Chapter 12
Approaches to the Development of the ICT Competence Standard in the System of Research-Based Training for the Future Specialist of Social Sphere in Ukraine

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12.1 Introduction

Nowadays, the final problem of the newest educational environment in Ukraine is the transition to a new system with an understanding of the transformational processes taking place in the political, economic, educational, scientific, and technical fields. This problem in the system of higher education in Ukraine arises, first of all, through a series of reforms and globalization processes, which, undoubtedly, affect the domination and thinking of the individual.

Reforms in the system of higher education (Law on Higher Education in 2014) and in the scientific and technical sector (Law on Scientific and Scientific and Technical Activities of 2015) provide ample opportunities for the training of highly skilled specialists and clearly regulate the educational and scientific policies of modern universities and research institutions. The changes announced in these laws include the training of specialists in the system of higher education and lifelong education, primarily through research techniques, i.e., research-based education/learning, and active use of IC technologies and tools in educational and professional activities. In particular, these reforms relate to the training of modern specialists in the social sphere, since their activities are directly related to work in a society with different categories of clients, constant monitoring of social transformations, research of basic needs, analysis of social challenges, changes and peculiarities of personality life in society, etc.

In addition to internal state education reforms, the world's trends in updating the educational environment are influenced by the professional training of specialists, in particular the social sphere. So, at the World Economic Forum (Switzerland, Davos, 2016), the experts presented key skills to be mastered by a successful

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specialist in 2020: integrated problem-solving, critical thinking, creativity, human management, coordination with others, emotional intelligence, judgment making and decision-making, service orientation, interaction, negotiation, and cognitive flexibility (10 key skills by 2020). These skills of a new specialist in modern society are organically formed into the structure of a new educational strategy of higher educational institutions of Ukraine related to the active use of IC technologies. However, not all Ukrainian universities are ready to start upgrading their education strategy and developing the ICT competencies of a modern specialist. This is primarily due to many factors: logistics, motivation of administration and faculty, understanding of the need to reform the education system as a whole, taking into account new social challenges, and taking into account the rapid pace of globalization of all social processes.

The ways of using ICT depend on the subject being taught, the learning objectives, and the particularities of the students. However, it is still important to formulate the basic principles of the use of ICT in education, and this is the task of the UNESCO project "Structure of ICT Competence of Teachers." This project draws attention to the many ways in which ICTs can transform education. Information and communication technologies enable the emergence of rapidly developing educational environments, erode the boundaries between formal and informal education, and encourage teachers to develop new ways of transferring knowledge and learning of students. In the end, these technologies require educators to rethink the complex of skills and competences that students need in order to become active citizens and employees and full-fledged members of the knowledge society (Structure of ICT Competence of Teachers 2011).

The UNESCO "Structure of ICT Competence of Teachers" project can be fundamental to specialists from other fields and can serve as a basis for the development of the ICT standard for the training of specialists from different fields, including the social sphere.

The Structure of ICT Skills for Teachers is part of a series of initiatives by the United Nations and its specialized agencies (in particular UNESCO) to promote education reform and sustainable economic development. Goals of initiatives Millennium Development Goals (MDG), Education for All (EFA), UN Literacy Decade (UNLD), and Decade of Education for Sustainable Development (DESD) are to reduce poverty, improve health, and improve quality of life, and education in these initiatives is seen as an important tool for achieving these goals.

At the same time, the modern system of higher education is in the process of updating and restructuring to the best European and world standards. First of all, this is connected with the preparation of a highly skilled specialist who can present himself well to the world and European labor market. The national policy of restructuring the higher education system is also connected with ensuring the participation of Ukrainian universities in joint research programs with European universities. It is no secret that the current state of scientific research in Ukraine is not fully consistent with the world due to the lack of proper academic integrity of the academic community, compliance with European and world trends, low level of interdisciplinary, etc.

Modern universities need to go through a simple way to ensure compliance with European and international standards and the main traditions of Ukrainian education and the deep study of European experience in order to strengthen the practices of the higher educational system.

Another urgent issue for Ukraine today is the provision of an individual trajectory for development and access to all social phenomena of people with special needs and the development of an inclusive environment. Accordingly, there is an urgent problem of training a specialist in the social sphere, which can provide people with special needs and people who are in a difficult life circumstances, full development and participation in public life on an equal footing with others.

Today in Ukraine, social workers, social educators, special teachers (speech therapists, defectologists), and psychologists (practical psychologists) belong to specialists of social sphere. The key person in this list is a social worker, since it provides a link between a person with special needs and people who are in difficult living conditions (DLC) with specialists from other social spheres. However, we tend to use the general term, a social sphere specialist, since each of them must have the basic knowledge and competencies to help people with special needs and people with DLC. In addition, in all European countries, the term "specialist in the social sphere" is used mainly in the competence of which we all have the above. Therefore, the question arises on the analysis of the best European practices of training a specialist in the social sphere for their implementation of the practice of Ukrainian universities.

The peculiarity of the activity of a specialist in the social sphere is not only his participation in providing equal conditions and support for people with special needs and people with DLC but also the ability to conduct various types of research. We mean monitoring and evaluation of social needs and requests, attraction of different capital of foreign funds into the social sphere, which cannot take place without a justified project or grant application, etc. That is, the current issue is the preparation of a future specialist in the social sphere on a research basis in accordance with the best European practices.

12.2 Structure of Training of a Specialist in the Social Sphere in the System of Higher Education of Ukraine

The system of training specialists in the social sphere is quite a new challenge for modern Ukrainian science, but now there are studies that either reflects different aspects of the problem under study. The question of substantiation and the importance of reorienting the domestic system of the world to the best European samples were reflected in the studies of N. Ascheniuk, G. Yelnikova, O. Zubchenko, N. Kosharna, L. Kuzminska, O. Norkhina, M. Leschenko, Yu. Palkevich, L. Petrenko, V. Svystun, and others; the renovation of the system of higher national education, in particular the elements of the implementation of research-based training, is devoted

to the works of T. Zhyzhko, L. Pukhovska, V. Proshkin, O. Slyusarenko, and many others; a comparative analysis of foreign educational systems and the practice of their application in Ukraine is highlighted in the works of N. Bidyuk, O. Lokshina, R. Rhodes, C. Torres, O. Romanovsky, and O. Sukhomlynska; and the study of the system of training a specialist in social sphere abroad is devoted to the works of O. Bezpalko, T. Veretenko, S. Dugan, I. Kovchyn, V. Kozubovsky, N. Lavrinenko, T. Lyakh, V. Polischuk, O. Prishlyak, P. Reder, and others.

At the same time, the concept of research-based training acquired its systematic justification in the works of such foreign researchers: P. Hanus, E. C. Lageman, J. Dewey, J. McKinney, J. Green, G. Baldwin, P. Blackmore, M. Fraser, J. W. Thomas, and others.

Although in foreign research, studies on research-based training have their methodological foundations, implementation practices, and positive experimental results, in Ukraine it is considered as a component of the research work of university students. Some aspects of studying on a research basis as a component of research work can be observed in the study of models of preparation of teachers of higher education in the conditions of the master's degree (N. Batechko, T. Fedirchik); designing of systems of open education (S. Priima) and systems of research of students (bachelor/magistracy) (L. Suschenko, N. Bondarenko); and development of student's scientific activity as a component of professional training (I. Lutsenko, V. Proshkin).

Research of Ukrainian scientists L. Sultanova, O. Egorova, M. Kniazian, Ye. Kulyk, G. Klovak, A. Rogozin, A. Yanovski, V. Kuleshova, N. Moskaluk, M. Samoilova, O. Milash, O. Bilostotskaya, S. Launa, and V. Tusheva one or the other way outline the research component and educational work in the process of training specialists in the system of higher education.

In Ukraine, training of specialists in the social sphere (social workers, social pedagogues) is carried out in the system of continuous professional education. Such a system includes the following structural components: preprofessional training (which includes updating self-knowledge and professional self-determination, preprofessional training and professional selection); multilevel professional training in higher educational establishments (carried out by educational qualification levels junior specialist, bachelor, master); and postgraduate training (which involves upgrading skills, retraining, mastering new specializations, professional development, and self-education) (Veretenko and Denysiuk 2011).

The systematic elements of the continuing professional education of social workers are the requirements and needs of society and clients; values, purpose, content, and technology of social and socio-pedagogical activities; the need to form specialists with readiness to perform professional duties; professional competence; and professionally determined personal qualities. The purpose of professional training of social workers in the conditions of continuous education is to form a professionally competent, competitive, and mobile specialist by creating favorable conditions for informed professional self-determination, professional-personal formation in the system of multilevel professional training, and professional growth at all stages of labor activity.

The activities of specialists in the social sphere are aimed at solving social problems of man and society such as social and psychological conflicts, crisis, and stress situations; emotional and psychological problems; need and poverty; alcoholism and drug addiction; violence and discrimination; ethnic and national problems; crimes and offenses; unemployment and professional adaptation; disability and lonely old age; and housing problems. Social work is not limited to providing assistance to people who need it, but is one of the tools of social control.

The main purpose of professional activity of a specialist in the social sphere is welfare care, the disclosure of the capabilities and abilities of the individual, family, and society to normal social functioning.

The functions of a specialist in the social sphere are a substantive and instrumental basis of his professional activities. Professional functions of a specialist in the social sphere allow us to imagine the structure of functional responsibilities as a certain amount of knowledge and skills that provide the professional competence of specialists in practical work.

The model of practical social work includes three basic elements: a client, a specialist, and a social component of the process of change, which, in turn, includes the social component of the client's field, the specialist of the social sphere, as well as the activity or energy of the subjects of interaction and mutual influence participants of professional interaction in social work (Tymoshenko 2014). Scientists distinguish a set of professional functions that are implemented by specialists in social services in the process of assisting different categories of clients.

Let's dwell on the specifics of professional training of specialists in the social sphere of the levels "bachelor" and "master."

The main feature of bachelor's professional readiness is the ability to solve complex specialized problems and practical problems in the field of their own professional activity or in the process of study, which involves the application of certain theories and methods of the corresponding science and is characterized by complexity and uncertainty of the conditions. In the process of training and practical training, students acquire conceptual knowledge (including certain knowledge of the field of modern achievements) and skills in solving complex unpredictable tasks and problems in specialized areas of professional activity and/or training, which involves the collection and interpretation of information (data) selection of methods and tools and application of innovative approaches. The future of social worker tasks is to manage complex projects or actions; it is responsible for decision-making in unpredictable conditions. Regarding the communication component qualification, it should be able to convey to specialist and nonspecialist information, ideas, and proposals to address the problem, based on their knowledge and experience in the profession. Professional types of work requiring a bachelor's qualification, according to the classifier of professions, belong to the section of "specialists."

Currently, in Ukraine, on the basis of many educational institutions, the training of social workers at the educational level "master" is carried out. A specialist who holds a bachelor's degree, if he has discovered a tendency to research and teaching work, may continue his studies at the magistracy. This allows you to achieve a certain degree of completeness of training at each level, helps the specialists of the

social sphere to master the new (higher) educational qualification level, promotes professionalism, and expands the range of new opportunities.

From the described characteristics of the activity of a specialist in the social sphere, it follows that the effectiveness of the training of a highly skilled specialist depends to a large extent on the willingness to conduct various kinds of monitoring, that is, conducting social and scientific mini-global studies. Consequently, we can conclude that the effective in this aspect will be the training of a specialist in the educational environment of a modern university on a research basis and with a high standard of ICT competence.

12.3 Characteristics and Attributes of a Research-Based Training System

Leading European and world universities in the middle of the last century have made major reforms on effective integration of research and education including the development of the universities as the main center of the latest research using best research-based training practices.

The system of research-based training has become widely developed in foreign higher educational institutions as a type of active learning (Wildt 2010; Ludwig 2011), which can be implemented through specific forms and has its features and specifications. In addition, research-based training is an unifying concept that covers a range of pedagogical approaches in the process of students' professional training aimed at developing of research skills (formulation and problem-solving) (Aditomo et al. 2013).

Our analysis of foreign researches of research-based training made it possible to isolate its general approaches and concepts of development. Some foreign researchers (Lageman 2002; Dewey 1933) relate the emergence of research-based training with the distinction of pedagogical research from the psychological system. This was preceded by a general scientific study in the system of joint sciences (e.g., the humanities). Such a statement originates from the first half of the twentieth century. In many foreign studies, research-based training is associated with project training – student prepares a graduation work on the basis of a lengthy study on interdisciplinary basis (Abbott and McKinney 2013; Baldwin 2005; Blackmore and Fraser 2007; Thomas 2000, etc.). In addition, it is known from the history of science and education that the views and activities of the German scientist Wilhelm von Humboldt (Humbold 1984) are a classic and the first example of the introduction of a research-based learning system. His ideas about the unity of science and education date back to the beginning of the nineteenth century. American scientist John Dewey more than a hundred years ago expresses a similar view – study through action and verification. The current understanding of research-based training has been developed since the 1970s of the twentieth century (Spoken-Smith and Walker 2010). Due to this, now we have a significant foreign arsenal of researches in the

methodology of using of research-based training. Thus, foreign studies have convincingly shown that research-based learning contributes to student-centered learning, aimed at fulfilling of student needs (Justice et al. 2009; Prince and Felder 2006, 2007), and contributes to the implementation of the scientific potential of the teaching staff of a higher educational institution (Healy 2005); research-based training can be realized as a means of understanding of science and as a method of teaching (Spoken-Smith and Walker 2010).

In our research paper, we understand research-based training as a form of learning/training that has its purpose, content, methods, forms of organization, and tools and can be implemented by using a specific set of learning technologies. Confirmation of such an opinion is found in the researches of well-known foreign scientists, whose research were concerned with the methodological basis of research-based training. So, the confirmation that research-based training cannot be a form of organization of training is found in the researches of Prince, M. and Felder, R. (Prince and Felder 2006) and Mills, J. E. and Treagust, D. F. (Mills and Treagust 2003), who argue that research-based learning can be implemented through certain organizational forms: problem-oriented learning, project-oriented learning, and learning based on case techniques/technologies. That is, these forms of organization of teaching contribute to the implementation of research-based training as a type of training. Ifenthaler, D. and Gosper, M. (Ifenthaler and Gosper 2014, p. 74) on the basis of theoretical and empirical research argue that "research-based training is based on a multidisciplinary approach for the application of diverse goals and strategies training for the purpose of interconnected and logical conducting of research and teaching/instruction." Levy, P. and Petrulis, R. (Levy and Petrulis 2012) in many of their writings have repeatedly argued that research-based training embraces a fairly wide range of pedagogical goals. This means that the concept of research-based training is very broad, and according to our deep conviction (and according to research by leading foreign scholars in this field), this is a type of study.

Consequently, according to the results of studies of foreign scientists, we can conclude that research-based learning is a complex of pedagogical goals, which are united with the main tasks in the development of research competence of students (development of skills for setting a research task and finding ways to solve it).

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Research-based training as a type of study has the following features:

- A set of student-centered learning and teaching goals that are realized through research.
- Teaching students by setting up specific tasks that involve the interpretation of experimental data, case studies (tasks) for analysis, or a set of real-life situations/problems for solving.
- A set of tasks that contain specific instructions and which promote student-oriented and consulting research (the teacher is a consultant).

- Management of the learning process is done by setting questions and problems/practical tasks.
- Training is based on the search for novelty and its relevance.
- Implication of student-centered learning where the teacher is a facilitator.

Learning objectives of research-based training are:

- Formation of knowledge about science as a holistic and integrated education
- Development of skills for determining the novelty and relevance of the research (through conducting own research and verification of its evidence)

Teaching methods of research-based training are:

- Search/research activities aimed at solving self-identified issues/problems in an unexplored/underdeveloped field
- Search for new knowledge, solving a research problem set by a teacher
- Situational analysis of research results through verification of their evidence using their methodology

Key research-based training elements are the research questions and problem situations that require their pilot testing.

The main subtypes of research-based training are:

- Problem-oriented learning (focused on the process of solving the problem/in the process of research, the main goal is the definition of new, unexplored)
- Project-oriented training (focused on product development; the main goal is to determine the practical use of research results)
- Evidence-based training (can be verified practically)

Forms of study of research-based training are:

- Content-oriented learning (studying the general methodology of science)
- Practically oriented training (participating in short-term or fundamental academic studies)
- Applied research (aimed at solving practical problems or providing practical recommendations)
- Academic comprehensive research
- Simplified research (research by model, algorithm, or methodology developed by others)
- Research on the basis of literature analysis (theoretical research, development)
- Discussion on a specific scientific topic (with the selection of unexplored aspects and when the result is a new knowledge)

Main types of tasks and forms of work of research-based training are case studies, project tasks, problem-search tasks, brainstorming, focus group, polls (surveys, interviews, etc.), press conference, discussion, and presentation (research results).

The role of students in research-based training is characterized as active participants in the research process (producing ideas, determining relevance, engaging in research, developing methodologies, empirical studies, etc.).

12.4 Components of the ICT Competence Standard of the Future Specialist in the Social Sphere

To develop the standard/structure of the ICT competence of the future specialist in the social sphere, we have taken the fundamental principles of the UNESCO project "Structure of ICT Competence of Teachers."

Recommended by UNESCO structure is based on the fact that teachers are not sufficiently competent in the field of ICT and can teach these students. Teachers should help students not only learn from the use of ICT but do so creatively and develop cooperation and problem-solving skills in order to become effective citizens and employees in the future. It closely resembles the activities of the future specialist of the social sphere (social teacher, social worker); only the subject of activity here is not a student, but a client, and the subject is not a teacher, a social worker.

The structure provides three different approaches to learning (three consecutive stages of development of a specialist in the social sphere). The first of these is the "technology literacy" approach, in which future social professionals learn to use ICTs for more effective learning. The second one was called "deepening of knowledge" and allows getting deep knowledge of professional disciplines and applying them to solving complex problems of real life. The third approach, "creating knowledge," ensures that students and future specialists acquire the skills to create the new knowledge necessary for building a more harmonious, perfect, and prosperous society.

By transforming the structure of the ICT competence of teachers into the structure of the ICT competence of the future specialist in the social sphere, the main components of it can be presented as follows (see Table 12.1).

This structure is intended to bring the role of ICTs in educational and social reform to the attention of social specialists (now practitioners), as well as to those

Table 12.1 The structure of the ICT competence of the future specialist in the social sphere

	Technology literacy	Deepening of knowledge	Creating knowledge
Understanding the role of ICTs in education and professional activities	Knowledge of educational and social policy	Understanding educational and social policy	Innovation in education and social policy
Curriculum and evaluation	Basic competencies	Application of competencies	Competence of the knowledge society
Educational and research activities	The use of technology	Use of complex tasks	Self-education
IT	Basic toolkit	Sophisticated toolkit	New technologies
Certification training	Literacy in digital technologies	Management and direction	Specialist in social affairs as a model for imitation

Source: Based on the author's design

who develop educational policy and work in the social, educational, and qualification systems.

The strategic goal of the "technology literacy" approach is the ability of future professionals in the social sphere, citizens and employees, to use ICTs to support social development and increase the efficiency of the economy. Other strategic goals are related to it: raising the level of employment, providing all citizens with access to high-quality resources, and raising the level of literacy and skills. Social professionals need to be aware of these goals and be able to relate them to the relevant components of educational reform programs. Such an approach leads to changes in the curriculum, which should include measures for the improvement and extension of skills that are common technological literacy, and the development of ICT skills in the relevant learning context (Structure of ICT Competence of Teachers 2011).

In the early stages of the approach, "technology literacy" relevant to competence of future specialists provides basic social skills in the civil use of digital technologies and the ability to choose and use prepared educational software, games, training educational software, and web content in computer classes or restricted computer tools of the usual class in order to achieve the objectives of the standard program, the introduction of evaluation strategies, and the implementation of modular plans and methods of training. Also, future social professionals should be able to apply ICTs to manage the data of educational activities and social activities and improve their qualifications.

The purpose of the "deepening of knowledge" approach is to develop the ability of future professionals in the social sphere, clients and employees, to contribute to the development of society and the economy, through the application of knowledge gained during the study of specialized subjects while performing complex high-priority tasks that arise in real life, work, and public relations. Such tasks can be related to the environment, health, and conflict resolution. Under this approach, future social professionals should be aware of their strategic goals and social priorities and be able to identify, develop, and use special educational and social measures to achieve their goals and priorities. Often, such an approach requires the inclusion of a change in the curriculum that reflects the priority of comprehension before the material reach and an appropriate assessment strategy that focuses on understanding the real-life objectives. During the assessment, the analysis of the ability of future social professionals to solve complex problems is carried out, and evaluation procedures are implemented as part of the educational process. The pedagogical techniques associated with this approach include training in collaboration based on the accomplishment of the tasks and projects implemented; students deeply explore the subject and apply their knowledge to find answers to complex daily issues and solve problems (Structure of ICT Competence of Teachers 2011).

The goal of the "creating knowledge" approach is to increase productivity by educating students, clients, and employees who are constantly involved in creating knowledge and innovation, using the results of this process, and studying throughout their lives. According to this approach, future social professionals should not only build their own educational process in accordance with the objectives of such

a policy but also participate in the development of educational programs aimed at their achievement. An educational program that implements such an approach should go beyond the mere study of specialized disciplines and involve the development of the skills and knowledge of the society necessary for the creation of new knowledge. These include, in particular, the ability to solve problems, interact, collaborate, experiment, critically think, and apply creative approaches. Such skills become the objectives of the curriculum and the objects of new methods of evaluation (Structure of ICT Competence of Teachers 2011).

The creation of this society is facilitated by a variety of network devices, digital resources, and electronic environments that provide technical support for the process of creating knowledge and for continuous and widespread joint learning.

Each of the identified levels of ICT competence of the future specialist in the social sphere has certain knowledge and skills. Let's dwell in more detail on their description (Tables 12.2, 12.3, and 12.4).

Table 12.2 Knowledge and skills inherent in the level of technological literacy

Activity	Knowledge and understanding, skills and abilities, forming judgments
Understanding the role of ICTs in education and professional activities	Awareness of ICT educational documents
	Understanding of the influence of different approaches to informatization of education on participants in the educational process
	The ability to describe the general purpose of informatization of activities in the social sphere
	The ability to describe the general principles of the use of ICTs in their own activities
	The ability to analyze the barriers that arise when using ICT in their own activities
	The ability to understand the legal norms regarding the protection of information resources as intellectual property
	The ability to describe the educational outcomes that will be obtained in the process of ICT education
Curriculum and evaluation	The ability to use IT in educational and professional activities
	To understand the basics of social policy in the field of development of infra-technology
	Understanding of the economic fundamentals of the use of IC technologies in the social sphere
	Observance of the ethical foundations of the use of IC technologies in the social sphere
	Understanding of sociopsychological peculiarities of different groups of clients in the application of infrared technologies
	The ability to manage ICT in the social sphere

(continued)

Table 12.2 (continued)

Activity	Knowledge and understanding, skills and abilities, forming judgments
Educational and research activities	Knowledge of key concepts and processes in their subject area
	Understanding of the impact of ICT on learning and increasing motivation for learning
	Forecasting of expected results of ICT use in educational and research activities
	Observance of legislation and copyright in the application of ICT in educational and research activities
	Knowledge and compliance with copyright protection provisions when publishing or using e-content
	Ability to determine the effectiveness of ICT when achieving educational and professional goals
	The ability to use electronic dictionaries, encyclopedias, manuals, databases, etc.
	Creation of documents with text, graphic, and tabular data for educational activities and work in the field of social services
	Selecting appropriate ICTs to monitor and disseminate information about work with different categories and groups of clients
	The use of various presentation software, video films, animations, and computer models to support the educational process and the effectiveness of working with different categories and groups of clients
	Use of Internet services and resources for educational and research activity
	The use of postal services
	Possession of methodology of sociological research and methods of statistics with the use of IC technologies
	Ability to assess the needs of individuals and families with the use of IC technologies
	Knowledge of the general principles of the operation of repositories, scientific metric databases, electronic libraries, electronic journals and the ability to use them
	Knowledge of the rules and structure of writing articles about the results of their own research and the peculiarities of their presentation at various conferences, publications in domestic and foreign publications, etc.
IT	Basic knowledge of computer equipment and computer networks and their use (the notion of computer hardware and software, understanding of concepts such as data storage and memory, knowledge of what computer networks and their applications, the ability to bring examples of the use of computers in everyday life; knowledge of the safety requirements and factors of possible harmful effects of the computer on human health)
	Knowledge of the general principles of operation of various operating systems and the ability to work on computers running under the control of various operating systems: running a computer to work, working with a reference system

(continued)

Table 12.2 (continued)

Activity	Knowledge and understanding, skills and abilities, forming judgments
	Knowledge of the general principles of work with Internet services and their ability to use them for communication, cooperation, search, organization of activity, and publication of results of social and scientific activity
	Understanding the basic principles of safe Internet work and data protection
	Ability to use basic operations with folders and files: creation, deletion, copying, editing, renaming, restoring
	The ability to process data in environments: a word processor, a table processor, a card-knowledge
	Ability to work with antivirus programs
Certification training	Ability to implement and plan professional self-development by means of IT
	Understanding the benefits of using ICTs to improve the quality and efficiency of their own educational and research activities
	Knowledge of the possibilities, advantages, and disadvantages of using ICT in the process of raising their own skills
	Use of ICT for communication with clients, external experts, and colleagues from international social, educational, and scientific institutions
	Use of ICT for the search, organization, analysis, integration, and evaluation of information necessary for professional development
	The ability to carry out online qualification upgrading, including through open distance courses

Source: Based on the author's design

Table 12.3 Knowledge and skills inherent in the level of knowledge deepening

Activity	Knowledge and understanding, skills and abilities, forming judgments
Understanding the role of ICTs in education and professional activities	Awareness of the benefits of informatization of education
	Knowledge of innovative (pedagogical, informational, and social) technologies and their ability to apply them in their own educational, research, and professional activities
	Understanding of the influence of modern technologies on the labor market and changing requirements for the level of professional-pedagogical and social readiness of the graduate
	Understanding the notion of nonformal education and the possibilities of its use in self-education and professional activities
	The ability to explain and analyze the principles of using ICT in its own educational and research activities
	The ability to analyze the barriers that arise when using ICTs in their own educational and research activities and the ability to find effective ways to address them
	Participation in group educational and social initiatives at the regional and national levels

(continued)

Table 12.3 (continued)

Activity	Knowledge and understanding, skills and abilities, forming judgments
Curriculum and evaluation	The ability to plan a system for assessing the needs of social groups by means of IC technologies
	The ability to analyze contemporary social policies and the use of ICTs to plan various social initiatives
	Ability to effectively plan the economic component of the use of IC technologies in the social sphere
	The ability to apply ethical bases of work with different groups of clients using the IC technologies in the social sphere
	The ability to apply ICT in the study of psychic phenomena in the process of interaction between people in large and small groups
	Possession of ICT by means of assessment and measurement of individual psychological characteristics of a person and a social environment
Educational and research activities	Knowledge of the methodology of the introduction of innovative social and information technologies, development of social projects on the application of ICT
	Understanding of the individual-personal trajectory of development based on the use of ICT
	Effective and systematic use of ICTs in educational and research activities
	Knowledge of the use of ICT for group work
	The application of methods of interactive social interaction based on the use of ICT
	The use of educational sites for the organization and conduct of social studies
	The ability to analyze and describe social problems (in their own and professional activities) associated with the peculiarities of using ICT
	An analysis of the effectiveness of using ICTs during social research and the implementation of its own educational and research activities
	Awareness of the need for the use of electronic means of scientific communication: repositories, electronic libraries and open access journals, as well as webinars and online conferences
	Presentation of the results of their own scientific activity on the basis of ICT use: publication of articles in repositories, participation in online conferences, publication in professional electronic journals
IT	Using ICT to develop critical thinking, creativity, and ability to solve problems, make decisions, gain knowledge of your industry, collaborate, search for information, and publish the results of your research
	Use of data visualization software

(continued)

Table 12.3 (continued)

Activity	Knowledge and understanding, skills and abilities, forming judgments
	Use of ICT for the creation of teaching materials, educational resources
	Using ICT to work together with colleagues and clients
Certification training	Knowledge of the criteria for evaluating open electronic educational rewards
	Knowledge of ethical norms of communication on the Internet and their observance in electronic communication
	Ability to find and use electronic resources for their own professional development
	Ability to collaborate on the Internet for personal professional development
	The ability to analyze and summarize data on the advantages and disadvantages of working together with ICTs to provide various social services
	Ability to find and design various innovative methods and forms of improving the quality of the results of providing social services to different groups of clients through ICT

Source: Based on the author's design

Table 12.4 Knowledge and skills inherent in the level of knowledge creation

Activity	Knowledge and understanding, skills and abilities, forming judgments
Understanding the role of ICTs in education and professional activities	Knowledge of successful strategies for providing social services to different groups of clients using ICT
	Participation in collective social initiatives to disseminate information on the effectiveness of ICT in providing social services to different groups of clients
	Develop and implement effective strategies for providing social services to different groups of clients using ICT
Curriculum and evaluation	Knowledge of the methodology of skills development of the XXI century based on the use of ICT in the provision of social services to different groups of clients
	Creation of own professional websites and blogs for the purpose of providing social services to different groups of clients
	Social support, provision of social services, and assessment of the needs of different groups of clients through ICT
Educational and research activities	Establishment of communication, creation of social communities and networks
	Description of the experience in a format that allows obtaining information on innovative ideas and ways of changing social practices using ICT
	Activities on designing and designing a community of practitioners to adapt experience and implement it in mass practice

(continued)

Table 12.4 (continued)

Activity	Knowledge and understanding, skills and abilities, forming judgments
	Consulting of subjects of innovative experience, providing them methodical assistance in the technology of social support of different groups of clients
IT	Knowledge of the features of work with services Web 2.0, Web 3.0
	Development and implementation of various social projects using ICT
	Development and implementation of telecommunication social projects
	Presentation of results of social projects, social studies in the form of diagrams and charts
	Creation and constant support of your own blog, wiki pages, personal educational, social and consulting environment
Certification training	Participation in international distance education courses, qualification projects
	Use of the Internet to find professional courses in the socio-pedagogical field
	Participation in international open courses
	Development and implementation of training programs to enhance the use of ICT in the provision of social services to different groups of clients

Source: Based on the author's design

12.5 Characteristics of the Disciplines of Professional Training of a Specialist in the Social Area on the Formation of ICT Competencies and the Application of a System of Training on a Research Basis

In accordance with the curriculum of educational programs Social Work and Social Pedagogy, students study a wide range of disciplines. The training of such specialists at the master's level takes place through educational and professional programs, but this does not mean that such a program excludes the scientific component. Consistent with the topic of the study – the formation of the ICT competence of the modern specialist in the social sphere with the use of a system of research-based training – there are program results of training. We illustrate the competency and program results of training professionals in the social sphere for educational programs Social Work and Social Pedagogy.

The purpose of the educational program Social Work is to provide academic training of highly skilled social work professionals capable of solving complex specialized tasks and practical problems in professional activities that ensure professionalism and competitiveness in the field of social work. To conduct original

independent research and to carry out scientific and pedagogical activities focused on further professional self-education.

Objects of study are to ensure the rights, needs, and interests of man as the highest social value; processes of socialization, social adaptation, and integration (reintegration) of the individual; realization of tasks and functions of social protection of the population; project activity in the social sphere; assistance and support for people in difficult living conditions; and provision of social services, etc.

The theoretical content of the subject area is the concepts, laws, and principles that reveal the development of the individual, social group, community, and society as a whole and form the professional competence of a specialist.

A student of higher education should combine the theory and practice of social work on the basis of an interdisciplinary approach and possess innovative methods of professional activity.

The program is a special one aimed at preparing a teacher of a higher educational institution. The emphasis is on knowledge, skills, and abilities in teaching social work disciplines, organizing and conducting research on topical social issues, introducing innovative social technologies, and managing social work. The emphasis is on leadership, teaching, and technology competencies.

The programmatic competencies of specialist training for the educational program Social Work are integral, general, and professional competencies.

Integral Competence:

1. Ability to solve complex special tasks and practical problems in the field of social work
2. Ability to take appropriate analytical and managerial decisions in the field of implementation of state social policy
3. Ability to realize the tasks of state social programs and projects

General Competencies:

- Communicative. Ability to communicate verbally and in writing in the first language. Possession of basic skills of communication in a foreign language
- Information and communication. Ability to choose and implement IC technologies in professional activity
- Self-education. Ability to study and to pursue a career. Ability to apply modern methods and technologies for personal and professional growth
- Prognostic. Ability to predict the strategy of professional activity. Ability to generate new ideas and nonstandard approaches to their implementation (creativity)
- Analytical. Ability to critical thinking, analysis, and synthesis. Ability to conduct scientific and applied research on a professional level
- Managerial. Ability to initiate, plan, and manage changes to improve existing and develop new social systems
- Scientific research. Ability to implement socio-pedagogical and sociopsychological knowledge in the process of setting research tasks in professional activities

- Deontological. Ability to act on the basis of ethical considerations (motives) in accordance with the principles of deontology

Professional Competencies:

- Moral and ethical. Readiness for absolute observance of moral norms and ethical principles in social work
- Organizational and managerial. Ability to determine problem situations and to simulate possible variants of their transformation and to implement social projects in the activities of social institutions
- Professional diagnostic. Ability to assess critical situations and risks that may arise from clients and provide appropriate assistance. Readiness to monitor and evaluate the effectiveness of individual interventions and programs
- Professional-technological. Readiness to develop and implement social technologies taking into account the specifics of the region, time dynamics, and the peculiarities of the situation
- Social and human rights. Ability to protect, assist, and support the rights and interests of various social groups. Ability to legal protection and representation of clients' social interests
- Professional and teaching staff. Ability to use in its cognitive activity modern pedagogical technologies and techniques. Knowledge about the essence and specificity of teaching activity and about methods of work in the modern pedagogical environment
- Understanding the foundations of social policy. Understanding of social problems, social structure, and processes at the level of society and community. Ability to use knowledge in the field of social policy, relevant social problems, and approaches in the organization of providing assistance to recipients of services
- Understanding the economic foundations of social work. Ability to organize economic activity of social institutions and carry out economic and financial analysis of the activities of social institutions
- Owning a method of sociological research and statistical methods. Operation of basic methods and techniques of sociological research, statistical methods; understanding of social priorities, social processes, and social relations
- Understanding the sociopsychological characteristics of different categories of recipients of services. Ability to use a wide range of methods and means of solving social and psychological problems of recipients of services
- Ability to create a health-preserving space. Ability to form healthcare management at recipients of services
- Ability to plan and carry out professional self-development and improvement. Ability to study throughout life, to increase professional competence, and to plan and carry out professional self-development, self-knowledge, self-determination, and self-organization
- Ability to conduct advocacy and mentoring support. Ability to conduct advocacy and mentoring support and to form a supportive client network

- Ability to perform social therapy. Possession of therapeutic general and specific technologies of social therapy (labor therapy, therapy of self-education, art therapy, game therapy, etc.)
- Ability to develop the implementation of innovative forms and methods of social work. Knowledge of innovative forms and methods of social work with different groups of recipients of services. Ability to adapt innovative forms and methods of work to modern realities

Program Learning Outcomes:

Knowledge and Understanding

Understanding of social problems, social structure, and processes at the level of society and community

Knowledge of innovative forms and methods of social work with different groups of recipients of services and the ability to adapt innovative forms and methods of work to modern realities

Application of Knowledge and Understanding

Ability to use knowledge in the field of social policy, relevant social problems, and approaches in the organization of providing assistance to recipients of services

Readiness for the preparation of analytical research work in the field of social policy; understanding of social priorities, social processes, and social relations; the ability to design sociological research, analyze and interpret their results, and use them in practice

Ability to organize economic activity of social institutions and carry out economic and financial analysis of the activities of social institutions

Ability to analyze the nature and content of legislative acts and other normative documents regulating legal relations in various social spheres

Possession of general therapeutic as well as specific technologies of social therapy

Readiness for absolute observance of moral norms and ethical principles in social work

Ability to communicate in a foreign language, readiness to study, and compilation of scientific and professional texts

Ability to implement IC technologies in professional activities. Readiness to conduct distance education and advisory activity, use computer and multimedia technologies and digital educational resources, and do working documentation on electronic media.

Formation of Judgments

Ability to develop, improve, adapt, and optimally use modern technologies of social work with different categories of recipients of services

Ability to conduct management in the social sphere

Ability to mediation and facilitation of conflict situations of recipients of services

Ability to carry out social expertise and to prepare recommendations for making managerial decisions and social designing in conditions where the research task is difficult to formalize

Ability to teach
Ability to find organizational and managerial decisions in nonstandard situations and be responsible for these decisions
Ability to lead and teamwork (Table 12.5)

Certification of graduates of the educational program of the specialty Social Work is carried out in the form of defense of the qualification work of the master's

Table 12.5 Structural-logical scheme of educational program Social Work

First semester	Second semester	Third semester
Formation of general competencies		
Foreign language professional communication, 2 credits	Foreign language professional communication, 2 credits	
ICT in professional activity, 4 credits		
Formation of special (professional) competencies		
Modern strategies for providing social services, 3 credits	Modern strategies for providing social services, 3 credits	
Management of social work in Ukraine, 3 credits	Management of social work in Ukraine, 3 credits	Management of social work in Ukraine, 1 credit
Social work with special groups of recipients of services, 4 credits	Social work with special groups of recipients of services, 4 credits	
Research of actual social problems, 2 credits	Research of actual social problems, 2 credits	
Practice		
Industrial (trainee), 3 credits		
	Industrial (trainee), 7,5 credits	
		Pre-diploma (research), 16,5 credits
Attestation		
	Writing a master's thesis, 6 credits	Master's degree defense, 1,5 credits
Choice of specialization "Social administration in the community"		
Technology of organization and activation of communities, 4 credits		
Social expert examination and public hearings, 4 credits		
	Social administration, 4,5 credits	
	Marketing in social work, 4 credits	
		Industrial practice in specialization, 6 credits
Choose from a catalogue of courses		
8 credits	8,5 credits	6 credits

Source: Based on the author's design

level and ends with the issuance of a state standard document awarding them a master's degree in qualification: "Master of Social Work in Specialization Social Work" or "Master of Social Work in the field of social administration in the community." The certification is carried out openly and publicly.

12.6 Conclusions

According to the strategy of modern Ukrainian higher education – the transition from the knowledge paradigm of education to the practice-oriented – the question of implementation of foreign effective practices of the training of modern competitive specialists arises more and more. In our theoretical scientific and pedagogical research, we are concerned with the preparation of a modern specialist in the social sphere on a research basis, considering that such a system of training is quite effective because of the practice-oriented future professional activity of such a specialist. In addition, all of the above is reinforced by the need to rebuild the modern society of Ukraine and an understanding of the development of an inclusive educational space.

Of course, the development of the standard of ICT competence of the future specialist in the social sphere in Ukraine, especially with the application of a research-based training system, requires the further development of specific tools for evaluating activities. Further development of the research problem is seen in the development of evaluation tools that will help to study the effectiveness of ICT competency formation for the future social science specialist in Ukraine in the process of a specially organized educational process – in a research-based education system.

References

10 key skills by 2020. Available online https://www.eduget.com/news/10_klyuchovix_navichok_do_2020-go-907

Abbott, M. L., & McKinney, J. (2013). *Understanding and applying research design*. Hoboken: Wiley.

Aditomo, A., Goodyear, P., Bliuc, A.-M., & Ellis, R. A. (2013). Inquiry-based learning in higher education: Principal forms, educational objectives, and disciplinary variations. *Studies in Higher Education., 38*, 1239–1258. https://doi.org/10.1080/03075079.2011.616584.

Baldwin, G. (2005). *The teaching research Nexus: How research informs and enhances learning and teaching in the University of Melbourne*. Melbourne: The University of Melbourne. Available online http://www.canterbury.ac.nz/media/documents/forms/TR_Nexus2005.pdf

Blackmore, P., & Fraser, M. (2007). Researching and teaching: Making the link. In P. Blackmore & R. Blackwell (Eds.). *Towards strategic staff development in higher education*. Maidenhead: McGraw-Hill International.

Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. Boston: D.C. Heath.

Healy, M. (2005). Linking research and learning to benefit student learning. *Journal of Geography in Higher Education, 29*(2), 183–201.

Humbold, V. W. (1984). Der Königsbrger Schulplan, 1809. In A. Flitner (Ed.), *Schriften zur Anthropologie und Bildunslehre*. Frankfurt am main: Ullstein.

Ifenthaler, D., & Gosper, M. (2014). Research-based learning: Connecting research and instructions. In *Curriculum models for the 21st century: Using learning technologies in higher education* (pp. 73–89). New York: Springer. https://doi.org/10.1007/978-1-4614-73-66-4_5.

Justice, C., Rice, J., & Warry, W. (2009). Academic skill development—Inquiry seminars can make a difference: Reflections and directions on course design and teaching methods. *Innovative Higher Education., 3*, 3: Available at: https://doi.org/10.20429/ijsotl.2009.030109.

Lageman, E. C. (2002). Experimenting with education: John Dewey and Ella Flagg Young at the University of Chicago. In C. H. Seigfried (Ed.), *Feminist Interpretations of John Dewey*. University Park: Pennsylvania State University.

Levy, P., & Petrulis, R. (2012). How do first year university students experience inquiry and research, and what are the implications for the practice of inquiry-based learning? *Studies in Higher Education, 37*, 85–101.

Ludwig, J. (2011). *Forschungsbasierte Lehre als Lehre im Format der Forschung*. Available online: http://www.sq-brandenburg.de/files/bbhd03.pdf

Mills, J. E., & Treagust D. F. (2003). Engineering education—Is problem-based or project-based learning the answer? *Australasian Journal of Engineering Education*. Available online: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.620.5767&rep=rep1&type=pdf

Prince, M. J., & Felder, R. M. (2006). Inductive teaching and learning methods: Definitions, comparisons, and research bases. *Journal of Engineering Education, 95*, 123–138.

Prince, M. J., & Felder, R. M. (2007). The many faces of inductive teaching and training. *Journal of College Science Teaching, 36*, 14–20.

Spoken-Smith, R., & Walker, R. (2010). Can Inquiry-based Learning Strengthen the Links Teaching and Disciplinary Research? *Studies in Higher Education., 35*, 723–740.

Structure of ICT competence of teachers. Recommendations of UNESCO. (2011).Version 2.0.

Thomas, J. W. (2000). *A review of research on project-based learning. Research review*. California: The Autodesk Foundation.

Tymoshenko, N. Y. (2014). *Introduction to the specialty: Social work. Module 2:* Textbook.

Veretenko, T. G., & Denysiuk, O. M. (2011). *Introduction to the specialty: Social pedagogy. Module 2*. Textbook.

Wildt, J. (2010, October 13). *Forschendes Lernen: Wie und Warum? Presentation at Leibniz University Hannover*. Available online: https://www.zqs.uni-hannover.de/fileadmin/institut/pdf/Forschendes_Lernen_Leibniz_Universitaet_Hannover_Prof._Dr._Dr._Wildt_13.10.2011.pdf