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THE POTENTIAL OF THE MEDIA AND NEW TECHNOLOGIES IN PEDAGOGICAL-EDUCATIONAL WORK IN THE OPINION OF CROATIAN AND POLISH STUDENTS

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Abstract: This article presents the results of research which should diagnose opinions and compare the assessments regarding the importance of selected media and technologies in pedagogical and educational work done by students of pedagogical and teaching majors in Poland and in Croatia. The research was conducted with the use of a diagnostic survey on 519 respondents from the University of Silesia in Katowice and the University of Split.
The explorations demonstrated the fact that the respondents highly assess the usefulness of new technologies and media in future professional work on a 5-grade scale. The computer with access to the Internet and the mobile phone are particularly appreciated. Such Internet resources as Khan Academy, MOOC, OER are perceived in negative terms. The respondents believe that the media and new technologies can contribute to the development of knowledge to the highest degree, to a slightly lower degree – to the development of skills, and to the lowest degree – to the development of competences. They will be most effective in work with young people and adults. The nationality and the country of origin are factors diversifying the opinion in certain scopes in the presented explorations.

Keywords: comparative research, higher education, ICT, learning, media tools, teacher and educator training.

Introduction

Changes in the contemporary world regarding the development of the media, new technologies and ICT force the adjustment of modern education systems to the requirements of the transforming reality. Media, carrying both - opportunities and hazards, are undoubtedly a tool which may be used in contemporary education and pedagogical actions. Whether this will be the case, depends on numerous factors. One of them is the will to use them by each single teacher and educator.
The literature on the subject contains a lot of research concerning the discussed area. The perception of ICT in education and the attitude towards technology in teaching was examined both among the students and active teachers [2, 11]. As long as a decade ago M. Polić [8] emphasized the role of remote teaching with the use of a computer with access to the Internet during the implementation of such forms as: lectures, seminars and classes, workshops, tasks and tests. He wrote that the computer cannot and is not able to replace a living human being and, at the same time, the teacher will carry out a more effective teaching process with the use of this device [8]. In the same time D. Anđić [1] demonstrated in her research conducted among 161 teachers in three Croatian districts the insufficient knowledge and use of ICT tools in practical teaching in the eight-class primary school. In Poland, M. Musioł [7] published a monograph in which author widely covered the use of media, multimedia and other simple and complex technological measures in education in general, additionally focusing on the use of media by the teacher in a group of six-year old children.
A decade has passed from these selected exceptions of numerous studies. A lot of scientific analyses, institutionnal and non-governmental reports have appeared [3, 4, 6, 10], and the topic is still current due to its dynamics.
This article presents the results of research which was to diagnose opinions and compare assessments regarding the importance of selected media and technologies in pedagogical and educational work in the formal and informal field made by students of pedagogical and teaching majors in Poland and in Croatia. The research objective was particularized through the formulation of research problems reflected in the form of the following questions:
What is the assessment of respondents on the degree of the media and selected new technologies usefulness in pedagogical work?
What is the opinion of respondents on the role of new technologies in the development of knowledge, skills and social competences during education at school?

What is the assessment of the degree of the media and new technologies usefulness in the education for people from various age groups?
Whether and how is the nationality/country of origin a factor diversifying the opinion of respondents on the examined topic?
The analyses were of a diagnostic-comparative nature. The media were widely understood and the notion of technology was referred, for the needs of the author's own research, to selected devices and tools, such as: computer, mobile phone, tablet, wearable technology gadgets, PlayStation but also to such network resources as: MOOC, Khan Academy, TEDs, Open Educational Resources (OER) and Wikipedia.

Methodology of research

The research fragment which is presented in this article was of a wider nature and referred to the role of the media, as well as new technologies, in the education process of future Croatian and Polish educators and teachers in the context of the challenges in the contemporary reality. The selected part of the explorations is research that was conducted in the first half of 2016 with the use of the diagnostic survey based on a questionnaire. The responses to the questions formulated above were obtained with the use of a questionnaire in which the respondents were asked closed questions on the basis of a 5-grade scale. The respondents were asked to assess the degree on the Likert scale from 1 (the smallest intensity of a given feature/element) to 5 (the highest intensity of a given feature/element) depending on the question. The constructed scale estimated the answers of the respondents, and its middle value (namely 3) expressed neutrality towards the question, which made it possible to maintain symmetry of the scale. The average from the questionnaire questions was used and corresponding predilections were determined on the basis of the answers.
The participation in the research was voluntary and anonymous. The survey was conducted among 519 randomly selected people (N = 519). Because the research was of a diagnostic-comparative nature, the research group included 233 respondents (N = 233) studying pedagogy or teacher education at the University of Split (Croatia), as well as 286 respondents (N = 286) studying pedagogy (including early education and kindergarten education), as well as special pedagogy at the University of Silesia in Katowice (Poland). Due to the specificity nature of these majors, as many as 94% of the respondents are women. The average age of the Croatians was 21.54, and the Poles – 20.60.
The respondents are people in their early adulthood, who prepare themselves for work with another human being in the profession of an educator and a teacher. Their knowledge, and skills but, first of all, will, decisions and judgment regarding usefulness will determine the use or the omission of new technologies and media in the processes of teaching, education, deepening interests. This is also a factor confirming the justified nature of the analysis of opinions and assessments of the media and new technologies usefulness in the future work in various aspects.

Results of research

Both, in Poland and in Croatia, starting humanistic studies – including pedagogical and teaching majors – does not guarantee working in the profession. Apart from economic-social and demographic conditions related to the job market, the future fate of graduates is also determined by their own will and private plans. A decision was thus made to check in the first stage of the research what intentions the students have and to what extent it is justified to ask the examined group about their further plans related to pedagogical work. In order to check whether people from Croatia differed from people from Poland in terms of the assessments of their own plans and the will to work in the area related to education, teaching, pedagogy, they were asked to express their opinions (on a scale from 1 to 5 where 1 – "very strong reluctance" and 5 – "very strong desire and resolute plans") and then an analysis with the use of the Mann-Whitney U test was conducted. The table below (Table 1) presents results obtained in the research.

Table 1. Nationality/country of origin and assessment of one's own plans and the will to work in the area related to education, teaching, pedagogy in the opinion of the examined people (N=519).

Variable	Country	Average	Standard deviation	Result of the Z test	Statistical significance
Are you planning and would you like to work in the future in an area related to education, teaching, pedagogy?	Croatia	4.63	0.73	3.40	0.001
	Poland	4.42	0.82		

The analysis with the use of the Mann-Whitney U test demonstrated significant differences in statistical terms. This means that people from Croatia planned and wanted to work in an area related to education, teaching, pedagogy to a greater extent than people from Poland. However, the average on the scale in two groups was high, which means a strong desire and rather resolute plans regarding working in the profession. 73.27% of the respondents in Croatia chose the highest – the 5th degree of the scale, and 18.96% – the 4th degree. In the case of

the Polish group, the 5th degree on the scale was also chosen most often (58.92%). A numerous group of respondents identified with the 4th degree on the scale (27.85%).

After determining the degree of the will to work in the profession, future teachers and educators were asked to assess (on a scale from 1 to 5 where 1 – "insignificant role" and 5 – "very important role") the importance of the media and new technologies in their future work. In order to check whether people from Croatia differed from people from Poland, the analysis with the use of the Mann-Whitney U test was conducted. The table below (Table 2) presents results obtained in the research.

Table 2. Nationality/country of origin and assessment of the importance of the role of media and new technologies in the future professional work, if it is related to education/pedagogy/teaching in the opinion of the examined people (N=519).

Variable	Country	Average	Standard deviation	Result of the Z test	Statistical significance
If your future professional work is related to education (pedagogy/teaching), how important the media and new technologies will be in it?	Croatia	4.10	0.78	7.56	<0.001
	Poland	3.57	0.77		

The analysis with the use of the Mann-Whitney U test demonstrated significant differences in the statistical terms. This means that people from Croatia assessed the importance of the role of the media and new technologies in their future professional work, if it is related to education/pedagogy/teaching higher than people from Poland. The difference is not large and both groups assess the role of the media rather highly. However, in the case of Croatian students as many as 47.63% chose the 4th degree on the scale, and 32.61% – the highest 5th degree on the scale. Although the Poles most often chose the 4th degree on the scale as well (42.95%), the neutral answer was also highly popular (3rd degree on the scale), indicated by 39.42% of respondents in this group.

The statistical analyses were conducted in order to check whether people from Croatia differed from people from Poland in terms of the assessment the impact degree of the use of modern technologies in education at school on the development of knowledge, skills and social competences (on a scale from 1 to 5 where 1 – "do not contribute at all" and 5 – "contribute very highly") (Table 3).

Table 3. Nationality/country of origin and assessment of the impact degree of the use of modern technologies in education at school on the development of knowledge, skills and social competences in the opinion of the examined people.

Please specify to what degree the use of modern technologies in education at school contributes to the development: of knowledge, skills and social competences	Country	Average	Standard deviation	Result of the Z test	Statistical significance
Knowledge	Croatia	3.97	0.88	2.28	0.023
	Poland	3.83	0.82		
Skills	Croatia	3.81	0.98	2.80	0.005
	Poland	3.57	0.99		
Social competences	Croatia	3.36	1.19	0.88	0.381
	Poland	3.28	1.15		

The analyses with the use of the Mann-Whitney U test showed significant differences in statistical terms. This means that the use of modern technologies in education at school, according to people from Croatia, contributes to the development of knowledge, as well as to the development of skills to a greater extent than according to people from Poland. The correlation between technologies at school and the stimulation of the knowledge development (average 3.97 (CRO) and 3.83 (PL)) was assessed as highest in both groups, and the correlation between the use of technologies and the development of social competences was assessed as lowest. In the case of the latter element, there are no statistically significant differences between students from Poland and Croatia.

In the author's explorations, the respondents were also asked to assess (on a scale from 1 to 5 where 1 – "no usefulness" and 5 – "very high usefulness") the usefulness of the new technologies and media in the work with people of various ages. The usefulness in work with the elderly was assessed as lowest, while the 2nd degree on the scale was chosen most often (30.93% of answers). The most neutral, 3rd degree on the scale (27.62%), was chosen most often in the research group treated as a whole in the case of children, which means an average degree of usefulness. The usefulness in work with adults was assessed slightly higher. The 4th degree was chosen most often (43.27%). When thinking about teenagers, the majority of respondents indicated the highest usefulness, namely the 5th degree on the scale (42.60%). In order to check whether people from Croatia were significantly different in statistical terms from people from Poland, analyses with the use of the Mann-Whitney U test were conducted. The table below (Table 4) presents results obtained in the research.

Table 4. Nationality/country of origin and assessment of the degree of the usefulness of the new technologies and media in formal and informal education for people from various age groups in the opinion of the examined people (N=519).

Please specify to what degree the new technologies and media are useful in formal and informal education for people from various age groups	Country	Average	Standard deviation	Result of the Z test	Statistical significance
Children	Croatia	3.19	1.25	4.13	<0.001
	Poland	2.75	1.15		
Young people	Croatia	4.25	0.84	2.30	0.022
	Poland	4.07	0.90		
Adults	Croatia	4.13	0.82	2.02	0.044
	Poland	3.99	0.83		
The elderly	Croatia	3.18	1.09	7.37	<0.001
	Poland	2.45	1.02		

The analyses showed significant differences in statistical terms. This means that the new technologies and media were useful in formal and informal education for people from all age groups according to people from Croatia (namely among children, teenagers, adults as well as the elderly), to a greater extent than according to people from Poland.

The respondents, when asked about particular tools and Internet resources and their usefulness in pedagogical work, assessed the usefulness of the computer with access to the Internet (68.48% of the examined group chose the 5th degree on the scale), the mobile phone (37.54% of the examined group chose the 5th degree on the scale) and the tablet as the highest (the 4th degree on the scale was chosen most often – 28.59% of answers). Most often choosing the lowest degree on the scale – low and very low, they assessed the usefulness: of wearable technology gadgets (41.5% chose the 1st degree on the scale), PlayStation (the 1st degree – 76.23%), MOOC (the 1st degree – 68.06%), Khan Academy (the 1st degree – 66.81%, TED (the 1st degree – 60.04%), OER (the 1st degree – 59.03%). This is also connected with the general poor knowledge about these elements. The usefulness of Wikipedia was most often described as average (the 3rd degree on the scale – 24.95%). The analyses with the U test showed certain significant statistical differences between Croatians and Poles which are shown in Table 5.

People from Croatia assessed the usefulness higher and would be more willing to use a tablet, wearable technology gadgets, MOOC, Khan Academy, TED, OER (Open Educational Resources), as well as Wikipedia in their future pedagogical work than people from Poland. In both groups well-known tools used by the respondents (e.g. telephone, Internet, computer) were assessed more highly than resources which may be a novelty and an innovation in pedagogical work.

Discussion

The author's own research may be referred to similar research of this type conducted previously. The comparative research was conducted in the years 2014-2015 among students of pedagogical majors in Poland and in the Czech Republic (N = 634), in which a typology including four main attitudes of respondents towards ICT was built: techno-optimist, techno-realist, techno-pessimist and techno-ignorant [13].

The typology made it possible to assess students of the Croatian university as greater techno-optimists in their declarative area, regarding the use of the media in their future professional work. Unfortunately, this optimism in both groups applies only to well-known tools and resources. Such approach may also be found in the research by A. Kobylarek [5], where the enthusiastic approach is also dominant.

Table 5. Nationality/country of origin and assessment the usefulness of particular tools/media/programs in the future pedagogical work, as well as the will to use them in the opinion of the examined people (N=519)

In the question below, please specify the usefulness of the mentioned tools/media/programs in pedagogical work, as well as your wish to use them	Country	Average	Standard deviation	Result of the Z test	Statistical significance
Computer with Internet access	Croatia	4.62	0.68	1.63	0.103
	Poland	4.51	0.81		
Mobile phone	Croatia	3.61	1.29	1.66	0.096
	Poland	3.78	1.29		
Tablet	Croatia	3.47	1.32	2.88	0.004
	Poland	3.14	1.33		
Wearable technology gadgets	Croatia	2.77	1.35	8.79	<0.001
	Poland	1.75	1.06		
Playstation	Croatia	1.38	0.86	0.50	0.617
	Poland	1.39	0.79		
MOOC	Croatia	1.95	1.26	5.08	<0.001
	Poland	1.37	0.75		
Khan Academy	Croatia	1.93	1.27	4.10	<0.001
	Poland	1.44	0.85		
TED	Croatia	2.29	1.49	5.17	<0.001
	Poland	1.58	0.99		
Open Educational Resources (OER)	Croatia	2.20	1.38	3.88	<0.001
	Poland	1.71	1.14		
Wikipedia	Croatia	3.52	1.18	5.81	<0.001
	Poland	2.83	1.35		

The research among active teachers (N=800) is dominated by the opinion only introducing ICT to schools and institutions, but in a cautious and thoughtful manner [4].
What is interesting, the literature on the subject, as well as personal interviews, reveal a certain difficulty in the self-assessment of one's own competences among future educators, and professionally active teachers. On the one hand, the key need for the training of teachers with regard to the use of media teaching materials and technologies in education is stressed [12] and, on the other hand, as is shown in research among Croatian students of the teacher major at the Juraj Dobrila University of Pula (N=122) – as much as 24,2% of respondents do not see the need to be permanently educated in this dynamically developing area of technology which has its place in the educational process [9].
The level of digital competences among active educators and teachers is the object of their concerns and, at the same time – as is shown by the research – the higher self-assessment of this level, the greater the wish to introduce ICT in the teaching-educational process [4].
The contrast between knowledge and the will to use well-known electronic media at work and the offer of constantly changing Internet resources is shown in this area. It may be assumed that the students of pedagogical and teaching majors are not subject to appropriate training and showing aversion to self-education in this respect may never learn the advantages and the opportunities to use certain resources in a practical way (e.g. OER or Khan Academy). If they use very rarely TED, MOOC etc. during their education at school, at university and in private life, or they do not use them at all, it is difficult to suspect that they will encourage their students or pupils to do so. The development of information, digital and media literacy competences seems to be particularly significant among people aspiring to the educator's profession. The dynamic nature of changes in the world of technologies and media requires not only the implementation of this subject matter to the curricula of the pedagogical majors, but also lifelong learning.

Conclusions

One of the factors determining the presence of the media and new technologies in pedagogical and educational work is the opinion of the educators themselves about their usefulness, which may be shaped already during their studies, professional internships and their own experience. Taking into account the methodological

assumptions of the presented research section and referring to the quoted research problems, it should be stated that: the majority of students both in Poland and in Croatia, associate their future with pedagogical work and highly appreciate the media and new technologies in this work, although a higher degree of usefulness was shown among the Croatians. The respondents believe that the media and new technologies can contribute to the development of knowledge to the highest degree, to a slightly lower degree – to the development of skills, and to the lowest degree – to the development of competences. They will be most effective in work with young people and adults, and least useful in work with the elderly. Despite a declarative high assessment of new technologies in a general manner, the majority of the respondents, when asked about specific tools and Internet resources, extremely poorly assess modern resources such as OER, Khan Academy or MOOC. The respondents appreciate the computer with access to the Internet and mobile phones. The nationality and the country of origin are factors determining the opinion in certain scopes, which was shown in detail above. In general, students from the University of Split usually chose a higher degree on the scale than students from the University of Silesia.

The author's own research had certain restrictions. The results should not be generalized on the entire population of future teachers and educators in a given country because they related to the specific nature of teaching in the two institutions.

The obtained results stimulate further explorations in the subject matter concerned. The analyses of the dynamics of changes in assessment, as well as the declarative nature of statements could assume the nature of longitudinal research, and a repeated survey or in-depth interviews among the same group of people after taking up professional work could indicate numerous additional practical factors and external factors that are essential to the presence of the media and new technologies in pedagogical work.

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