

Copyright © 2023 by Cherkas Global University



Published in the USA
 International Journal of Media and Information Literacy
 Issued since 2016
 E-ISSN 2500-106X
 2023. 8(2): 295-304

DOI: 10.13187/ijmil.2023.2.295
<https://ijmil.cherkasgu.press>



Perception of Visual Information in a Digital Environment and Cognitive Styles

Tatiana Byundyugova ^{a,*}, Anna Babikova ^b, Elena Kornienko ^c

^a Southern University (IMBL), Russian Federation

^b Southern Federal University, Russian Federation

^c Taganrog Institute of Management and Economics, Russian Federation

Abstract

The existence of a modern person in a digital environment requires a high level of digital literacy, special skills that allow us to perceive, process and use ever-increasing amounts of information. Any information is now available to users, technologies allow viewing and studying various sources of information almost simultaneously. The amount of visual content is increasing, and therefore, cognitive processes are adapting to new conditions. Technologies are changing, and needs are changing, which in turn leads to a new stage of technology development. Technologies are becoming more complex and at the same time becoming more understandable and familiar to users, simplifying the processes of perception and processing of information. Advances in the field of image creation and processing have significantly expanded the possibilities and ways of presenting visual information. There is a need to investigate the features of the processes of human perception of visual information from the standpoint of various theoretical approaches.

The article contains the results of a study of the perception of visual information in the digital environment by people of different ages, the features of its processing, memorization, comprehension. Modern digital space forms new perceptual and cognitive styles of information processing, which are associated with the development of awareness of digital content consumption – depending on the goals of online activity – sometimes a thoughtful and contemplative perception and comprehension of data is necessary, and sometimes it is enough to identify keywords or images and, based on them, view certain data and draw conclusions. It is this awareness of digital content consumption that allows you to experience a unique cognitive experience in a digital environment, which allows you to experience emotional satisfaction from studying and perceiving data, and not just from studying them.

Keywords: information, information literacy, technology, virtual reality, digital environment, perception, cognitive schemas, cognitive constructs, visual information, multimedia.

1. Introduction

Among the topical socio-psychological issues related to the study of the digital environment, part is devoted to the study of its structural components and the general concept of digital space, part is devoted to the influence of the digital environment on a person's personality, and there are also studies that are devoted to the organization of the interaction and communication system. There are different definitions that are associated with the attempt to determine the digital environment: actually, the digital environment, cyberspace, the information environment:

* Corresponding author

E-mail addresses: tach_29@mail.ru (T.V. Byundyugova), annafeat@gmail.com (A.V. Babikova), elena.kornienko@tmei.ru (E.V. Kornienko)

- the digital environment is a given set of technical forms for the self-realization of a person, his professional growth, as well as for the realization of his needs, interests and needs of a broad plan in the communicative and information space (Bough, Martinez Sainz, 2023; Örtégren, 2023);

- cyberspace – can be described as a certain area within which digital technologies and various services for optimizing the social sphere of human life exist, are actively implemented and developed, which leads to the formation of specific behavior and activity of the individual (Carter, 2020). It is worth noting that existence in cyberspace can lead to changes in society and ethics (Dagaeva, Klimachev, 2022);

- the information environment is a purposeful system of influences and various circumstances, situations that allow satisfying the needs of the individual by processing various data from the environment or as a result of interaction with others (Wanless, Shapiro, 2022).

Thus, the digital environment, on the one hand, is an open space with specific "inputs and outputs" where a person can receive any kind of information; whilst on the other, it is an area where a person can express himself, develop with the help of information and communication technologies, while forming a new system of meanings, values and digital identity.

Personal growth and development, as well as professional self-realization of a person in a digital environment occurs due to the satisfaction of a system of needs:

- search and use of the required information in various fields (educational, household, social and household);

- digital accommodation of anxieties, stresses, traumas and experiences on significant personal occasions;

- attempts to reduce dissatisfaction with unresolved needs in real life;

- formation of a social, communicative space in order to reduce the feeling of loneliness, search for like-minded people who are close in spirit, values, meanings of people to create a common event series, living similar positive emotions;

- increasing the degree of significance and level of satisfaction from the information received on the web and, due to this, cognitive, aesthetic, interactive, communicative development.

All these needs can be realized through the formation of a certain structure of meanings and meanings in the inner world of the personality, which it translates and reinforces with the experience of interaction and living certain events in the digital environment. The individual digital environment, as a whole, cannot be differentiated from the individual, its structuring and organization depends on what, on the one hand, is important and valuable for the individual, and on the other, on how a person perceives and processes information and data existing in the digital space. Perceived and structured in a certain way data and information from the digital environment form a system and a space of interactions of the individual with himself, with others, as well as events, situations, events in the media space. Over time, the digital personality and the real personality become one and differentiate less and less.

2. Materials and methods

The digital environment of a person allows her to satisfy her needs, realize her own interests, and, on the other hand, with the help of contextual advertising, targeted data that a person sees on a computer screen or smartphone, she forms a strictly directed and controlled space and data flow for a person to perceive and comprehend a given content. The synthesis of digital personality, real personality and media space at a certain moment unites all individual subjective perceived images into a certain structure that a person endows with qualities, meanings, instrumental content and actively interacts with it. On the one hand, in modern psychological theory and practice, the interaction of a person and the digital environment is studied from the perspective of the formation of his connections, attachments and interests within its framework (communicative and interactive aspects of interaction with the environment), as well as online activity, various forms of dependent and autodestructive behavior. On the other hand, it is necessary to investigate the peculiarities of information perception, the "inscribing" of the read images into the inner world of the personality, their processing and the creation of systemic thought forms based on the results, which subsequently direct perception and concentrate the focus of the personality's attention on certain topics, pictures, information in the digital environment, which subsequently leads to a certain activity, the formation and implementation of the given patterns of behavior, both, in fact, in the digital and in the real environment.

Systemic thought forms, images of the structure and features of the digital environment for an individual can be the basis of his activity in the digital environment, which can then move into the real physical space. They arise, among other things, through the use of mechanisms of personification and subjectivization, when individual situations, phenomena, events, objects from the digital space are endowed with subjective, personal traits, "humanized". In order for such systemic thought forms, images from the digital environment to become part of the inner world of the individual, to be remembered or actively influenced by a person or used by him in the real world, it is necessary:

- so that a person actively interacting with various images from the digital environment can see personal growth, development, transformation of his inner world, motives, emotions, values, etc.;
- so that these images become a kind of "bridge" between the personality and the external world or media space, which also lead to changes, for example, relationships with social group;
- so that these images become part of digital communication, interaction with other people, characters on the network.

By analogy with information, the digital environment and its interaction with a person includes several key components: the organization of an effective, convenient and simple space for working with data and information (the subject component); the formation of stable connections and channels for transmitting information from subject to subject, convenient for perception (the communicative component); the ability to implement various actions in working with the digital environment (technical and technological component).

The whole set of components of the digital environment and the person who interacts in it in a subject-subject or subject-object format form a system of digital behavior. The system of realization of digital behavior of a personality is a new format of activity of a subject, which, in addition to communication skills acquired in a normal environment in the conditions of socialization, interaction based on perception of reality, transfers them to a new media space, where they are implemented by his virtual Self.

Modern research, in general, focuses on the consequences of personal self-realization in the digital environment, in particular: the features of the implementation of his behavior (prosocial and antisocial; the impact of digital traces on a person; the possibility of influencing his activity, activity and behavior in the digital environment; the features of communication and self-realization of personality in the new augmented reality, the emergence of psychological problems as the consequences of spending too much time in a digital environment). Around the 90s of the last century, as soon as the digital world became more accessible, they began to talk about changing the perception of the ever-increasing flow of information from the Internet. As modern researchers note, a new world of civilization is being formed now, where the volume of perceived and consumed information becomes so large that its value decreases, since a person cannot work out everything thoughtfully and competently. All this indicates an increase in the quality of the "throughput" of human perceptual and cognitive systems, while the amount of information perceived during the day is growing, and there is less time to consume it, so a separate and step-by-step study of it is becoming more rare, cognitive units are becoming more dense and generalized. The decrease in the focus of attention is also due to the fact that the number of new and diverse stimuli requires more and more user attention. Therefore, information is increasingly becoming visual rather than textual. Visual data is simplified to infographics, pictograms, and becomes as cognitively simple and unambiguous as possible, realizing one of the key trends in the presentation of data on the web-digital minimalism. The ideographic format of data representation has always existed, but now it is increasingly relevant due to the need to supplement text messages for a clearer representation of their semantic load. It is the visual format of information in the digital environment that makes it possible to complement complex narratives with meaning as much as possible, since images, as a rule, contain a multi-semantic load, reflect cultural codes, operate with mass meanings or narrowly focused categories. A competent addressable visual series allows you to capture the meanings and contexts conveyed in the message much faster. Any pictures, gifs, pictograms, memes, stickers become multi- and cross-cultural communication, a new way of processing information, broadcasting and forming meaning for each individual user or entire groups, communities, representatives of cultures and nationalities. Any image becomes a communication. All this, within the framework of the inner world of the individual, turns into semantic collages and is not stored in separate information clusters and groups, but is constantly changing, becoming part of a new or larger information series. Practically all the new reality that

exists around the modern personality becomes a semantic visual interface, which consists of generalized concepts of objects, subjects, situations, events, concepts. The key parameters of the reflection and expression of visual information are its overall expressiveness, conciseness, memorability for the subject of perception, as well as its capacity – the more meanings it is able to generate in a shorter period of time, the more effective it becomes.

Perception and processing of visual information from the digital environment depends, in principle, on the permeability of semantic constructs and representations: the simplest and most complex constructs have greater permeability. The more a person thinks about an image, the more often he enters it into his picture of the world and actively interacts with it, just as a simple minimalistic image with many meanings becomes part of the inner world of the personality due to emotional recognition.

All these reflections lead to the fact that, on the one hand, it is difficult to develop tools that can comprehensively work out and evaluate the system of hyper-phrases, meanings and features of information perception, on the other hand, actual directions for assessing the real interaction of the individual and the digital environment are emerging.

3. Discussion

In modern research, the issues of visual information perception, applied technologies and visualization methods are widely discussed (Gálik, Gáliková Tolnaiová, 2022; Gáliková Tolnaiová, 2021; Gáliková Tolnaiová, 2021; Vrabec, Odziomková, 2021 and others). Cognitive load in multimedia learning environments is being actively studied, since the development of information and educational technologies has significantly expanded the possibilities of visualizing information, providing more and more screen images, animations, and videos. All this requires a detailed study of how effectively visual information is processed. The features of hypertext reading, neuroimaging, principles of multimedia learning, measurement of cognitive load, type of cognitive load, effects of modality and redundancy are studied (Mutlu-Bayraktar et al., 2019).

With the increase in the amount of information and the need to process a large amount of data, visualization provides much more opportunities for obtaining and processing information for decision-making. Within the framework of the theory of cognitive correspondence, it is argued that visual representation leads to a decrease in cognitive effort and contributes to better problem solving (Bina et al., 2023).

The use of virtual reality in the educational process significantly increases its results, viewing visual content gives higher results of perception of the material compared to listening to the text (Vogt et al., 2021). Visual representation of information using augmented reality technologies reduces unnecessary cognitive load of students and contributes to the acquisition of conceptual knowledge (Altmeyer et al., 2020). As the experiments conducted by Ouyang, et al. show, the use of network visualization tools had a positive effect on changing the cognitive structures of students. Visualization of the social network had a positive effect on increasing social activity, visualization of the thematic network influenced the increase in cognitive activity, and visualization of the cognitive network initially caused students to search for information (Ouyang et al., 2021).

Currently, "scanning" dominates in the text of keywords, and in the image – the main symbols and signs. A person has an internal data filtering system that allows them to identify key elements of the digital space that are significant for perception, evaluation and processing. The widespread use of electronic reading devices and the accessibility created by these devices has increased the amount of information consumed, which is accessible by cursory viewing of text rather than careful reading (Baron, 2021).

Studies show that the perception of text from the screen and on paper is not the same, while the opinions of scientists are divided: some note greater efficiency of reading from the screen, while others believe that reading on paper is more effective. For example, in conditions of limited time and for descriptive texts, perception from the screen is worse, the advantage of reading in printed form is obvious, reading digital texts takes less time than reading printed texts. More cognitive effort is required to understand descriptive texts compared to narrative ones. This refers to texts containing academic knowledge, artistic texts with a complex textual structure, a lot of new information and require a good vocabulary.

The experiment conducted by P. Delgado and L. Salmerón showed that screen reading is characterized by inattention, superficial processing of information, low informativeness (Delgado, Salmerón, 2021). There are other studies in which it is noted that the understanding of the text

read on paper is higher than reading the text on the screen, the reading efficiency is affected by the level of literacy, age, genre of the text, reading time, in addition to the text carrier. For example, those who immediately respond to alerts from messengers and social networks concentrate worse, study worse and process information. There is a decrease in concentration, which is required to perform a complex task for several hours. Consequently, those who retain critical thinking, the ability to concentrate and separate thoughtful perception of information from rapid scanning will be able to be more effective in cognitive data processing and less fall into the "attention traps" that are increasingly appearing within, for example, contextual advertising (Stiegler-Balfour et al., 2023).

Some aspects of information perception are investigated on the basis of the works of J. Nielsen, who notes the dominance of the interest of users of the digital environment in simple point facts, separate, small in volume, texts or sets of images that will allow to form a superficial understanding of various issues and assess the possible significance of the perceived data. Which leads to an increase in the ease of moving from materials to materials without critical reflection. It is also noted that these transformations lead to an increase in multitasking, defocusing of attention, its rapid switching between various visual objects. At the same time, the criticality of information perception decreases, but the recognition of its significance for the user of the digital environment increases. All this leads to a simplified, but fast solution of tasks that are significant for users within the digital space (Lu et al., 2022; Sobrino-Duque et al., 2022).

The use of illustrated texts in the learning process increases its effectiveness compared to the fact that illustrations are not used. These phenomena are studied in the context of the cognitive theory of multimedia learning, which describes cognitive processes in the processing of illustrated texts (Frick, Schüler, 2023).

N. Carr, studying the negative impact of the digital environment, collected the results of a number of studies that confirmed the cognitive vulnerability of Internet users – a deterioration in the understanding of information, an increase in the number of extraneous factors that reduce the focus of attention and increase its switchability. Over time, this can lead to superficial information processing, superficial learning, which ultimately limits the ability to perform more complex tasks (Latini et al., 2020). There is also evidence in studies confirming a decrease in the skill of returning to already perceived information, a deterioration in the quality of induction, critical thinking, as well as a decrease in the level of productive imagination, the quality of thinking about data and the level of spatial imagination (Cebollero-Salinas et al., 2022).

The study of how digitalization affects reading shows that there are significant differences between viewing texts on the Internet and reading fiction, between the perception of a paper book and a digital text, which explains the increased interest in the formation of digital literacy skills as a necessary factor of existence in a digital environment. A well-formed reading skill, the habit of reading enhances linguistic competence, attention, the ability to search and find analogies and patterns, draw conclusions, evaluate different points of view, develop imagination. There is a point of view that despite the dominance of digital reading due to the widespread introduction of e-learning tools, the concept of reading has not changed significantly. However, this is not quite true, so-called "cognitive costs" arise, a negative correlation between digital reading and reading skills is manifested.

Reading on the Internet, a person usually sees short fragmentary texts, switches between message sources where the text as such is absent. The widespread use of digital technologies has led to the decline of reflexive thinking. The latest research has proved that slow and conscious reading of fiction, which contains many figurative techniques to emphasize the meaning, as well as a complex composition of sentences, requires more focused brain work, more intellectual effort, which led to increased motivation to read. There was also evidence that when reading complex fiction, images modeled in consciousness stimulate the work of the same neurons in the brain that would work if everything were happening in reality (Weel, Mangen, 2022).

It was also revealed that fiction allows you to rethink and relive personal experience, it is proved that teenagers who spend more time reading fiction have significantly stronger reading skills than peers who do not read or read less fiction (Jerrim, Moss, 2019). Lanier, in his discussions about virtual reality, comes to the conclusion that even small changes in the visual design of the proposed data can lead to a transformation of behavior and activity on the network (Burbules, 2006; Lanier, Biocca, 1992). Modern achievements in the field of information technology have significantly expanded the possibilities of visualizing the space of the real world, which significantly influenced the growth of interest in the problems of using virtual reality in

teaching. The main idea of using virtual reality is that the virtual reality learning environment should be designed in such a way as to reduce cognitive load and improve relevant cognitive processing (Oje et al., 2023).

Based on the studies reviewed, an algorithm for the perception of information in a digital environment is proposed.

There are three possible (conditionally schematized) types of information perception in the digital environment:

1 – conditionally passive: the digital environment has a dominant, reactive effect on the individual due to his cognitive unwillingness to process large amounts of data and subsequent acceptance of the meanings that are imposed on him by the media space;

2 – conditionally active: a person tries to subdue the digital environment, implements proactive reactions to all influences from it and translates the meanings he has into the digital environment, which he actively uses on a regular basis.

3 – conditionally – suprasituatively – active (the ability of the subject to rise above the level of the requirements of the situation): a person also consciously and thoughtfully perceives information that is broadcast from the digital environment, but repeats it due to which he processes data and leaves the important and necessary as part of his inner world, on the basis of which he creates new meanings and translates them into the digital environment.

All semantic grids that allow you to immediately analyze visual information belong, as a rule, to the system visual series (hyperobrase) and become a constructor that immediately classifies perceived data into certain categories.

4. Results

Below are the results of a pilot study of the perception of visual information in a digital environment by people of different ages.

The processing of information from the digital environment is connected, one way or another, with cognitive styles that affect its perception, comprehension and addition, if necessary, to the picture of the world. Cognitive style, which is characterized by the dominance of analyticity or holism, is the basic one for processing information from the physical or digital environment. Analyticity allows us to consider any objects, images, phenomena or situations regardless of each other, and holistic, on the contrary, as an integral system. That is why this cognitive skill underlies the processing and analysis, as well as the memorization of information. Analyticity-holism is associated with other, more specific and particular cognitive styles: utility – independence, flexibility – rigidity, impulsivity – reflexivity, verbalization – visualization.

214 people aged 18 to 50 years took part in the study of the features of cognitive styles and the perception of visual information from the digital environment. Conditionally, we divided all participants into three groups according to the types of perception that we described earlier:

1) with a conditionally passive type, where: the digital environment has a dominant, reactive effect on the individual due to his cognitive unwillingness to process large amounts of data and subsequent acceptance of the meanings that are imposed on him by the media space – 62 % of respondents (the majority have an average age of 35-40 years, all are professionally employed, men 62 %, women – 38 %, have a professional education)

2) with a conditionally active type, where: a person tries to subdue the digital environment, implements proactive reactions to all influences from it and translates his existing meanings into the digital environment, which he actively uses on a regular basis – 20 % of respondents (most have an average age of 25-30 years, most are professionally employed, 45 % of men, 55 % of women, have a professional education);

3) with conditionally-suprasituative-active, where: a person also consciously and thoughtfully perceives information that is broadcast from the digital environment, but repeats it due to which he processes data and leaves the important and necessary as part of his inner world, on the basis of which he creates new meanings and translates them into the digital environment – 8 % of respondents (the majority have an average age of 45-47 years, all are professionally employed, 36 % of men, 64 % of women, have a vocational education).

In order to assess the peculiarities of perception and processing of information from the digital environment, the features of the respondents' cognitive styles were determined. For the analysis of cognitive styles, techniques were selected that were based on working with free associations, copying complex drawings and a survey about how a person perceives and processes information.

In general, the diagnosis made it possible to identify the cognitive characteristics of respondents from different groups. A comparative analysis of the results showed the following:

1) in the group with a conditionally passive type of perception of visual information from the digital environment, it was shown that 96 % of respondents in this group expressed an average level of analyticity and holism. This can be interpreted as the ability to approach emerging issues and tasks relatively flexibly, consciously switch from holistic data processing to analytical and vice versa. In general, the holistic style is used more often, that is, objects are perceived as a whole, as if "photographed" by a person, individual components are not considered, there is a consistent perceptual process from the general to the particular. Only 4 % process information chaotically and haphazardly, which indicates the lack of consistent perception of visual information from the digital space. Also, cognitive style dominates in this group, which is associated with pronounced activity of the right posterior part of the brain, which is associated with the dominance of emotional tone, control of interpersonal relationships and optimization of contact, perception of social situations. It occurs in 59 % of respondents. 60 % of respondents can be characterized by utility dependence, they often focus on compliance with social norms, assessment of their behavior and decisions by others. 67 % of respondents are characterized by impulsivity in the perception and evaluation of external stimuli from the digital environment, they also make decisions quickly, often under the influence of momentary emotions. Respondents are also prone to rigidity in the perception and processing of information in 71 % of cases, which suggests that it is difficult for them to switch from one type of perception, assessment, analysis to another. 88 % of respondents are inclined to visual processing of information, working with images, and only 12 % – to verbal. This means that it is easier for them to work with information in a figurative form than to try to deal with it in a different format. In general, the respondents of this group can be characterized, on the one hand, as impulsive, perceiving objects and situations holistically, and on the other, as rigid, utility-dependent.

2) in the group with a conditionally active type of perception of visual information from the digital environment, it was shown that the majority of respondents in this group (94 %) also have a pronounced balance between the manifestation of analyticity and holism. This can be interpreted as the ability of respondents to be flexible enough to analyze and solve emerging issues and tasks, consciously switch from holistic data processing to analytical and vice versa. In general, the holistic style is used as often as the analytical one, that is, objects are perceived as a whole, as if "photographed" by a person, individual components are not considered, there is a consistent perceptual process from the general to the particular, then, on the contrary, they are analyzed in detail "from the particular to the general". Only 6 % process information chaotically and haphazardly, which indicates the lack of consistent perception of visual information from the digital space. Also in this group, as in the previous one, the cognitive style dominates, which is associated with pronounced activity of the right posterior part of the brain, which is associated with the dominance of emotional tone, control of interpersonal relationships and optimization of contact, perception of social situations. It occurs in 62 % of respondents. 61 % of respondents in this group can be characterized by a balance between utility dependence and independence, they often focus on compliance with social norms, assessment of their behavior and decisions by others, but in significant situations they focus on their own opinion. 77 % of respondents are characterized by reflexivity in the perception and evaluation of external stimuli from the digital environment, they make decisions deliberately and slowly, they never focus on momentary emotions. Respondents also tend to be flexible in the perception and processing of information in 82 % of cases, which suggests that it is enough for them to simply switch from one type of perception, assessment, analysis to another. 76 % of respondents are inclined to visual processing of information, working with images, and only 23 % – to verbal. This means that it is easier for them to work with information in a figurative form than to try to deal with it in a different format. In general, the respondents of this group can be characterized, on the one hand, as reflexive, perceiving objects and situations holistically and within the framework of a detailed analysis, and on the other, as flexible, field-independent.

3) in the group with conditionally – suprasituatively – active perception of visual information from the digital environment, it was shown that the majority of respondents in this group (97 %) also have a pronounced balance between the manifestation of analyticity and holism. This can be interpreted as the ability of respondents to be flexible enough to analyze and solve emerging issues and tasks, consciously switch from holistic data processing to analytical and vice versa. In general,

the holistic style is used as often as the analytical one, that is, objects are perceived as a whole, as if "photographed" by a person, individual components are not considered, there is a consistent perceptual process from the general to the particular, then, on the contrary, they are analyzed in detail "from the particular to the general". Only 3 % process information chaotically and haphazardly, which indicates the lack of consistent perception of visual information from the digital space. Also, cognitive style dominates in this group, which is associated with pronounced activity of the anterior lobe of the frontal hemisphere of the brain, which is associated with the dominance of structural analysis, logical thinking in the perception of objects and social situations. It occurs in 68 % of respondents. 66 % of respondents in this group can be characterized as those who have a predominant gender dependence, they often do not focus on compliance with social norms, assessment of their behavior and decisions by others, in significant situations they focus on their own opinion, easily distinguish themselves from the group. 89 % of respondents are characterized by reflexivity in the perception and evaluation of external stimuli from the digital environment, they make decisions deliberately and slowly, they never focus on momentary emotions. Respondents also tend to be flexible in the perception and processing of information in 82 % of cases, which suggests that it is enough for them to simply switch from one type of perception, assessment, analysis to another. 70 % of respondents are inclined to visual processing of information, working with images and 30 % – to verbal. This means that it is easier for them to work with information in a figurative form than to try to deal with it in a different format. In general, the respondents of this group can be characterized, on the one hand, as reflexive, perceiving objects and situations holistically and within the framework of a detailed analysis, and on the other, as flexible, field-independent.

5. Conclusion

There are reverse trends that are also emerging at the moment – this is the "slow mo" mode – slowing down, as well as focusing as opposed to multitasking as a reaction to the too fast pace of life, which does not allow you to feel and feel it to the fullest. This will not become a general trend and practice, but it will make you think as much as possible about more conscious consumption of digital content.

All the conclusions of the researchers described above, the results of scientific developments made it possible to formulate general trends in the perception and processing of visual information in the modern digital environment. Among the current trends in the study of the construct "digital environment – personality" are the following:

- search for pronounced interrelations between forms of communication and autocommunication in the digital environment and reflection of personality, its self-perception;
- search for technologies for full human involvement in activities within the digital environment (reducing the influence of clip perception, high attention switching);
- search for technologies to reduce the negative impact on the brain of digital technologies and virtual reality;
- the development of interrelations between cultural codes, the heritage of mankind and the emerging digital worlds in order to adapt the individual to the new fragmented conditions of existence.

As a rule, most modern research is devoted to externally observed psychological phenomena and facts. In addition to evaluating the results of human activity in the digital environment, it is necessary to study and analyze the features of information processing, perception of individual images in order to understand the reasons for their choice of individual spaces and media objects for interaction and, as a result, fitting into their picture of the world, which will further determine their choice of content, behavioral strategies and communication in the digital environment.

Thus, the conducted pilot study allowed us to conclude that the study of how people of different ages perceive and process information from the network has many applied meanings for different professional fields of activity, but also allows us to analyze and deduce the specifics of the perception of all received data in a digital environment and compare it with data and information received in real life.

References

[Altmeyer et al., 2020](#) – *Altmeyer, K., Kapp, S., Thees, M., Malone, S., Kuhn, J., Brünken, R.* (2020). The use of augmented reality to foster conceptual knowledge acquisition in STEM

laboratory courses – Theoretical background and empirical results. *British Journal of Educational Technology*. 51: 611-628.

Baron, 2021 – Baron, N.S. (2021). How we read now: strategic choices for print, screen, and audio. New York: Oxford Academic.

Bina et al., 2023 – Bina, S., Kaskela, T., Jones, D.R., Walden, E., Graue, W.B. (2023). Incorporating evolutionary adaptations into the cognitive fit model for data visualization. *Decision Support Systems*. 171. [Electronic resource]. URL: <https://www.sciencedirect.com/science/article/pii/S0167923623000544>

Bough, Martinez Sainz, 2023 – Bough, A., Martinez Sainz, G. (2023). Digital learning experiences and spaces: Learning from the past to design better pedagogical and curricular futures. *The Curriculum Journal*. 34: 375-393.

Burbules, 2006 – Burbules, N.C. (2006). Rethinking the Virtual. In: Weiss, J., Nolan, J., Hunsinger, J., Trifonas, P. (eds.). *The International Handbook of Virtual Learning Environments*. Dordrecht: Springer.

Carter, 2020 – Carter, D.M. (2020). Cyberspace and Cyberculture. In: *International Encyclopedia of Human Geography*. Elsevier: 143-147.

Cebollero-Salinas et al., 2022 – Cebollero-Salinas, A., Cano-Escoriaza, J., Orejudo, S. (2022). Are emotional e-competencies a protective factor against habitual digital behaviors (media multitasking, cybergossip, phubbing) in Spanish students of secondary education? *Computers & Education*. 181. [Electronic resource]. URL: <https://www.sciencedirect.com/science/article/pii/S0360131522000355>

Dagaeva, Klimachev, 2022 – Dagaeva, E.A. Klimachev, T.D. (2022). Sotsial'no-eticheskie problem kibernizatsi I sovremennogo obshchestva [Socio-ethical problems of cybernization of modern society]. *Vestnik Taganrogskogo institute upravleniya i ekonomiki*. 1 (35): 105-109. [in Russian]

Delgado, Salmerón, 2021 – Delgado, P., Salmerón, L. (2021). The inattentive on-screen reading: Reading medium affects attention and reading comprehension under time pressure. *Learning and Instruction*. 71. [Electronic resource]. URL: <https://www.sciencedirect.com/science/article/pii/S0959475220306915>

Frick, Schüler, 2023 – Frick, P., Schüler, A. (2023). Extending the theoretical foundations of multimedia learning: Activation, integration, and validation occur when processing illustrated texts. *Learning and Instruction*. 87. [Electronic resource]. URL: <https://www.sciencedirect.com/science/article/pii/S0959475223000695>

Gálik, Gáliková Tolnaiová, 2022 – Gálik, S. Gáliková Tolnaiová, S. (2022). Media coverage and its determinants in the context of the covid-19 pandemic. *Communication Today*. 13(1): 46-58.

Gáliková Tolnaiová, 2021 – Gáliková Tolnaiová, S. (2021). On perspectives of teacher training and understanding of their digital competencies as determinants of digital education. *Media Literacy and Academic Research*. 4(1): 118-133.

Gáliková Tolnaiová, Gálik, 2022 – Gáliková Tolnaiová, S., Gálik, S. (2022). Epistemic and ethical risks of media reporting in the context of the Covid-19 pandemic, as challenges for the development of journalistic practice. *Media Literacy and Academic Research*. 5(1): 76-94.

Jerrim, Moss, 2019 – Jerrim, J., Moss, G. (2019). The link between fiction and teenagers' reading skills: International evidence from the OECD PISA study. *British Educational Research Journal*. 45(1): 181-200.

Lanier, Biocca, 1992 – Lanier, J., Biocca, F. (1992). An insider's view of the future of virtual reality. *Journal of Communication*. 42: 150-172.

Latini et al., 2020 – Latini, N., Braten, I., Salmerón, L. (2020). Does reading medium affect processing and integration of textual and pictorial information? A multimedia eye-tracking study. *Contemporary Educational Psychology*. 62. [Electronic resource]. URL: <https://www.sciencedirect.com/science/article/pii/S0361476X20300357>

Lu et al., 2022 – Lu, J., Schmidt, M., Lee, M. Huang, R. (2022). Usability research in educational technology: a state-of-the-art systematic review. *Educational technology research and development*. 70: 1951-1992.

Mutlu-Bayraktar et al., 2019 – Mutlu-Bayraktar, D., Cosgun, V., Altan, T. (2019). Cognitive load in multimedia learning environments: A systematic review. *Computers & Education*. 141. [Electronic resource]. URL: <https://www.sciencedirect.com/science/article/pii/S036013151930171X>

Oje et al., 2023 – Oje, A.V., Hunsu, N.J., May, D. (2023). Virtual reality assisted engineering education: A multimedia learning perspective. *Computers & Education: X Reality*. 3: 1-12.

Örtegren, 2023 – Örtegren, A. (2023). Philosophical underpinnings of digital citizenship through a postdigital lens: Implications for teacher educators' professional digital competence. *Education and Information Technologies*. [Electronic resource]. URL: <https://link.springer.com/article/10.1007/s10639-023-11965-5#citeas>

Ouyang et al., 2021 – Ouyang, F., Chen, S., Li, X. (2021). Effect of three network visualizations on students' social-cognitive engagement in online discussions. *British Journal of Educational Technology*. 52: 2242-2262.

Sobrino-Duque et al., 2022 – Sobrino-Duque, R., Martínez-Rojo, N., Carrillo-de-Gea, J.M., López-Jiménez, J.J., Nicolás, J., Fernández-Alemán, J.L. (2022). Evaluating a gamification proposal for learning usability heuristics: Heureka. *International Journal of Human-Computer Studies*. 161. [Electronic resource]. URL: <https://www.sciencedirect.com/science/article/pii/S1071581922000039>

Stiegler-Balfour et al., 2023 – Stiegler-Balfour, J.J., Roberts, Z.S., LaChance, A.S., Sahouria, A.M., Newborough, E.D. (2023). Is reading under print and digital conditions really equivalent? Differences in reading and recall of expository text for higher and lower ability comprehenders. *International Journal of Human-Computer Studies*. 176. [Electronic resource]. URL: <https://www.sciencedirect.com/science/article/pii/S1071581923000459>

Vogt et al., 2021 – Vogt, A., Babel, F., Hock, Ph., Baumann, M., Seufert, T. (2021). Immersive virtual reality or auditory text first? Effects of adequate sequencing and prompting on learning outcome. *British Journal of Educational Technology*. 52(5): 2058-2076

Vrabec, Odziomková, 2021 – Vrabec, N., Odziomková, J. (2021). Self-presentation as a component of personal identity in cyberspace. *European Journal of Media, Art & Photography*. 9(1): 86-97.

Wanless, Shapiro, 2022 – Wanless, A., Shapiro, J.N. (2022). A CERN Model for Studying the Information Environment [Electronic resource]. URL: <https://carnegieendowment.org/2022/11/17/cern-model-for-studying-information-environment-pub-88408>

Weel, Mangen, 2022 – Weel, A.H. van der, Mangen, A. (2022). Textual reading in digitised classrooms: Reflections on reading beyond the internet. *International Journal of Educational Research*. 115: 1-9.