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The Functioning of Children in the Digital Information Space – Threats, Problems and Educational Strategies for the Development of their Information Literacy

Funkcjonowanie dzieci w przestrzeni informacji cyfrowych – zagrożenia i problemy a edukacyjne strategie rozwoju ich kompetencji informacyjnych

KEYWORDS

digital information, information overload, media literacy, information literacy, media education

ABSTRACT

The aim of the article is to indicate the importance of developing children's information competences in the context of information overload. The author of the article presents selected threats related to the use of digital information by young Internet users. A short description of their activity in cyberspace is also provided. Information overload and low quality of information available on the web mean that the process of their use is conditioned by the proper development of information literacy. The author of the article also formulates the thesis according to which the way to overcome difficulties in obtaining and using information includes the development of information and media competences of students from the digital generation. Finally, the quality of media education in early childhood education is assessed and some postulates for its improvement are indicated. The importance of choosing the right goals, content and methods of education is pointed out. Moreover, it is emphasized that an important goal of media education is the development of children's media literacy understood in a cultural and not technological terms.

SŁOWA KLUCZE	ABSTRAKT
informacje cyfrowe, przeciążenie informacyjne, kompetencje medialne, kompetencje informacyjne, edukacja medialna	Celem artykułu jest wskazanie znaczenia procesu kształcenia kompetencji informacyjnych dzieci w sytuacji problemów wynikających z przeładowania informacyjnego. W rozwinięciu artykułu przedstawiono wybrane zagrożenia związane z korzystaniem z informacji cyfrowych przez młodych użytkowników Internetu. Dokonano także krótkiej charakterystyki ich aktywności w cyberprzestrzeni. Przeładowanie informacyjne oraz niska jakość informacji dostępnych w sieci powodują, że proces ich użytkowania uwarunkowany jest posiadaniem odpowiednio rozwiniętych kompetencji informacyjnych. Narracja artykułu budowana jest wokół tezy, że sposobem pokonywania trudności i ograniczeń w zakresie pozyskiwania i wykorzystywania informacji powinno być rozwijanie kompetencji informacyjnych i medialnych uczniów z pokolenia cyfrowego. W zakończeniu dokonano oceny jakości edukacji medialnej w edukacji wczesnoszkolnej oraz wyróżniono wybrane postulaty jej doskonalenia. Wskazano na znaczenie doboru właściwych celów, treści i metod kształcenia. Podkreślono, że ważnym celem edukacji medialnej jest kształtowanie kompetencji medialnych uczniów rozumianych w opisie kulturowym, a nie technologicznym.

Digital information space

Modern information space is identified with an environment that brings together innumerable amounts of data and information available in different formats. Additionally, the dynamics of the transformation of this space, conditioned by the progress of digital technology, draws our attention. In publications dealing with the issue of information space, the term "information environment"' appears interchangeably. Małgorzata Kisilowska points out the difference between the two, stating that the latter is "used without any attempt at definition; intuitively, in order to name a certain (information) environment in which the described activities are performed" (2011, p. 42). The origins of information production and transmission goes back to the origins of the communication process, but the concept of "information space" is a term identified with the emergence and development of new digital technologies. Over the past centuries, information environment (space) has remained almost constant and fairly stable. While there was a significant increase in the number of printed materials published, their production and distribution remained under the control of publishers, printers and other information associations. Significant changes in the information environment occurred with the rapid development of the Internet which created opportunities for unrestricted publication and dissemination of information, encouraging every user of the virtual world to enter the role of not only a consumer, but also a producer of information.

Information space has become a platform for diverse forms of individual activity which can be analysed from the technical perspective (organisation and representation of content, innovation of technological solutions), social perspective (communities using it, together with the relationships existing within them), and cultural perspective (Głowacka et al., 2015, p. 19). Its main components are: information resources and content, means of information interaction, and information infrastructure. According to Kisilowska, "the very notion of space includes a certain challenge: an incentive to act, explore, learn, organise, design, and to control it" (Kisilowska, 2011, pp. 48-49). Information space gains dynamism from its exploration and cognition, that is, the processes carried out by information users. The state of their minds, the level of their cognitive curiosity, the sophistication of their cognitive processes make information space something that is dynamic, i. e. is constantly developed and modified.

The aim of the article is to indicate the importance of the process of developing children's information competences in a situation in which there are many problems resulting from information overload. In the development of the article, selected risks related to the functioning of young internet users in the world of digital information are presented. The narrative is built around the thesis that the way to overcome the difficulties and limitations in acquiring and using information should be the development of information and media competences of students of the digital generation. The article concludes with an assessment of the quality of media education in early childhood education and a suggestion of selected postulates for improving education in this area.

Threats and problems of the digital information space

The intensive immersion of young users in virtual space has contributed to a change in the style of acquiring and processing information. The hitherto time-consuming process of searching through paper resources has been replaced by extremely fast, but only seemingly easy exploration of digital sources. The cost of accessing information has been minimised, but, at the same time, the cost of selecting and using it has increased disproportionately. Digital information space has provided problems and challenges on both the individual and the global scales. The digitisation of data has, on the one hand, enabled access (on an unprecedented scale) to powerful information resources, but, on the other hand, created a space for the emergence and experience of digital abuse and threats. In the context of the subject matter of the article, attention will be focused on problems concerning the reception and use of digital information. Due to the limited framework of the text, selected consequences of information overload will be presented, as well as some of the dangers of accessing fake information.

Social media have made it possible for any user of digital space to locate information on any topic in any format in that space, which has become the main impetus for an uncontrolled flood of information. The state of experiencing too much information is referred to as information overload in the course of which the amount of data and the rate of information stimuli received exceeds the individual's capacity to process and assimilate information (see Toffler, 2007). From the perspective of the functioning of the human mind, information overload undeniably affects the intellectual condition of the individual. The excessive amount of data causes cognitive confusion, as well as difficulties in finding the right information and evaluating it. The stream of content from the digital media space often exceeds the capacity of the human brain to process it. Maria Ledzińska uses the term "pathological imbalance" between "the amount of information provided and the ability of a sane mind to process it" (2005, p. 15). The bad influence of digital technologies on cognitive processes is recognised by Maggie Jackson who notes that such technologies create "a culture of social distraction, intellectual fragmentation, sensory separation. In it, we lose the ability to maintain attention and concentration" (2008, p. 8). According to Czesław Nosal (2012), contemporary digital media affecting human senses cause numerous difficulties in the mind-media relationship. Such difficulties include "decreased scope of simultaneity of processing, and a growing tendency to fragment information and knowledge; [...] difficulties in reducing and generalising information from different media; difficulties in assessing the accuracy of messages and their credibility" (Nosal, 2012, p. 37). M. Ledzińska (in a study on experiencing information stress) lists the following:

> [...] difficulties in focusing attention, difficulties in selecting information, difficulties in planning learning, difficulties in integrating current information with existing knowledge, difficulties in transforming information into knowledge, discomfort related to the feeling that knowledge is outdated, difficulties in assessing the state of one's own knowledge, difficulties in recalling needed information, difficulties in using information in everyday life (Ledzińska, 2005, p. 17).

In addition, for cognitively immature children, the visual attractiveness of information overrides its factual properties. The pursuit of simplified information search is also linked to the illusion of completeness indicated by Nosal, resulting from the tendency to treat digital media as the only source of complete information (2012, p. 38). Information overload should also be linked to disinformation and the influx of false information, which has been increasing in recent years. According to Claire Wardle and Hossein Derakhshan (2017, p. 20), they create the so-called information disorder within which different groups of false content can be distinguished, differing in the intention of their creator. They contribute to cognitive distress, difficulties in solving

information problems, disruption of information processing and effective judgment of reality along with decision-making.

Negative consequences for cognitive processes are also caused by the pattern of the construction of digital information. It is usually accompanied by a headline (*clickbait*) or a visual thumbnail to encourage people to click on the material. The title sometimes bears little relation to the content of the article itself; often no relation at all. In view of the developing reading competence of the youngest, it seems that contact with information disorder is most often made via hyperbolic headlines or eye-catching colourful images. Because of the emotions they arouse, they have the effect of fixing inadequate information in the memory. In addition to this, it is worth mentioning that the reception and comprehension of digital content in the form of a text (for which information literacy is required) are replaced, in the case of children, by the reception of graphic content, the analysis and verification of which also requires an appropriate level of visual competence (visual literacy) (Harrison, no date).

Children as users of digital media

It would seem that experiencing the problems of information overload affects older online users to a greater extent: teenagers or adults. Arguably, some parents have the belief that children use the web much less and for different purposes than older people, and are therefore less susceptible to experiencing information risks. However, this is wishful thinking, as digital technologies are becoming more and more accessible (lower device prices and access costs, simplified interface), which is reported in selected empirical studies.

The research conducted by NASK: "Teenagers 3.0" proves that, between the 2014 and 2018 editions of the survey, there has been a "reduction in the average age declared by respondents as the one at which they started using the web on their own" (Lange, 2021, p. 30). The report results show that one in three teenage respondents have been using the Internet independently for between 4 and 6 years, and one in five teenagers admit that they started using digital technologies around 9 to 10 years ago. Almost the same number of students declared that their experience in using the web is 7-8 years. Fifteen percent of the respondents estimate that they have been using the Internet for more than 11 years, and almost 5% admit that they have already been using digital media for 13 years (Lange, 2021, p. 30). Knowing that the oldest respondents were 17 years old, it can be inferred that they started using the web independently at the age of 6 or earlier. The study found that 20.5% of the teenage respondents already owned a mobile phone with internet access at a younger school

age, indicating the threat of uncontrolled and probably unlimited access to digital content (Lange, 2021, p. 33).

Other studies confirm the so-called paradigmatic shift noticed in connection with technological change and the dominance of touch devices. The intuitiveness of use makes the use of mobile digital devices completely natural for the youngest children, requiring no special technical competence (Kopciewicz and Bougsiaa, 2020, p. 60). Similar conclusions can be drawn from the research conducted by the Office of Electronic Communications: the average age of a child starting to use the Internet is 7-8 years (46.8%), slightly less often it is 5-6 years (27.6%). Furthermore, almost 59% of parents indicated that children install apps on their phone themselves and are users of social networking sites (38.2% children) (Office of Electronic Communications, 2021). The statistics cited above show that children already at a younger school age may be exposed to incomplete or false, manipulated information. This is all the more so because an easily accessible source of this highly problematic content is social media the users of which unfortunately include children.

To sum it up, information overload and the low level of content available in the Internet make the process of using information dependent on the possession of appropriately developed information competences. Particular care for their development should be shown with regard to the youngest, as it is children, due to their emerging cognitive abilities, who are most exposed to the dangers of information disorder.

Educational strategies for the development of children's media competence

Properly implemented media education becomes particularly important as soon as digital media are used in children's play and daily activities. Early initiation of media education is guaranteed to prevent media risks. The ability to critically evaluate the content children receive is only just beginning to develop at an early age, but already at this stage of development children are able to understand that digital media can be a source of harmful content. Researchers and experts in the field of media education indicate that media education classes can be successfully applied to preschool and early school-age children (Ogonowska, 2013; Penkowska, 2013; Borkowska and Polak, 2019; Ptaszek, 2019).

However, media education should not be equated with equipping students with purely technical competences that enable them to efficiently operate digital technology tools and applications. The content and objectives of such education should also address issues arising from universal access to digital technologies and information sources, and related to the development of the ability to critically analyse and

creatively use them. Media education should be interpreted as "the implementation of various types of activities planned and undertaken by the teacher, aimed at equipping students with media competence, understood in cultural rather than technological terms" (Łuc, 2018, p. 188). Among the components of media competence, UNESCO experts identify accessing, understanding and evaluating, and producing new information, media content or knowledge for a specific purpose in innovative, ethical and creative ways (UNESCO, 2013).

In the context of the topic of the article, information competences occupy a special position in the group of digital competences. They are assumed to be a set of "integrated skills involving reflective discovery of information, understanding how information is produced and valued, and the use of information in the creation of new knowledge and ethical participation in learning communities" (Association of College & Research Libraries, 2015, p. 8). These competencies include "the set of skills and abilities that everyone needs to undertake information-related tasks, such as, for example, searching, accessing, interpreting, analysing, managing, creating, storing or sharing information. It includes critical thinking and awareness, as well as understanding of both ethical and political issues related to the use of information" (CILIP, 2018, p. 4).

Experts working on the issue of digital competence formation highlight the weaknesses of the current model of educational practice. A discrepancy is noted between uncontrolled activity of children and young people in the digital space and the slow pace of introducing relevant systemic solutions in education, pedeutology or science and research (Media Pedagogy Team, no date). Deficiencies are noted in "the area of critical understanding of the media environment, cultural, economic and technological factors influencing media use, critical understanding of the rules governing the world of the new media, using them for self-expression, paying attention [...] to the urgent need to develop critical thinking skills" (Pacewicz and Ptaszek, 2019, p. 5).

The suggestion for the development of students' information literacy should take into account the classic triad of the educational process: goals – content – methods, selected according to the assumptions of broadly understood media education, implemented with the support of a teacher with high digital competence.

According to Piotr Drzewiecki, "the educational ideal is the virtue of media wisdom: the practice of discernment and making good media choices" (2010, p. 66). This general goal of media education is an important starting point for the operationalisation of didactic objectives aimed at shaping knowledge, skills and attitudes related to the safe use of digital technologies. The indicated aim of media education avoids the misconception that technology is effective and useful in itself. Of course, it may have a creative potential, but its use is determined by the way technological tools are used and the social relationships constructed around it (Buckingham, 2008, p. 168).

The current core curriculum for early childhood education includes recommendations to prepare students to make conscious choices when using resources available online, to critically analyse information, and to navigate safely in digital space (Regulation..., 2017). In my opinion, this content is insufficiently exposed and, more importantly, it has not been included in the mainstream of IT education. The content of IT education is a set of specific objectives in the core curriculum that mainly deal with technical media skills. This blurs the key idea of implementing media education, i. e. equipping students with media competence in cultural terms. Media education objectives and content perceived in this way fit in with the idea of media education 3.0, discussed by Grzegorz Ptaszek. In his opinion, such education should

> [...] focus, on the one hand, on investigating the practices, activities, and motivations of digital media users related to phenomena such as digital data, online disinformation and propaganda, and the distribution of false information [...] and, on the other hand, on suggesting specific educational activities related to the training of competences aimed at a critical understanding of these phenomena (Ptaszek, 2019, p. 164).

As interpreted by the National Association for Media Literacy Education (NAMLE), media literacy consists of the following categories: Access, Analyse, Evaluation, Create, and Act (NAMLE, no date). These competences can be one important criterion for the selection of educational content in the media education process, so that the student can develop the skills to access, analyse, evaluate, create and act, using all forms of media.

An important component of the effective implementation of media education includes the methods of education among which student activation methods occupy a special place. They make learning dominate over teaching, and thus children are stimulated to think and act independently. An important premise is the selection of practical methods in such a way that pupils, thanks to skilfully organised exercises, have the opportunity to search for information in diverse sources, evaluate it, interpret and use it creatively. Such actions should shape pupils' critical thinking, as well as abilities to select and verify digital content. Methods understood in this way can be used to help develop critical thinking by, among other things, identifying reliable sources of information or questioning stereotypical plots. In the discussion on teaching methods, it is important to change the educational philosophy: from transmission didactics to problem-based learning strategies. Innovative learning environments are characterised by a good balance between student self-discovery and appropriately selected teacher instruction and guidance, while taking into account individual differences in students' abilities, needs and motivation (Schleicher, 2012, p. 45). The use of inadequate learning strategies in the context of contemporary technological and

cultural change is, according to Dorota Klus-Stańska, the result of "mental inertia" (2012, p. 36). This tendency is particularly visible in the area of media education, especially since the didactic process concerns students for whom digital space is the natural environment of activity. The observation of the school educational reality proves that there is a serious cultural and moral gap between the system of formal media education and the extracurricular activity of children and young people (Ogonowska, 2015). This is also evidenced by the research conducted by Lucyna Kopciewicz and Hussein Bougsiaa on the topic of undertaking technological practices related to the formation of 21ˢᵗ century skills. The findings show that in the analysed schools (also at the early childhood education stage), the development of digital competences is not among the priority tasks, and the teaching of 21ˢᵗ century skills is reduced to incidental activities. "Mobile technologies, irrespective of the model of their integration, are subordinated to the defined goals of the school, not to the cultural goals (in the scope of digital culture)" (Kopciewicz i Bougsiaa, 2020, p. 218).

Conclusion

Children of younger school age are not only exposed to digital content aimed directly at their developmental level, but they also encounter many other media messages "by the way", "by accident", on the sidelines of other activities: both their own and those of adults. The effect of their use of digital content will depend on their media literacy: on the one hand, it may lead them to maximise the benefits of exploring the information space; on the other hand, it may make them exposed to multiple risks. This dichotomy is evoked by Paul Levinson's theory of soft technological determinism (2006, p. 24), an understanding of which outlines the important educational tasks facing teachers of the youngest digital media users: "to make technologies comprehensible so that they become a source of deep and complex process of learning; a tool for critical reading of cultural content" (Parmigiani, 2019, p. 3). Interpreted in this way, the objectives of media education open up the possibility of exploiting the benefits offered by digital technologies, thus fostering the idea of a balanced relationship between people and technology in all spheres of life.

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