasks of IC formation only by the tasks of purely technical preparing for work with computer equipment. Elimination of existing shortcomings required a more detailed study of the issue.

The results obtained during the pilot study and their generalization prompted us to develop a model of IC formation of BSW (Fig. 1).

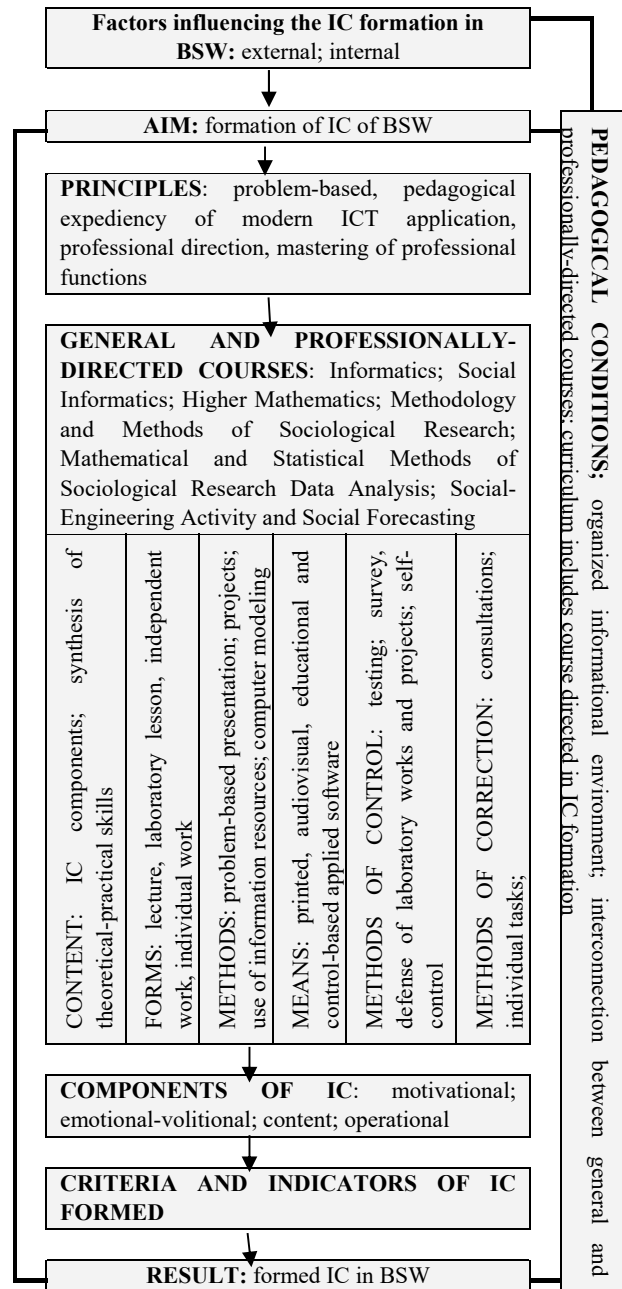


Fig. 1 Model of IC formation of BSW in the process of professional training.

The results of the pilot study testified that: BSW positively assessed the IC formation; there were serious gaps IC formation in the delivered learning procedure.

##### Components, criteria and levels of IC formed

We were in favor of position of O.Povidaichyk [20], that IC of BSW included interconnected and interdependent components: motivational, emotional-volitional, content, and operational.

We developed the criteria for the formation of:

– Motivational component: striving to realize personal capabilities, abilities, and qualities; degree of activeness and independence of cognitive activity in performing of laboratory works, problem solving, etc.; professional interest and need for self-realization, self-development, self-education; interest in the use of IC;

– Emotional-volitional component: ability for volitional efforts, activeness; emotional stability; reflexive position.

– Content component: understanding of social preconditions and consequences of society informatization process, its importance for scientific-technological progress; understanding the issue of “human-computer” interaction as well as the impact of informatization on an individual; an idea of methodological problems of computer science as a fundamental scientific course. We considered the content component of IC formation of BSW as a system of the following components: (i) technical – included knowledge on personal computer architecture, characteristics of basic and auxiliary peripherals, skills and abilities to use them; (ii) system – included knowledge on characteristics of the operating system, its purpose and components, objects and control management; (iii) software – included the ability to work with applied software for general and special purposes.

– Operational component: (i) acquired knowledge on: informatization processes; basic principles of organization and functioning of computer hardware and software; global and local computer networks; multimedia technologies as opportunities to provide information to the user in an interactive mode; (ii) acquired skills to apply general and special applications for various purposes.

Developing the approach of [O.Bartosh \[2\]](#), [H.Makarova \[17\]](#), we set indicators to define the level of IC formed in BSW.

– Low level – characterized by fragmentary theoretical knowledge and basic skills to process information. A student demonstrated: non-systematic idea of data retrieval in the Internet; occasional use of IC to search and process data; basic skills in working with computer hardware and software for general purpose with minor outside help.

– Average level – characterized by the ability to perform main operations, general methods and sequence of actions. A student demonstrated: a systematic idea of data retrieval in the Internet; non-occasional use of IC to search and process data without assistance; formed skills to work with computer hardware and software for general and specific purpose, purposeful solving of educational tasks.

– High level – characterized by the student’s ability to navigate independently in new tasks, situations, make a program of action and implement it to achieve the goal, to offer new, previously unknown solutions, i.e. perform research educational activities. A student demonstrated: a

systematic understanding of idea of data retrieval in the Internet, constant application of IC to search and process data; developed skills to work with computer hardware and software for general and specific purpose, purposeful solving of educational tasks; skills to manage the information system in non-standard situations.

### *The delivery of the learning procedure*

Conducting of the pedagogical experiment was preceded by selecting of CG – 47 BSW from Bohdan Khmelnytsky Cherkasy National University and EG – 48 BSW from Uzhhorod National University. EG studied within the mastered curriculum with the strategy to improve IC. The composition of CG and EG changed slightly during the pedagogical experiment (about 2%), which generally did not affect its overall results.

Based on specifics of social work research and our study purpose, analysis of scientific research of [M.Biryukova \[4\]](#), [A.Gorbachyk and S.Salnikova \[9\]](#), [O.Vasylenko and I.Sencha \[25\]](#), [V.Verbits \[26\]](#), to maximize the potential of general and professionally-directed courses, we filled them with content directed on IC formation of BSW.

– General course “Basics of Informatics” – aimed at forming the operational component of IC. Mastering of its content and directedness contributed in addition to the formation of motivational and emotional-volitional components of IC. Leveling up of these components formed was achieved by including in the course content of a separate theme “Specialized information technologies used in the professional activities of social workers”.

– General course “Social Informatics” – its content was improved with the following themes: Information and its role in society; Social-cultural development in the informatization era; Homo Informaticus; Informatization of the social sphere”. The themes contributed to the formation of motivational and reflective position of BSW to apply IC in the future professional activities.

– General course “Higher Mathematics” – an important place was given to the development of methods of higher mathematics with the help of spreadsheets. The use of computer technology in combination with other means allowed to improve the perception, comprehension and memorization of educational information, to take a differentiated approach to students, to organize a person centered learning. This ensured the involvement of all students in the learning process, which, in turn, had a positive effect on the learning motivation.

The formation of IC in the study of professionally-directed courses was a complex process, as BSW mastered both knowledge on the course and skills to apply software. When studying the courses “Methodology and Methods of Sociological Research”, “Mathematical and Statistical Methods of Sociological Research Data Analysis”, “Social-Engineering Activity and Social Forecasting” students learned how to process research results, project

and model social processes or phenomena using statistic packages:

– League: Law – the most complete source of systematic and reliable Ukrainian legal information with convenient tools for finding information.

– OCA – technology for social and marketing data processing and analyzing. OCA platform presents the following software technologies: OCA MakeForm – a data input module; OCA for Windows – a program designed for statistical analysis of the results of sociological and marketing surveys; OCA New Line – an advanced shell for projects of different structures (monitoring, tracking, panels, diaries, etc.); it has an ability to generate reports for previously described patterns, supports not only the OCA but also the SPSS data format, and has an option of results display on the interactive index maps; OCA New Line Technology – a set of programs for data preparation and analysis in the OCA New Line shell; OCA MakeFormPsy – a program to conduct a variety of tests; OCA CATI – a set of programs that allows using computers for telephone polls; OCA CAPI Android – a set of programs that allows using tablets and smartphones for interviewing; OCA Online – a system that allows to host data on the Internet and analyze it using a standard browser (e.g. Internet Explorer);

– SPSS – a widely used program for statistical analysis in social science. The platform presents the following software technologies: IBM SPSS Statistics Base – designed to solve research problems using ad hoc analysis, hypothesis testing, geospatial analysis and predictive analytics; IBM SPSS Modeler – designed to tap into data assets and modern applications, with complete algorithms and models ready for immediate use; IBM SPSS Modeler in Cloud Pak for Data – a containerized data and AI platform that enables to build and run predictive models anywhere – on any cloud and on premises; IBM SPSS: Advanced Statistics, Bootstrapping, Categories, Complex Samples, Conjoint, Custom Tables, Data Preparation, Decision Trees, Direct Marketing, Exact Tests, Forecasting, Missing Values, Neural Networks, Regression;

– Stadia (Statistical Dialogue System) – the program allows to: carry out a comprehensive analysis of data using a set of modern and effective methods for determining descriptive statistics, criteria for difference, categorical, variance, correlation and regression analysis, etc.; visualize the obtained data by means of scientific graphics (distribution diagrams, multidimensional diagrams, surfaces, maps, rotations, forecasts, dendrograms, graphic archives, etc.); convert and calculate, import / export data in ASCII and DBF formats;

– StatPlus was developed by AnalystSoft, StatPlus 7.0 and StatPlus Pro – the program allows calculations of basic descriptive statistics (check of normality; comparison of averages, variances; definition of

correlation coefficients; analysis of variance, etc.) and nonparametric statistics (analysis of conjugacy tables; rank correlations; regression analysis; etc.). StatPlus spreadsheet provides the following features: import / export of documents in Microsoft Excel, StatSoft formats, SPSS and others; plotting (histograms, charts, X-bar, CUSUM, etc.); spell checks; use of built-in mathematical, statistical, financial formulas; data processing and generation, in particular random generation numbers, matrix operations; support for OLE 2 objects (Equation formulas, documents ChemSketch, graphs Microsoft, Excel, MathCad, Statistica).

– Vortex – a modular program, based on a module data entry. Among its features should be noted: opportunities to process data collected during surveys by means of CAWI (Computer Assisted Web Interface); CATI (Computer Assisted Telephone Interviewing); TAPI (Tablet Assisted Personal Interviewing); CAPI (Computer Assisted Personal Interviewing).

– X7.2009 program – designed for statistical data processing, in particular calculating of descriptive statistics, checking normalcy distribution, calculation of Pearson and Spearman correlation coefficients, defining of parametric and nonparametric statistical criteria comparison, as well as graphical analysis of data.

Such forms of education as lectures, laboratory lessons, independent and individual work of students were leading in the process of acquiring the necessary knowledge, skills and abilities on IC. Independent and individual work of students contributed to the development of skills of independent processing of various sources of information, the ability to independently study software products and master their application in the future professional activity.

The formation of IC of BSW during laboratory classes was organized in such a way that the acquisition of the necessary skills and abilities to work with IC was carried out in stages, from simple to complex, taking into account logic and sequence. First, BSW get acquainted with universal software products and their capabilities in the process of solving professional problems, then – with special, focused on a specific profile of future professional activity. For example, the purpose of laboratory lesson “Providing legal advice using electronic search databases” work was to provide students with knowledge, skills and abilities to use automated search engines to obtain professional information. Required software – package “League: Law”, websites of the Verkhovna Rada and the Cabinet of Ministers of Ukraine, word processor MS Word. Students got the task to find the necessary legislation to provide the requested legal advice. This task required knowledge not only on computer science, but also on social welfare law. The task was performed by each student individually, providing an opportunity to develop the necessary skills for a social worker to make decisions

independently. The report on the work done was presented in the form of MS Word file and contained a reasoned response to the client's request with a list of relevant legislation.

The didactic goals of independent students' work are to: teach students to acquire knowledge independently from various sources; raise the responsibility of students for their training; develop independence in planning, organizing and performing future job responsibilities; or form professional thinking. Independent work of students in the process of forming IC can be classified by the levels of cognitive activity in performing educational tasks:

1) Work after a sample, performed on the basis of a known algorithm, using the method of information resources, selection and systematization of material;

2) Reconstructive works, during which the existing experience of solving problems is transformed,

3) Variable cognitive tasks (require a student to analyze an unfamiliar problem situation and obtain the necessary new information);

4) Creative (research) work, which involves the formation of new knowledge in the form of individual and educational research tasks.

Thus, the problem of organizing independent cognitive activity of social workers, based not only on memorization, but on the ability to independently acquire knowledge and apply it at practice, is especially relevant in the process of IC forming in BSW. On the one hand, this is conditioned by the rapid aging of acquired knowledge, which is caused by the continuous development and updating of IC. On the other hand, independence is a necessary condition for the successful completion of practical tasks, as students work individually with IC means, only occasionally consulting with an educator.

In the study of software and information technology used in the professional activities of social workers, training was based on problem-based methods, which included the ability to: establish cause-and-effect relationships; make generalizations; argue judgments; prove the truth or falsity of certain positions; critical thinking; cognitive activity of students. It was equally important to teach a student to focus thinking on the implementation of the task set. The educational-cognitive task was a model of a problem situation from which thinking began. Educational-cognitive tasks projected a certain shift in the intellectual and general development of students. The success of solving problems and tasks, as well as the processes of modeling these procedures, depended on the acquisition of the ability to schematization, generalization, specification, abstraction.

Much attention was paid to project-based approach [15], use of information resources, computer modeling.

The project-based method was used in determining the role and place of IC in the future professional activities. In this case, the activity was of search / research nature.

Each student completed a task assigned by a group. The process of solving the problem was carried out in the form of cooperation between project participants and a teacher. Students reported on the results of their work at lectures-conferences. Group discussion of complex issues in a situation of cooperation, dialogical forms of work, expression of opinion helped to develop logical and critical thinking, conscious acquiring of knowledge. The project-based method allowed developing of cognitive skills, ability to navigate in the modern information environment, and search for information. It contributed to the formation of culture of communication, personal qualities of students, such as responsibility, ability to work in a team. The use of information-communication technologies allowed to organize joint research activities: mutual consultations, exchange of information, assistance to each other, etc.

BSW practiced the method of using information resources, for example, when preparing reports on the topics set. The sources of information were the Internet and scientific articles. A teacher informed students of the purpose of the work, gave assignments and a list of addresses to search for on the Internet. Students performed the main part of the tasks during independent work.

The main advantage of the method of computer modeling was the acquisition of strong motivation of students due to the possibility of modeling the professional activity of a social worker. The method offered the students in conditions of professional environment organization: relative freedom; the ability to boldly make a hypothesis based on the acquired knowledge; the ability to fully realize cognitive needs, creative activity; consolidation of knowledge gained in the process of studying professionally-directed courses; development of practical professional skills.

#### ***Experimental testing of effectiveness of the developed and implemented learning procedure***

The above-mentioned combination of courses provided the basis for mastering the knowledge and skills on IC in BSW. Thus, the development of motivational, emotional-volitional, content, and operational components of IC took place. We used diagnostic techniques to check the effectiveness of implemented learning procedure and the level of IC formed in BSW by its components.

To diagnose the levels of IC formed in BSW by *motivational component* we used: (i) "Value orientations" after M.Rokeach [6]. Respondents ranked terminal and instrumental values in order of subjective significance. At the end of it, in the CG they remained unchanged, while in the EG the values of cognition and professional development became decisive; (ii) "Methods of personal differential reflection" after G.Soldatova et al. [23] to specify the stability of interest in studying IC. (iii) Questionnaire "Motivation in the learning activity of university students" after N.Ilyina [6].

To diagnose the level of IC formed in BSW by *emotional-volitional component* we used: (i) Technique of diagnostics of emotional intelligence after N.Hall [21] – revealed the ability of BSW to manage the emotional sphere. At the beginning of the pedagogical experiment, low level of emotional intelligence prevailed in both EG and CG. At the end of it, higher dynamics of emotional intelligence level formed was observed in the EG; (ii) Technique of diagnostics of volitional potential after E.Rogov [21] – revealed positive changes in students’ volitional activity. At the end of the pedagogical experiment, higher dynamics of the level of volitional potential formed was observed in the EG.

To diagnose the level of IC formed in BSW by *content component* we used questionnaire on students’ self-assessment of being satisfied with knowledge and skills formed on IC within the courses provided. At the beginning of the pedagogical experiment, CG and EG demonstrated a vague attitude to IC, insufficient level of knowledge and skills on IC, consequences of society informatization process and low level of satisfaction. At the end of it, EG displayed higher level of satisfaction with IC formed than CG.

To diagnose the level of IC formed in BSW by *operational component* we used: (i) Questionnaire on students’ self-assessment of the level of IC formed; (ii) Technique after O.Darvish [6] to determine the level of organizational skills formed to apply general and special applications for various purposes.

Having applied diagnostic methods we transferred student’s level of IC formed by each criterion into a three-point scale: low level – 1 point; average level – 2 points; high level – 3 points. The integrated indicator of IC level formed of *i*-student ( $H_i$ ) was calculated by the formula:

$$H_i = \frac{M_i + EV_i + C_i + O_i}{4} \tag{1}, \text{ where}$$

$M_i, EV_i, C_i, O_i$  – the normalized values of motivational, emotional-volitional, content, and operational criteria.  $H_i$  was evaluated by the following scale: 0-1 points corresponded to the low level of IC formed; 1.1-2 – average level; 2.1-3 – high level (see Table 1).

**Table 1:** Changes in the levels of IC formed in BSW

Sample	At the beginning of experiment			At the end of experiment		
	Low	Average	High	Low	Average	High
CG	18	25	4	17	24	6
	38.3%	53.2%	8.5%	36.2%	51.1%	12.7%
EG	19	24	5	9	28	11
	39.6%	50.0%	10.4%	18.8%	58.3%	22.9%

### 5. Conclusions

Mankind has entered a new stage of its development – the formation of information society, in which information and information processes are the defining components of society. The development of the global process of society informatization involves the formation of new information environment and lifestyle, professional activity. In conditions of modern society development social work clients are interested in timely operational, reliable, and valid social information. That is why social workers face the task to be able not only to collect and process information qualitatively and quickly, but also to provide it to the others. The use of information technology and its processing is a necessary condition for this issue solving. No less important is the idea that we live in “one world”, which is based on understanding the essence of globalization processes of economic, political, and sociocultural nature, requiring the application of data, secondary analysis of information to understand the development trends.

IC of an individual as a component of general and professional culture in the information society has a specific, integrated nature and acts as a key human competence in the new information environment. The formation of IC of an individual is a complex, multi-stage, and life-long process. The professional training of future specialists played the leading role in this process.

Scientific analysis of the problem of IC formation in BSW has allowed concluding that the new conditions of social life and work in a modern informatized society determine the requirements for personal and professional qualities of future specialists, formed IC, in particular. Generalization of approaches to the disclosure of the concept of IC of a specialist helped to define the IC of BSW as a component of general culture, which included the ability to perceive and analyze information, navigate oneself in the modern information environment, and readiness to make use of modern information and communication technologies based on knowledge and skills on: analysis, projecting and modeling of social phenomena; provision of social-psychological assistance, preventive and rehabilitation work using the whole arsenal of hard- and software.

The conducted pedagogical experiment demonstrated the following results. In the EG: the number of BSW with the high level of IC formed increased from 12.5%; with the average level – increased by 8.3%; with the low level – significantly decreased (by 20.8%). There were minor changes in the CG. The application of the statistical criterion  $\chi^2$  for independent samples demonstrated that at the experiment beginning the levels of IC formed of CG and EG did not differ significantly and as a result of the formative experiment the level of IC of BSW in EG is higher than in CG. Thus, the results of the

experiment confirmed that the developed model, mastered and implemented learning procedure optimized the educational process, providing higher level of IC formed in BSW.

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