

Digital Exclusion in Poland and South Korea – A Comparative Analysis of the Phenomenon

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Abstract

Comparative empirical studies of digital exclusion have been conducted in Poland and South Korea. Surveys of students (including doctoral candidates) and in-depth interviews with academic teachers at selected universities and fields of study were used (N=135). The average differences in the opinions of Polish and Korean students are not statistically significant at the level of $p < 0.05$. Therefore, an independent sample t-test was performed. The most common exclusion variables are objective (or technological) factors, whereas a lesser role is played by subjective (or psychological and sociological) factors.

Keywords: *Poland, South Korea, digital exclusion, post-digital society, algorithmization of social life*

Introduction

Globally, intensive theoretical and empirical studies have been conducted, for several years, under the current scientific paradigms: Industry 4.0 and Society 5.0. These concepts are related to the long-term, dynamic development of digital media, used in many aspects of the modern individual's social and professional group functions and the functioning of organisations, enterprises, and factories. The concepts can also be extended to include the financial and logistic sectors. The spiralling development of modern society's digitisation, called digital transformation, and everyday life algorithmisation have contributed to a synthetic view of the economy, not only in individual countries, such as Japan or the USA, but also

in their integrated federations, such as the European Union. Among digital media, the Internet is dominant, with its digitisation of the human functioning space, using TV, smartphone, computers, cars, maps, forecasting many phenomena and processes, such as, for example, production and distribution of manufactured consumer goods, management and development of organisations, diagnosing business relations in organisations, communicating via digital messaging and social media, or listening to music and watching movies.

Both paradigms of thinking about the economy (because Industry 4.0 evolves towards the concept of Economy 4.0), Industry 4.0 and Society 5.0, closely correlate. The economy is a social system, a set of cooperative rules within limits described by law and Economy 4.0 is a concept of an industrial and cultural revolution stimulated by the development and widespread use of digital media. It includes the processes of automation as well as data processing and exchange, the implementation of various new technologies, allowing the construction of so-called cyber-physical systems and changing the methods of producing goods. This new way of manufacturing is implemented through the digitisation of production in which devices and technological systems are connected, also via the Internet, and where large sets of production data are analysed.

Today, however, it can be said that the dynamic development of digital media also leads to the digital exclusion of individuals and social and professional groups.

Theories of Digital Divide and Digital Exclusion

Van Deursen and Helpers (2015) have written that research into digital inequalities has moved from a simple understanding of digital divides in terms of access to a more nuanced understanding of digital exclusion as multi-faceted, involving access, literacy and participation through Information and Communications Technologies (ICTs): an exclusion embedded in traditional inequalities.

In that sentence, one can find a few terms concerning the research subject, for example, digital inequalities, digital divide, and digital exclusion. Let us try to define these three concepts briefly.

The term “digital inequalities” is seen as either coming from macro-level structural constraints that lead to inequalities between socio-economic and cultural groups or deriving from individual micro-individual level factors such as personality and skills. Digital inequalities research cannot ignore the social inequalities theory and social contexts. Thus, we should account for the person’s feelings whether they can or need to engage with ICTs at a certain point in their

life (Helpers, 2017; Reisdorf & Groselij, 2015, pp. 1–20; Robinson et al., 2015, pp. 569–582).

The term “digital divide” originated in the mid-late 1990s and subsequently gained popularity with researchers in multiple spheres: information systems and technology, business, economics, management and the social sciences have examined multiple aspects of the digital divide. The Organization for Economic Cooperation and Development (OECD, 2011) has defined the term digital divide as the “gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access ICTs and to their use of the Internet for a wide variety of activities”. Thus, prior research has largely focused on this phenomenon regarding access and use of ICTs (Gunkel, 2003, pp. 499–522; Warschauer, 2003). Pick and Sarkar (2016, pp. 3888–3897) have shown that access and use of ICTs in digital divide studies have been examined at various levels – from that of the individual (Chen, 2013, pp. 13–25), to the household (Van Dijk, 2005; 2006, pp. 221–235; Van Dijk & Van Deursen, 2014), to multi-national (Corrocher & Ordanini, 2002, pp. 9–19) or global (Skaletsky et al., 2014, pp. 218–250). The analysis of the phenomenon should also account for cultural and educational divisions, as well as attitudes, needs, views and individual experiences of individuals.

Many theories have been posited and developed over the years upon which to base investigations related to access, adoption and use of ICT. However, most researchers agree that four main theories have either been adapted or posited to examine digital divides (Pick & Sarkar, 2016, pp. 3888–3897): (1) Adoption-Diffusion Theory (ADT), (2) Van Dijk’s Model of Digital Technology Access, (3) Unified Theory of Acceptance and Use of Technology (UTAUT), and (4) Spatially Aware Technology Utilization Model (SATUM). The last model has been developed and implemented for recent studies of the digital divide at the global, national, and sub-national (state or provincial) levels: model 4 is unique due to its explicit modelling of spatial autocorrelation of ICT indicators as well as their independent correlates. In today’s world, one of the determinants of the level of civilisational development of the country is citizens’ access to the Internet.

Digital exclusion is a multi-faceted social, educational, cultural, technological and economic phenomenon that is intensively studied in various academic and research centres around the world. Many theories of digital exclusion have arisen, the original of which alluded to the concept of „social exclusion”, understood as the lack of access to certain goods necessary for normal functioning in society. It was shaped in the 1970s as a reflection of the multidimensionality of social life. Digital inequalities research adopted the idea that exclusion is compound and

multi-faced (Janmaat, 2013, pp. 357–389). Nevertheless, digital exclusion theory and empirical research often take an individual-focused, static approach, which assumes that personal characteristics such as socio-economic status consistently influence how individuals engage with ICTs across different contexts. We are guided to understand digital inequalities by the Relative Deprivation Theory (RDT) (Helsper, 2012, pp. 403–426; 2017; Smith & Petigrew, 2015, pp. 1–6).

Determinants of Digital Exclusion

However, digital exclusion, although the same as social exclusion due to its effects, is a more complex phenomenon, consisting of many different factors determining the exclusion of people at risk. Both physical access to the Internet and a whole range of psychological and sociological conditions are causative factors: they can be divided into two categories:

(1) Objective (or technological) factors, including access to infrastructure, the quality of equipment, internet connection and its bandwidth, technological progress and algorithmisation of social life (Helmond, 2013). This latter factor (or this category?) is linked to the implementation of technology into education, social life and culture and either causes social resistance or misunderstanding of the processes taking place in these areas by less educated residents or the elderly, who do not understand the assumptions of the information society. The variable „algorithmisation of social life” interacts with other variables, resulting in their stronger impact (Han-Wei Liu et al., 2019).

(2) Subjective (or psychological and sociological) factors, including fears concerning the use of technology and the Internet (fear of new products as well as concerns of, e.g., the security of transaction), motivation, personality traits, quality of life and income, skills and their level, to which we can add containment of knowledge, high degree of knowledge specialisation. „Motivational exclusion” refers to mental barriers and resentment towards new technologies, including lack of faith in one’s own abilities, lack of motivation and willingness to get acquainted with modern technologies, and fear of novelties. The second dimension – material – is related to a simple understanding of digital exclusion, for example, the inability to purchase network access devices, software and services. The third dimension concerns skills and is understood as the inability to acquire, maintain or upgrade the capabilities associated with the use of ITCs, and the fourth „use” means that the technology is used for a specific purpose (Van Dijk & Van Deursen, 2014). As Van Dorsen and Van Dijk point out (2015), the model is cumulative and recursive,

with the individual dimensions of digital exclusion consecutively followed and the process repeated as new technologies emerge.

We live in an algorithmic society. Algorithms have become the main mediator through which power is enacted in our society. However, we are still grappling to understand their operations and effects (Shuilenberg & Peeters, 2022). The Internet user avails of certain search engines and communication tools to generate content and services tailored to his profile, preferences, interests, or previous choices. All this information is available through (via) algorithms integrated into portals and websites. Algorithms that track your tastes, preferences and choices allow to „personalise your offer by tailoring it to the information we collect about your needs and interests, using the software’s ability to influence what content you receive” (Miczka, 2019, pp. 13–21).

Current websites and web portals are therefore taking on increasingly pseudo-human characteristics, automating many processes and limiting the interaction of the real user, among others, when making decisions. It applies not only to how the recipient uses the network but also to the creative process of the broadcaster (Brown & Whittle, 2020). Thus, the ubiquitous algorithms already know our interests and tastes. Therefore, they send us information similar to what we have already viewed. Consequently, they limit and cut us off from other information that could potentially interest us. That is why it is so important for the individual to be creative and a critical thinker so that they can free themselves from supervision by algorithms and develop in an unfettered way. The majority of the population can thus be subject to algorithm-based recommendations and information from the original circle of interest. Liberating ourselves from the pressures of algorithms and related artificial intelligence is a task for modern education. Otherwise, the recommendation of algorithms will lead individuals to a kind of digital exclusion, associated with restriction of the freedom to know reality, narrowing our circle of interest and development of skills, leading to a lack of knowledge of the basic problems of the modern world.

Some important factors that impact digital exclusion include:

- Sex of the Internet users: girls and women in many countries often have less access to technology and the Internet than boys and men. Particularly in developing countries, girls and women struggle to afford technology and Internet access. In addition, stereotypes around technology being “for boys” and fear of being discriminated against, stop girls from using digital tools;
- Individuals with low material status;
- Individuals with a specific type of disability, for example, deafness, visual

impairment, blindness, limb dysfunction, those with fear of novelty and misunderstanding of the assumptions of the information society;

- Elderly (60+), elderly families living in rural or poorly serviced urban areas;
- Employees of companies with low digital competencies, leading to their low competitiveness in the labour market;
- Consumers suffering from a lack of access to information resulting in unnecessary spending and a lack of independence;
- Citizens, through lack of access to digital public services.

Empirical research shows that individuals who are passive to the Internet show lower levels of social capital due to a lack of online contact. In addition, online activity implies higher activity in cultural and social life (Śmiałowski, 2019, pp. 54–61).

The described empirical research aims to analyse the level of knowledge of concepts related to contemporary society, problems related to the widespread digitisation of our lives, and factors conducive to digital exclusion among students and academic teachers from three universities in Poland and the Republic of Korea.

Research Sample

We invited PhD students and students from various fields of study at the Silesian University of Technology (SUT) in Gliwice, the Janusz Korczak Pedagogical Academy (JKPA) in Warsaw (Faculty of Social Sciences in Katowice, Poland) and Hankook University of Foreign Studies (HUFS) in Seoul (Republic of Korea), to take part in the survey. The research samples were selected based on convenience samples (N=123). The survey opinions were supplemented with in-depth interviews conducted with academic teachers from these universities, representing specialists from different disciplines: automatisisation, telecommunication, material engineering, media educators and philosophers in SUT and specialists from humanities in HUFS (N=12). The total number of the research sample was N=135.

The exact numbers of doctoral students and students surveyed at each university and the disciplines they represent are given below:

Doctoral students (DS) in SUT, $N_M=19$, $N_F=22$, total number $N_{DS}=41$; age: 24-54. Disciplines and specialisations represented by doctoral students: automatisisation, biotechnology engineering, biomedical engineering, biomedical technology, chemical engineering, environmental biotechnology, material engineering, applied informatics, telecommunication and transport engineering.

Students of pedagogy (early school education, special pedagogy, pedagogical therapy) in SUT and JKPA $N_M=2$, $N_F=38$, the total number of students $N_S=40$; age: 23-27.

Doctoral students in HUFS, $N_M=2$, $N_F=10$, total number $N_{DS}=12$; age: 27-31. Students of humanities $N_M=10$, $N_F=20$, the total number of students $N_S=30$; age: 20-24. The total number of respondents from HUFS $N_K=42$. Disciplines represented by doctoral students and students from HUFS are: media communication, media technology, convergence study, political sciences, philosophy, statistics, sociology, business and administration, economics, electronics, Middle Eastern studies, Arabic studies, Middle East & Islamic Strategy, African society and culture, Chinese language.

Research Method

The research design for this study is a descriptive analysis. Descriptive research is useful when it is impossible to test and measure the large number of samples needed for more quantitative types of experimentation (Picciano, 2004). The qualitative nature of the content analysis is supported by in-depth interviews with academic teachers and by the surveys conducted among the students and doctoral students.

Analysis of the Results of the Survey of Students and Doctoral Students and Interviews with Academic Teachers

Selected results of the survey are presented in Tables 1-6, where N_{DS} , N_S , and N_K , respectively, represent the number of doctoral students from SUT, the number of students from SUT and JKPA and N_K , the total number of doctoral students and students from HUFS.

The obtained data were analysed and interpreted in the framework of the described theories concerning digital inequalities, digital divide, digital exclusion, and the algorithmisation of social life.

All the collected data were analysed using the statistical program SPSS 21.0. The average differences in the indications of Polish and Korean students are not statistically significant at the level of $p<0.05$. Therefore, an independent sample t-test was performed. The diagnosis of key concepts of a post-digital society showed that respondents from both countries know these concepts equally. It reflects social

Table 1. In what society are we living?

No.	Type of society	N _{DS}	%	N _S	%	N _K	%
1.	Changing society	19	46.3	8	20	11	26.2
2.	Information society	28	68.2	16	40.0	19	45.2
3.	Postmodern society	5	12.1	2	5.0	3	7.1
4.	Society 5.0	4	9.7	11	27.5	3	7.1
5.	Citizen society	5	12.2	0	0	2	4.7
6.	Digital society	6	14.2	6	15.0	17	40.4
7.	Post-digital society	6	14.2	5	12.5	12	28.5
8.	Other: misinformation society	1	2.4	2	4.7	0	0
9.	Other: Family society	1	2.4	0	0	0	0

changes taking place globally before our eyes, and specialist literature is teeming with novel descriptive names for this evolving society: from a changing society to an information society, a digital society to a post-digital society, etc. (Table 1). The nuances associated with the various names of social order are understandable to specialists, which was confirmed by in-depth interviews with academic teachers.

In the philosopher's opinion (in our interview), the term "digital society" is increasingly used today. The terms postmodern society, knowledge society and information society are used less and less. "Citizen society" appears more often in political discussions, and "changing society" is too general and does not adequately characterise the changes taking place. In addition to "digital society", the terms "society 5.0" and "post-digital society" are also used.

Computer scientists believe that the "contemporary society is composed of ICT facilities. And without digital technique or facilities, such as mobile phones, internet big data and cloud technologies, our society is not able to maintain and manage itself. Also, the other terms, changing society, postmodern society, knowledge society, citizen's society, information society, are usually used in the academic field rather than in normal society".

The economist and the sociologist consider that "contemporary society is witnessing an unprecedented pace of social transformation. The characteristics of this change are described in various forms, postmodern society, knowledge society, citizen's society, information society. However, the most crucial aspect of the transformation is coming from the advancement of digital technology. Digital technology is providing new tools that are revolutionising institutional relationships and the way they operate, empowering individuals and their ability

to both participate in and contribute to decision-making and production. Thus, as the notion of digital society effectively symbolises and reflects the results of the changing society and its modernity, it is the most used lexicon that defines the current human society”.

Table 2. What does the term ‘digital inequalities’ mean?

No.	Explanation of the term ‘digital inequalities’	N _{DS}	%	N _S	%	N _K	%
1.	Inequalities between socio-economic groups	9	21.9	28	66.6	16	38.1
2.	Inequalities between cultural groups	3	7.3	24	57.1	1	2.3
4.	Differences in personality	2	4.8	0	0	2	4.7
5.	Differences in Internet skills	18	43.9	32	76.2	14	33.3
6.	Lack of familiarity with ICTs	18	43.9	24	57.1	12	28.6
7.	Other: inequalities in accessing ICTs; information gap	2	4.8	0	0	1	2.3

The sociologist from HUFS thinks that gender-based, digital inequality might be becoming less pronounced in the post-digital society than before in real social life. Boys can generally expect better digital tools (laptops, smartphones, iPhones) than girls. Boys are simply keener to play video games and are more inclined to take into account digital hardware requirements. But, in general, no empirical studies have documented a statistically significant difference in digital competence between women and men. The other respondents from SUT and HUFS said that gender inequality has different sources. For example, cultural and digital inequality is secondary to these sources and can most often perpetuate them.

Table 3. What does the term ‘digital divide’ mean?

No.	Explanation of the term ‘digital divide’	N _{DS}	%	N _S	%	N _K	%
1.	Gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access ICTs and to their use of the Internet for a wide variety of activities	29	70.7	32	76.2	32	76.2
2.	Lack of access, adoption and use of ICTs	4	9.7	5	11.9	2	4.7
3.	Lack of access to cultural and educational divisions	5	12.2	0	0	3	7.1
4.	Attitudes, needs, views and individual experiences of individuals with ICTs	5	12.2	0	0	3	7.1

The respondents from SUT and HUFs said that as digital technology is common, people who use this technology will acquire more knowledge, thus enabling them to increase their wealth. In contrast, the person who cannot access this technology will not have the opportunities to develop new skills. This discrepancy between the two groups will continue to widen over time. In addition, this is not merely a simple information gap between digital-based knowledge groups. It also occurs in and will create further knowledge gaps in the realms of insights, thought, perception, and culture.

Some respondents added that the digital divide can be considered a discrepancy of capacity between different groups in society being able to access and use ICT or the “gap is between agents (group, person, institution, etc.): those who are able to benefit from the digital age and those who are not able”.

According to the philosopher, the “digital divide” “is the most general and at the same time a neutral term. Digital inequalities, otherwise termed digital differentiation, which has different sources and causes (the term is not neutral), requires the identification of inequality indicators. Digital exclusion becomes the result of digital inequalities in relation to specific fields and expected objectives; digital exclusion is rooted in digital inequalities, but digital inequalities do not always have to lead to digital exclusion, similar in nature to social exclusion”.

The computer scientists from SUT and HUFs believe that “because of the internet access opportunity or possession of digital facilities, people can be divided into those who have information (they have access to Internet network and high-tech IT devices) and those who do not. It occurs as information inequality among them. Usually low-income or rural residents have less opportunity to access these kinds of information due to digital inequalities, it is strongly connected with the disparities or discriminations in the structure of access to and use of ICT”.

Table 4. What does the term ‘digital exclusion’ mean?

No.	Explanation of the term “digital exclusion”	N _{DS}	%	N _S	%	N _K	%
1.	This is a multi-faceted social, educational, cultural, technological and economic phenomenon	20	48.7	32	76.2	16	38.1
2.	This is a socio-economic status which consistently influences how individuals engage with ICTs across different contexts	20	48.7	20	47.6	15	35.7
3.	Social group processes caused by different factors (variables)	3	7.3	5	11.9	7	16.6
	Other: specific groups excluded from benefits of information society	0	0	0	0	2	4.7

The respondents from HUFS said that the main factors for digital exclusion are: “lack of access to broadband Internet, which often happens in poorly urbanised areas, lack of ability to use new technologies, here digital media, and the old age of digital media users. In addition, other groups of people usually discriminated against due to their ethnicity, education, region and income, are also included. At present, digital exclusion is strongly connected with social exclusion from contemporary society”.

The linguists from HUFS said that “particularly in South Korea, which is considered as one of the leading countries in the world digitally, the problem of digital exclusion is ubiquitous. During the COVID-19 era, for instance, some students, who could not afford appropriate digital devices, had difficulty in taking online lectures. A more serious issue with regard to digital exclusion is not the exclusion itself, but the rapid speed of the digitalisation of every life. In South Korea, digitalisation is happening at top speed. Seniors’ groups who are not accustomed to dealing with digital services, in particular, have difficulty coping with minor things in daily life such as food delivery service, ticketing for the bus or subway, QR codes and so on”.

Economists and computer scientists said, that: “Firstly, nationals in technologically-advanced countries can access and use ICT much easier in comparison with nationals in technologically less-advanced countries. Secondly, social economic variables such as income level, education level, generation, even membership in ethnic groups also can cause digital exclusion”.

Linguists from HUFS added that the “cases that they experience most about digital exclusion in everyday life is strongly related to the issues of social class and the age group. Although the internet access is relatively easy and cheap in South Korea, the cost is still a barrier to the people who cannot afford it. Moreover, the older generations who are not accustomed to cyberspace and SNS had more chances to be victims of digital exclusion”.

The professors from HUFS said that digital exclusion can be approached from two perspectives. “One is that human beings are artificially excluded from the right-to-access digital resources and infrastructures and possible benefits and wealth they can get from them. The other perspective is that human beings can also be socially excluded simply because they are too involved with and extremely embedded in the digital world to the extent that they cannot lead a normal social life. The professors from HUFS emphasise the need to consider ways and means to create balance between the social and digital world, by providing equal opportunities and freedom for people so that they can choose the most holistic way to live: this is critical for a healthy future society”.

Table 5. What does the term ‘algorithmisation of the social life’ mean?

No.	Explanation of term ‘algorithmisation of the social life’	N _{DS}	%	N _S	%	N _K	%
1.	Algorithms integrated on portals and websites track your tastes, preferences, and choices: they allow you to ‘personalise your offer by tailoring it to the information they collect about your needs and interests, using the software’s ability to influence what content you receive’	25	60.9	12	28.5	26	61.9
2.	Current websites and web portals are taking on increasingly pseudo-human characteristics, automating many processes and limiting interactions of the real user, e.g., when making decisions	1	2.4	5	11.9	6	14.2
3.	The ubiquitous algorithms already know our interests and tastes, and therefore they send us information similar to that we have already viewed. However, in this way, they limit us and cut us off from other information that could potentially interest us	16	39.0	28	66.6	12	28.5

A very important and dynamically developing process is the “algorithmisation of social life”, which does not appear to severely impact our respondents, with consequent average knowledge by students (especially from humanities and social sciences) in both countries. Better knowledge of this process is presented by doctoral students and the best by academic teachers. Its multidimensional and diverse features were aptly indicated by respondents in Table 5 and in-depth interview results.

The economists said that <<everything is programmed with algorithms, and people are more and more embedded in the “algorithmisation of social life”. The “algorithmisation of social life” is the institutionalisation of social life into the digital world, since digital technologies can fully embody the institutional properties of our social life>>.

According to the philosopher, “digital exclusion in the case of algorithmisation is most often carried out in a hidden and opaque way. Apparently, only the algorithms used are objective, because, in reality, they are based on specific assumptions, deliberately based on specific inequalities and, therefore, designed to perpetuate or even produce these inequalities. In universities, for example, research funding is always based on specific preferences, i.e., inequalities, often justified, but sometimes also requiring “compensatory” actions”.

Table 6. What are the factors which cause or impact 'digital exclusion'?

No.	Factors that impact 'digital exclusion'	N _{DS}	%	N _S	%	N _K	%
1.	Lack of the physical access to the Internet	29	70.7	32	76.2	12	28.5
2.	Lack of access to information infrastructure, the quality of equipment, Internet connection and bandwidth	25	60.9	24	57.1	15	35.7
3.	Technological progress and algorithmisation of social life	13	31.7	20	47.6	6	14.2
4.	Misunderstanding of the processes taking place in the mentioned areas by less educated residents or elderly	14	34.1	20	47.6	14	33.3
5.	Not understanding the assumptions of the information society	13	31.7	0	0	4	9.5
6.	Fears concerning the use of technology, including the Internet	16	39.0	0	0	7	16.6
7.	Motivation, personality traits, quality of life and income, skills and level	15	36.5	24	57.1	11	26.2
8.	Containment of knowledge, high degree of knowledge specialisation	3	7.3	0	0	6	14.2
9.	Sex/gender of the Internet users	0	0	0	0	0	0
10.	Low material status of the individuals	12	29.2	24	57.1	7	16.6
11.	A specific type of disability of individuals such as: deaf, visually impaired, blind, limb dysfunction, etc.	13	31.7	32	76.2	7	16.6
12.	Age: elderly (60+), elderly families living in poorly urbanised areas (rural areas)	24	58.5	24	57.1	19	45.2
13.	Low digital competencies of employees in companies	3	7.3	0	0	1	2.3
14.	Lack of access to digital public services by citizens	12	29.2	8	19.0	6	14.2

In our research, respondents accurately pointed to the importance of technical problems in the phenomenon of digital exclusion (Table 6). The factors of digital exclusion were also aptly indicated by the respondents. Students and doctoral students from both countries rightly considered that the most common exclusion factor was the old age of Internet users (60+) and living in poorly urbanised areas (rural areas).

According to the philosopher, the "Internet and digital technologies as means of communication can lead to exclusion, in general, because they can serve as means of manipulation. It does not have to be done, for example, by hiding information

or manipulating data, but also by over-information and mixing the essential with the unimportant”.

According to the computer scientists, “in developed societies digital exclusion is not obvious. Maybe, in the case of aged people, who cannot deal with new technologies, for example, online queuing systems”.

The linguists said that “this phenomenon is clearly seen, when students don’t have relevant digital devices to take online courses with Zoom. When colleagues are too involved in digital working environment that they are excluded in real social activities in the working place. Or when colleagues don’t have access to certain data or information that they should have. Older people cannot buy Express Rail ticket (or subway ticket) simply because they don’t know how to use a mobile app and mobile payment system (QR code)”.

Conclusions

The global crisis caused by the COVID-19 pandemic has brought education in all countries into the digital world. The technological factors of digital exclusion were particularly significant in early 2020 when the pandemic caused the closure of schools, libraries and universities, among others, and the transition to synchronous distance learning using the global Internet network. Not only did schools lack adequate computer hardware, software and broadband Internet access, but also universities around the world. Rapid purchases of computers, and software, construction of educational portals, as well as network communicators such as Zoom, Teams, Big Blue Button, or Webex and many others were the characteristic activities of schools, universities and teachers during the pandemic. Intensive courses for teachers in schools and universities were held to develop new methodical skills, different from the face-to-face method of direct education. Efforts were made to use fibre optic links to counteract the digital exclusion of pupils and students living in poorly urbanised areas where broadband Internet was lacking. Academic teachers and students critically recall this period of study (Juszczak & Kim, 2020, pp. 115–127).

In 2020–2021, most of the technical obstacles to distance learning have been removed in universities, and sociological and psychological obstacles have been largely reduced, resulting in the digital exclusion showing a decreasing trend in the modern world, especially in the research countries.

The results of empirical research confirm the knowledge – held by students and doctoral students – of concepts concerning phenomena and processes taking

place in a dynamically changing social order. Digital media, the development of which significantly contributes to the dynamics of the analysed phenomena and processes, are at the same time becoming an excellent tool for diagnosing these changes and obtaining information about them.

Through in-depth interviews, academic teachers from SUT and HUFS aptly described and assessed the course of dynamic phenomena and processes taking place in a post-digital society as related to the development of digital media and bringing many utilitarian benefits (Ruggiero, 2000, pp. 3–37; Van Deursen & Helsper, 2015, pp. 29–52), but also favouring certain mechanisms related to digital exclusion. Respondents interpreted the analysed concepts in their own words, referring them to their own everyday life realities.

The research aimed to draw attention to these contemporary phenomena and processes, which have a global dimension.

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