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Reasons for the Use of ICT by Children and Teenagers in Daily Practice – Differentiating Factors

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Abstract

The article presents a fragment of diagnostic-correlational studies of a quantitative-qualitative nature, establishing pupils' information competence in the use of ICT in the context of technological trends and accompanying civilisational changes. The research seeks answers to the question why children and teenagers use ICT tools in everyday practice. A diagnostic survey method (questionnaire and interview) and statistical methods were used. 2510 pupils were surveyed, and it was established that: 1) pupils' numerous indications, obtained through open-ended questions, allowed for distinguishing eight important categories – reasons for using new technologies; 2) main reasons for using ICT lie in activities oriented at handling information (18.5%) and activities involving communication, also through social media (16.7%); 3) calculations of differentiating factors revealed statistical differences in three cases, namely between the opinion on reasons for using ICT by children and teenagers and: gender, stage of education, place of education. The treatment of children and teenagers as important stakeholders of the educational process helps improve it through selection of methods and tools adequate to pupils' needs, expectations and cognitive preferences.

Keywords: *media pedagogy, reasons for the use of ICT methods and tools, diagnostic-correlative studies, differentiating factors*

Introduction

Almost all forms of activities undertaken today are supported by ICT (Information and Communication Technology) methods and tools, treated as key technologies of modern civilisation. The reality of the digital era forces pupils and teachers to face ever higher expectations oriented at shaping particular information competences (Van Deursn, Van Dijk, 2014: 43–62), guiding their development and the choice of school and extracurricular activities. It is important that the activities undertaken by children and teenagers via digital tools bring constructive benefits in the individual and social dimensions (Livingstone et al., 2018). This is a key task for education. Teaching success is achieved when a pupil feels accepted and is aware that his/her problems are noticed and understood. Then, the pupil's mind 'opens' – a way appears to fully use the potential she/he came to school with (Rasfeld, Breidenbach 2014: 109–115, 195). Thus, the following question is important for educational practice: What are the reasons for which students use ICT tools in their daily practice? Identifying these reasons is important for the process of designing and constructing learning environments that conform with young learners' needs and expectations. One can speak then about 'following' the pupil – a targeted understanding of their needs and possibilities and fulfilling the role of 'protector' against the undesirable impact of the media world (Spitzer, 2015: 359; Guerrero et al., 2019: 105; Twenge et al., 2019: 185–199).

Methodology of Research

The theoretical stance is determined by: 1) concepts of critical pedagogy, assuming 'the constant resistance against the obvious, visions and goals open to social dialogue'; 2) the postmodernist approach, encompassing the ambiguous emancipation – 'ambiguous modernity' and 'liquid modernity'; 3) indications of self-education, self-realisation, self-determination and open education (Bauman, 2015); 4) proposals for forming and developing information competences, recognising the foundations of teaching and learning in the constructivist theory (with emphasis on the socio-cultural perspective), indicating one of the ways of thinking about knowledge formation – learning about ICT methods and tools through ICT (Henson, 2015); 5) the positive visions of a future in which media and technologies can be effectively used to support learning and healthy development (Berdik, 2020); 6) motivational factors for effective ICT-supported learning (Franken, 2006; Zimbardo et al. 2016). Trying to understand practice, the author endeavoured to

confront educational reality with the contemporarily dominant scientific theories picturing the 'new learner' who exists and functions in cyberspace, in the 'new media world' (Levinson, 2013) that enables information flow and multi-sensory learning, i.e., the online pupil with unlimited access to new e-education spaces. The author assumed that the path of development is guided by the global cultural imperative of participating in the process of constructing and negotiating symbols, values, meanings partnered by technology, machine, and tool (Gabriel, Röhrs, 2017).

Already at the conceptual stage of the project, it was assumed that this would be diagnostic-correlative research (Ferguson, Takane 2016: 33, 233–254) of a qualitative-quantitative nature, embedded mainly in media pedagogy. Two techniques were used: the questionnaire (Babbie, 2016: 247, 255–264) and the open-ended interview (Frankfort-Nachmias et al., 2015: 240–265). The author implemented proceedings and techniques incorporating elements of qualitative-quantitative analysis and explanation. The triangulation allowed for a better understanding and for addressing the research problem (verging on education, technique and IT) from two different points of view. The statistical calculations – using the chi-square independence test (King, Minium, 2003: 458–478) – helped establish the factors differentiating the studied phenomena.

The primary study (questionnaire), involving learners at four stages of education, was conducted in selected institutions in Lubuskie and neighbouring voivodeships. The group comprised 2510 pupils. The interview involved 40 learners from Zielona Góra and nearby towns (10 persons per one institution were interviewed).

One of the specific questions concerned establishing the extent of pupils' knowledge, understanding and application of new ICT trends, and children and teenagers' reflections on the (not)undertaken activities related to ICT implementation. Focusing on factors motivating to action, the problems guided the description, explanation and interpretation of learners' reflections. The presented results allow for establishing the reasons why students use ICT in everyday practice and the factors that differentiate their beliefs and experiences in this sphere.

Research results and discussion

In the open-ended questions, pupils were asked to give reasons for using ICT. 2095 (83.5%) persons, i.e., a vast majority, were willing to share their reflections in this respect. Students' indications allowed for distinguishing eight categories. The

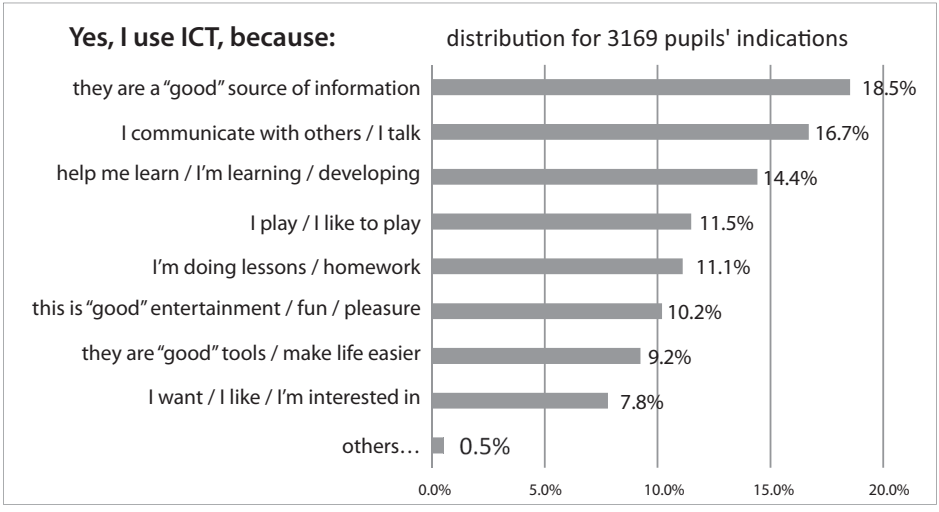

Figure 1. Reasons for using ICT by children and teenagers in daily practice (percentage frequency distribution)

reasons for the use of ICT – pupils enumerated a few of them, thus, the results obtained concern the frequency of indications (Figure 1) – were codified into three most important categories (enumerated reasons).

For the researched, the most important motive for using ICT are the activities oriented at handling information, mainly its acquisition and verification (18.5%), and communication (16.7%) (cf. Orłowska et.al., 2017: 260). Pupils indicate here the opportunities and tools offered by social networks (especially the activities undertaken to communicate and exchange information). One should note that some respondents emphasised the communication and information aspects of social media and pointed the values and reasons for their use in the categories of 'communication with others' and 'a »good« source of information'. The others explicitly pointed (by names) to social networks (f.e., Facebook, Instagram) and the tools they offer (communicators and information-operating instruments). One can conclude thus that the surveyed, when listing the motives for using ICT, emphasized the process itself (communication and information exchange) rather than the tools supporting it. This may mean that modern technology is becoming more 'transparent' to the final user. To reiterate, the learner does not need to know how the functionalities used by him/her are technically achieved.

The next reasons and explanations for using ICT distinguished by students are mainly: their instrumental level, numerous values and a wide technological

Table 1. Reasons for using ICT by children and teenagers in the function of: gender; education stage; places of pupils' learning (distribution of numbers by numerical and percentage values)

Differentiating factors	Reasons for using ICT																		Total	
	I play / I like playing		I communicate with others / I talk		they are a „good" source of information		I do lessons / homework		help me learn / I'm learning / developing		I want / I like / I'm interested in		they are „good" tools / make life easier		this is „good" entertainment / fun / pleasure		others…			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Gender																				
Girls	142	8.1	377	21.6	364	20.8	220	12.6	245	14.0	88	5.0	139	8.0	163	9.3	8	0.5	1746	100.0
Boys	222	15.6	152	10.7	223	15.7	132	9.3	212	14.9	159	11.2	154	10.8	160	11.2	9	0.6	1423	100.0
Total	364	11.5	529	16.7	587	18.5	352	11.1	457	14.4	247	7.8	293	9.2	323	10.2	17	0.5	3169	100.0
Education stage																				
Early-school education	176	34.0	57	11.0	107	20.7	38	7.3	55	10.6	15	2.9	23	4.4	46	8.9	1	0.2	518	100.0
Primary education	126	13.3	150	15.8	171	18.0	154	16.2	114	12.0	50	5.3	69	7.3	108	11.4	8	0.8	950	100.0
Junior high school	42	4.6	178	19.6	153	16.9	95	10.5	140	15.5	82	9.1	105	11.6	107	11.8	4	0.4	906	100.0
High school	20	2.5	144	18.1	156	19.6	65	8.2	148	18.6	100	12.6	96	12.1	62	7.8	4	0.5	795	100.0
Total	364	11.5	529	16.7	587	18.5	352	11.1	457	14.4	247	7.8	293	9.2	323	10.2	17	0.5	3169	100.0
Place of learning																				
Village	124	11.9	169	16.2	186	17.9	118	11.3	171	16.4	76	7.3	97	9.3	95	9.1	6	0.6	1042	100.0
Small town (2–10 thousand)	74	11.8	117	18.7	97	15.5	90	14.4	91	14.6	38	6.1	59	9.4	55	8.8	4	0.6	625	100.0
Town (10–25 thousand)	45	9.5	78	16.5	111	23.4	41	8.6	68	14.3	51	10.8	33	7.0	46	9.7	1	0.2	474	100.0
Medium-sized city (25–100 thousand)	58	10.3	94	16.7	114	20.3	50	8.9	64	11.4	39	6.9	66	11.7	76	13.5	1	0.2	562	100.0
City (over 100 thousand)	63	13.5	71	15.2	79	17.0	53	11.4	63	13.5	43	9.2	38	8.2	51	10.9	5	1.1	466	100.0
Total	364	11.5	529	16.7	587	18.5	352	11.1	457	14.4	247	7.8	293	9.2	323	10.2	17	0.5	3169	100.0

offer. When listing the reasons for practical implementation of new media, the surveyed treat ICT as the main source of knowledge and a tool for forming and improving their skills, abilities and attitudes (14.4%). Simultaneously, another indicated motive for learning and implementing ICT is an external 'requirement' – the necessity, obligation imposed by: modern times and the world, civilisational and technical progress, school, subject teaching, education. Still other reasons involved 'sharing' one's knowledge, work, and inventions with others (f.e., creating and publishing for network communities). Pupils treat ICT either as their favourite tool and environment to play (11.5%) or as a means to do homework or school duties (11.1%). It is precisely through the attitude of the researched to ICT that their real reasons for the practical implementation of new technologies is revealed. The arguments given by children and teenagers (10.2%) for applying digital instruments distinguish also 'good' entertainment, i.e., the one that by definition gives pleasure and relaxation, which next regenerates physical and mental strengths. Here, the reason is also to 'kill' time and boredom. Students (9.2%) justify using ICT by pointing to modern technology as 'good' tools that make life easier (f.e., e-commerce), support learning and work. The most interesting motives and triggers for using ICT are those in which students focused on themselves, their needs and feelings. Through the phrases: 'I want to', 'I feel such a need', 'I like to', the respondents (7.8%) indicate an intrinsic motivation and activity in the media world, which itself is their interest-related goal (cf. Wrońska, Lange, 2017: 18).

Thus, the identified reasons for the daily use of ICT by students involve mainly subjective motivations, namely own benefits as well as practical and purposeful actions, illustratable through the formulations (I use ICT because): I want to, can, and do it for my own benefit. The basic motives thus take on a praxeological character, frequently driven by fulfilling emotional desires. The fundamental rationale for using ICTs was not only to fulfil needs in the cognitive-instrumental sphere, but also to satisfy emotional desires. By revealing their emotionally positive attitude towards technology and the activity undertaken (shown in the words: I like, adore, love), they indicated the pleasure and satisfaction of existing in digital reality. For many, the digital world of entertainment with its offerings for fun and relaxation is a wake-up call for action. The stimulus for using ICT is ICT itself – treated as a tool offering instruments to achieve specific goals and tasks.

Other reasons for using ICT involved extrinsic motivation, specified by students as a requirement, need, order, obligation, or duty to use ICT. However, many reflections indicate action-motivated stimuli, satisfying children and teenagers' inner needs. The surveyed – often displaying a reflective attitude and judging their

own ICT activities – note that using ICT is worth the effort not only for their own benefit but also that of other users of the digital world.

The established data (Table 1) and conducted calculations allow for stating that among the analysed **differentiating factors**, features like: gender, stage of education, place of schooling showed significant statistical differences between these features and reasons for using ICT by children and teenagers. The detailed numerical distributions reveal that:

(1) **Gender**

[Result TEST.CHI: $\chi^2 = 161.1 > \chi^2_{(\alpha=0.01;\ df=7)} = 18.48$; $p = 1.84944E\text{-}31$; => H_0 rejected]

When asked why they use ICT, girls more often than boys indicated activities such as: handling information, communicating (talking with others), and doing homework (school duties). Boys, on the other hand, more frequently than girls stated that they find motivation to use modern technology in playing games, usefulness of ICT, interest in new technology trends, and more frequently 'good' entertainment and fun. Generalizing, one may conclude that the stimuli encouraging girls to be active in the world of digital tools lie primarily in the awareness of entrusted duties (mainly school ones) and the need to fulfil them responsibly, while communication as well as obtaining and verifying information enables them to fulfil these (often externally set) goals and tasks. The driving force for boys, on the other hand, are their interests – a force inducing action guided by intrinsic motivation. The boys' love of whether games, new technologies, or media (including those providing entertainment) is underpinned by a belief in the value and usefulness of ICT tools, which facilitate functioning in the modern world.

(2) **Type of educational institution (education stage)**

[Result TEST.CHI: $\chi^2 = 483.9 > \chi^2_{(\alpha=0.01;\ df=21)} = 38.93$; $p = 3.41893E\text{-}89$; => H_0 rejected]

Regarding children in the early-school education (the youngest ones), they attribute the greatest importance in cyberspace activity to information handling processes and computer games. Primary school pupils are distinguished in this respect mainly by the obligation to fulfil school tasks. Junior high school pupils prefer communication and distinguish 'good' entertainment that provides fun, pleasure, and relaxation. For high school pupils, the most important reasons for using new media are: cognitive instruments supporting learning, development of personality, own interests (including modern technologies) and access to ICT infrastructure, universal and practical tools. Based on general trends in the rea-

sons for the use of ICT among pupils, one can notice as regards education stages: 1) increasing trends: the older the children (the higher educational stage) the more they appreciate the digital learning environment, discovering in it motivating values of cognitive tools that support personal development; With time, pupils become increasingly aware of the need and are more driven by interests oriented at modern technique and technology. As the educational level increases, the opinion about usefulness of ICT as a reason for using new technologies also gains significant importance; 2) decreasing trends: as people get older (higher educational stage), the less involved they are in the game world; 3) specific directions: at the beginning of the educational journey, the strength of actions taken in relation the use of ICT as a reliable source of information is great. It gradually decreases in primary and junior high school, and increases again at the highest educational stage – the intensity of motivation among teenagers returns and is almost at the same level as in early education. Pupils aged 11–16 show the greatest conviction and need for entertainment.

(3) **Place (environment) of learning**

[Result TEST.CHI: $\chi^2 = 61.07 > \chi^2_{(\alpha=0.01;\ df=28)} = 48.28$; $p = 0.000297186$; => H_0 rejected]

Pupils attending rural schools ascribe the greatest driving force for the use of new technologies to tools that provide 'learning aids'. Respondents from small towns (10–25 thousand) saw the reasons for using ICTs mostly in the possibility to communicate. Motivational factors originating from interests in technology and technological novelties are also very important for them in stimulating activities in the network. Learners in medium-sized cities (25–100 thousand) most frequently saw reasons for participating in the new media world in the availability of 'good' tools, including those that meet their entertainment-related expectations. In large cities (>100,000), pupils mainly indicated a desire to be active in the digital gaming environment. Comparing the established counts in each category with the respondents' place of study, one can infer a rather specific pattern revealing the reason "I do my homework". One can conclude that students attending schools in the smallest and largest towns (<2,000 and >100,000) are more motivated to use ICT in order to fulfil their school duties. A lower level of motivation was identified for children and teenagers attending schools in towns with a population between 10,000 and 100,000.

Conclusions

Calculations and analysis of students' narratives (3169 indications) revealed: 1) a rich range of factors (stimuli) inclining young people to be active in the media world; 2) significant diversity (conditioned by gender, stage of education and learning environment) of students' experiences, beliefs, needs and expectations regarding the practical use of new media. They help draw attention to the heterogeneity of these phenomena and characteristics such as pupils' readiness to act, their intentions, desires, values, interests and goals. The level of motivation represented (often high, unambiguous and highly aspirational) determined children's and teenagers' everyday readiness to (co-)work with new media, incorporate them into learning and play. Pupils show a big engagement, satisfaction with, and persistence in doing so.

For today's pupils, cyberspace is a natural ("normal") environment of everyday functioning, which satisfies their needs and expectations. In this unlimited offer of the ICT world, they see reasons for using digital tools – often as a "justification", or even a "command", for a given activity. Thus, the question arises: does the education system make use of this cognitive potential of pupils – manifested in positive motivation to act and learn through ICT – and to what extent?

The recently published reports (cf. e.g., UNESCO Office Montevideo, 2020) highlight the holistic importance of ICT in children's and teenagers' daily lives: impact on their education, physical and mental health, entertainment, socio-cultural development, and political life. Simultaneously, they point out that although public initiatives are often designated to integrate these outcomes, children and teenagers' perceptions, evaluations and experiences are frequently disregarded. Equally often overlooked is the importance of gender (the study found clear gender-conditioned disparities in the positive use of the Internet as a space for expression) in the formulation of public policies on ICT use. The COVID-19 pandemic time (Doucet et al., 2020; Bailenson, 2020; Murphy, 2020; D'Souza, 2020) has clearly shown how important it is to choose methods and tools appropriate to children's and teenagers' needs in order to use this positive attitude in the education (not only formal) process (Baron-Polańczyk, 2019: 118; cf.: Wrońska, Lange, 2017; Pyżalski et al., 2019).

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