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The digital gap and the digital exclusion of students from rural areas

Annotation. In the information society, where the overriding good is information transmitted mainly through new technologies, it is particularly important from the point of view of equal access to knowledge to examine the digital gap and its impact on the educational process. The term digital gap is defined in the literature as the difference in access to technology and the internet between individuals and households[1]. Unequal access to new technologies and the Internet poses a particular risk of digital exclusion of students from rural areas, which lack access to broadband Internet and equipment, and often teachers' skills in using digital tools. This is a significant problem not only sociological, but also clearly located in the field of contemporary philosophy of culture and upbringing philosophy, which is reflected in studies on the philosophical problems of digitization and the technologization of everyday life.
Keywords: digital gap, education, digital exclusion, rural areas

Luka cyfrowa a wykluczenie cyfrowe uczniów z obszarów wiejskich
Streszczenie: W społeczeństwie informacyjnym, w którym nadrzędnym dobrem jest informacja przekazywana przede wszystkim za pomocą nowych technologii szczególnie istotne z punktu widzenia równego dostępu do wiedzy jest zbadanie luki cyfrowej i jej oddziaływania na proces edukacyjny. Termin luki cyfrowej określany jest w literaturze jako pojawiająca się między jednostkami i gospodarstwami domowymi różnica w dostępie do technologii oraz internetu (Wrycza 2010: 474). Nierówny dostęp do nowych technologii oraz internetu stwarza szczególne zagrożenie wykluczenia cyfrowego uczniów z obszarów wiejskich, w których brakuje dostępu do internetu szerokopasmowego i sprzętu, a nierzadko również umiejętności wykorzystania narzędzi cyfrowych przez nauczycieli. Jest to istotny problem nie tylko socjologiczny, ale też wyraźnie lokujący się w zakresie współczesnej filozofii kultu-

[1] S. Wrycza, *Informatyka ekonomiczna. Podręcznik akademicki*, Polskie Wydawnictwo Ekonomiczne: Warszawa 2010, p. 474.

ry i filozofii wychowania, co ma odzwierciedlenie w opracowaniach z zakresu filozoficznych problemów digitalizacji i technologizacji codzienności.
Słowa kluczowe: luka cyfrowa, edukacja, wykluczenie cyfrowe, wieś

Цифровой разрыв и цифровая изоляция студентов из сельских местностей
Аннотация: В информационном обществе, где главным благом является информация, передаваемая в первую очередь с помощью новых технологий, особенно важно с точки зрения равного доступа к знаниям изучить цифровой разрыв и его влияние на образовательный процесс. Термин «цифровой разрыв» определяется в литературе как разница в доступе к технологиям и Интернету между отдельными лицами и домашними хозяйствами. Неравный доступ к новым технологиям и Интернету создает особый риск цифрового исключения учащихся из сельских районов, которые не имеют доступа к широкополосному Интернету и оборудованию и часто учители не имеют возможности использовать цифровые инструменты. Это значимая проблема не только социологическая, но и четко расположенная в области современной философии культуры и философии воспитания, что находит отражение в исследованиях философских проблем оцифровки и технологизации повседневной жизни.
Ключевые слова: цифровой разрыв, образование, цифровая изоляция, сельские районы

Introduction

Although the concept of the information society was created by Tadeo Umesao in 1963, it was only at the beginning of the 21st century that the involvement of European countries in building the information society increased. Nowadays, the information society is associated with the creation, collection and transmission of information with the use of media. This understanding of the information society is related to the concept of a post-industrial society in which information has become the dominant factor in the functioning of the economy and society[2]. Manuel Castells[3] stated that the network society arose from "the technocratic belief that technology would make progress for mankind." Along with the development of the theory of digital society (information, networks) and the belief that the progress in the development of information and communication technologies contributes to the development of the economy and society, the European Union began to create strategies for the digitization of Member States. As Lesław Koćwin[4] notes, one of the benefits of the digitization of society and the development of digital technologies is reducing social inequalities, combating various forms of exclusion and increasing life chances. At the same time, L. Koćwin notices that digitization means not only benefits, but also threats resulting from the fact that countries that delay the development of the digital society cease to be competitive.

The aim of the article is to show the degree of digitalisation of the European Union countries, to draw attention to the problem of digital exclusion which concerns

[2] L. Koćwin, *Społeczeństwo cyfrowe w Polsce – strategie, plany i realia* [in:] *Komunikacja a zmiana społeczna,* ed. J. Kędzior, B. Krawiec, M. Biedroń, A. Mitręga, Wydawnictwo Uniwersytetu Wrocławskiego 2018, pp. 85-107.

[3] M. Castells, *Galaktyka Internetu. Refleksje nad Internetem, biznesem i społeczeństwem*, Rebis: Poznań 2003.

[4] L.Koćwin, *op. cit.*

students living in rural areas and to look for solutions enabling to eliminate the digital gap by improving digital competences of teachers.

The digital gap in the European Union

Making information the greatest good and striving to ensure that every member of society has access to information that is transmitted via information and communication technologies has contributed to the acceleration of the development of digitization. The pace of change caused by the development of new technologies is so fast that it has come to be referred to as the digital revolution. According to data from December 30, 2020 available on the Internet World Stats website in the Internet Usage in the European Union report 397,988,114 units had access to the Internet in the European Union, which constituted 89.4% of the entire EU population, while in the world only 57.8% of humanity had access to the Internet.[5]

Looking at data on the internet access of members of the European Union's public, it can be seen that only 11.6% of individuals were concerned with the digital gap. The digital gap is likely to affect older people, as the European Union is an area where one fifth of the population is over the age of 65 and the proportion of over-80s is projected to increase from 5.8% to 14.6% from 2019 to 2100.[6] It is also worth noting that in 2021 only a quarter of Europe's population lived in rural areas, and 75% of the population lived in cities where internet access is easy.[7]

The term digital gap was first used by Lloyd Morrisett, former chairman of the Markle Foundation, and described it as a lack of access to information. At the same time, Richard J. Coley, John Cradler and Penelope K. Engel (1997) found that there is a correlation between Internet access and education and wealth. Cynthia Hewitt de Alcántara[8] notes that the problem of the digital gap is inextricably linked with the wealth of countries. He points out that any top-down initiatives, such as providing Internet access at school, will not be successful if the state is unable to maintain and finance specific programs. C. H. de Alcántara argues that in order to close the digital gap there is a need for better coordination of activities in the field of international ICT projects and the methods of financing them. It also assumes that strong and efficient countries and those that invested in education have done the best to create a digital society. The analysis of the situation in the European Union seems to confirm this thesis. As shown in Figure 1, the smallest digital gap (according to data from 2020) is in Denmark - 97.9% of internet users (GDP per capita in 2019 was USD 60,170), Sweden - 97.9% of internet users (GDP per capita in 2019 USD 55,780) and in Malta - 97.2% of internet users (GPD per capita in 2019 28,030). The following countries were the worst at creating a digital society by 2020: Bulgaria - 67.6% of internet users (GBD per capita in 2019 was USD 9,570), Romania - 75.2% of internet users (GBD per capita in 2019 was USD 12,630) , Greece - 78.3% of internet users (GBD per capita in 2019 was $ 19,750).

[5] Internet World Stats, https://www.internetworldstats.com/stats9.htm, access: 25.04.2021

[6] Eurostat Statistics Explained, 2021: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Population_structure_and_ageing/pl, access: 25.04.2021.

[7] Populationof.net, 2021: https://www.populationof.net/pl/europe/, access: 25.04.2021.

[8] C. H. De Alcántara, *The Development Divide in a Digital Age*, "Technology and Society" (2000 – 2009) 4, 48/2001.

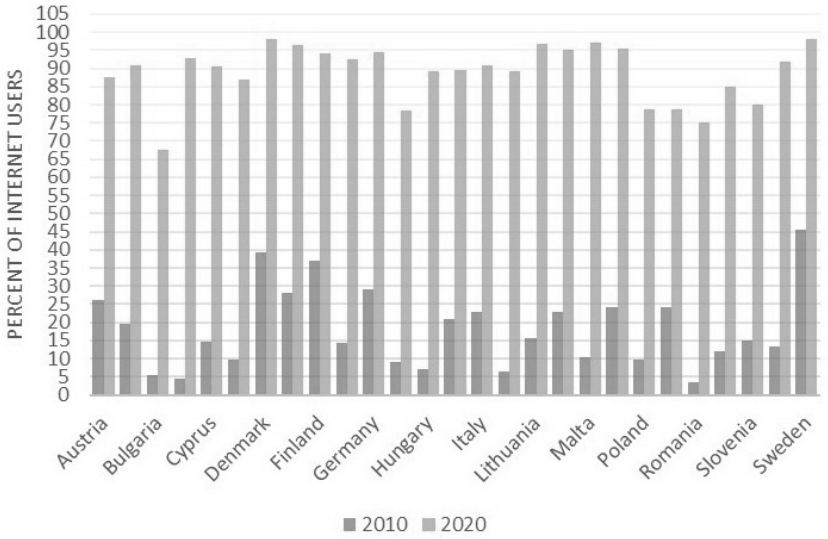

Figure 1. Internet Users in EU
Source: own study based on data from https://www.internetworldstats.com/stats9.htm

There were also relatively fewer internet users in 2020 in Poland - 78.7% (GBD per capita in 2019 was USD 15,350) and Portugal 0 78.8% (GBD per capita in 2019 was USD 23,200). Analyzing Figure 1, it can be seen that the greatest increase in internet users took place in Croatia - from 4.6% in 2000 to 92.8% in 2020, and in Malta - from 10.5% in 2000 to 97.2% in 2020. The significant increase in internet users in Malta and Croatia is related to the development of tourist services, which forced and coincided with the development of IT infrastructure (fibers, 3G LTE network). Data on GDP comes from the World Bank[9].

Also Douglas Blanks Hindman points out that geographic location is less related to Internet access and use than education, income and age.[10] As noted by Joanna Kłos-Łabędowicz[11] the higher the population indicator in cities, the more often the country is included in the group with a lower level of digital convergence. It also draws attention to the fact that the lack of access to the internet in rural areas may be influenced by many factors, such as: higher cost of infrastructure construction and thus lower profitability of investments, lack of interest on the part of the population, lack of competence to use ICT tools, aging rural society. The digital gap in rural areas creates digital exclusion, especially in the context of building a digital society, where more and more services (offices, academic training, electronic voting, shops, online

[9] World Bank, 2021: https://data.worldbank.org/indicator/NY.GNP.PCAP.CD?locations=SE, access: 26.04.2021.

[10] D. B Hindman, *The Rural-Urban Digital Divide*, "Journalism & Mass Communication Quarterly", 77, 3/2000, pp. 549-560.

[11] J. Kłos-Łabędowicz, *The issue of digital divide in rural areas of the European Union*, "Ekonomiczne Problemy Usług", 1/2017 (126), t. 2, pp. 195-204.

work, etc.) are moving to the internet. Additionally, attention should be paid to the fact that in rural areas the quality of the Internet may also be worse, thus the services provided via the Internet will be of lower quality (e.g. disconnecting during job interviews, breaking authorization calls, etc.). Due to the pace of change in digital reality, rural residents are at risk of unequal access to technologies that are implemented in urban areas.

Analysing the situation of the European Union countries (Figure 2), which have the highest percentage of Internet users (Denmark, Sweden, Malta), it can be noticed that they have a low percentage of the population living in agricultural areas: in Denmark it is 12.13% of the total population, in Sweden 12.57% of the general population, Malta - 5.39% of the general population. The lowest percentage of the population among the total population living in rural areas was in Belgium - 2%, and in Luxembourg - 9.2% and the Netherlands - 8.51%, where in 2020 there were over 90% of internet users.

As shown in Figure 2, the lowest percentage of internet users in 2020 was in the following countries: Bulgaria, Romania, Greece, as well as Poland and Portugal, where the percentage of inhabitants of agricultural areas among the total population was the highest in Romania – 46%, and the lowest in Greece – 20, 94%. In Poland, rural residents accounted for 39.94% of the entire population, in Portugal 34.79%, and in Bulgaria 24.99%. A high percentage of rural residents in 2018 was in Croatia (43.05%), which was among the countries with the highest increase in internet users in 2010-2020. The remaining countries with a high percentage of the population living in rural areas are Slovakia (46.27%) and Slovenia (45.46%), among which the percentage of internet users in 2020 was 84.8% and 80%, respectively. When analysing the presented data, it can be concluded that there is no direct correlation between the percentage of Internet users and the number of people living in rural areas in a given country. The number of Internet users is also influenced by other factors: the state economy, EU programs, earnings prospects related to the implementation of Internet services, user preferences related to media reception. At the same time, when analysing the data of the International Telecommunication Union , it can be seen that 88% of households in the city have access to the Internet, while only 78% of farms in rural areas. The rural versus urban households gap highlights the digital gap in rural areas and a greater risk of exclusion. Therefore, the European Union established the Digital Agenda for Europe, whose main task was to establish a strategy for the development of Internet services, and at the level of the Member States to create national programs[12].

The gap in internet access has narrowed significantly over the past decade. However, as the authors of *Measuring digital development. Facts and figures 2020*[13] note, there has been a slowdown in the development of internet infrastructure since 2019, noting that this may be the result of a global pandemic or infrastructure saturation with both wire and wireless technologies. When analysing the Internet network in rural areas in Europe it can be seen that 89% of them were programmed in the 4G structure. As in-

[12] International Telecommunication Union: https://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx, access 03.05.2021.

[13] ITU, 2020: *Measuring digital development. Facts and figures 2020, Genewa: https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2020.pdf.*

dicated, 78% of households in rural Europe had access to the Internet, but only 66% of households had access to a computer, which is significant especially in the field of education, not only during distance learning during a pandemic, but also in the context of long life learning, access to courses, training, computer-based tasks (e.g. graphic tasks, writing texts, creating presentations). In summary, only rural areas are areas in Europe that suffer from the digital gap.

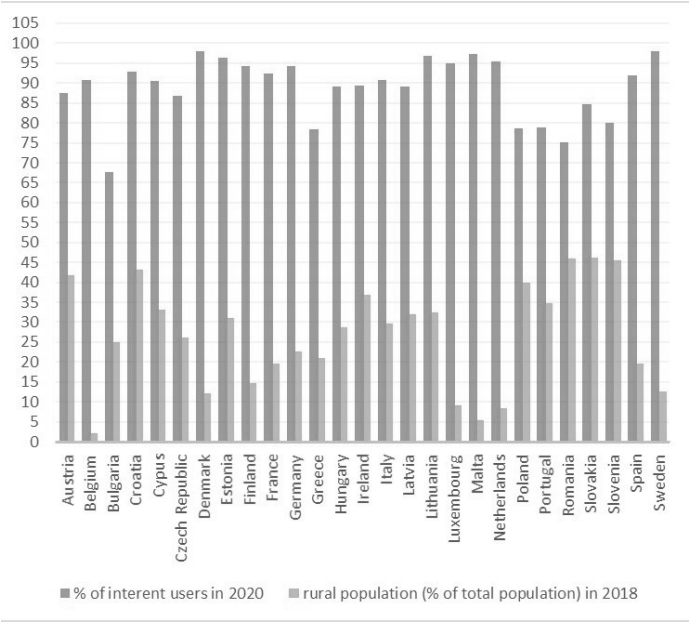

Figure 2. Percentage of internet users in 2020 and percentage of the population living in agricultural areas

Source: own study based on data from the Index Mundi website: https://www.indexmundi.com/facts/denmark/rural-population#SP.RUR.TOTL.ZS (accessed on April 27, 2021).

Program of the European Digital Agenda

Along with the expected increase in the importance of information and communication technologies, it was necessary for the European Union to define an action strategy in this area for all Member States. For this purpose, the initiative of the European Digital Agenda has been established. The first "Europe 2020" program assumed the creation of a digital single market, the main pillars of which were:

1) creating appropriate conditions for the development of networks and services;
2) providing consumers and businesses with easier access to digital goods and services across Europe;
3) maximizing the economic growth potential of the digital economy[14].

[14] European Parliament, https://www.europarl.europa.eu/ftu/pdf/en/FTU_2.4.3.pdf, accessed on 04/05/2021.

In March 2021, the European Council presented the "digital compass" project, which included goals for the development of digital services in Europe by 2030. The key areas that influence the digital transformation are skills, government, infrastructure and business.

In the area of skills, the Commission has assumed a growing demand for digital skilled workers, as well as reducing by half the emerging gap, which oscillates around a million digital professionals. Attention was also drawn to the need to develop digital skills among the population so that at least 80% of the population have basic digital skills. It is related to the improvement of digital education in the member states.

Among the most important goals in the field of digital infrastructure, connectivity at the gigabit level for everyone and 5G everywhere. The necessity to develop quantum technologies and the creation of 10,000 safe edge nodes was emphasized.

In the field of business management, 75 percent of enterprises in the EU should benefit from the cloud, AI, big data, and more than 90% of small and medium-sized enterprises should reach at least the basic level of use of digital technologies.

As part of the digitization of public services, it was assumed that the most important public services should be 100% online; there should be 100% availability of medical records and 80% of citizens should use a digital identity document[15].

Strategic goals defined in this way for 2030 highlight the urgent problem of the digital gap, which affects especially people living in rural areas. First of all, the lack of access to the Internet and to laptops / computers will result in the lack of access to the most important public services and will reduce the chances of development of enterprises in rural areas. Additionally, there is a risk of digital exclusion not only of older people, people with lower digital skills, but also of students who carry out some of their educational activities with the use of ICT. The digital gap in rural areas causes digital exclusion of communities, which entails social and economic exclusion.

Digital exclusion of students from rural areas

The problem of digital exclusion was noticed already in the 1990s in the USA and in Europe, although, as Dominik Batorski[16] notes, its perception was slightly different. In the United States, the problem of digital exclusion was analysed mainly due to unequal access to the Internet and computers of people with different socio-economic status, due to gender, place of residence and age. In Europe, however, the topic of digital exclusion was considered from the point of view of building digital cohesion.

The concept of digital exclusion concerns not only the lack of access to the internet, but also the inequalities in digital skills and the resources necessary to use ICT. Jan Van Dijk[17] identified four types of barriers that affect the appearance of the problem of the digital divide:

1) mental access - lack of interest in new technologies and anxiety about using new media results in low digital skills, and thus deepening digital exclusion;

[15] European Commission, https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/europes-digital -decade-digital-targets-2030, accessed May 4, 2021.

[16] D. Batorski, *Wykluczenie cyfrowe w Polsce*; [in:] *Społeczeństwo informacyjne*, ed. D. Grodzicka, BAS: Warszawa 2009, pp. 223-249.

[17] J. Van Dijk, *The Deepening Divide, Inequality in the information Society*, Sage: London 2005.

2) material access - lack of internet and no access to a computer, meaning a digital gap, result in digital exclusion of individuals;
3) skill access - the lack of digital skills, the lack of education in the area of building digital skills exclude or limit the possibility of fully using the offer of digital technologies. Among the skills, Van Dijk (2005) distinguishes:

(a) operational skills related to technological and communication competences to use computer, software and the Internet;

(b) information skills in terms of searching for information, selecting it, assessing its usefulness and reliability, and processing acquired information;

c) strategic skills related to the purpose of using ICT in the life of an individual (economic, social, educational, entertainment goals).

4) usage access - the way in which individuals use internet access.

Siti Zobidah Omar, Azlina Dauda, Md. Salleh Hassana, Jusang Bolonga, Misha Teimmouria[18], analysing the way the Internet is used by children, noticed that children are sufficiently motivated to use digital technology and distinguish three types of children's activity: 1) content-base activity - related to online activities related to the implementation of school work, searching for information, music, content, using entertainment; 2) Contact/ communication-based activities - related to communicating with peers through chats, e-mail, social media and 3) Conduct / peer participation activities - involving active creation of internet content, such as blogging, file sharing. Sonia Livingstone and Ellen Helsper[19] distinguish six types of children's activities on the Internet: 1) information, 2) communication, 3) entertainment, 4) participation, 5) creativity and 6) expression.

Sonia Livingstone, Leslie Haddon, Anke Görzig and Kjartan Ólafsson[20] characterizing the activities of European students in the Internet state that these are generally positive activities related to communicating or sharing content. Younger and younger children are starting to use the Internet, but the time spent on using the Internet increases with age. Most often, children use the Internet at home (87%) or at school (63%). It is easy to notice that the digital gap in rural areas excludes students from the peer group. Referring to the types of activities of children on the Internet, it can be noticed that the lack of access to the Internet makes it impossible to search for information, for example for the purpose of completing a homework or expanding one's own interests; prevents communication with peers and teachers, and condemns children from rural areas to the inability to participate in the creation of Internet content, development of digital skills (which we also gain thanks to the active use of the opportunities offered by the Internet - creating blogs, critical information retrieval, data selection, sharing the content. Digital exclusion of children from rural areas due to lack of Internet access, limited Internet access or lack of access to appropriate equipment prevents full participation in the virtual community and development of digital skills, which (as indicated by the European

[18] S. Z. Omar et al., *Children Internet Usage: Opportunities for Self Development*, "Procedia - Social and Behavioral Sciences" 155(2014), pp. 75-80.

[19] S. Livingstone, E.J. Helsper, *Balancing opportunities and risks in teenagers' use of the internet: the role of online skills and internet self-efficacy*, "New Media and Society" 12(2)/2010, pp. 309-329.

[20] S. Livingstone, L. Haddon, A. Görzig, K. Ólafsson, *Risks and safety on the internet: The perspective of European children*, EU Kids Online: London 2011.

Union) will be key on the labour market. At the same time, as indicated in the report (Livingstone et al. 2010), only one third of students agree with the statement that they know more about the Internet than their parents. This means that, to a large extent, the guides of children in the digital world are parents who, by analysing rural areas, grew up in the digital gap.

Considering the fact that contact with the Internet takes place at school and in order to carry out school tasks, it is also necessary to look at the digital competences of teachers, who should shape the digital habits of students so that they are active and conscious Internet users. The school, especially in rural areas, should ensure that a possible digital exclusion (caused by lack of infrastructure in pupils 'homes; finances; parents' motivation to start the Internet) does not lead to social exclusion. J. Van. Dijk and K. Hacker[21] also pointed out that Internet access alone would not change passive members into active and committed creators. On the other hand, Henry Jenkins[22] notes that focusing too much on the digital gap as the lack of Internet access may result in ignoring the participation gap. This means that the internet will only be a source of entertainment, not culture. These dimensions of digital exclusion should be analysed by educators who, to a large extent, make up members of the digital society.

Teachers who want to create active members of a media society can use various tools to monitor the degree of students' participation in the virtual world, including Bloom's Digital Taxonomy and Ruben R. Puentedura's SAMR model. Andrew Churches [23]analysed Bloom's taxonomy in detail and proposed a digital taxonomy. It allows teachers to analyse the objectives of their lessons in terms of categories, from verbs that require simple mental actions to complex ones. Each category is assigned an activity that students can perform using new media (e.g. instant messaging, twitting, chatting, posting, commenting, moderating, debating, negotiating, collaborating with others). Teachers can evaluate the lesson objectives to see if the tasks proposed to students require them to have more advanced thinking and digital competencies, or if they remain in the basic categories. The SAMR model created by Ruben Puentedura[24] shows the successive levels of ICT implementation in teaching-learning. The model distinguishes four levels: substitution, augmentation, modification and redefinition. As in the digital taxonomy, each successive level represents a more complete use of new media in education related to the functional change of new media and changes in teaching methodology.

Striving for better and better use of new media, which changes the methodology of teaching, implies the necessity of closing the digital gap, which will exacerbate the digital exclusion of students from rural areas and students who, for financial reasons, have difficult or limited access to technology and the Internet.

[21] J. Van Dijk, K. Hacker, *The Digital Divide as a Complex and Dynamic Phenomenon,* "The Information Society" 19/2003, pp. 315 - 326.

[22] H. Jenkins, *Kultura konwergencji. Zderzenie starych i nowych mediów*, Wydawnictwa Akademickie i Profesjonalne: Warszawa 2007.

[23] A. Churches, *Bloom's Digital Taxonomy,* 2008: https://www.researchgate.net/publication/228381038_Bloom's_Digital_Taxonomy

[24] R. R. Puentedura, *Transformation, Technology, and Education,* 2006, http://hippasus.com/resources/tte/.

Increasing teachers' digital competences as a way to fight digital exclusion

Building teachers' digital competences is one of the most effective ways to counteract digital divide in rural areas. Teachers who are aware of their digital competences in the area of both preparing to conduct classes, using the media during classes, working with students, shaping their online habits, as well as complying with the law and caring for online safety, are able to effectively counteract the effects of digital exclusion students. The mere perception of the problem of a digital gap or digital divide in rural areas enables teachers to take actions such as participating in dedicated projects, providing ICT tools and the Internet at school, training for parents to raise awareness of the importance of new media for students' development and for their future professional careers. Any actions aimed at eliminating the digital divide will not be effective if teachers' awareness of the functioning of communication and information technologies is low.

Christine Redecker stated in the report on the European Digital Competence Framework for Teachers that with the growing media participation in education, it is necessary to define the digital competence set for teachers in order for teachers to fully use the potential of ICT in education.[25] The report distinguishes six areas in which the competences related to various professional activities of teachers are analysed (Figure 3.)

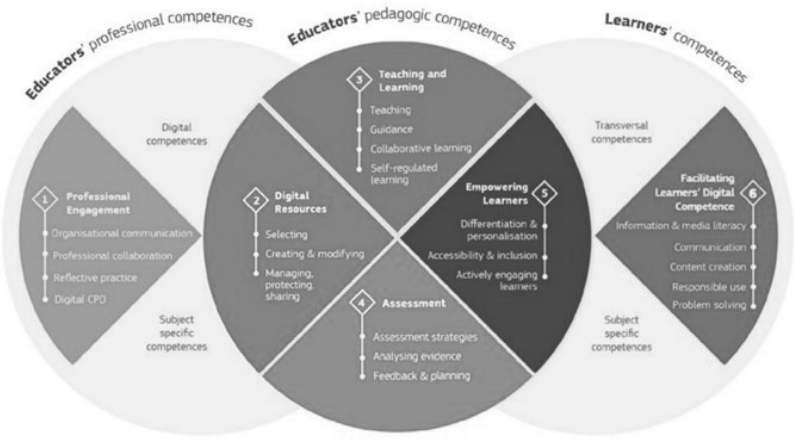

Figure 3. Digital competences of teachers
Source: C. Redecker, *European Framework for the Digital Competence of Educators: DigCompEdu*, Publications Office of the European Union: Luxembourg 2017, p. 19.

1) professional engagement - this is an area where attention is paid not only to the use of digital competences in teaching, but also in professional contacts with students, parents and other teachers. In this area, the following competences have been distinguished in detail: a) communicating with members of the organization; b) professional

[25] C. Redecker, *European Framework for the Digital Competence of Educators: DigCompEdu*, Publications Office of the European Union: Luxembourg 2017, p. 19.

exchange of experience and knowledge in order to implement innovations; c) reflection on one's own activity related to ICT in education; d) using digital sources to improve one's own qualifications.

2) digital resources - this is an area covering teachers' pedagogical competences and concerns: a) the ability to search and select information available on the Internet; b) the ability to adjust specific materials to the abilities of students and their needs in accordance with the law in the field of using resources available on the Internet; c) knowledge and skills related to copyright, the protection of sensitive content, and the management of online content, as well as sharing and organizing it.

3) teaching and learning - this is an area in which competences related to: a) teaching with the use of ICT related to the search for new methods and forms of work have been distinguished; b) counseling, i.e. directing an individual educational offer for students in need of support, c) strengthening cooperation and communication with students through the use of new media, and d) implementing digital tools thanks to which students will be able to plan and supervise their learning and progress on their own.

4) assessment - in this area digital competences have been distinguished regarding: a) the use of programs enabling formative and summative assessment; b) using tools to analyse and interpret students' activity; c) the use of digital tools to provide faster feedback to students about their work.

5) empowering learners - in this area, attention was paid to the potential of new media in individualizing education. High competences in this area support: a) personalization of education for students with diverse groups or with special needs; b) making educational resources available to people who, for various reasons, cannot participate physically in the classes; c) designing activities so that all students actively participate in them by undertaking their own research and practical activities.

6) the last area is related not so much to the use of ICT tools in education, but to the implementation of students to function in the digital world. It distinguishes students' acquiring competences related to: a) searching for information, its selection, analysis, critical evaluation and evaluation of sources; b) responsible and conscious use of the Internet, including civic participation; c) creating content and assessing the possibility of using sources in accordance with copyright law.

Michal Klichowski's[26] research shows that teacher candidates are resistant to introducing ICT tools into their daily work that modify the existing ways and methodologies of work. Additionally, teachers are not in favour of introducing any changes regarding the semi-permanent space of the school classroom and the transmission model. Klichowski refers to the TPACK model as an element that, when introduced into the training of future teachers, would have the potential to change their approach to the use of new media at work. The TPACK model assumes that teacher education takes place on three levels that interact with each other: 1) the acquisition of pedagogical knowledge and competences, 2) the acquisition of knowledge and competences about the subject of teaching, and 3) the acquisition of technological knowledge and skills that enable the teacher to combine ICT tools with subject and pedagogical knowledge.

[26] M. Klichowski, P. Bonanno, S. Jaskulska, C. Smaniotto Costa, M. de Lange, F. R. Klauser, Cyb*er-Parks as a new context for Smart Education: theoretical background, assumptions, and pre-service teachers' rating*, "American Journal of Educational Research", 2015, 3/12A, pp.1-10.

Summary

The analysis of the report by C. Redecker[27] makes it possible to see how strongly digital technologies affect the educational process and in how many areas they are present. The problem of the digital gap in rural areas excludes both teachers and their students from participation in the virtual world, which provides tools and the opportunity to expand knowledge and skills. The lack of access to tools and the Internet prevents more personal and faster communication both in the organization and between teachers and students, their parents and the students themselves; use of online learning resources in and to prepare for lessons; entering the virtual world as a place where there are rules and compliance with the law; the use of tools and applications supporting assessment, teaching and learning; learning the rational use of Internet resources and being not only a passive recipient, but also an active creator of valuable content. Closing the digital gap should be a priority action. However, it is worth paying attention to the fact that not only the technical lack of access to the Internet causes digital exclusion of students, but also mental barriers and barriers related to the ability to use ICT favor the increase in the scale of the phenomenon. In the context of younger school age children, important is the educational activity of teachers aimed at parents who, despite their lack of interest and skills, will connect to the network and enable their children to use scientific resources. For this reason, apart from closing the digital gap, it seems more reasonable to diagnose and develop teachers' media competences in the six indicated areas, so that they can show their students and their parents the way of effective use of Internet resources, not so much for entertainment, but for educational purposes. The issue of digitization and technologization of the process of organizing education and upbringing has been an issue that has been discussed for several decades. Preparing young people to function in the digitized world, deep specialization in the labor market related to the paradigm of technological determinism[28], dual functioning of individuals both in virtual and real space and the interpenetration of these spheres in everyday activities, and Jonscher's "wiring" of an individual in the contemporary world should become a serious space for discussion on the shape and form of educational processes at various levels of society functioning. The digital gap mentioned in the article, taking into account the above arguments, is both a sociological and a philosophical problem, which, in the opinion of the author, should be taken up and developed in interdisciplinary research, combining philosophical ideas with sociological empiricism.

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