The article considers important aspects of the problem of formation of informational-communicative competence of junior students in the context of the requirements of the State Standard of Primary Education (2018) and the Concept "New Ukrainian School" (2016). The concepts of "competence", "information and communication competence", "formation of information and communication competence", "pedagogical conditions for the formation of informational-communicative competence" are analyzed. Based on the analysis of scientific and educational literature on the study of advanced pedagogical experience and the use of positive results of their own pedagogical activities in higher education and in primary schools, the authors determine the pedagogical conditions for informational-communicative competence of primary school students. Particular attention is paid to such conditions as: positive motivation of teachers and cognitive interest of students in information and communication activities; creating an educational and developmental environment in the classroom, at school; teacher's possession of modern technologies and techniques, in particular, games, information and communication and their use in practice; taking into account in the process of studying computer science age and individual characteristics of students; availability of material and technical and information support for students and schools. The National Doctrine of Education Development in Ukraine in the 21st Century defines that the priority of education development is the introduction of modern ICT, which ensure further improvement of the educational process, accessibility and effectiveness of education, preparation of the young generation for life in the information society.

**Key words:** informatization of education, competence, informational-communicative competence, formation of ICC, pedagogical conditions.
ПЕДАГОГІЧНІ УМОВИ ФОРМУВАННЯ ІНФОРМАЦІЙНО-КОМУНІКАЦІЙНОЇ КОМПЕТЕНТНОСТІ УЧНІВ ПОЧАТКОВИХ КЛАСІВ

С. С. Вітвицька, О. М. Мороз

У статті розглянуто важливі аспекти проблеми формування інформаційно-комунікаційної компетентності учнів молодших класів у контексті вимог Державного стандарту початкової освіти (2018) і Концепції "Нова українська школа" (2016). Проаналізовано поняття "компетентність", "інформаційно-комунікаційна компетентність", "формування інформаційно-комунікаційної компетентності", "педагогічні умови формування інформаційно-комунікаційної компетентності". На основі аналізу наукової та навчально-методичної літератури, вивчення передового педагогічного досвіду й використання позитивних результатів власної педагогічної діяльності у закладі вищої освіти і в початкових класах загальноосвітньої школи авторами визначено педагогічні умови формування інформаційно-комунікаційної компетентності учнів початкової ланки освіти. Особливу увагу приділено таким умовам, як: позитивна мотивація вчителя та пізнавальний інтерес учнів до інформаційно-комунікаційної діяльності; створення освітньо-розвиваючого середовища в класі, в школі; володіння вчителем сучасними методиками і технологіями, зокрема, ігровими, інтерактивними, інформаційно-комунікаційними та використання їх в практичній діяльності; врахування в процесі вивчення інформатики вікових та індивідуальних особливостей учнів; наявність матеріально-технічного та інформаційного забезпечення учнів та школи. У Національній доктрині розвитку освіти в Україні у XXI столітті визначено, що пріоритетом розвитку освіти є впровадження сучасних інформаційно-комунікаційних технологій, які забезпечують подальше вдосконалення навчально-виховного процесу, доступність та ефективність освіти, підготовку молодого покоління до життєдіяльності в інформаційному суспільстві.

Ключові слова: інформатизація освіти, компетентність, інформаційно-комунікаційна компетентність, формування інформаційно-комунікаційної компетентності, педагогічні умови.

Introduction of the issue. Modern Ukrainian society needs to educate independent, proactive, competent, and responsible citizens who are able to effectively interact while performing social, industrial and economic tasks. In this context, the state sets new requirements for education, in particular, for its initial stage, to enhance the quality of the educational process.

In the National Doctrine of Education Development in Ukraine in the XXI century, it is determined that the priority of education development is the introduction of modern ICT, which ensure further improvement of the educational process, accessibility and effectiveness of education, and preparation of the young generation for life in the information society [1].

In Ukraine, the necessary legislative framework for primary education has been created: the Law "On Education" (2017), the "State Standard of Primary General Education" (2018), the Concept "New Ukrainian School (NUS)" (2016), which set the tasks for the new Ukrainian school: the
formation of a competent individual who strives for self-improvement and lifelong learning, is ready for a conscious life choice, labor activity and civic activity. Ensuring the implementation of these tasks necessitates the formation of information and communication competence of primary school students and teachers.

**Current state of the issue.** The problem of the competence-based approach to the education of elementary school students is explored in the works of such domestic scientists as T. Barbara, N. Bibik, O. Vashulenko, O. Ovcharuk, O. Pomiatun, O. Savchenko, M. Sobko and other researchers.

The formation of informational-communicative competence (ICC) and the introduction of ICT are highlighted in the works of Ukrainian (V. Bykov, M. Zhaldak, N. Morze, O. Spirin and the others) and foreign (J. Raven, O. Khutorskyi, L. Chernikov and the others) scientists; the works of O. Hrytsenchuk, I. Ivaniuk, S. Lytvynova, I. Malyska, O. Ovcharuk, O. Kravchyna and others are devoted to the problem of assessing ICC.

**Aim of research** is to analyze such basic concepts as "informatization of education", "competence", "information-communication competence (ICC)", "formation of informational-communicative competence", "pedagogical conditions"; as well as to single out the definition and characteristics of pedagogical conditions for the formation of ICC of primary school students.

**Results and discussion.** In the conditions of modern challenges and the rapid development of technologies, the Ukrainian society faces the important task of preparing citizens for a full-fledged life and effective activity in the digital world. In 2021, by order of the Cabinet of Ministers of Ukraine, the Concept for the Development of Digital Competencies was developed. The main goal of this Concept is to define the priority areas and main tasks for the development of digital skills and digital competences, to increase the level of digital literacy of the population [2].

The priority of urgent spheres and initiatives of Ukraine is the spread of digital Ukrainian school: forming a competent citizen, who strives for self-improvement and lifelong learning, is ready for a conscious life choice, labor activity and civic activity. Ensuring the implementation of these tasks necessitates the formation of information and communication competence of primary school students and teachers.

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education, the development of the information society (IS) [2].

The information society is a qualitatively new stage of human development, in which any person can receive, process, and distribute information with the help of ICT, and the state ensures a high level of informatization of all industries [2].

Academician V. Kremen defines the essence of the concept of "informatization of education" as the leading direction of increasing the effectiveness of the educational process, one of the main factors in improving the quality of education. Informatization of education is understood as a set of interconnected organizational-legal, socio-economic, educational-methodical, scientific-technical, production and management processes aimed at meeting information, computing, and telecommunication needs (and other needs related to the implementation of ICT) participants in the educational process, as well as those who manage and ensure this process, including its scientific and methodological support and development [4].

According to the State Standard of Primary Education, the invariant component of the basic curriculum includes the field of computer science (CS) taught in grades 2-4 of primary school. The purpose of the CS educational field is the formation of informational-communicative competence, which involves mastering the basics of digital literacy for development and communication, the ability to use the means of ICC safely and ethically in education and other life situations [8]. According to the curriculum [9], the main goal of the subject "Computer Science" in accordance with the State Standard of Primary General Education is to acquaint students with ICT and to form children's key competencies for the realization of their creative potential and socialization within society.

The content of the educational subject CS in elementary school is a generalized and abbreviated presentation of the basics of ICT, which is adapted to the capabilities and characteristics of children of primary school age.

The implementation of this goal and
content is carried out in the educational process of primary school based on the competence approach.

Competence approach is a priority orientation to goals and vectors of education, which incorporates: education, self-determination, self-actualization, socialization and development of individuality. Fundamentally new meta-educational constructs act as instrumental means of achieving these goals: competencies, competences, and meta-quality.

The analysis of scientific-pedagogical and reference sources proves that there are many definitions of the concepts of "competence" and "competency", which often differ from one another in terms of place. Thus, the "Great explanatory dictionary of the modern Ukrainian language", edited by V. Busel, considers competence as the range of powers of any institution or person; a range of issues in which a certain person has knowledge and experience. According to the same source, competency is a certain amount of knowledge of a person that allows him/her to judge something, to express a convincing authoritative opinion [5: 568].

In the Law of Ukraine "On Education", "competence" is defined as a dynamic combination of knowledge, skills and practical skills, ways of thinking, professional, worldview and civic qualities, moral and ethical values, which determines a person's ability to successfully carry out professional and further educational activities and is the result study at a certain level of higher education [2].

The "New Ukrainian School" concept defines competence as a dynamic combination of knowledge, ways of thinking, views, values, skills, abilities, and other personal qualities that determine a person's ability to successfully conduct professional and further educational activities [11].

In addition, competence is characterized as the ability of a personality (O. Novikov), holistic image (N. Holovanova), personal quality or a set of personal qualities (A. Khutorskyi, etc.) [3: 48].

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understanding, in our opinion: competency is a social norm, a requirement that includes knowledge, abilities, skills, methods of activity, certain experience.

Competence is the ability to apply acquired knowledge, abilities and skills, methods of activity, own experience in non-standard situations to solve certain vital problems. Competence is a personal formation that manifests itself in the process of a person’s independent actions [12: 49].

Thus, competency is not a personality characteristic. It is manifested in the process of assimilation and reflection, thus turning into competence during the process. World experience has developed an understanding of competence as an integrated result of education assigned by the individual.

In our opinion, the concepts of "teacher competence" and "student competence" should be distinguished, which is clearly described in the State Standard of Basic and Complete Secondary Education, which states that competence is an integrated ability of a student acquired in the learning process, consisting of knowledge, skills, experience, values and attitudes that can be holistically implemented in practice; competency is socially recognized the level of knowledge, abilities, skills, and attitudes in a certain field of human activity, and the competence of a teacher can be defined as a dynamic combination of knowledge, ways of thinking, views, values, skills, abilities, and other personal qualities that determine a person's ability to successfully conduct professional and further self-education.

As evidenced by the analysis of scientific and scientific-methodological literature, the concept of "ICC" has different interpretations: both the narrow and the broad one. Researchers interpret it in different ways, using the concepts and their characteristics already established in national legal framework, adding their own coloring in accordance with the particular author's research.

In the "New Ukrainian School" Concept, ICC indicates the confident and, at the same time, critical use of ICTs for creating,
searching, processing, exchanging information at work, in public space, and in private communication [11].

In scientific circles, "ICC" is understood as the confirmed ability of an individual to apply ICT in practice to meet one's own needs and to solve socially significant professional tasks in a certain subject area or type of activity (O. M. Spirin) [15].

O. Savchenko interprets this concept as mastering the basis of digital literacy for development and communication, the ability to use the means of informational-communicative competence safely and ethically in education and other life situations [13].

The concept of "digital literacy" as a tool of information activity has gone beyond the ability to use a computer and has been considered among a few concepts related to technological literacy: computer and ICT literacy. Digital literacy serves as a catalyst for development because it contributes to self-education and the acquisition of other important life skills of a citizen of the information society, a consumer of electronic services [16].

It should be noted that almost all scientists note that informational-communicative competence is a mandatory component of a teacher's professional competence. According to modern teachers, the acquisition of vital competences can give a person the opportunity to navigate in modern society, the information space, the rapid development of the labor market, and further education.

Depending on the field of use, the term "information" has many definitions.

Information (from Latin informatio – explanation, teaching) is one of the general concepts of science; in a broad sense, new information about the surrounding world obtained as a result of interaction with it [6: 204].

From a practical point of view, the most important properties of information are value, reliability, and relevance. Information has the following properties: memorability, hierarchy, conditionality and unconditionality.

In our study, we will use the term "information" in the following sense: "information" is communication and characteristics, adding my own colouring according to the author's research.

In the concept "New Ukrainian School" information-competence means confident, and at the same time critical, use of information-communicative technologies for creation, search, processing, exchange of information at work, in public space, and private communication [11].

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interaction, in the process of which uncertainty is eliminated (information entropy is the communication theory of the American scientist K. Shannon) [7: 19].

With the spread of information-globalization networks (digital television, mobile communications, the Internet, etc.), the concept of "information flow" is used with the concept of "information". Note that the information flow is a stable movement of information, directed from the source of information to the recipient, determined by the functional connections between them.

Information exchange is defined as "communication" [5: 562].

A communicative process is an interaction between various subjects of communication, during which information is exchanged. It includes a dynamic change in the stages of formation, transmission, reception, decoding and use of information in both directions during the interaction of communicators. We live in a world of communication, where a person spends most of his time communicating. Studies have confirmed that about 70% of a person's time is spent on communication: an individual writes, reads, speaks, listens. No person or group of people can exist without communication. Only communication ensures the transfer of information and ideas. The main types of communication include: interpersonal communication is direct contact between people. In those situations when people communicate in small groups (the number of their members can be from 3 to 20-30 people), it is customary to talk about group communication.

Mass communication is the process of informing the masses using technical means. Mass communication is the process of spreading information and influence in society with the help of special means, print, television, radio, cinema, etc., because of which the message reaches large groups of people immediately.

In this context, a necessary component of the educational process in educational institutions (in primary school in particular) is the formation of students' ICC. The concept of "formation" in the reference sources is defined as "creation", which implies giving completeness to пояснення, викладання) – одне із загальних понять науки; в широкому розумінні нові відомості про навколишній світ, одержувані в результаті взаємодії з ним [6: 204].

Найважливішими, з практичної точки зору, властивостями інформації є цінність, достовірність та актуальність. Інформації притаманні такі властивості: запам'ятовування, ієрархічність, умовність і безумовність.

В нашому дослідженні термін "інформація" ми будемо використовувати в такому аспекті: "інформація" – комунікація та зв'язок, у процесі якого усувається невизначеність (інформаційна ентропія – теорія звізку американського вченого К. Шеннона) [7: 19].

3. Поширенням інформаційно-глобалізаційних мереж (цифрове телебачення, мобільний зв'язок, Інтернет тощо) з поняттям "інформація" вживають поняття "інформаційний потік". Зазначимо, що інформаційний потік – це стабільні рух інформації, спрямований від джерела інформації до отримувача, визначений функціональними зв'язками між ними.

Обмін інформацією – це комунікація [5: 562].

Комунікативний процес – це взаємодія між різними суб'єктами комунікації, при якому здійснюється обмін інформацією. Він включає динамічну зміну етапів формування, передавання, приймання, розшифрування і використання інформації в обох напрямках при взаємодії комунікантів. Ми живемо у світі комунікації, де більшість свого часу людина витрачає на спілкування. Дослідження підтвердили, що близько 70% часу особистості припадає на комунікацію: людина пише, читає, говорить, слухає. Жодна людина чи група людей не може існувати без комунікації. Лише комунікація забезпечує передачу інформації та ідей. До основних відділів комунікації належать: міжособистісна комунікація як основа безпосередній контакт людей. У тих ситуаціях, коли люди вступають в спілкування в маленьких групах (кількість їх членів може бути від 3 до 20-30 чоловік), прибігають говорити про групову комунікацію.
something (certainty) because of the development of changes [5: 1544]. Based on the analysis of the essence of such concepts as "information", "communication", "information and communication competence", we defined the concept of "formation" as a purposeful, organized, systematic process of interaction between the teacher and students, aimed at mastering and organizing knowledge, abilities and skills of use ICTs in the educational process, communication in private life. This process requires the creation of effective pedagogical conditions. In the Great Explanatory Dictionary of the Modern Ukrainian Language, "Condition-factor" is defined as an anthropogenic factor caused by human activity. Factor – from Lat. faciy – "I do" – condition, driving force, cause of some phenomenon, process [5: 1601]. Pedagogical science has established that the quality of the learning process depends on a set of factors-conditions that are conditioned by the individual qualities and properties of students, the skill of the teacher, his personal qualities, and the features of the environment in which their interaction takes place.

Among the key components (conditions) in the "New Ukrainian School" Concept, the following stand out: a motivated teacher, orientation to the needs of the student in the educational process, a modern educational environment and pedagogy based on a partnership between the student, teacher, and parents. Under the pedagogical conditions of the formation of ICC in students in the process of studying the "Computer Science" course (grades 2-4), we understand the factors that affect the acquisition of skills in the use of ICT, work with various devices for studying other subjects, as well as for solving practical social, communicative tasks, formation of ideas about information, its properties, peculiarities of processing, transmission and storage; initial skills, use of information for educational purposes; development of algorithmic, logical and critical thinking. Based on the analysis of scientific and educational-methodical sources, the study of advanced pedagogical experience and the
use of positive results of one’s own pedagogical activity in a higher education institution and in primary classes of a comprehensive school as well as the use of factor analysis methods, the authors determined the pedagogical conditions for the formation of information-communication competence of primary school pupils. Special attention is paid to such conditions as: positive motivation of the teacher and interest of students in informational-communicative activities; creation of an educational and developmental environment at school and in the classroom; teacher's mastery of modern methods and technologies, ICT and their use in practical activities; taking into account the age and individual characteristics of students in the process of studying computer science; availability of material, technical and information support for pupils and the school.

The authors of the UNESCO project "ICT Competency Standards for Teacher (ICT-CST)" note the basic knowledge and skills that characterize the ICC of a computer science teacher.

CS teachers must be able to navigate in the information space, receive corresponding data and operate it in accordance with their own needs and requirements of the modern high-tech information society, directly teaching students; use computer technologies, text editors, databases, programs for viewing graphics or videos, browsers; understand the possibilities of use and potential risks in the Internet and communication through electronic means (e-mail, Skype, social networks) for work, study, recreation, exchange of data and information and network communication, etc.; the ability to find, collect and process data, information and messages and critically analyze according to the real and virtual environment [8].

The most important condition for the formation of informational-communicative competence is the positive motivation of both the teacher and the student.

Motivation to study is one of the main conditions for the implementation of the
educational process. It not only contributes to the development of intelligence, but is also the driving force for the improvement of personality as a whole. A motivated teacher is one who works according to the calling of their soul, has pedagogical skills, and works creatively. A motivated student is one who has developed cognitive interests and needs, a desire for knowledge. The formation of the student’s motivational sphere can be carried out in two directions: to ensure the development of abilities, inclinations, professional orientation and to develop motives of duty, social significance of learning.

In order to develop motivation to study the computer science course, we use the following methods: selection of interesting information, creation of a positive emotional mood of schoolchildren, identification of known regularities in new situations, diversification of methods and techniques of working with students, determination of the optimal level of individual complexity of tasks, dosed assistance, disclosure of the goals of learning the whole topics and each lesson; use of modern gaming and interactive technologies. From the experience of teaching the propaedeutic course "Computer Science" in grades 2-4, it is possible to testify that lessons that use game technologies (exercise games, travel games, simulation games, role-playing, story games) most contribute to the development of cognitive interests, cognitive activity and creativity). For example, "We are magicians", "Black and white", game "Tell the word", "Work with cards", "Printer", "Help Winnie the Pooh", sound game "Silence", etc. Interactive technologies and methods of "Six Hats", "Storytelling" (composing stories about your favorite pets) and others are effective. Pupils like and remember the use of various crosswords, anagrams, rebuses, logographs in lessons. In order to effectively master the "Informatics" course, it is necessary to create a developmental environment in the classroom.

In pedagogy, the term "developmental kom'ютерні технології, текстові редактори, бази даних, програм для перегляду графіки або відео, браузерів; розуміти можливості використання та потенційні ризики у мережі Інтернет і спілкування через електронні засоби (e-mail, скайп, соціальні мережі) для роботи, навчання, відпочинку, обміну даними і відомостями та мережевого спілкування тощо; уміння знаходити, збирати та опрацьовувати дані, відомості та повідомлення та критично аналізувати відповідно до реального та віртуального середовища [8].

Найважливішою умовою формування інформаційно-комунікативної компетентності є позитивна мотивація як вчителя, так і учня.

Мотивація до навчання - одна із головних умов реалізації освітнього процесу. Вона не лише сприяє розвитку інтелекту, але і є рушійною силою вдосконалення особистості в цілому. Вмотивований вчитель – це той, який працює за покликом душі, має педагогічні здібності, працює творчо. Вмотивований учень – це той, хто має розвинені пізнавальні інтереси й потреби, потяг до знань. Формування мотиваційної сфери учня можна здійснювати у двох напрямках: забезпечувати розвиток здібностей, нахилів, професійної орієнтації та розвивати мотиви обов’язку, суспільної значущості учнів.

З метою розвитку мотивації до вивчення курсу інформатики нами застосовується: добір цікавої інформації, створення позитивного емоційного настрою школярів, виявлення відомих закономірностей у нових ситуаціях, урізноманітювання методів і прийомів роботи з учнями, визначення оптимального рівня індивідуальної складності завдань, дозована допомога, розкриття цілей вивчення всієї теми і кожного уроку; використання сучасних ігрових та інтерактивних технологій. З досвіду викладання пропедевтичного курсу "Інформатика" в 2-4 класах можна зазначити, що найбільш сприяє розвитку пізнавальних інтересів, пізнавальної активності та творчості уроки, в яких використовуються ігрові технології (ігри-вправи, ігри-подорожі, імітаційні ігри, рольові, сюжетні ігри). Наприклад, "Ми
educational environment of primary school" is identified as a complex of material and technical, sanitary and hygienic, aesthetic, psychological and pedagogical conditions that ensure the organization of life and education of primary school pupils, their development.

Based on the analysis of scientific and pedagogical works, we single out the following components of the modern developmental educational environment of primary school:

- informational (availability of modern normative, educational-organizational and technological support for the process of formation of the educational and developmental environment of the primary school);

- psychological (taking into account the individual psychological characteristics of the student’s development in the educational process, focusing on spiritual and moral adequate perception of the network environment, communicative culture of participants in the pedagogical process, etc.);

- subject-spatial (taking into account the elements of subject-developmental design in the interior of the elementary level of the school, organization of the spatial structure of the environment, which contains its heterogeneity and complexity, interconnection of various functional zones, mobility and controllability of the environment as a means of educational and developmental communication of the teacher, students and their parents; availability of modern multimedia tools, audio and video productions of educational and developmental direction);

- cultural-educational (coverage of the content, forms, methods, innovative technologies related to the implementation of tasks of development and self-development of a young person on the basis of socio-culture with the focus on social order, regional needs, cultural potential of the region) [13].

Under such conditions, work with pupils is based on the use of new approaches to teaching, which shift the emphasis from
the accumulation of knowledge to the formation of a culture of students' intellectual work. Cooperation between the teacher and students, partnership in the lesson, the joint process of learning and discovery, the constant creation of a situation of success, which are the components of a pupil's self-realization in the educational environment.

At the same time, the rapid development of the digital world causes a certain crisis in the constant updating of the educational base of the educational environment and the knowledge of teachers and students. There are several important factors affecting these processes: the arsenal of modern learning tools (including digital ones) in school education is not systematically updated; insufficient attention is paid to the creation and maintenance of the digital learning environment of educational institutions.

Conclusions and research perspectives. Thus, in the process of research, the main concepts of the competence approach to the formation of ICC of primary school pupils and the pedagogical conditions for their effective formation were clarified. The obtained results make it possible to outline a number of problems of a theoretical and practical nature. Reforming primary general education, requires the activation of the subject position of students in the educational process and increasing their interest in educational activities. Studying the subject "Computer Science" (grades 2-4) requires orientation to activity-oriented and person-oriented approaches. The creation of models and technologies for the implementation of pedagogical conditions that ensure the effectiveness of the formation of information and communication competence of students can be a perspective for further research.
REFERENCES (TRANSLATED & TRANSLITERATED)


