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Impact of ICT – chaos and information "confusion" in the view of students and teachers

Abstract

The article presents a fragment of the diagnostic-correlation research of a mixed character, defining ICT competencies of students as far as using ICT methods and tools is concerned. It seeks an answer to the question on the consequences of using ICT by children and adolescents (significance level of new media impact) in the area of chaos and information "confusion". A diagnostic survey (a questionnaire and an interview) and statistical methods (a chi-square test and Pearson correlation coefficient) were used. 2510 students and 1110 teachers were researched. It was found out that: 1) according to the aggregated order of importance regarding ICT impact, the information "confusion" category was given the least importance by the students (the fifth place), and small importance by the teachers (the fourth place); 2) there is a correlation (correlation weak, positive – r ≅ 0,29) between the students' opinions and the teachers' views concerning the impact of using ICT by children and adolescents leading to growing information chaos and confusion (overload and interference with information handling); 3) the calculations of differentiators showed significant statistical differences between the impact of ICT on children and adolescents leading to chaos and information "confusion" and their educational stage and place of learning; 4) there is a noticeable similarity between the students' and the teachers' views – "separating" the world of children and adolescents ("Us") from the world of teachers ("Them") is of little significance.

Keywords: media pedagogy, diagnostic-correlation research, opinion correlation, ICT competencies, ICT use, chaos and information "confusion".

Introduction

Nowadays, no matter what kind of activity we take, it is likely to be based on ICT (Information and Communication Technology) methods and tools, treated as key technologies of modern civilization, which the time of the COVID-19 pandemic let us see clearly (Bailenson, 2020; Doucet et al., 2020; D'Souza, 2020; Murphy, 2020). The reality of the digital era keeps posing higher and higher challenges to students and teachers, who are supposed to improve particular areas of ICT competencies (Van Deursn, Van Dijk, 2014, pp. 43-62), defining the directions of their development and undertaken school tasks and extracurricular activities. That is why the main aim of the research regarded ICT competencies of students and teachers as far as using ICT in the context of new technological trends and accompanying civilisation changes is concerned. The study made an attempt to define the range of knowledge, comprehension, activities and attitudes of children and adolescents displayed in their approach towards new ICT trends. Apart from the students' opinions, the teachers views were also interesting, especially on the areas and consequences of using ICT by the young generation. As for the impact of modern technology (the "fruit" of new media), among all, chaos and information "confusion" were taken into account – how a human being functions in the condition of constant information overload (Tessier, 2020, pp. 18-35). This state, triggered by a constant inability to process all the received information, leads to information chaos manifested by "brain overload" (Bawden, Robinson, 2009, pp. 180-191; Matthews, Campbell, 2009, pp. 417-442;), e.g. growing attention and memory deficits, having a negative impact on handling information and productivity (effectiveness) of learning[1] (see: Attali, 2008; Kurzweil, 2005). The ability to handle information (manifested in action, in the process of searching, ordering, selecting, storing, creating, evaluating, giving access to and removing information), especially as a result of deliberate actions driven by intrinsic motivation, constitutes the foundation of knowledge construction – the process of learning and developing cognitive interests. It is an activity that conditions one's existence in the information society – society of "knowledge creators", where knowledge becomes a process, and learning is an integral part of creation, a new form of social functioning (Furmanek, 2013, pp. 176-177, 297; Okoń, 2007, p. 460; Włodarski, 1996, pp. 25, 34-35; Zimbardo, Gerig, 2012, p. 468).

There arise questions whether and to what extent ICT tools used in practice cause chaos and information "confusion" among children and adolescents. The comparison of data obtained from the students with the teachers' views (expressed by the degree of dependence, correlation of opinion) let us pay attention to differences and similarities in the area of needs and expectations of education subjects. These findings are significant for understanding the process of teaching-learning,

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[1] In general approach, evolutionary discrepancies of developmental mechanisms are explained mainly by the fact that cognitive capabilities of the human mind (brain) do not grow as fast as the amount of information provided by technical devices and technology.

especially in the context of an ever-existing generational conflict (see: Protzko, Schooler, 2019).

Research assumptions

The theoretical foundation is defined by: 1) concepts of critical pedagogy, assuming "constant opposition to the obvious", visions and aims open to social dialogue; 2) the postmodernist approach taking into account ambiguous emancipation – "ambiguous modernity" and "liquid modernity"; 3) emphasis on self-education, self-realisation, self- determination and open education (Bauman, 2015; Melosik, Szkudlarek, 2010); 4) the proposal of shaping and developing ICT competencies, discerning the foundations of teaching and learning in the constructivist theory (with special focus on the social-cultural perspective), pointing to one of the ways of thinking about knowledge development – learning about ICT methods and tools via ICT (Henson, 2015); 5) positive visions of the future, where media and technologies can be effectively used to support learning and healthy development (Berdik, 2020); 6) conditions for processing (recognizing, coding, segregating and finding) information in cognitive development (Birch, 2012, pp. 71-123; Meadows, 1997, pp. 37-59). Trying to learn about practice, the authors aimed at showing educational reality confronting contemporarily dominating scientific theories drawing an image of "a new student" who exists and realizes their potential in the internet cyberspace, in the world of the latest new media" (Levinson, 2013), providing multisensual communication and multisensual learning – an "online" student who has unlimited possibilities of using new areas of e-education. It was assumed that our developmental path is shaped by a cultural imperative of participating in creating and negotiating symbols, values, meanings, where the student's main partner is technology, machine, tool (Gabriel, Röhrs, 2017). It was assumed that we can talk about success of teaching when a given student feels accepted and is aware of the fact that their problems are noticed and understood. While their mind "opens up", there is an opportunity to use their potential which they came to school with to the full (Rasfeld, Breidenbach, 2014, pp. 109-115). At the conceptual stage of the project, it was assumed that its activity would focus on diagnostic-correlation studies (Ferguson, Takane, 2016, pp. 33, 233-254) of a mixed type (quantitative-qualitative) (Urbaniak-Zając, 2018, p. 122; Dróżka, 2010, p. 125), rooted mainly in media pedagogy. Two techniques were used: a questionnaire (Babbie, 2016, pp. 247, 255-264) and an open interview (Frankfort-Nachmias et al., 2015, pp. 240-265). Apart from quantitative studies, the research also implemented activities and techniques combining the elements of analysis and quantitative explanation with the quantitative one. Triangulation created an opportunity to conduct a more profound study and adopt an approach (on the border of education, technology and ICT) from two different points of view (Furmanek, 2016, pp. 21, 28). Statistical calculations with the use of the chi-square test (Wieczorkowska-Nejtardt, 2003, pp. 270-284) and Pearson correlation

coefficient (King, Minium, 2020, pp. 165-181) made it possible to define the relation between the students' ICT competencies as far as using ICT is concerned, the students' opinions and the teachers' views, and define factors differentiating the phenomenon class under research.

The research (questionnaire) covering the teachers realizing curricula for various subjects and the students learning at particular educational stages,[2] was conducted in selected educational institutions in the province of Lubusz and neighbouring provinces. The research sample consisted of 2510 students and 1110 teachers. 40 students attending schools in Zielona Góra and neighbouring places were interviewed (10 students from each educational institution of an appropriate educational stage were chosen).

One of more detailed questions concerned the effects of using ICT, which made it possible to define more precisely a vast area of new media impact. Five main areas of influence were singled out, mentioning the following impact (effects): 1) improved reflexes and manual coordination; 2) developing creativity and cooperation skills; 3) improved pace of searching, selecting and evaluating information; 4) improved powers of concentration and ignoring distracting stimuli; 5) creating chaos and information "confusion". The results presented in the article – concerning the fifth area of influence, directed towards the processes distracting information handling – seek the answer to the question: to what extent (in the students' and the teachers' opinion) does using ICT tools in practice cause chaos and information "confusion"? With regard to the relational issue, the research unveiled the link between the students' and the teachers' opinions and the factors differentiating their views on that matter.

Research results – interpretation and discussion

2456 (97.8%) students and 1061 (95.6%) teachers answered a closed question on what ICT offers to children and adolescents (as far as effects are concerned). For this group, the frequency distribution of effects of ICT use by children and adolescents referring to particular (abovementioned) areas of influence, was calculated and illustrated, presenting in this way how important they are for the research participants. In this area, an attempt was made to determine the students' and the teachers' opinions concerning whether and to what extent used ICT tools are the cause of chaos and information "confusion" among children and adolescents. The results are presented in Table 1.

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[2]   The stages of education in Poland at the time of the research: 1) integrated education (ages 7-10; one teacher running alone all the subjects); 2) primary school (ages 11-13); 3) junior high school (Pol. gimnazjum, ages 14-16); 4) high school (ages 17-20).

Table 1
The frequency distribution of using ICT by children and adolescents – causing chaos and information "confusion" (*in the students' and the teachers' opinion*) [*quantity distribution in numerical and percentage values*]

Using ICT leads to chaos and information "confusion"		Level of importance (hierarchy of importance attributed to influence)						Total
		0 (lack)	1 (the most important)	2	3	4	5 (the least important)	
The students' opinions								
nominal figures	N	352	196	103	124	194	1487	2456
	%	14.3%	8.0%	4.2%	5.0%	7.9%	60.5%	100.0%
weighted figures	N	0	196	82	74	78	297	728
	%	0.0%	26.9%	11.3%	10.2%	10.7%	40.9%	100.0%
The teachers' opinions								
nominal figures	N	454	198	87	66	33	223	1061
	%	42.8%	18.7%	8.2%	6.2%	3.1%	21.0%	100.0%
weighted figures	N	0	198	70	40	13	45	365
	%	0.0%	54.2%	19.1%	10.8%	3.6%	12.2%	100.0%

[*] In the calculations and interpretations performed, due to the fact that the scale is linear and five-band (0 – 5), the numbers obtained at a given level were attributed the following weights: level 0 = weight 0, etc.; 5 = 0,2; 4 = 0,4; 3 = 0,6; 2 = 0,8; 1 = 1,0.

Source: own research.

The students' opinions

The frequency distribution of the effects of using ICT by children and adolescents, regarding the sources of chaos and information "confusion" is quite irregular, with similar and low nominal figures located at particular (except the fifth one) levels of importance. It is this one, the last (fifth) level that stands out in figure distribution as far as the students' self-assessment is concerned. Most of the children and adolescents (as many as 60.5%) put information "confusion" resulting from ICT use at the last place. This choice supported by so many voices determined the students' general point of view concerning the extent to which ICT tools influence this analysed area. In fact, the students believe that using new media by them is **the least important** factor as far as causing chaos and information "confusion" is concerned. The rest of the research participants (39.5%) pointed to a higher or zero level of importance. Among them, the most numerous group, i.e. 352 (14.3%) students did not attribute any weight to this category (level zero). In their opinion, the common practice of using digital instruments has no impact on emerging chaos and information "confusion". Furthermore, comparable figures can be found at level one and

four (8.0% and 7.9% respectively). It means more or less that every twelfth student discerns ICT use as having the most significant (the biggest) impact on growing chaos and information "confusion", or slight (little) influence on creating information "confusion" and chaos. Only 124 (5.0%) students (level three) point to significant effects of new technology's impact and significant (big) growth of information "confusion". And slightly fewer of them, i.e. 102 (4.2%) pointed to the second level of importance thus claiming that using new media leads to very significant changes and contributes, to a large extent, to growing chaos and information "confusion".

In conclusion we can state that the students, putting the aforesaid category at the fifth place, existing in the ICT world, fear chaos and information "confusion" the least. They claim that using new media causes to the smallest extent growing chaos and information "confusion". The students believe that cyberspace providing them with too much information has the smallest significant impact on interference with information handling and, what follows, on the process of understanding and integrating it with already existing knowledge.

In order to gain a broader perspective on using ICT by children and adolescents, the emphasis was put on factors differentiating the researched phenomenon. The following variables were listed: the children's and adolescents' sex, type of educational institution (educational stage) and learning place (environment). The statistical analysis made it possible to answer the question whether the aforesaid variables significantly differentiate the researched class of phenomena. The results are presented in Table 2.

Table 2
Effects of using ICT tools by children and adolescents: chaos and information "confusion" – in the light of differentiating factors (*in the students' opinion*)

TEST.CHI. results. Effects of using ICT tools by children and adolescents: chaos and information "confusion"		
Differentiating factors (the students' sociometric data)		
Sex	Type of educational institution (educational stage)	Learning place (environment)
$\chi^2 = 4.03 < \chi^2_{(\alpha=0.01; df=5)} = 15.09$ p = 0.544584566 No grounds to reject H_0	$\chi^2 = 78.63 > \chi^2_{(\alpha=0.01; df=15)} = 30.58$ p = 1.24472E-10 **H_0 rejected**	$\chi^2 = 65.35 > \chi^2_{(\alpha=0.01; df=20)} = 37.57$ p = 1.02561E-06 **H_0 rejected**

Source: own research.

The calculations showed statistically relevant differences in two cases – between effects of ICT impact on children and adolescents as far as creating chaos and information "confusion" was concerned and one's educational stage; their learning place. The detailed number distributions[3] show that:

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3   Due to the limits of the text's length, they are not presented in this article.

(1) The distribution of numbers illustrating the hierarchy of importance regarding ICT impact (effect: chaos and information „confusion" – according to one's educational stage) is irregular, and the results obtained demonstrate a high level of differentiation. Marginal results and evaluation at extreme educational stages can be noticed. The oldest students that operate in cyberspace fear chaos and information "confusion" the most (in comparison to the younger respondents). On the other hand, the youngest children claim that using new media gives them to the smallest extent the growth of chaos and information "confusion". At the zero level of this category (no ICT impact) the children of preparatory education constitute the largest group (27.4%), almost twice the size of the average value of this level (equaling 14.3%). It may also prove lack of awareness concerning digital threats among the youngest students.

(2) The frequency distribution of the results of using ICT by children and adolescents (effect: chaos and information „confusion" – according to one's learning place) characterized by an irregular sequence primarily demonstrates the views of students coming from small and medium-sized towns (10-100 thousands of inhabitants). These students, attributing higher weights to this area of digital tool impact, see more threat (than the others) in the shape of chaos and information „confusion". On the other hand, the research participants from the biggest and the smallest places (from the countryside and places above 100 thousand inhabitants) are less afraid of these consequences. They believe that cyberspace providing them with too much information has the least significant impact on interference with information handling. For example, the percentage distribution of the first (highest) level of importance (whose average is 8.0%) proceeds as follows: 6.1% - the countryside; 7.7% - a small town (up to 10 thousand inhabitants); 10.5% - a small city (10-25 thousand inhabitants); 10.4% - a medium-sized city (25-100 thousand inhabitants); 6.8% - a city of more than 100 thousand inhabitants.

The teachers' views

In the teachers' view, the common practice of children and adolescents operating in cyberspace is of **little significance** as far as creating chaos and information "confusion" is concerned. It derives from the analysis of the distribution of occurrence frequency (in the aforesaid area of causing chaos and information "confusion"), irregular in nature, which is demonstrated by both nominal and weighted figures. The emerging image's most characteristic feature is level zero significantly outnumbering other levels. It represents these respondents who did not mark this category at all, thus attributing zero weight to it. The data shows that as many as 454 (42.8%) respondents behaved in this way. These teachers declare that ICT tools used by children and adolescents do not have much impact on them and are not the source of chaos and information "confusion". It is significant that the distribution in question distinguishes two extreme significance levels: the first (the most im-

portant) one and the fifth (the least important) one – showing the biggest and comparable nominal figures (18.7% and 21.0% respectively). Due to their extreme positions occupied in the hierarchy of significance, one can certainly notice significant differences in calculated weighted figures (54.2% and 12.2% respectively). The general result established for this category (weight of little significance for the impact of the activity) results from the specificity of the aforesaid distribution. As for the first and the fifth level of significance, it can be stated that more or less every fifth teacher regards the use of ICT tools by students as either the most significant (the biggest) or the least significant (the smallest) contribution to growing chaos and information "confusion". The remaining, middle levels of significance (the second, third and fourth) recorded lower figures, with a clear downward trend. Thus, 87 (8.2%) teachers, attributing a very big weight, claim that there is profound impact of new media on growing information chaos among students. Next, 66 (6.2%) respondents, pointing to a big weight, talk about significant impact of ICT, creating information chaos among children and adolescents. Only 33 (3.1%) respondents point to little significance of using ICT as far as its impact on growing information chaos is concerned.

The results presented let us state that the teachers attributed little significance to the category of chaos and information "confusion" resulting from using ICT by children and adolescents. The teachers believe that using digital tools offered by the virtual world has little impact on their charges and does not disturb rational information handling (acquiring, selecting, gathering, processing information). They are of an opinion that media and cyberspace impact students' cognitive sphere to a little extent, implying a decline in productivity (effectiveness) of the learning process.

Table 3
Effects of using ICT tools by children and adolescents: chaos and information "confusion" – in the light of differentiating factors (*in the teachers' opinion*)

TEST.CHI results. Effects of using ICT tools by children and adolescents: chaos and information "confusion"			
Differentiating factors (the teachers' sociometric data)			
Sex	Type of educational institution (educational stage)	Workplace (environment)	Professional position
$\chi^2 = 4.41 < \chi^2_{(\alpha=0.01; df=5)} = 15.09$ p = 0.492534594 No grounds to reject H_0	$\chi^2 = 12.10 < \chi^2_{(\alpha=0.01; df=15)} = 30.58$ p = 0.671309999 No grounds to reject H_0	$\chi^2 = 18.54 < \chi^2_{(\alpha=0.01; df=20)} = 37.57$ p = 0.552168701 No grounds to reject H_0	$\chi^2 = 12.36 < \chi^2_{(\alpha=0.01; df=15)} = 30.58$ p = 0.651424271 No grounds to reject H_0

Source: own research.

While analysing the teachers' views, the emphasis was put on the factors differentiating the researched phenomenon. The following variables were listed: sex, type of educational institution, teachers' workplace and professional position. The differentiating variables were analysed statistically, like in the case of the students. The test results are presented in Table 3. The calculations did not show significant statistical differences.

Correlation between the students' and the teachers' opinions

In order to better illustrate the hierarchy of significance referring to the impact of new technology, the results from five analysed areas were put together. The data concerning the effects of ICT practical use by children and adolescents was captured globally. Overall, as far as the hierarchy of significance is concerned, the students put the change category of "chaos and information 'confusion'" on the fifth, last place (with a weighed value – 728, and zero weight – 352), classifying it as the least significant effects of using ICT. The teachers attributed the fourth place to it (with a weighed value – 365, and zero weigh – 454), stating that pragmatic implementation of the latest technology by children and adolescents has little impact leading to chaos and information "confusion". Therefore, both the students and the teachers do not emphasise this area of media influence and attach little importance to ICT as tools disturbing rational handling of information coming from various sources – not seeing any threat or undesirable influence on the development of ICT competencies demonstrated in the pace of searching, selecting and evaluating information, which consequently has a big impact on understanding, processing and integrating it with already existing knowledge (see: Birch, 2012, pp. 117-123; Meadows, 1997, pp. 42-44).

The analysis of gathered empirical material and its results pointed to the possibility of a link between the variables under research, i.e. between the students' and the teachers' opinions regarding the effects of ICT impact on the area of chaos and information "confusion" concerning children and adolescents. In order to find this connection constituting a methodological assumption of a general nature in the light of the formed relational research problems, statistical methods were used as well. To calculate the strength of the relation between the two studied (co-occurring) variables, the coefficient of determination (r^2) and Pearson correlation coefficient (r) were employed (Ferguson, Takane, 2016, pp. 142-143).

According to the calculated values of these coefficients, the strength of the relation between and students' and the teachers' opinions concerning the effects of using ICT by children and adolescents resulting in chaos and information "confusion" is expressed by:
1) the coefficient of determination $r^2 = 0.082755189$;
2) Pearson correlation coefficient r = 0.287672017.

The calculated Pearson correlation coefficient was positive, pointing to a growing regression line, thus the correlation is positive and demonstrates one-directional

changes in both variables under study (Pilch, Bauman, 2010, p. 133). It means that the higher the values of the students' self-assessment (higher levels of significance given by children and adolescents), the higher the teachers' evaluation marks (higher levels in the hierarchy of importance given by the teachers). It should be emphasised that in the research (of a review type) the data obtained to calculate the correlation let us only detect the co-occurrence of the variables' values. These values can co-occur despite the fact that one does not derive from another (King, Minium, 2020, pp. 186-188).
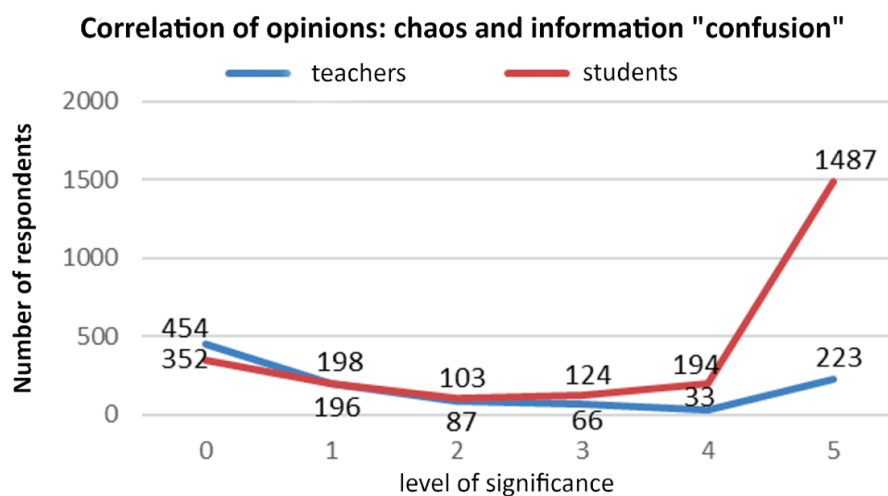

Fig. 1
The correlation between the students' and the teachers' opinions concerning the effects of using ICT by children and adolescents resulting in chaos and information "confusion"

Source: own research.

Interpreting (determining the strength of the relationship) the obtained value of Pearson correlation coefficient (about r = 0.29), it can be stated that the correlation between the students' and the teachers' opinions is "low" (Guilford, 1964, p. 157) or "weak" (Góralski, 1987, p. 38). Therefore, such a name – low/ weak correlation, positive correlation – can be given to the studied correlation calculated for the established levels of significance (the hierarchy of importance) concerning the impact of ICT of the analysed category (illustrated by similar opinions of the students and the teachers). Figure 1 showing chaos and information "confusion" as a result of ICT impact, demonstrated in interference with information handling, makes us see that the course of variables for the students and the teachers is very similar for particular levels of significance. The biggest divergence in the course of variables occurs for extreme values – level 0 (without impact) and level 5 (the smallest impact). As for the remaining levels (1-4) representing the hierarchy of ICT impact re-

sulting in interference with information handling, the courses are almost identical (the lines partially overlap).

Referring to the research problem and its outcomes, it is worth emphasizing that a sudden increase in the amount of data (Ransbotham et al., 2016, p. 6) generated by cyberspace makes contemporary students constantly bombarded with information of various nature and worth. They are the target (explicit or more or less implicit) of applications promoting anti-values, programmes evoking primitive instincts and pandering to common tastes. It results in chaos and information "confusion", impacting, not necessarily in the desirable direction, children and adolescents' cognitive and emotional sphere. It is more and more difficult to build a non-distorted and coherent image of reality (Szmyd, 2015, p. 357). That is why it is so crucial to educate about the media and by the media – common media literacy requiring complementary measures in the form of preventive educational, therapeutic and re-educational programmes (Tanaś, Siemieniecki, 2021, pp. 125-140; Tanaś, 2017, p. 47). In this educational area, the following are the most important: 1) the ability of choosing selectively from this immeasurably rich and varied media offer; 2) the ability of critical and active reception of the media; 3) knowledge about basic theories of media impact and played educational roles (Gajda, 2007, pp. 103-104). Rational information processing in the environment of its overload and technological acceleration requires a high level of information culture from all information users (Batorowska, 2017, p. 190). Thus, a high level of ICT and media competence demonstrated by the students constitutes the best protection against numerous threats that using ICT tools brings, including chaos and information "confusion".

It is worth emphasizing that the educational guidelines (*Curriculum basis*…) regarding the development of skills concerning information handling do not particularly stress the process of its evaluation. It must be remembered that evaluating information, i.e. subjecting it to assessment, has a measurable impact on decision making (Dukiewicz, Spustek, 2016, pp 49-60). In chaos and information "confusion" (Baron-Polańczyk, 2018, pp. 72-88, 311-317) contemporary students face multiple difficulties, e.g. distinguishing between truth and falsehood, between important, useful information and irrelevant, detrimental content. Fake news spreads much faster, further and deeper than real stories. Truth is "boring" and inappropriate content (immoral, pathological, propagating socially harmful ideas) is more easily accessible and more willingly acquired (Dizikes, 2018; Vosoughi et al., 2018). That is why evaluating (assessing) acquired data/ information constitutes an important element in efficient, rational and safe information handling. It is a desirable ability developed in the process of education, protecting against manipulation and negative impact on taken decisions – creating a conscious and responsible approach towards new technologies.

Conclusion

The conducted environmental studies on educational applications of ICT might allow for discerning certain tendencies, but it is not possible to make generalizations based on them. The conclusions deriving from the research conducted with the help of chosen methods and techniques refer to the research sample. The analysis of professional literature and collected empirical material (concerning 2456 students and 1061 teachers) let us make the following conclusions:

(1) Based on the distribution of the occurrence frequency of effects of using ICT by children and adolescents, in five areas of ICT impact, taking into account the students' and the teachers' choices, an aggregated hierarchy of importance was created, according to which the category of chaos and information "confusion":
  — was attributed the lowest weight (the fifth place) by the students. Generally speaking, we can say that the effects of using new media in the form of chaos and information "confusion" are least important for children and adolescents (weighed value – 728). It is clearly shown by the highest score in the distribution of frequency (nominal value of 60.5%), placed at the lowest, fifth level of significance. Students, putting the aforesaid category at the last (fifth) place, operating in the ICT world, are least afraid of generating chaos and information "confusion", and what follows, referring to the category put at the first place, interference with information handling;
  — was attributed a small weight (the fourth place) by the teachers. Information overload and interference with information handling were regarded by the teachers as an insignificant effect of the young generation's activity in the media, and in their general assessment put at the fourth place (weighed value – 365). Such an outcome is also confirmed by the result of zero weight indicated by an even bigger number of people (454) who did not mark this area of ICT influence at all. These teachers claim that ICT tools used by children and adolescents do not have any significant impact on them and do not constitute the source of creating information "confusion" and chaos. Therefore, in a general perspective, the teachers claim that media and cyberspace to a small extent generate interference with information handling (implying a decrease in the ability of information obtaining, selecting, collecting and processing).

(2) The correlation between the students' and the teachers' opinions concerning the effects of using ICT by children and adolescents, leading to chaos and information "confusion", is weak ($r \cong 0.29$); the correlation is positive and shows one-directional changes in both researched variables;

(3) Among many analysed differentiating factors, the calculations showed relevant statistical differences only in two cases – between the effects if ICT impact in children and adolescents as far as creating chaos and information "confusion"

was concerned and the students' educational stage as well as their learning place. It was agreed that:

— the distribution of numbers referring to the type of an educational institution (the students' educational stage) makes it possible to discern an irregularity – the oldest students (adolescents aged 17-20), existing in cyberspace, are (in comparison with the others) most afraid of chaos and information "confusion". On the other hand, the youngest children believe that using new media contributes to the smallest extent to growing chaos and information "confusion";

— the image of results pertaining to particular areas and the distribution of numbers referring to one's learning place (its size) makes it possible to discern an irregularity – the students from small and medium-sized towns (10-100 thousand inhabitants) see more threat (than the others) in the form of chaos and information "confusion". On the other hand, the research participants from the biggest and the smallest places (from the countryside and cities with more than 100 thousand inhabitants) are less afraid of the impact of ICT use leading to overloading and information "confusion".

The research (establishing the correlation) points to the overlapping opinions of the students and the teachers concerning the range of ICT impact on creating chaos and information "confusion". It showed similar views on that matter (which is demonstrated by the positive, low-degree correlation) and uncovered a slight "separation" of the both worlds, i.e. "Us" – the children and adolescents, and "Them" – the teachers, which is particularly important in the context of identifying one's students' needs and understanding the reasons why they undertake actions in favour of using new media in their everyday life (Baron-Polańczyk, 2019). Taking into account the empirical evidence regarding the students' and teachers' similar opinions and educational guidelines pertaining to the idea of constructivism, as well as conclusions about teaching practice deriving from it, it can be hoped that the researched teachers are "constructivist" enough for the ICT era. Similar views of the charges of school education took on a special meaning at the times of the coronavirus pandemic (Donoso et al., 2020; Ptaszek et al., 2020) when the educational process depended on the efficacy of implementing online teaching tools, demonstrating ICT competencies determining the process of learning (knowledge construction). At the same time, the very same process was distorted by the designators of chaos and information "confusion".

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Skutki oddziaływania ICT – chaos i "zagubienie" informacyjne w opinii uczniów i nauczycieli

Streszczenie

Artykuł przedstawia fragment badań, diagnostyczno-korelacyjnych o charakterze mieszanym, ustalających kompetencje informacyjne uczniów w zakresie wykorzystywania metod i narzędzi ICT. Poszukuje odpowiedzi na pytanie określające skutki stosowania ICT przez dzieci i młodzież (poziom istotności oddziaływań nowych mediów) w sferze chaosu i "zagubienia" informacyjnego. Zastosowano metodę sondażu diagnostycznego (ankietę i wywiad) oraz metody statystyczne (test niezależności chi-kwadrat i współczynnik korelacji Pearsona). Zbadano 2510 uczniów i 1110 nauczycieli. Ustalono, że: 1) według zagregowanej hierarchii ważności oddziaływań ICT, kategorii "zagubienie" informacyjne uczniowie nadali najmniejszą wagę (miejsce piąte), a nauczycie małą wagę (miejsce czwarte); 2) istnieje związek (korelacja: słaba, dodatnia, pozytywna – r $\cong$ 0,29) pomiędzy opinią uczniów a spostrzeżeniami nauczycieli, co do skutków korzystania przez dzieci i młodzież z ICT przejawiających się wzrostem informacyjnego nieładu i zamętu (przeciążeniami i zakłóceniami w operowaniu informacją); 3) obliczenia czynników różnicujących wykazały istotne różnice statystyczne pomiędzy skutkami oddziaływań ICT na dzieci i młodzież w zakresie powodowania chaosu i "zagubienia" informacyjnego a: etapem kształcenia i miejscem nauki uczniów; 4) zauważalne jest podobieństwo między opinią uczniów a nauczycieli – mało istotne "odseparowanie" świata dzieci i młodzieży ("My") od świata nauczycieli ("Oni").

Słowa kluczowe: pedagogika medialna, badania diagnostyczno-korelacyjne, korelacja opinii, kompetencje informacyjne, wykorzystywanie ICT, chaos i "zagubienie" informacyjne.