EDUCATION IN THE ERA OF PARADIGMATIC CHANGES: CHALLENGES, MODERN PRACTICES, POSTTRAUMATIC GROWTH

ОСВІТА В ЕПОХУ ПАРАДИГМАЛЬНИХ ЗМІН: ВИКЛИКИ, МОДЕРНІ ПРАКТИКИ, ПОСТРАВМАТИЧНЕ ЗРОСТАННЯ

EDITED BY PROF. ANNA TSVIETKOVA

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За науковою редакцією професора Ганни Цвєткової

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According to the scientific edition of Professor Anna Tsvetkova

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ОСВІТА В ЕПОХУ ПАРАДИГМАЛЬНИХ ЗМІН: ВИКЛИКИ, МОДЕРНІ ПРАКТИКИ, ПОСТРАВМАТИЧНЕ ЗРОСТАННЯ

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The presented monograph covers relevant issues of contemporary psychological and pedagogical education: educational policy in the era of paradigmatic changes; posttraumatic personal growth in the context of Ukrainian realities; trends in higher education and responses to the challenges of martial law; modern practices in preschool education taking into account Ukrainian and foreign experience. The scientific research of the proposed monograph is a response to the challenges of martial law, a unique example of posttraumatic professional growth of scholars, and the intensive development of psychological and pedagogical science under extreme conditions.

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ПЕРЕДМОВА

Війна в Україні примусила по-іншому подивитися на сенс життя та педагогічні реалії. Переосмислення цінностей, усвідомлення важливості духовних пріоритетів, здатності до відродження на тлі травматичних подій (на фоні війни та освітянських втрат) веде до ґрунтовних особистісних та професійних трансформацій.

Вірність педагогічним ідеалам, віра в дитину, інноватівність, здатність, готовність та спроможність до професійних та особистісних трансформацій – пріоритети освітянської політики України.

Саме на ґрунті альтруїзму, любові, самоактуалізації можливо відродження нації, формування нової генерації українців. І в цьому головну роль відграють сучасні педагоги, які мають природну схильність до емпатичного відчуття дійсності, здатність до подолання своїх травм та перетворення їх в мудрість, які обирають особливий шлях посттравматичного зростання, шо ґрунтується на цілісності особистості, її саморозкритті та самоствердженні. На основі колективної індивідуації (К. Юнг) відбувається глобальна еволюція людства, як шлях до більш високої усвідомленості та інтеграції. Отже, педагоги, психологи, які проходять через трансформацію та посттравматичне зростання, сприяють еволюційному переходу людської свідомості на більш високий трансцендентний рівень. І це є підготовкою до наступного етапу психолого-педагогічного розвитку людства, що здатне глибоко відчувати, опрацьовувати свої «тіньові сторони» та досягати цілісності на рівні виду (К. Юнг). Готовність бути аутентичним в сучасному глобалізованому світі – сміливий вибір актуалізованої людини, яка може вести за собою та змінювати світ.

Презентована монографія охоплює актуальні питання сучасної психолого-педагогічної освіти: освітню політику в епоху парадигмальних змін; посттравматичне зростання особистості на фоні українських реалій; тенденції вищої освіти та відповіді на виклики військового стану; модерні практики в дошкільній освіті, що враховують український та закордонний досвід.

Наукові розвідки запропонованої монографії є відповіддю на виклики, військового стану, унікальним прикладом посттравматичного професійного зростання науковців та інтенсивного розвитку психолого-педагогічної науки в екстремальних умовах.

Видання адресоване вченим-дослідникам, вихователям, учителям-практикам, науковцям-початківцям і всім небайдужим до проблем дитинства, виховання, подолання травмуючого досвіду, розвитку освіти України у столітті кардинального оновлення колективної свідомості та глобальних викликів.

FOREWORD

The war in Ukraine forced a new perspective on the meaning of life and pedagogical realities. Reconsideration of values, awareness of the importance of spiritual priorities, and the ability to recover against the background of traumatic events (amid war and educational losses) lead to profound personal and professional transformations.

Faithfulness to pedagogical ideals, belief in the child, innovativeness, ability, readiness, and capacity for professional and personal transformations are priorities of Ukraine's educational policy.

It is precisely on the basis of altruism, love, and self-actualization that the revival of the nation and the formation of a new generation of Ukrainians is possible. In this, modern educators play a key role, possessing a natural inclination toward empathetic perception of reality, the ability to overcome their own traumas and transform them into wisdom and professionalism, choosing a special path of posttraumatic growth based on the integrity of the individual, self-disclosure, and self-affirmation. Based on collective individuation (C. Jung), a global evolution of humanity occurs, as a path toward higher awareness and integration. Therefore, educators and psychologists undergoing transformation and posttraumatic growth contribute to the evolutionary transition of human consciousness to a higher transcendental level. This is preparation for the next stage of psychological and pedagogical development of humanity, capable of deeply feeling, processing its "shadow sides", and achieving wholeness at the species level (C. Jung). The readiness to be authentic in the modern globalized world is a bold choice of an actualized person who can lead and change the world.

The presented monograph covers relevant issues of contemporary psychological and pedagogical education: educational policy in the era of paradigmatic changes; posttraumatic personal growth in the context of Ukrainian realities; trends in higher education and responses to the challenges of martial law; modern practices in preschool education taking into account Ukrainian and foreign experience. The scientific research of the proposed monograph is a response to the challenges of martial law, a unique example of posttraumatic professional growth of scholars, and the intensive development of psychological and pedagogical science under extreme conditions.

The publication is intended for researchers, educators, practicing teachers, novice scientists, and all those concerned with issues of childhood, education, overcoming traumatic experiences, and the development of education in Ukraine in the century of radical renewal of collective consciousness and global challenges.

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MODELLING THE IMPLEMENTATION OF PEDAGOGICAL CONDITIONS FOR THE FORMATION OF INFORMATION AND DIGITAL SKILLS OF PRIMARY SCHOOL STUDENTS IN THE PROCESS OF DIGITALISATION OF PRIMARY EDUCATION

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Annotation. *The section explores the modelling of the process for implementing pedagogical conditions that foster the development of information and digital skills among primary school pupils in the context of digitalisation. The proposed model comprises interrelated components, including the aim, tasks, methodological approaches, principles, pedagogical conditions, forms, methods, techniques, tools, skill components and groups, as well as criteria, indicators, and levels of formation. Particular attention is given to aligning the model's aim with both pupils' needs and societal demands. The section also proposes practical ideas for using forms and methods to effectively develop information and digital skills among primary school pupils in the process of digitalising primary education.*

Keywords: *modelling; pedagogical conditions; formation; information and digital skills; primary school pupils; digitalisation; primary education; educational process.*

МОДЕЛЮВАННЯ РЕАЛІЗАЦІЇ ПЕДАГОГІЧНИХ УМОВ ФОРМУВАННЯ ІНФОРМАЦІЙНО-ЦИФРОВИХ УМІНЬ МОЛОДШИХ ШКОЛЯРІВ У ПРОЦЕСІ ДИДЖИТАЛІЗАЦІЇ ПОЧАТКОВОЇ ОСВІТИ

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Анотація. *У розділі досліджено моделювання реалізації педагогічних умов формування інформаційно-цифрових умінь молодших школярів у процесі диджиталізації початкової освіти. Запропонована модель охоплює взаємопов'язані компоненти, зокрема мету, завдання, методологічні підходи, принципи, педагогічні умови, форми, методи, прийоми, засоби, компоненти та групи інформаційно-цифрових умінь, критерії, показники й рівні їх сформованості. Увагу приділено узгодженню мети моделі з потребами учнів і вимогами суспільства. У розділі також запропоновано практичні ідеї використання форм і методів для ефективного формування інформаційно-цифрових умінь молодших школярів у процесі диджиталізації початкової освіти.*

Ключові слова: *моделювання; педагогічні умови; формування; інформаційно-цифрові вміння; учні початкової школи; цифровізація; початкова освіта; освітній процес.*

Relevance of the research. At the present stage of societal development, particularly within the field of education, the process of digitalisation is actively unfolding. The digital transformation of primary education necessitates the development of information and digital skills among younger students, since the continuous growth of digital information volumes and easy access to them require that pupils be taught how to find relevant information, create, store, transmit, and process it by means of information and communication technologies. The development of the corresponding set of skills and abilities among learners in primary education must align with the needs of contemporary society. This is also conditioned by the fact that digital transformation acts as a factor in implementing the provisions of the Conceptual foundations for reforming general secondary education: «New Ukrainian School» and the State standard for primary education, according to which primary school must ensure pupils' acquisition of key competences, among which information and communication (information and digital) competence occupies an important place *(Державний стандарт початкової освіти, 2018; Концептуальні засади реформування середньої школи «Нова українська школа», 2016)*.

Since 2019, the Ministry of Digital Transformation of Ukraine has been operating, implementing state policy in the field of digitalisation. Its activities are directed towards the development of open data, the creation and maintenance of national electronic information resources, the introduction of e-services, and the enhancement of citizens' digital literacy *(Постанова Кабінету Міністрів України від 18.09.2019 р. № 856)*. The Digital Competence Framework for Ukrainian Citizens (DigCompUA for Citizens 2.2, Updated Version) was published as an instrument designed to raise the level of digital competence of Ukrainians, ensure the implementation of state policy, and plan educational initiatives aimed at enhancing citizens' digital literacy and practical use of IT tools and services by specific target groups *(Рамка цифрової компетентності громадян України DigCompUA for Citizens 2.2 (оновлена), 2023)*. With the support of UNICEF, in 2023 the Ministry of Education and Science of Ukraine organised the annual August Educational Conference, during which the state of and prospects for the digitalisation of education in Ukraine were discussed – a particularly pressing issue both during the COVID-19 pandemic and under the conditions of the full-scale invasion of Russia into the territory of Ukraine *(Міністерство освіти і науки України: вебсайт, 2023)*. Taking these aspects into account, the state is undertaking significant measures that promote the realisation of digital transformation across social domains and the enhancement of citizens' digital competence, thus substantiating the relevance of this research topic.

To enhance the formation of information and digital skills among primary school pupils, it is essential to ensure the implementation of pedagogical conditions for their development within the process of digitalising primary education. The following conditions are identified: development of positive motivation and value-

based attitudes of primary school pupils toward mastering information and digital skills; formation of educational and cognitive activity during work with digital information; creation of an educational and developmental environment in primary school that facilitates the acquisition of information and digital skills; and stimulation of constructive and productive reflection during the processing of digital information and online communication among primary school pupils *(Шишак, 2025b)*. The content and logic of applying the proposed pedagogical conditions should be reflected in a specific model – the model for implementing pedagogical conditions for the formation of information and digital skills of primary school students in the process of digitalising primary education – which confirms the relevance of the study.

Analysis of recent research and publications. The problem has been explored by scholars from multiple perspectives. The stated topic was partially examined by us during the preparation of a doctoral dissertation (PhD).

Recognising the formation of information and digital skills of younger students as a component of their information and digital competence, it is relevant to disclose the essence and structure of competence as a general concept (O. Hryshko, L. Klevaka) and to analyse the implementation of the competence-based approach in the educational process of primary school (N. Bibik, Ya. Kodliuk, O. Savchenko).

Conceptual understanding of the thematic terminology, the specifics of the development of information and digital competence, and the assessment of its formation level were studied by K. Ala-Mutka, D. Bawden, S. Valenzuela, J. A. G. M. Van Dijk, A. J. A. M. Van Deursen, E. Van Laar, G. Wong, D. Woo, J. E. Hinostroza, M. Claro, F. Cortes, N. Law, M. Nussbaum, D. D. Preiss, E. San Martín, J. De la Torr, J. De Haan, I. Jara.

The digitalisation of social domains, including education, has been investigated by Yu. Harust, H. Zhosan, V. Sukhonos, Ya. Shevtsov. The emergence of educational digitalisation was preceded by the processes of computerisation and informatization, which were reflected in the academic works of V. Alekseienko, V. Bykov, G. Brandhofer, D. Verbivskyi, Ya. Vovk, V. Hapon, A. Hurzhii, M. Zhaldak, M. Ebner, B. Sabitzer, O. Kravchuk, V. Luhovyi, L. Makarenko, P. Micheuz, M. Pleskach, A. Reiter, T. Yarmolenko. The problem of teaching informatics in primary school was explored by S. Kolesnykov, H. Lomakovska, Y. Ryvkind, F. Rivkind.

The issues of digitalising primary education, using digital tools and electronic educational resources in primary classrooms have been studied by O. Bilier, T. Blyzniuk, O. Budnyk, O. Vasko, I. Zharkova, N. Ratushniak, V. Chaika, V. Sharan, O. Sharan, O. Shapovalova. The scientific contribution of V. Stiehantseva systematises the problem of forming information and digital competence among primary school pupils; the state and development of their information and digital skills were investigated by A. Iwanicka, Ja. Heinz, S. Rahayu, V. Chaika, A. Yasa.

For the effective digitalisation of primary education and the formation of abilities among 6–10-year-old learners to process digital information and communicate online, modern educational technologies are applied, as reflected in the research of A. Andzheievska, Yu. Bednarek, O. Budnyk, O. Yankovych.

Accordingly, attention should be paid to the study of virtual communication (O. Boiko, L. Cherednyk) and observance of netiquette by primary school students (Ju. Popovich, H. Tereshchuk, O. Yankovych); to the rules and strategies for information searching on the Internet by participants in the primary educational process (M. Gordon, I. Kabakci, E. B. Kuzu, S. Izmirli, M. Firat, P. Pathak); to the formation of skills for critical evaluation of web resources and the issue of pupils' online safety (S. Bonte, N. Dementiievska, B. De Wever, M. Gažiová, I. Rots, M. Tvrdon, M. Valcke, V. Chaika, O. Chernykh, Yu. Shcherbiak); to the development of critical and algorithmic thinking in primary school pupils (H. Haryanto, A. Ghufron, F. N. Kumala, S. Petrenko, S. Suyantiningsih, V. Sharan, O. Sharan, O. Shkvyr); to the use of digital tools in the educational process (O. Bardadym, O. Budnyk, O. Hotko, O. Chaikovska); and to the application of computer technologies for the development of pupils' self-organisation skills in learning (I. Zharkova, V. Chaika, O. Chykurova, H. Tereshchuk).

The formation of information and digital skills among primary school pupils and the development of primary education digitalisation are significantly influenced by the environment of general secondary education institutions. The role of the educational and developmental environment in forming various competences among participants in the primary educational process is reflected in the works of O. Borovets, O. Pysarchuk, O. Yaroshynska. For the effective formation of digital information processing skills in younger learners, educators themselves must possess the corresponding abilities. Hence, within the scope of this study, the preparation of future primary school teachers for the use of information and communication technologies (V. Andriievska, O. Shkurenko) was also an important focus. Teachers play a decisive role in organising distance and blended learning in primary school within the framework of the New Ukrainian School, as evidenced by the research of O. Blizniakova, O. Vovk, S. Yermolenko, Z. Zvyniatskivska, I. Kobernyk, O. Lebid, I. Ovcharenko, O. Obukhovska, O. Trypolska.

Considering the multidimensional nature of this issue in scholarly studies, it is deemed necessary to explore it in greater depth.

Aim of the article. The purpose of the article is to model the process of implementing pedagogical conditions for the formation of information and digital skills of primary school students within the process of digitalising primary education.

Research results. Within the framework of this research, we identify the necessity of constructing a model for implementing pedagogical conditions for the formation of information and digital skills of primary school pupils in the process of digitalising primary education. This is determined by the understanding of primary school pupils' information and digital skills as a complex phenomenon, the presence of multiple interrelated aspects to be considered during their development, and the findings of prior research.

One of the most common methods of studying reality is modelling. Modelling is regarded as a method of pedagogical research, the essence of which lies in creating and analysing scientific models that are meaningfully represented and materially realised systems adequately reflecting the object of study *(Фіцула, 2009)*. Modelling serves as an indirect method of scientific inquiry based on the use of a model as a

research tool that reflects or reproduces the object of study and itself becomes a source of information about it. Modelling includes formulating the goal, selecting or creating a model, exploring the object of cognition through it, and transferring the knowledge obtained from the model to the original, based on their essential similarity and minor differences *(Лузан та ін., 2010)*.

The model acts as an intermediary between proposed theoretical provisions and their verification within real pedagogical practice. Accordingly, there exist hypothesis models, which serve as assumptions and require empirical validation, and conceptual models, which evolve into scientifically substantiated theories. Hence, the model developed within this study – the model for implementing pedagogical conditions for the formation of information and digital skills of primary school pupils in the process of digitalising primary education – is initially a hypothesis model which, after successful verification of its effectiveness in the educational process, may become a conceptual model. It reflects a distinct and fixed interrelation among its elements, representing an internal essential structure of reality *(Гончаренко, 2008)*.

Considering the above, let us characterise the components of the model for implementing the pedagogical conditions of forming information and digital skills in primary school pupils within the process of digitalisation of primary education *(see Fig.)*. It should be noted that the model contains the following designations: PC – pedagogical condition, IDS – information and digital skills.

The aim is to form information and digital skills in primary school pupils through the implementation of pedagogical conditions for their development in the process of digitalising primary education. This aim is defined on the basis of the interrelation of two demands: the first – the natural need of a junior pupil to acquire new competences, and the second – the social requirement to shape a personality capable of functioning successfully in the conditions of digitalisation of society in general and education in particular.

To achieve this aim, the following tasks should be implemented:

1. To stimulate motivational orientation and value attitudes of primary school pupils towards mastering information and digital skills.
2. To promote the development of knowledge among primary school pupils necessary for processing digital information and engaging in virtual communication.
3. To develop the abilities of primary school pupils to process digital information and communicate online.
4. To cultivate in primary school pupils the ability to reflect while applying information and digital skills.

The implementation of the above aim and tasks in the educational process is based on a set of key methodological approaches:

– Competence-based approach. Information and digital skills are considered within the structure of information-communication (information-digital) competence, which, according to the State Standard of Primary Education, is defined as one of the key competences for primary school pupils. The focus is placed not so much on the accumulation of knowledge, skills, and abilities as on the development of the

learner's capacity to act in practice and creatively apply acquired skills in standard and non-standard situations *(Чайка та Шишак, 2023b)*;

– System approach. Information and digital skills of primary school pupils are perceived as an integral system consisting of interrelated components; the process of their formation is directed towards the development of each element. The model of implementing pedagogical conditions for the formation of such skills in the process of digitalisation of primary education also has a systemic character, as it demonstrates the interconnections among the essence, structure, and types of information and digital skills and the pedagogical conditions of their formation, which are reflected in the forms of organisation, methods, and means of instruction.

– Synergetic approach. The junior pupil in the process of forming information and digital skills is viewed as a self-organising system whose development is accompanied by internal contradictions that determine the transformation of value orientations, activate self-knowledge and self-education; decision-making and action depend not only on the possession of knowledge, skills, and abilities but also on the awareness of one's own mental processes and personal «self» *(Чикурова, 2022a)*;

– Environmental approach. The formation of information and digital skills in primary school pupils occurs under the conditions of the digitalisation of primary education, implemented through several directions of its effective introduction: normative-legal, professional-competence, technical-technological, and the subjectivity of the primary education learner. The educational and developmental environment in which this complex of skills is formed reflects the state, regional, and institutional levels, is ensured by the availability of digital tools, interaction with them, and interpersonal communication centred around ICT devices.

– Activity-based approach. The effectiveness of forming information and digital skills is determined by the unity of teaching and learning processes, which manifest themselves in the integrity, interconnection, and constant interaction of the participants in the educational process. The primary school pupil performs active, independent, purposeful activities – either directly or under the mediated guidance of a pedagogue – aimed at processing digital information and participating in online communication *(Чайка, 2011)*;

– Axiological approach. The formation of information and digital skills in primary school pupils during the digitalisation of primary education contributes to the development of their system of values – safety, critical thinking, independence, ethics, responsibility, time, achievement, hobbies, hedonism, etc. – ensuring the position of the learner as an active, value-motivated subject of activity oriented towards humanistic development *(Васильєва, 2016)*.

Analysing the approaches to defining the concept of pedagogical conditions, scholars note that these are «a qualitative characteristic of the main factors, processes, and phenomena of the educational environment» that «ensure the resolution of a specific pedagogical task» *(Шмоніна та Глухов, 2011, p. 68)*. They are also characterised as «a complex of specially designed general factors influencing the external and internal circumstances of the educational process and the personal parameters of all its participants» *(Литвин та Мацейко, 2013, p. 56)*. Based on scientific studies, pedagogical conditions for the formation of information and digital

skills in primary school pupils within the process of digitalisation of primary education are understood as a qualitative characteristic of a set of processes and phenomena under conditions of digital transformation of primary education that affect the effective development of information and digital skills in primary school pupils *(Шишак, 2024)*.

The pedagogical conditions for forming information and digital skills in primary school pupils within the digitalisation of primary education are as follows: development of positive motivation and value attitude of primary school pupils towards mastering information and digital skills; formation of learning and cognitive activity of primary school pupils when working with digital information; creation of an educational and developmental environment of primary school for forming information and digital skills in primary school pupils; stimulation of constructive and productive reflection while processing digital information and online communication among primary school pupils *(Шишак, 2024)*.

The first pedagogical condition for forming information and digital skills in primary school pupils during distance and extracurricular learning is the development of positive motivation and value attitude towards this process.

Motivation is the driving force of any activity, a system of incentives encompassing needs, interests, goals, and motives *(Шишенко, 2016)*. It is shaped by the content of learning material and the methods of organising learning activity – through methods, means, and forms of work. Among the main motives for mastering digital skills among pupils are the desire to acquire new knowledge, master modern digital tools, create personal digital products, and the interest in working with information-digital means that attract attention through brightness, interactivity, and access to diverse content *(Шишак, 2021)*.

Three types of motivation are distinguished: internal, external positive, and external negative *(Резвих та Булах, 2022)*. On this basis, positive motivation towards information and digital skills includes internal (interest, cognitive needs) and external positive motives (approval, recognition, prestige), whereas external negative motivation is based on fear of criticism or punishment.

Internal motivation is considered the most stable: when external stimuli lose their significance, it continues to sustain interest in activity. Therefore, it is important first to engage external positive motivation, gradually shaping internal motivation.

The value attitude towards information and digital skills among primary school pupils is defined as pupils' awareness of the significance of digital literacy and culture of communication in the online environment *(Лупінович, 2006)*. In the process of distance education, it is necessary to purposefully develop values that regulate behaviour in the digital space. The main value orientations of primary school pupils include:

– independence and critical thinking – awareness of the importance of verifying the reliability of information from various sources;

– value of one's «self» and achievement – pride in the results of digital activity, contributing to self-respect;

– ethics and safety of online interaction – adherence to netiquette, avoidance of cyberbullying, and awareness that online insult is equivalent to real-life offence;

– value of time and health – rational use of digital tools and respect for others' personal space;

– causality and mutual assistance – understanding the logic of technical processes and readiness to seek help in case of difficulties.

Thus, positive motivation and a developed value attitude create a foundation for the sustainable development of information and digital skills in primary school pupils.

The second pedagogical condition is the formation of learning and cognitive activity in primary school pupils when working with digital information.

The concept of learning and cognitive activity combines aspects of learning and cognitive engagement, being a «dialectical unity of the learning and cognitive aspects», where learning activity acts as a means of cognition *(Писарчук, 2014)*. It aims at mastering knowledge, skills, and abilities at empirical, theoretical, and practical levels and encompasses stages of perception, comprehension, generalisation, consolidation, and application of knowledge *(Чайка, 2011)*.

Digital information is the subject of learning activity, and its practical use promotes the formation of the foundations of information and digital skills. At the perception stage, pupils become familiar with texts, images, audio, or video materials; at the comprehension stage – they analyse content, draw conclusions, and form their own attitude. Generalisation implies identifying common features of various digital materials, for instance, when studying online communication rules. Consolidation occurs through work with different digital files, while application takes place when completing tasks using computer programmes and online services *(Шишак, 2021)*.

The development of information and digital skills is supported not only by specialised digital content but also by any information in digital form used in learning or everyday life. Cognitive activity here is a process of «reflecting in human consciousness the objects and phenomena of reality», encompassing major mental processes – perception, memory, thinking, attention, imagination, and speech *(Мацко та ін., 2009: 30)*.

Work with digital resources (online colouring books, virtual tours, interactive musical instruments) develops visual and auditory analysers, thinking, attention, and memory. Using educational software (Paint, Word, LearningApps, etc.) helps to correct perception and develop analytical, classification, and linguistic skills. Emotionally engaging digital content (cartoons, memes, interactive games) stimulates memorisation and enhances voluntary attention.

The use of digital tools also contributes to imagination development: pupils can create their own stories, continue video plots, or describe illustrations, stimulating creative thinking. Using online games and didactic audio or video files helps develop speech, enrich vocabulary, and form oral and written communication skills in Ukrainian or foreign languages.

Learning and cognitive activity in primary school pupils are closely interrelated since the acquisition of new knowledge simultaneously ensures the development of mental processes. Therefore, learning and cognitive activity is an

activity «aimed at the individual's acquisition of a system of competences, resulting in the development of cognitive mental processes» *(Шишак, 2021)*.

Mastering learning and cognitive activity when working with digital information ensures awareness of the stages of knowledge acquisition and the development of thinking, memory, attention, speech, and imagination – the foundations for forming information and digital skills in primary school pupils.

The third pedagogical condition involves the creation of an educational and developmental environment in primary school for forming information and digital skills in primary school pupils.

The educational environment is defined as a complex system of intellectual, cultural, methodological, organisational, and technical resources *(Боровець, 2019)*; a natural or artificially created setting ensuring productive activity of the individual *(Ярошинська, 2015)*; a set of conditions that influence the development of a person, their abilities, and interests *(Макар, 2013)*. The educational and developmental environment is interpreted as a system of influences and opportunities for personal development that includes spatial-object, psychological-didactic, cognitive-motivational, and socio-communicative components *(Писарчук, 2016)*.

It functions at state, regional, school, and classroom levels *(Макар, 2013)*. At the first two levels, its formation is determined by regulatory documents (State Standard of Primary Education, New Ukrainian School Concept, etc.) and methodological materials concerning distance learning. An important role is played by professional development courses and training for pedagogues focused on digital literacy and ICT use.

At the school and classroom levels, the educational and developmental environment requires modern technical provision – computers, laptops, printers, multimedia devices, licensed software, and Internet access. The pedagogue selects online applications and digital resources that ensure the creation of quality digital content (infographics, comics, word clouds, educational videos), checking their scientific validity and appropriateness. The use of electronic educational resources (textbooks, manuals, encyclopaedias, workbooks) during blended learning fosters creativity and digital information-handling skills. Skills in searching, evaluating, and using digital data are developed through working with computers, tablets, smartphones, and online browsers.

The effectiveness of the educational and developmental environment depends not only on technical provision but also on purposeful organisation of learning activities. The pedagogue should systematically engage pupils in exercises, research, and collaborative tasks involving digital information processing and online interaction. Only such activity ensures the real formation of information and digital skills in primary school pupils.

The fourth pedagogical condition involves stimulating constructive and productive reflection during digital information processing and online communication among primary school pupils.

In philosophy, reflection is understood as comprehension of one's actions and inner world *(Шинкарук та ін. (ред.), 2002)*, in psychology – as a process of self-knowledge of one's states, actions, and development potential *(Приходько та*

Юрченко, 2020). In pedagogy, reflection is defined as a pupil's ability for self-knowledge, self-awareness, self-control, and self-evaluation *(Савченко, 2015b)*. It includes the following interrelated processes:

– self-knowledge – obtaining knowledge about oneself;
– self-control – monitoring one's activity during its performance;
– self-evaluation – determining the level of one's work;
– self-awareness – understanding one's traits and social role;
– self-analysis – identifying strengths and weaknesses of activity;
– self-correction – correcting one's mistakes;
– self-criticism – objectively assessing one's actions.

Constructive-productive (positive) and destructive-unproductive (negative) reflection are distinguished. The former promotes personal growth, awareness of mistakes, and the search for self-improvement, while the latter focuses the individual on negative emotions and past failures. The pedagogue should help primary school pupils master constructive and productive reflection, which manifests in three types: retrospective, situational, and prospective *(Подкоритова, 2017)*.

Retrospective constructive and productive reflection involves analysing and evaluating already performed actions. For instance, a pupil realises that posting personal data on social media was unsafe and decides to delete it. Situational constructive and productive reflection consists in awareness of one's actions while performing them; for example, a pupil noticing grammatical errors on a website critically evaluates the reliability of the information and decides not to use it. Prospective constructive and productive reflection manifests in planning future actions: after receiving a task to create an image, the pupil imagines the final result, selects the necessary software, anticipates steps, and foresees possible challenges *(Маліцька, 2014)*.

Among primary school pupils, retrospective reflection predominates, as situational and prospective types require a developed ability to distribute attention and self-regulate. However, systematic stimulation of all three types of constructive and productive reflection during digital information work fosters the development of critical thinking, safe online behaviour, and the formation of information and digital skills in primary school pupils.

All the identified pedagogical conditions for forming information and digital skills in primary school pupils in the process of digitalisation of primary education are closely interconnected. They are collectively aimed at developing groups and types of information and digital skills among primary school pupils. Information and digital skills of primary school pupils constitute a complex of abilities of 6- to 10-year-old pupils to consciously "process digital information, including online communication, and select appropriate ICT tools and action algorithms to meet their own needs" *(Чайка та Шишак, 2023b:71)*.

The information and digital skills of primary school pupils are conceptually grouped as follows:

– The ability to search for and evaluate digital information (the ability to search for information on the Internet and the ability to critically evaluate it) – this grouping is determined by the fact that, when searching for information online using

algorithms in search engines, primary school pupils usually simultaneously and critically assess its relevance to the search query and select the data that is most relevant to them.

– The ability to select and use digital tools (the ability to choose the necessary digital tools for completing a learning task, the ability to select and use digital tools for online communication, the ability to create and edit a digital product) – this is explained by the fact that these three types of information and digital skills are fundamentally based on selecting and using digital tools, but for different purposes: to complete a learning task, for online communication, or to create and edit a digital product.

– The ability to interact online (the ability to apply netiquette and the ability to behave safely online) – the reason for grouping these skills lies in the fact that a user's behaviour online is generally built on their interaction with other people in the global network or with the digital device or resource itself, and such behaviour can be ethical/unethical and safe/unsafe.

– The ability to independently identify and resolve elementary technical problems (the ability to identify malfunctions in the operation of a digital device and the ability to independently resolve elementary technical problems) – this is because a younger schoolchild, when working with a digital device, must be able not only to notice an inaccuracy in its functioning but also to determine whether they can fix it themselves; if the answer is yes, they should do so, and if not, they should seek help from an adult *(Шишак, 2025b)*.

We can characterise the aforementioned information and digital skills of primary education students as follows:

– The ability to search for information online implies the capacity of primary school pupils to quickly and accurately find answers to their own search queries on the Internet.

– The ability to critically evaluate digital data is the capacity of primary school pupils to reflect on materials available on the World Wide Web and to understand how accurately their content corresponds to scientific and social reality.

– The ability to select the necessary digital tools for completing a learning task is understood as the capacity of primary education students, based on analysing the functions and possibilities of tools, to choose such software or online resources that will facilitate optimal completion of the learning task.

– The ability to create and edit a digital product implies the capacity of primary school pupils to perform actions and operations to produce digital files (images, videos, audio, text) and make changes to them.

– The ability to select and use digital tools for online communication is the capacity of primary school pupils to identify the most effective digital applications for fulfilling a communicative purpose and to use them in both learning and everyday life.

– The ability to apply netiquette implies that primary education students have mastered ways of ethical behaviour online based on established norms.

– The ability to behave safely online encompasses the capacity of the individual to conduct activities in the online environment without causing harm to their own health, the health of others, or property.

– The ability to identify malfunctions in the operation of digital devices is the capacity of a younger schoolchild to understand the difficulties of interacting with digital tools by recognising the signs of minor problems and their possible causes.

– The ability to independently resolve elementary technical problems encompasses the capacity to correct minor inaccuracies in the functioning of a personal computer or smartphone, based on understanding the characteristics of the device's difficulties and implementing steps to overcome them *(Чайка та Шишак, 2023b)*.

The structure of a younger schoolchild's information and digital skills as a complex phenomenon contains four components: motivational, content-based, procedural, and control. We describe them in more detail below.

The motivational component encompasses the pupil's goals and motives for working with digital information and tools. Motivation (from the French motif – prompting reason) is the state of readiness for activity, determined by internal or external stimuli. Its basis lies in needs, which, according to Maslow's theory, determine human behaviour *(Телепнєва та Онопко, 2023)*.

Younger schoolchildren are naturally interested in digital tools, as they satisfy social and cognitive needs: communicating in chats, presenting themselves online, sharing the results of their activities. However, this motivation is predominantly external – influenced by peers, trends, and fashion. The formation of stable internal motives (safe behaviour online, adherence to netiquette, effective use of digital tools) requires targeted work by the educator.

Learning motivation includes goals, needs, and interests, and motives are divided into external (desire for approval, interest in technology, trust in the teacher, desire to have the status of an «experienced user») and internal (cognitive interest, intellectual activity, desire to improve one's own information and digital skills) *(Савченко, 2015a)*.

The motivational component also includes setting personal goals, for example, improving the ability to create and edit digital products.

The content-based component encompasses the system of knowledge of ICT and skills necessary for working with digital information. Its foundation is information literacy, i.e., the ability to use technologies rationally to solve learning tasks. It is based on computer literacy, which includes knowledge about ICT, information process technologies, and practical skills for working with data *(Баніт, 2020)*.

A pupil should possess knowledge about: digital objects, phenomena, and their properties; methods of searching, selecting, and evaluating information; rules for safe online behaviour; algorithms for creating digital products, etc. We consider that knowledge within the structure of information and digital skills should be divided into three types:

– About the surrounding world – in the sphere of digital technologies and digitalisation;

– About methods of activity – algorithms of actions, methods of searching and processing information;

– About values – awareness of the importance of safety, responsibility, independence, time, and personal development.

The procedural component encompasses a system of practical actions, operations, and activity methods that ensure the effective use of digital technologies in the educational process. It is aimed at applying acquired knowledge and motives in concrete activities – searching, selecting, processing, presenting, and using digital information.

Its structure includes the following skills:

– Defining the goal and tasks of activity in a digital environment;

– Planning stages of searching, analysing, and presenting information;

– Using digital tools (search engines, office and educational applications, online platforms);

– Selecting reliable sources and critically evaluating information materials;

– Creating, editing, and structuring digital products (presentations, messages, diagrams, mini-projects, etc.);

– Following rules for safe and ethical behaviour in the virtual space.

The development of this component ensures the formation of the operational-activity base of information and digital skills in the pupil, which manifests in the ability to effectively organise one's own learning activities, use digital resources to solve practical tasks, and engage in creative self-expression *(Чикурова, 2022b)*.

The control component reflects the ability of primary school pupils to evaluate the quality of their own activity in a digital environment, analyse achieved results, and make necessary adjustments. It is implemented in the forms of self-monitoring, self-assessment, and self-correction, which are developed during the performance of educational and cognitive tasks using ICT.

Key manifestations of the control component include:

– Checking the correctness of performed actions in a digital environment (through automatic or visual control systems);

– The ability to compare the obtained result with the intended goal;

– Identifying and correcting one's own mistakes, analysing difficulties;

– Evaluating the level of formation of one's own information and digital skills and determining directions for further development;

– Participating in peer assessment, which stimulates the development of critical thinking and responsibility.

The use of digital tools (online tests, interactive trainers, educational platforms) facilitates machine-based control, where the computer automatically checks completed tasks, provides feedback, and helps the pupil become aware of their own progress. Thanks to this component, information and digital skills acquire a reflexive character, i.e., the pupil not only performs actions but also understands their effectiveness, reasons for successes and errors, forming skills of self-regulation and digital responsibility.

Each group and type of these skills contains the four aforementioned components in its structure. The formation of the components of information and

digital skills is determined by the implementation of pedagogical conditions for the formation of information and digital skills in primary school pupils in the process of digitalisation of primary education.

The development of information and digital skills in primary school pupils occurs under conditions of digitalisation of primary education, which is a part of the digitalisation of education and a process that «involves the translation of information and communication in this sphere into digital form» *(Чайка та Шишак, 2023a, p. 159)*. Digitalisation of primary education is a factor in the formation of information and digital skills and is characterised by directions for its effective provision:

– Normative-legal direction – provides the legislative and methodological basis for digitalisation. It includes state documents and concepts that define requirements for the digital competencies of pupils and educators;

– Professional-competence direction – aimed at improving the digital literacy of educators, developing their creative activity, and their ability to effectively use digital educational resources for teaching pupils;

– Technical-technological direction – involves providing the primary education institution with modern infrastructure and digital tools, creating conditions for content visualisation, interactive interaction, gamification, and the development of primary school pupils's cognitive activity;

– Pupil-subjectivity direction – focuses on the formation and consideration of the pupil's ability to be an active participant in the educational process, independently acquire information and digital skills, communicate online, interact with classmates, educators, and digital resources, as well as reflect on their own actions and learning achievements *(Шишак, 2025b)*.

The process of implementing the model for realising pedagogical conditions for the formation of information and digital skills in primary school pupils during the digitalisation of primary education is carried out in accordance with principles (based on both general educational and specific patterns):

– Unity – since the defined pedagogical conditions are closely interrelated and interdependent; to achieve a successful result, they must be implemented as a whole;

– Purposefulness – the identified pedagogical conditions are clearly aimed at achieving the goal: the formation of information and digital skills in primary school pupils during the digitalisation of primary education;

– Systematicity – the implementation of pedagogical conditions for the formation of information and digital skills in primary school pupils during the digitalisation of primary education involves maintaining consistency and planned application during lessons and extracurricular activities;

– Methodicalness – the defined pedagogical conditions are reflected in the appropriate methodology aimed at the formation of information and digital skills in primary school pupils;

– Individualisation – the application of pedagogical conditions for the formation of information and digital skills in primary school pupils during the digitalisation of primary education takes into account the individual psychological characteristics of each pupil, which allows for adjusting tasks, specifying them, and providing support from the educator if necessary;

– Health-preservation – implementing the defined pedagogical conditions minimises or eliminates risks to the physical, social, mental, and spiritual well-being of the primary school pupil;

– Interactivity – the implementation of pedagogical conditions for the formation of information and digital skills in primary school pupils during the digitalisation of primary education is ensured through active interaction among participants in the educational process, often mediated by digital devices;

– Humanism – the implementation of the defined pedagogical conditions recognises the primary school pupil as the highest value and creates conditions for their comprehensive development (abilities, talents, inclinations, interests, etc.).

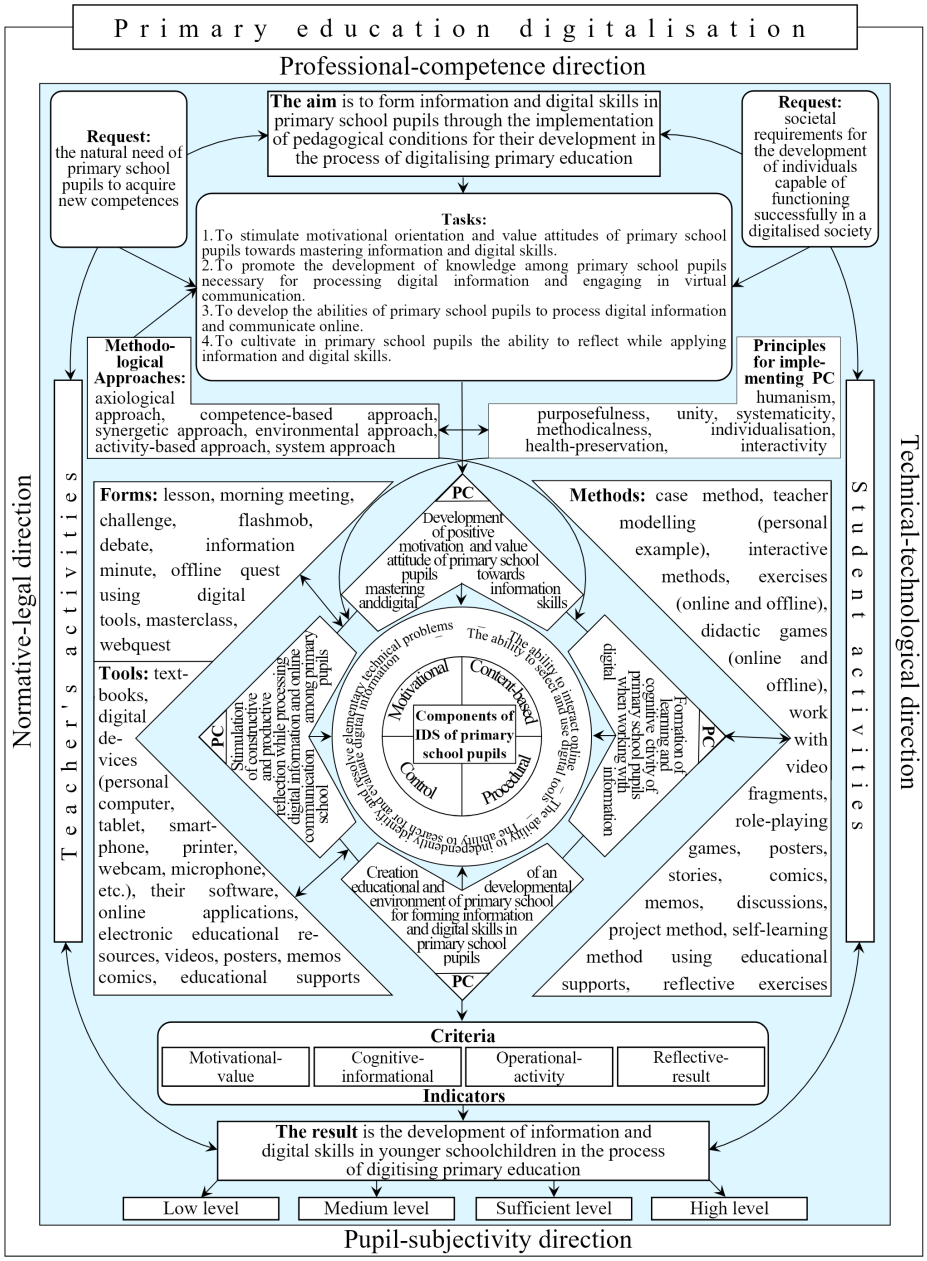

Figure. Model for implementing pedagogical conditions for the formation of information and digital skills in primary school pupils during the digitalisation of primary education

Facilitating the effective formation of components of information and digital skills can be achieved by implementing pedagogical conditions for their development in primary school pupils during the digitalisation of primary education, which are reflected in the defined forms of organisation, methods, techniques, and teaching tools.

The forms of organisation of learning, within which it is appropriate to develop information and digital skills in primary school pupils, are as follows: lesson, morning meeting, challenge, flashmob, debate, information minute, offline quest using digital tools, webquest, masterclass.

Effective methods and techniques that should be used for this include: case method, teacher modelling (personal example), interactive methods, exercises and didactic games (online and offline), role-playing games, work with video fragments, posters, stories, comics, memos, discussions, project method, self-learning method, reflective exercises.

The following tools will enhance the formation of information and digital skills in primary school pupils: textbooks, digital devices (computer, smartphone, tablet, webcam, printer, microphone, etc.), their software, online applications, electronic educational resources, videos, posters, comics, memos, educational supports.

Here are several examples of the practical implementation of pedagogical conditions for the formation of information and digital skills in primary school pupils during the digitalisation of primary education.

To develop the motivational component of information and digital skills in primary school pupils, the first pedagogical condition should be implemented – the development of positive motivation and a value-based attitude of primary school pupils towards acquiring information and digital skills. For example, to develop the need to independently identify and solve elementary technical problems and to form thematic values, it is appropriate to use the teacher modelling method, enacting a situation and applying elements of problem-based learning.

Situation 1: «Internet disappeared». While working with an educational website, the page does not load. The teacher says: «Oh, the page isn't loading. Maybe the internet isn't working. What do you think I can do?» Children suggest options: check the Wi-Fi, see if the connection icon is present, refresh the page. The teacher demonstrates how to do this and emphasises: «It is good when we first think about what the cause might be and try to solve it ourselves.»

Situation 2: «No sound in the video». While watching an educational video, the teacher comments: «I can't hear… maybe the sound is off? How can we check?» Pupils look for the volume icon, suggest increasing the volume, and check the speakers. After the problem is solved, the teacher concludes: «You see, sometimes it is enough just to check the settings. This skill will be useful to you at home.»

Situation 3: «Advertisement appeared on the screen». The teacher opens an educational website, and a pop-up window appears. «Look, here is a window that distracts us. What is this? How can we remove it safely?» Pupils respond: close by clicking the relevant icon, do not click on links, do not enter data. The teacher demonstrates how to close the advertisement and says: «It is good when we do not rush to click but think whether it is really necessary.»

Situation 4: «Unsafe connection». The teacher tries to open a website, and a message appears: «Connection is not secure.» «I wonder what this means? How should we act?» Children express suggestions. The teacher explains that such a site may be dangerous and demonstrates how to close the page. «When you see such messages, do not proceed further but consult an adult» *(Шишак, 2025а)*.

To develop the content component of information and digital skills in primary school pupils, it is necessary to implement, in conjunction, the second (formation of learning and cognitive activities of primary school pupils while working with digital information) and third (creation of an educational and developmental environment in primary school for the formation of information and digital skills in primary school pupils) pedagogical conditions. For example, to stimulate the development of knowledge of the features of searching and critically evaluating information on the Internet within a specially created educational and developmental environment in primary school, games and exercises are appropriate.

Game «Pairs». It is suitable to play during breaks. Specially designed paired cards are used. One card depicts a tool or icon, and the other describes the purpose for which it is used. Cards are laid face down. The task for pupils is to «reveal» two cards. If the cards with the tool and its purpose match, the player takes both; if not, they are turned back face down. When there are no cards left on the field, the game ends. The winner is the pupil who has collected the most cards.

This game is aimed at developing memory and increasing the knowledge of primary school pupils regarding Internet tools and icons that improve the information search process on the global network. It was also suggested to conduct the game online on the service LearningApps.org individually for each pupil if personal digital devices were available *(Шишак, 2025а)*.

During the exercise «Where did you find this?», the teacher asks primary school pupils to share information on any lesson topic (for example, the characteristics of continents' nature). Then the pupil is asked where they learned this. The pupil reasons aloud and tries to determine whether the source of information is reliable. Classmates may also suggest their opinions. Pupils' answers often include: «read in a textbook», «heard on television», «seen in a film». Questions should be asked with curiosity and humour, thanking the pupil for sharing their thoughts. The aim of the exercise is to focus the attention of primary school pupils on the necessity of tracking the source of information, assessing its reliability and authority, and not trusting all available information *(Баранова, 2022)*.

The formation of the procedural component of information and digital skills in primary school pupils is facilitated by implementing the second and third pedagogical conditions in conjunction. For example, to stimulate pupils' competence in ethical and safe online interaction within learning activities and a specially created educational and developmental environment of the class and the general secondary school, it is recommended to use didactic games (online and offline) and exercises.

It is appropriate to suggest primary school pupils the online game «Interland: Be Internet Awesome» (https://beinternetawesome.withgoogle.com/uk_ua/interland).

The online game allows immersion in a simulated world, where users perform adventure tasks with didactic content, in particular at locations such as:

– «Kind Kingdom» (teaches polite online behaviour);

– «Reality River» (develops the ability to recognise fakes);

– «Tower of Treasure» (provides practical guidance on keeping personal data safe) *(Нова Українська школа : вебсайт, 2023)*.

The game is suggested for independent completion at home using smartphones. After all pupils complete it, the morning meeting involves discussion:

– What dangers do Internet users face?

– What possibilities for avoidance does the online game provide?

– Was everything you learned new to you?

– What did you learn while completing the online game? *(Шишак, 2025а)*.

It is also useful for primary school pupils to complete six didactic games and exercises developed by DignityOnline, aimed at forming skills for safe Internet use: «Save Googlik», «Questions and Answers "Internet"», «Billboard Test», «Safe Internet for Kids», «Truth or Falsehood», «Collage "Safe Internet"», the methodology of which is proposed on the organisation's website (https://dignityonline.in.ua/adult/pochatkova-shkola-7-9-rokiv/) *(DignityOnline : вебсайт, 2025)*.

It is also appropriate to complete exercises developed by us, which stimulate the formation of ethical online behaviour in primary school pupils.

Exercise 1: Talk to a classmate about preparing a school project. Use a template in the form of a direct message on social media. Fill in the blanks with the appropriate phrases. Follow netiquette rules. Which rules of netiquette did you follow during online communication?

Exercise 2: Together with a classmate, create a social media dialogue on school behaviour (10–12 replies). Follow netiquette rules. Act out the dialogue in class (during a thematic lesson of the course «I Explore the World»). Which rules of netiquette did you follow during online communication?

Exercise 3: Read a dialogue on social media regarding behaviour in public transport (during a thematic lesson of the course «I Explore the World»). Identify which etiquette and netiquette rules were violated by pupils. Discuss in class how to correct mistakes in communication.

The formation of the control component of information and digital skills in primary school pupils is facilitated by implementing the fourth pedagogical condition – stimulating constructive and productive reflection during the processing of digital information and online communication. For example, the development of the ability to analyse the selection and use of digital tools is promoted by using interactive methods and reflective exercises.

The interactive method «Six Thinking Hats» can be applied, for example, when pupils in groups have prepared educational projects. They discuss the selection and use of digital tools applied. Pupils assign among themselves six hats and according to them receive tasks:

– White: state specific facts on how and which digital tools were selected and used;

– Red: express emotions and feelings during the selection and use of digital tools;

– Black: identify weaknesses, shortcomings, and mistakes;
– Yellow: explore positive aspects and advantages;
– Green: outline new ideas and possibilities for improvement;
– Blue: summarise the discussion.

Each group briefly presents the discussion results in class *(Шишак, 2025а)*.

The interactive method «Change Position» involves stepwise implementation by project groups at the stage of project summary under teacher moderation:

– I propose for discussion the question: «Did the chosen digital tool allow the project to be completed as well as possible?»

– Divide your project group into two equal subgroups. One subgroup (2–3 pupils) thinks for 3 minutes why the answer should be «yes», the other – «no». Provide as many arguments as possible. Distribute the arguments so that each pupil can participate in presenting and explaining.

– Present the arguments of each subgroup.
– Now swap places. Time for consideration – 2 minutes.
– Present arguments to all group members.

– Within the group, for 2 minutes present your personal positions regarding the discussion question. Was a consensus reached?

– How satisfied is each group with the chosen digital tool for completing the project? Would you like to go back and change it? Why?

During and after using applications for communication or learning tasks, a discussion with primary school pupils should be organised:

– Which application did you choose for communication? Why?
– Which functions were particularly useful for completing the task?
– Did you experience difficulties? Which?
– Rate your experience from 0 to 5. Why this score?

– Do you think your partner was comfortable communicating in this app? Why?

– Would you choose (continue using) this application again? Explain.

Exercise «Venn Diagrams» allows identifying similarities and differences between digital applications *(Чемоніна, 2014)*.

During the selection of digital tools, pupils should identify two applications to solve the task and complete a Venn diagram to see which tool best achieves the goal, considering differences. The algorithm is:

– Which two applications do you think can solve this task?
– Complete the diagram.
– Note the differences. Which are most suitable?
– Which tool will you use?

Retrospective reflection using Venn diagrams helps analyse functions of previously used tools:

– Which two applications allowed task completion?
– Are you satisfied with your choice?
– Complete the diagram.
– Which tool is more suitable next time? Why?

To check the formation of information and digital skills in primary school pupils, criteria should be developed and applied, characterised by the following indicators:

– Motivational-value: interest in searching for information and evaluating it critically, motivation for selection and use of tools, ethical and safe behaviour, independent problem solving;

– Cognitive-informational: knowledge of search and evaluation, tool selection, ethics and safety online, independent problem solving;

– Operational-activity: ability to search and evaluate information, select and use tools, ethical and safe online interaction, independently solve technical problems;

– Reflective-result: self-monitoring, analysis of tool use, evaluation of ethical and safe online actions, reflective problem-solving.

The essence and interrelation of components of information and digital skills in primary school pupils, criteria, and indicators influence the determination of formation levels. In the Dictionary of the Ukrainian Language: in 11 volumes, the term «level» is defined as «degree of quality, magnitude, etc., achieved in something» *(Білодід та ін. (ред.), 1977, p. 547)*. Therefore, levels of formation in primary pupils are a measure of the qualitative and quantitative manifestations of information and digital skills. According to the degree of compliance with each criterion, four levels are defined: low, medium, sufficient, high.

– Low: no interest, does not understand value, cannot critically evaluate, lacks motivation, avoids self-solving technical problems, knowledge fragmented, skills weak, no self-control or reflection.

– Medium: situational interest under adult influence, episodic motivation, basic but unsystematic knowledge, can perform tasks by example, occasional ethical behaviour, episodic self-monitoring and self-assessment.

– Sufficient: stable interest mainly guided by teacher, sufficient knowledge, understands digital ethics and safety, can complete tasks under guidance, solves simple problems independently, self-monitoring with support.

– High: intrinsic motivation, independent search and critical evaluation, ethical and safe behaviour applied in practice, independently selects tools, shows initiative and creativity, controls and analyses own activities, reflects results, solves technical problems independently, demonstrates high autonomy and responsibility.

Thus, implementing the proposed model ensures the formation of information and digital skills in primary school pupils during the digitalisation of primary education.

Conclusions and future research directions. The modelling of the process of implementing pedagogical conditions for forming information and digital skills in primary school pupils during digitalisation involves creating a model with the following components: aim (defined by pupil needs and societal requirements), tasks, methodological approaches, principles, pedagogical conditions, forms, methods, techniques, tools, skill components, skill groups, criteria, indicators, levels of formation, and directions for effective implementation.

Future research should focus on the readiness of primary school teachers to effectively develop information and digital skills in primary school pupils in the context of digitalisation of primary education.

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The presented monograph deals with topical issues of modern psychological and pedagogical educa tion: comparative aspects of the formation of the national and cultural identity of the individual; innovative projects of scientists; trends in the development of preschool and primary education in the era of postmodern ism; topical issues of training a competent future professional teacher; problems of postmodern digitalization of education in practical constructions; adult learning in non-formal education.

The publication is addressed to research scientists, educators, teachers-practitioners, new scientists and all those who are not indifferent to the problems of childhood, education, formation of the national and cultural identity, development of education in Ukraine in the age of digitalization and global pandemic chal lenges.