THE CONDITIONING OF THE DIGITAL ENVIRONMENT ON COGNITIVE PROCESSES OF MODERN STUDENTS: THE OPINION OF TEACHERS OF UKRAINE

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Abstract: *The present publication reflects the results of the latest research in the field of theory and practice of learning in the growing dominance of artificial intelligence and digital reality. The simultaneous presence of people in two worlds – the physical in the virtual causes the emergence of a special cognitive style – clip thinking. The article presents the results of the analysis of the essence of the phenomenon that distinguishes modern people from previous generations – a special cognitive style, which is manifested in clip art. Clip thinking is the antithesis of linear thinking and causes a fragmentary perception of the world in the form of a clip without establishing relationships. Clip thinking is an individual's protective reaction to the rapid growth of information flow, to the oversaturation of information that a person is unable to comprehend, process and remember. The article presents the results of an online questionnaire submitted to Google forms and analyzes the opinion of the educational community of Ukraine on the causes of clip thinking, the main aim of which is the influence of the digital environment on the cognitive processes of modern students. According to teachers' observations, the peculiarities of cognitive processes of modern students and their preconditions are determined. A comparison of the answers to the questionnaire of teachers from different levels: primary, basic, specialized schools, as well as colleges and universities. The conclusion is made of the need to introduce new teaching methods that take into account the clipping*

thinking of students, and provide for the presentation of educational information in both material and digital form, as well as with the use of hyperlinks.

Keywords: digital environment, distance learning, cognitive processes, clip thinking, modern teaching methods.

INTRODUCTION

The last few years have become transformative in the system of life of people around the world. Such transformations affected the spheres of production, science, culture, art, medicine, and education. The pandemic, caused by Covid-19, quarantine restrictions strongly update the theory and practice of learning, including distance learning in schools around the world. And although modern pre-schoolers, schoolchildren, and other students are representatives of the digital generation, the generation of children who do not think of their lives without gadgets, without connection to the virtual world, without constant contact with it 24/7, at the same time, this is the reality that gives rise to the feature of cognitive processes. Smyrnova-Trybulska, E., Noskova, T., Pavlova, T., Yakovleva, O., & Morze, N. (Smyrnova-Trybulska, Noskova, Pavlova, Yakovleva, & Morze, 2016; Smyrnova-Trybulska, 2018) note that the digital environment allows modern man to instantly act on information that is updated daily. Scientists emphasize the ability to analyze and work with big data (tools for working with electronic documents), point to multitasking, which requires the student to be multifunctional and organized (tools for organizing work). Thus, digital competence today is one of the keys, which allows a person to navigate in the modern world, and at the same time, causes serious cognitive processes, including clip thinking.

The purpose of this publication is to present the results of an experimental study of the problem of clip thinking of modern pupils/students of Ukraine, which is developing under the influence of digitalization, as well as a presentation of approaches to building teaching methods they take into account clip thinking. The research methods are a survey of teachers and lecturers of Ukraine, analysis of survey results.

1. CLIP THINKING AND SIGNS

The basis of all cognitive processes, including thinking, is the human brain. Although the architecture and general structure of the brain are determined mainly by genes, the fine structure of neural networks is formed on the basis of experience and can change significantly (Cromby, Newton, & Williams, 2011). Ukrainian psychologists have found that under the influence of ICT, the human brain undergoes rapid changes due to the formation of new neural connections while weakening the old ones (Honcharenko, Vavrik, Vereschak et al., 2014). Both scientists and teachers observe this aspect in modern students, that is a change in thinking style from linear – logical to clip (Nesterova, 2016; Aksenov, 2014).

Scientists from the Ural University (Russia) Rezer, T., Symaniuk, N., Kuznetsova, E. compare clip and linear thinking, and conclude about the advantages and disadvantages of each type of thinking (Rezer, Symaniuk, & Kuznetsova, 2018). The

positive aspects of clip thinking include the speed of information processing and decision making; clip thinking, referring to the emotional and pragmatic part of the human mind and helps to navigate in a world oversaturated with all sorts of information. However, making analytical conclusions, building theoretical constructions and, as a result, gaining knowledge is possible only with the help of linear thinking. We agree with the conclusions of the authors and support the thesis about the need to take into account the clip thinking of pupils and students, as well as the need to form methods of mental activity – analysis, synthesis, comparison, generalization, classification as the basis of logical thinking.

The change in the style of human thinking occurred as a result of the simultaneous presence of man in two worlds – physical and virtual. IT makes it easier for a person to access any information and speeds it up. Moreover, thanks to hyperlinks on the Internet, a person can specify certain concepts, theses, theories, and facts. But the pages to which the hyperlink leads are not content related to the original page. Thus, a person gets used to thinking with separate thoughts that are not logically related to each other, without trying to systematize and generalize them, he is engaged in a type of clip thinking (Skvortsova, Onopriienko, & Britskan, 2019; Skvortsova & Britskan, 2019).

Clip thinking is a consequence of the rapid introduction of information and communication technologies into all spheres of human life. This is evidenced by the analysis conducted by Dautov, D., Korochentseva, A., and Mohamed Kadom Mahdi Al Hussini (Dautov, Korochentseva, & Hussini, 2019), from the standpoint of the active influence of man-made society and reducing the general background of mental activity, in terms of the role of information systems, including the media and the Internet, from the standpoint of a certain stage in the development of human relations and the information world, in terms of human consciousness and thinking. Clip thinking encourages a person to make immediate ill-considered decisions, bypassing the analysis of the situation of the problem and its factors (Girenok, 2016), in this regard, there is a decrease in the level of reflection and introspection. Korochentseva, A. and Mohamed Kadom Mahdi Al Hussini (Dautov, Korochentseva, & Hussini 2019) conclude that one of the main factors contributing to the change of human thinking is the technological evolution and the emergence of new sources of information, and the main source of influence on human thinking is the media, which on the one hand provide access to a large number of information sources, but also impose advertising focused primarily on the emotional sphere, rather than its semantic component. As a result, a person avoids an additional mental load, because the information is as simple as possible, and therefore, the effectiveness of analytical thinking is significantly reduced, which leads to the inability to perceive long-term linear information and the phenomenon of clip thinking. The analysis of researches of possible American and English scientists concerning the transformations of cognitive processes under the influence of development of modern technologies is given in Lysak, I., Belov, D. (Lysak & Belov, 2013). Agreeing with the influence of IT on the processes of attention, memory and thinking, the authors note that it is unacceptable to absolutize the negative impact of IT on cognitive processes; based on the results of the analysis of applied research, and such a conclusion cannot be made. According

to these authors, the use of IT has a positive effect on the development of the functions of the right hemisphere of the brain, the development of spatial thinking, which can promote creativity. At the same time, the results of the analysis of research by scientists from the Laboratory of Human Communication and Interactive Media at Stanford University and the Institute for Future Thinking at Oxford University show that the constant use of computer technology leads to reduced stability and concentration and analytical thinking (Lysak & Belov, 2013).

Clip thinking is the antipodal of linear thinking, which presupposes a sequential perception of information, and manifests itself in the endless flickering of segments that determine the choice of various educational technologies.

The heterogeneity of the information flow, its fragmentation and illogicality of the incoming information, the high speed of switching between its fragments, the lack of a holistic perception of the surrounding world are essential characteristics of clip thinking (Volkodav & Semenovskikh, 2017; Bkhat, 2018).

The ability to access information that is contained in hyperlinks, the ability to explore issues on other Internet sites, access to a variety of information, joining many news feeds of social networks, causes such a feature of human thinking as computer surfing, which is derived from clip thinking. Modern people do not read the full text, but only look at the beginning and end of the text, and, as for the middle – people look diagonally, quickly turning the pages. Obviously, in this case, we cannot talk about the logical processing of content, its understanding and memorization. Quickly browsing the Internet, following the hyperlinks, a person also tries to do several things at once, and this property is called by scientists as multitasking. B. Oakley (Oakley, 2020) defines multitasking as a constant switching of attention, which prevents new ideas and concepts from developing and leads to the impossibility of building full-fledged logical connections. Multitasking is also seen by scientists as the ability to perform two or more actions simultaneously, and in this context, multitasking in digital generation students is imaginary because the student's brain does not focus on any of them (Skvortsova & Britskan, 2018). Researchers from Stanford University's Human Communication and Interactive Media Laboratory and the Institute for Future Thinking at Oxford University understand multitasking as the simultaneous perception of information and attempts to perform several actions simultaneously or directly one after the other; and only 3% of people who simultaneously perform from two to six cases successfully combined multiple streams of information (Lysak & Belov, 2013).

Proceeding from the fact that the human brain is not physically adapted to operate with reality, it works with models and abstractions. A fragmentary perception of the world in the form of a clip deprives the model of the world of context - the relationship of new information with the existing base in the form of a set of facts, statements and conclusions, and as a result, the clip loses its own context and turns from a means of correcting the model into information noise. The main danger of the clip perception of the world is the created illusion of knowledge, when it seems to a person that he knows more than he actually does, which leads to the fact that he is not able to correctly evaluate his own actions, which are based on this knowledge.

2. METHODS, TECHNIQUES AND METHODS OF RESEARCH

In May–June 2021, we conducted an anonymous survey of primary, secondary and high school teachers, as well as teachers of colleges and universities in Ukraine. The questionnaire was developed by the authors to study the views of teachers on the pre-conditions of clip style thinking and other features of cognitive processes in modern students, as well as to determine the causes of changes in the cognitive processes of the digital generation. The questionnaire contained closed-ended questions with four or more answer options. When answering the questionnaire, respondents could choose one or more answer options or add their own version.

The questionnaire was submitted in Google form and was distributed through the professional communities of teachers on the social networks Viber and FB. The survey covered 536 respondents from all over Ukraine. The most active boules are representatives of the Odessa region (21.8%; 117 individuals), Dnipropetrovsk region (17.2%; 92 individuals), Kyiv (8%; 43 individuals) (Figure 1).

Choose your region
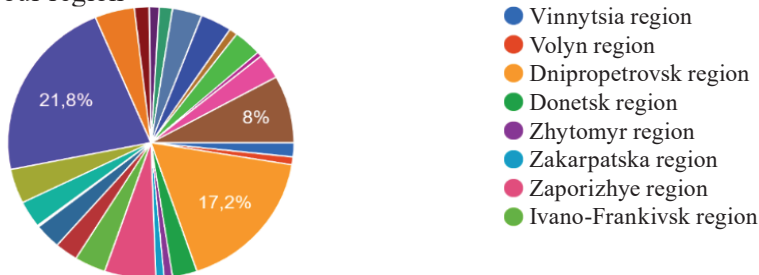
F i g u r e 1. Distribution of respondents by regions of Ukraine
Source: own work.

In the questionnaire, teachers in primary school (46.6%; 250 respondents), basic schools (23.3%, 125 respondents), profile (basic) school (11.2%; 60 respondents), schools, college (2.4%; 13 respondents), teachers in higher education (16.4%; 88 people) (Figure 2), of which 51, 3% (275 people) have work experience from 10 to 20 years, 19.2% (103 people) (Figure 3).

What do you work for?
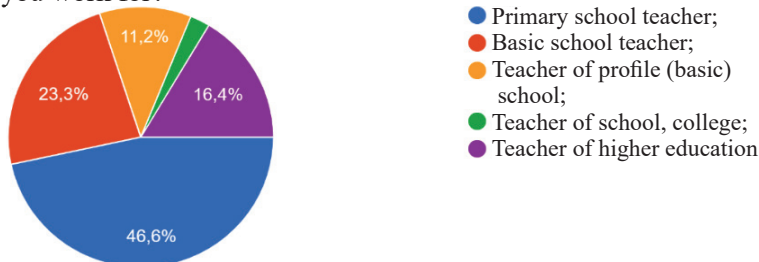
F i g u r e 2. The number of respondents in the field of education
S o u r c e: own work.

Your experience as a teacher / lecturer
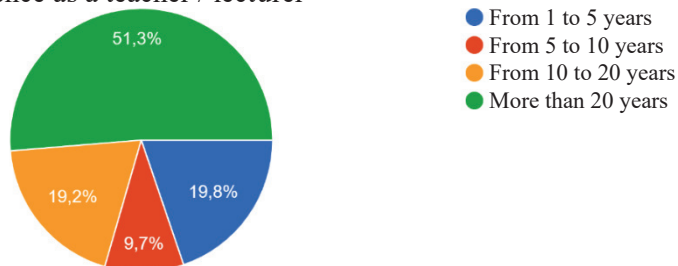
F i g u r e 3. Distribution of respondents by length of service

S o u r c e: own work.

45.9% (246 respondents) – teachers in primary school, 29.9% (160 respondents – teachers of mathematics, 9.5% (51 respondents – teachers of informatics, 5.8% (31 respondents – teachers of physics, 5.4% (29) – teachers of Ukrainian language and literature (Figure 4).
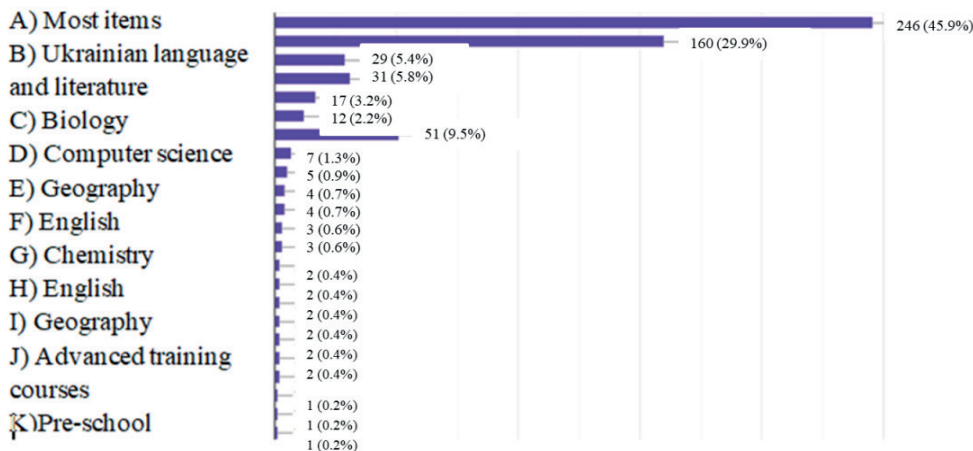
F i g u r e 4. Distribution of respondents by subject taught

S o u r c e: own work.

2.1. Prerequisites of Clip Thinking

Teachers had to answer the question, "What do you think was the prerequisite for the emergence of clip thinking?". Respondents were asked to choose one or more answers: A) the revolution in information technology, virtualization, gamification, robotics and computerization of various spheres of life of modern man; B) the emergence of generation Z with its corresponding features; C) change of neuropsychological processes that determine the formation of clip thinking / consciousness by the transition from conceptual-logical thinking to the network. Or write your own version – D) Your version.

What became a prerequisite for clip thinking?

A) The revolution in information technology
B) The emergence of generation Z with its corresponding features
C) Change in neuropsychological processes
D) Powerful amount of information every moment
E)Large amounts of information
F)I believe that all of the above is valid

378 (70.5%)
161 (30%)
183 (34.1%)
1 (0.2%)
1 (0.2%)
1 (0.2%)
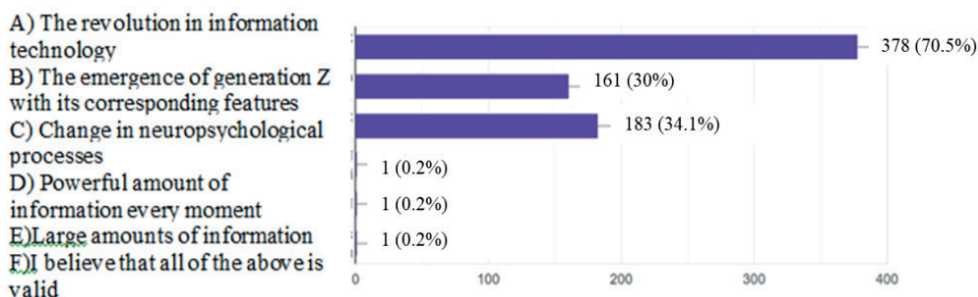
F i g u r e 5. Distribution of respondents' answers regarding the preconditions of clip thinking

S o u r c e: own work.

As we can see, 70.5% (378 people) of respondents consider the revolution in information technology, internetization, virtualization, gamification, robotics and computerization of various spheres of modern life as a prerequisite for a special cognitive style – clip thinking (option A). 34.1% (183 people) noted changes in neuropsychological processes that determine the formation of clip thinking and the transition from conceptual and logical thinking to the network (option C). 30% (161 people) associate clip thinking with the emergence of a new generation – Generation Z (option B). We analyzed the answers to this question in separate groups of respondents. Thus, only option A was given as a reason for the emergence of clip thinking and was chosen by 42.4% of primary school teachers, 47, 2% of basic school teachers (%), 40.5% of teachers of specialized schools, 45.5% of university teachers, 69.2% of college and college teachers. At the same time, respondents could choose several answer options. 9.2% of primary school teachers answered this question and chose options A) and C); 8.4% – A) and B); 5.6% – A), B) and C). Among primary school teachers, we have the following distribution: 12% chose two answer options A) and B); 0.8% – A), C), adding this option "Large amounts of information"; 7.2% – chose A) and C); 7.2% named three reasons A), B), C). Among the teachers of the profile school, we have the following distribution of answers to this question with the choice of option A: 18.3% – A), C); 11.7% – A), B); 8.3% – A), B) and C). 7.7% of teachers of schools and colleges believe the reasons for the emergence of clip cognitive style A), C); 7.7% named three reasons A), B) and C). 15.9% of university teachers chose A) and C) as the reasons for the emergence of clip thinking; 3.4% – A) and B), 5.7% – three reasons A), B), C). At the same time, there were answers in which the revolution in information technology, internetization, virtualization, gamification, robotization and computerization of various spheres of modern human life are not considered to be the reason for the emergence of clip thinking. Only option B was chosen by 15.2% of primary school teachers, 13.6% of basic school teachers, 3.3% of specialized school teachers, 9.1% of university teachers. 2.4% of primary school teachers, 1.6% of basic school teachers, 3.3% of specialized school teachers, 7.7% of college and school teachers, 1.1% of university teachers named two options, B) and C) as the reasons for clip thinking.
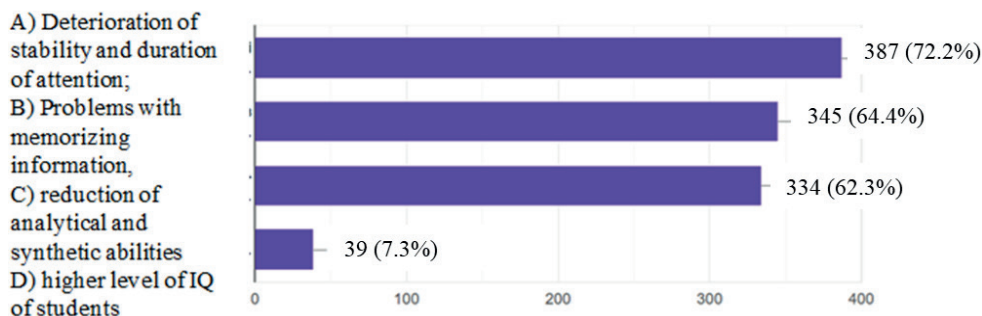
Thus, a new stage in the development of world society – the introduction of ICT in all spheres of life causes the peculiarities of the cognitive style of students, which is manifested in the idea of clip thinking. Obviously, in the learning process, including distance or blended learning should take into account the features of cognitive processes that accompany clip thinking.

2.2. The peculiarities of cognitive processes of representatives of the digital generation

The next question of the questionnaire: "Have you observed in the last 5 years such features of cognitive processes in students?" provided five options for response: A) Deterioration of stability and duration of attention; B) Problems with memorizing information; C) Decrease in analytical and synthetic abilities; D) Higher level of IQ of students; E) Your option.

As you can see from the diagram shown in Figure 6, 72.2% (387 people) identified a deterioration in the stability and duration of attention (option A), 64.4% (345 people) – problems with memorizing information (option B), 62.3% (334 people) – a decrease in the analytical and synthetic abilities of pupils / students of the digital generation (option C). And only 7.3% (39 people) reported a higher level of IQ (option D). It is obvious that this state of development of cognitive processes creates certain problems with the perception, understanding, processing and memorization of educational information. These data indicate the need to find new teaching methods that take into account the peculiarities of the cognitive processes of students / students of the digital generation.

Have you observed such peculiarities of cognitive processes in students during the last 5 years?

A) Deterioration of stability and duration of attention;
B) Problems with memorizing information,
C) reduction of analytical and synthetic abilities
D) higher level of IQ of students

387 (72.2%)
345 (64.4%)
334 (62.3%)
39 (7.3%)

F i g u r e 6. Distribution of respondents according to the options for answering questions about the features of cognitive processes in modern pupils / students
S o u r c e: own work.

The results of the analysis of responses by categories of teachers / lecturers are presented in table 1.

As a result of the analysis of the data of table 1, option A, it can be shown that from primary to basic and profile school the stability and duration of attention is in the

range of 15% – 10%, and slightly improves in basic school. This can be explained by the age-related features of the neural and functional development of the human brain. Namely, in 10–11 year old students, the frontal lobes and frontal cortex, which are responsible for arbitrariness, for self-regulation acquire signs of maturity, although the actual development of these areas of the brain does not stop and lasts almost 30 years. But in this context, the data of university professors look a bit strange, noting that a feature of digital generation students is the instability and shortness of attention, which of course, hinders quality education at the university. It should also be noted that college teachers did not mention option A) separately in their answers. Problems with memorizing information (option B) decrease slightly from primary to basic school, and then increase to profile. This can be explained by the fact that in primary school the methods of logical memorization of educational information are beginning to take shape, and it is possible that in primary school we already have some changes in this property.

T a b l e 1. Options for respondents to answer the question, "Have you observed such peculiarities of cognitive processes in students during the last 5 years?"

Answer option	Primary school teachers (%)	Basic school teacher (%)	Teachers of profile school (%)	College teachers (%)	University teachers (%)
A	14.8	9.6	10.0	–	45.5
B	10.4	4.0	8.3	–	9.1
C	8.4	5.6	5.0	38.5	18.2
D	4.8	3.2	–	–	–
A,B	14.4	16.8	8.3	15.4	3.4
A,C	6.8	12.8	13.3	7.7	15.9
A,D	2.0	–	–	–	–
B,C	4.4	4.8	6.7	15.4	11
B,D	0.8	–	–	–	–
A,B,C	30.8	39.2	43.3	15.4	5.7
A,B,C,D	1.6	2.4	3.3	–	–

S o u r c e: own work.

Decreased analytical and synthetic abilities (option C) is more pronounced in primary school students, due to the immaturity of their brain structures (frontal lobes and frontal cortex), for college students, which can be explained by the contingent of these institutions. 18.2% of the answers of university teachers about the presence of reduced analytical and synthetic abilities in students are also related to the modern contingent of students entering universities with existing problems in school education. Speaking about the positive impact of ICT on the development of students, some scientists note the higher level of IQ students. Thus, Gary Small and Gigi Vorgan, claim that children who work with gadgets show a higher IQ, they have better cognitive

abilities than those who hardly use a computer (Small & Vorgan, 2008). According to the observations of Jackson, Witt, Games, etc., children who use the Internet have a higher academic performance than children who do not use the Internet (Jackson, Witt, Games, Fitzgerald, von Eye, & Zhao, 2012).

The responses of primary and basic school teachers correlate with the results of these studies for a small percentage of students, but teachers of specialized schools, colleges and universities, universities did not observe this feature. It is possible that students of this age group are all already connected to digital devices and the Internet.

2.3. The reasons for changes in cognitive processes of modern students

The next question, which was proposed to answer teachers and educators, was aimed at determining the cause of changes in cognitive processes (perception, attention, memory, thinking) in the current generation of students. Respondents were offered five possible answers: A) Use of gadgets. And therefore a simultaneous stay in the physical and virtual world; B) Information overload and the simultaneous need for new information; C) Deterioration of the quality of training of students at the previous stage of education; D) Outdated teaching methods that do not take into account the peculiarities of the digital generation; E) Your option.

As can be seen from the diagram (Figure 7), 65.9% (353 people) of respondents said that the reason for changes in the processes of perception, attention, memory, thinking in the digital generation is the constant use of gadgets, which offers a person simultaneous learning in the physical and virtual world, which attracts children and young people more than the physical world (option A).
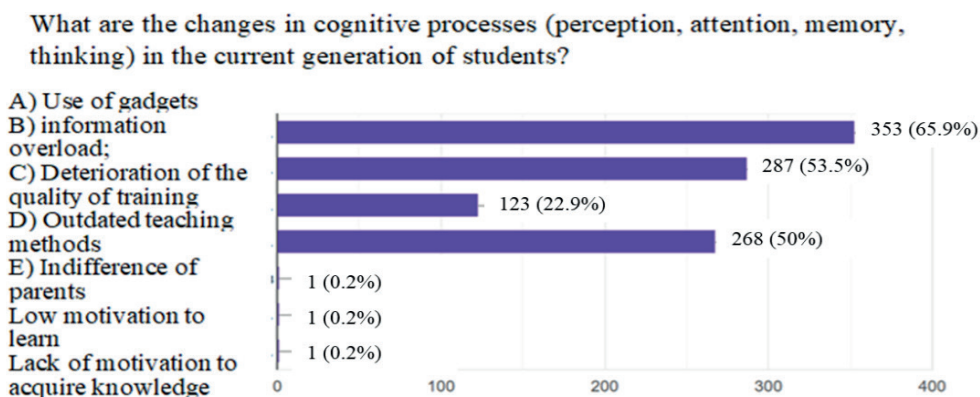
F i g u r e 7. Distribution of respondents by answer options to questions about the reasons for changes in cognitive processes in modern students

S o u r c e: own work.

These data correlate with the data of the Institute of Psychology of the National Academy of Pedagogical Sciences of Ukraine, which show that modern children have acquired an excessive ability to absorb digital information, that the virtual world acts like the physical and requires the child to form those abilities that allow it to exist in this world (Honcharenko, Vavrik, Vereschak et al., 2014).

53.5% (287 people) of teachers and lecturers determined that the reason for the deterioration of cognitive processes is that they are, on the one hand, overloaded with information, and on the other hand, need new information (option B). It is obvious that under such conditions it is impossible to perceive it and process it qualitatively. 50.0% (268 people) see the problem in outdated teaching methods that do not take into account the peculiarities of the digital generation (option D). At the same time, 22.9% (123 people) believe that the problem lies in the deterioration of the quality of training of students at the previous stage of education (option C).

The analysis of the reasons of the deterioration of cognitive processes at pupils / students of the digital generation on categories of respondents is given in table 2.

Table 2. Options for respondents to answer the question, "What are the changes in cognitive processes (perception, attention, memory, thinking) in the current generation of students?"

Answer option	Primary school teachers (%)	Basic school teacher (%)	Teachers of profile school (%)	College teachers (%)	University teachers (%)
А	18.8	15.2	15.0	15.4	8.0
Б	10.4	7.2	13.3	–	10.2
В	4.0	–	–	15.4	3.4
Г	9.6	10.4	1.7	15.4	4.5
А, Б	17.2	8.8	10.0	–	12.5
А, В	2.8	2.4	8.3	–	3.4
А,Г	11.6	11.2	11.7	7.7	10.2
Б,В	–	–	3.3	7.7	4.5
Б,Г	5.2	8.8	3.3	7.7	10.2
В,Г	–	2.4	–	–	4.5
А,Б,В	1.6	1.6	6.7	7.7	5.7
А,Б,Г	10.8	14.4	11.7	7.7	14.8
А,В,Г	2.4	4.8	3.3	7.7	–
Б,В,Г	–	9.6	3.3	–	–
А,Б,В,Г	2.8	–	5.0	–	8.0

Source: own work.

CONCLUSION

This comprehensive and deep study of the outlined problem, conducting a serious observational experiment which provides a reason to believe that today we have an important problem of change in the cognitive processes of modern students under the influence of the digital world and artificial intelligence. We point to the clipping of students' thinking as a consequence of digitalization.

The use of gadgets, and connection to the Internet, allows a person to survive in a fast-changing world, instantly receiving the necessary information. In this way, there is a growing need for new information on the one side, and on the other side there is an oversaturation of information that causes computer surfing, forming a lack of habit of reading the page completely, and the perception of information presented on Internet pages separately. The presence of hyperlinks, adjusts a person to perceive information without establishing links between content elements in the form of a clip in which there is no context. Thus, the duration and stability of attention decreases, the selection of semantic parts of information, the establishment of relationships between them becomes increasingly difficult, the ability to logically process the content deteriorates. Thus, at the theoretical stage of the study, the essence of clip thinking and its derived features of cognitive processes were determined, which became the basis for the development of a questionnaire for school teachers and university teachers. An analysis of the results of the survey shows that the main reason for the emergence of clip thinking, according to Ukrainian teachers, is the revolution in information technology, internetization, virtualization, gamification, robotics and computerization of various spheres of modern life. It is the entry of IT into all spheres of life of modern man, his excessive ability to assimilate digital information that causes a different style of thinking, and a different means of learning.

These data points correlate with the results of research by Polish scientists (Mokwa-Tarnowska & Tarnowska, 2019), in which it was proposed students of Generation Z prefer online text and images and they use Internet resources to teach real skills. As a result of a survey of Polish students, researchers found that representatives of Generation Z are willing to use online learning materials, only 5% said they do not want to learn from Internet resources or activities (p. 226). Almost three quarters of respondents (74.4%) believe that extended lessons via the Internet are an attractive way to learn, and only 5.6% hold the opposite view. As a result of the analysis of the questionnaires, it was found that according to the observations of teachers of Ukraine, the current generation of students has deteriorated the stability and duration of attention, there are problems with memorizing educational information, there is a decrease in analytical and synthetic abilities. Teachers in Ukraine associate these changes with the constant use of gadgets, which offers a person a simultaneous stay in the physical and virtual world, which is more attractive to children and youth than the physical world; with information overload and with the simultaneous need for new information; with outdated teaching methods that do not take into account the specifics of the digital generation.

The obtained experimental data correlate with the conclusions of K. Frumkin on the inability to perceive long linear information of one type, reduced analytical thinking, as well as an inability to perceive long-term linear information and the phenomenon of clip thinking (Frumkin, 2010). Also, our study confirms the conclusion of Dautov, Korochentseva, & Mohamed Kadom Mahdi Al Hussini (Dautov, Korochentseva, & Mohamed Kadom Mahdi Al Hussini, 2019) that along with thinking, attention also undergoes significant changes. In particular, under the influence of clip thinking, such properties of attention as the distribution and switching of attention are enhanced, which allows a person to work with large information flows with less

energy, but concentration and stability of attention are weakened. Dautov, Korochent-seva, and Mohamed Kadom Mahdi Al Hussini experimentally proved a decrease in productivity of attention among representatives of the digital generation with an increase in indicators of clip thinking. At the same time, the authors emphasize the high reproducibility of attention resources among the digital generation with a high level of clip thinking, which somewhat compensates for the low level of attention productivity in general. Thus, according to Ukrainian teachers, changes in cognitive processes are caused by the use of digital technologies, and on the other hand, it is impossible to teach modern students without the use of IT in the educational process. Therefore, the opinions of scientists are aimed at finding effective means of teaching students – as representatives of the digital generation based on IT.

Scientists from Russia insist on the use of information technologies in the educational process (Rezer, Symaniuk, & Kuznetsova, 2018). Based on the peculiarities of clip thinking, which consists in the perception of small pieces of information (Volkodav & Semenovskikh, 2017) suggest organizing information in the form of clips; use bright, clear and visual presentations with clear, imaginative and memorable word-ing. Bkhat insists on the structuring of information in the form of clips, changing the presentation format, using bright, clear and visual presentations that will improve the learning process of young people with "clip-thinking" (Bkhat, 2018). The author sees this as a way of adapting "clip culture" to educational technologies by means of rethinking the pedagogy of classes. Thus, the prospects for further research we see in the search for effective approaches to teaching students, who are obviously representatives of the digital generation that constantly uses IT.

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