

Optimizing Educational Opportunities using AI to Ensure Accessibility at Public Sector Institutions in Poland

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Abstract: The use of artificial intelligence in education is a logical consequence of the potential it represents. The solutions offered by AI to eliminate barriers, e.g. for people with special educational needs, provide real help in communicating with them. However, the potential often does not equal the opportunity. It is necessary to check whether the environment in which AI solutions will be implemented is actually prepared for its application/use. The article indicates the main directions of AI development in education by analyzing the types of disabilities among learners. Finding real needs will allow you to optimize opportunities (using AI) for equal access to education. Public institutions were subjected to additional examination. Its aim is to check their actual digitization status, which creates the foundation for implementing modern solutions.

Keywords: Education, AI, People With Special Needs, Accessibility.

1. Introduction

The Constitution of the Republic of Poland adopted in 1997 (Constitution of the Republic of Poland, 1997) guarantees the right to education in Poland. It is provided by Article 70, which refers to, among others, having the right to education, while maintaining its compulsory education until the age of 18. It defines education in public institutions as free and emphasizes the obligation to ensure universal and equal access to education, which is guaranteed by public authorities while maintaining the autonomy of higher education institutions on the principles set out in the Act. Another legal document relating to education in Poland is the Act of December 14, 2016, Education Law (2023). Respects the principles contained in:

- the Constitution of the Republic of Poland,
- Universal Declaration of Human Rights,
- International Covenant on Civil and Political Rights
- Convention on the Rights of the Child.

The structure of the school, special units and counseling facilities and centers are described in Article 2 of this Act, while Article 4 in sections 2 and 3 defines a special unit, section 3 characterizes an individual educational and therapeutic program and section 4 organization of education and upbringing for special education. The special unit is intended for pupils with a certificate of need for special education and is described as a form of education (with reference to Article 127): "Special education covers children and youth who are disabled, socially maladjusted and at risk of social maladjustment, requiring the use of special organization of learning and methods of work. The global dimension of the issue of special education had its original place in the United States Congress in 1975: Public Law 94-142, 94th Congress, Education for All Handicapped Children Act of 1975 (Public Law 94-142, 1975).

In Poland, in accordance with the Education Law (Education Law, 2023), compulsory schooling (7 years) is preceded by one year of pre-school preparation (in the age of 6 years), and then the obligation to study until the age of 18, mainly in secondary schools. The education system also includes: educational and upbringing facilities, continuing education facilities, artistic institutions, psychological and pedagogical counseling centers, youth educational centers, institutions providing care and upbringing for pupils, teacher training institutions, pedagogical libraries, and colleges of social service workers. The stages of education also include in their structures special, integrated, with pre-school integration, special classes, job training, bilingual, sports and sports championship units/schools/kindergartens. Education is generally available, but only in the context of the absence of administrative barriers. In accordance with the Regulation of the Minister of National Education (2023) on the principles of organizing and providing psychological and pedagogical assistance in public kindergartens, schools and institutions, announced on September 5, 2023, the director of the educational unit is responsible for the organization of psychological and pedagogical assistance. (which is related to the limited budget, e.g. for eliminating architectural barriers). As a result, this forces young people with disabilities to choose a place of education depending on the degree of need for special education, and thus, to some extent, to choose, for example, a special school rather than an integrated school. Paragraph 2 of the above-mentioned regulation

specifies the situations qualifying a pupil for psychological and pedagogical assistance in a kindergarten, school or institution: 1) disability, 2) social maladjustment, 3) risk of social maladjustment, 4) behavioral or emotional disorders, 5) special talents, 6) specific learning difficulties, 7) deficit of competences and language skills disorders, 8) chronic diseases, 9) crisis or traumatic situations, 10) educational failures, 11) environmental neglect related to the living situation of the pupil and his family, the way of spending free time and environmental contacts, 12) adaptation difficulties related to cultural differences or changes in the educational environment, including those related to previous education abroad. In order to obtain the right to benefits ensuring equal access to education, a decision on the need for special education must be obtained, pursuant to Article 127 point 18 Education Law (2023).

2. Literature Review

2.1 Inclusive Education

The 1994 Salamanca Declaration recognizes the idea of inclusive education, and the definition of integrational education in the second chapter emphasizes the need to ensure that people with special educational needs have the opportunity to learn in traditional schools where teaching is tailored to their needs. This is an important step towards ensuring equal educational opportunities for all pupils and promoting social integration (UNESCO and Ministerio de Educación y Ciencia, 1994). Inclusive education aims to ensure that every student has equal opportunities for education, regardless of possible limitations such as disabilities or other attributes. The desire to ensure that everyone can benefit from education in a way tailored to their individual needs is the foundation of this approach (Florian, 2014). Inclusive education aims to create a more inclusive and tailored learning environment in which all pupils have equal access to learning and the opportunity to develop their skills. Through integration, the educational system aims to promote understanding, tolerance and acceptance among pupils, which contributes to creating a more diverse and friendly school community (Sharma et al, 2021; Moosa et al, 2022). Although it offers many benefits, integration education faces several obstacles, such as teacher shortages, lack of training for educators, and negative attitudes towards pupils with disabilities. Both pre-school and professional teachers' attitudes toward integration education are crucial to its effectiveness because they have a significant impact on the implementation and robustness of integration practices. Additionally, teachers' attitudes can shape relationships, activities, and teaching methods that directly impact all pupils, including those with special needs (Soeharto et al, 2024; De Boer et al, 2011).

Research conducted by (Unianu, 2013) clearly indicates the need to improve teachers' competences in the field of integration and promote good practices in this field. The quality of education is closely related to the quality of teachers' work, therefore it is crucial to introduce the principles of integrative teaching and develop strategies to support each pupil in achieving educational success. Adapting the teaching process to the individual needs and capabilities of pupils is a key element of optimizing the educational process. Inclusive education is crucial to ensuring equal opportunities and support for pupils with disabilities. This requires the involvement of teachers who have the appropriate knowledge and skills to adapt their teaching methods to the individual needs of pupils (Marimuthu and Cheong, 2015). The lack of an implemented practice of integrated education necessitates the need to take difficult actions to identify barriers and develop appropriate measures that will allow the development of such a model at all levels of the education system. Current efforts focus primarily on primary education, but it is important to expand these practices throughout the system to provide a more comprehensive, inclusive education that is an essential element of an inclusive society (Dimov et al, 2014). Monitoring the academic progress of Children With Disabilities (CWD) in inclusive classrooms is a key aspect of assessing the effectiveness of UN inclusion education policies. Understanding how CWDs achieve outcomes in low- and middle-income countries is important to achieving the goal of providing all children with high-quality primary education by 2030. It is important to ensure that education systems are equitable and appropriately responsive to the needs of children with disabilities, in line with the principles of the UN Convention on the Rights of Persons with Disabilities (Diaz-Sarachaga et al, 2018). However, there is a long-standing debate about whether people with disabilities underperform academically compared to their peers who study in integrated schools (McCoy and Banks, 2012). Researchers agree that pupils with severe disabilities can develop their academic, social and independence skills in an inclusive setting. This integration allows them to participate in the everyday life of the school and community, which contributes to their comprehensive development and greater acceptance by peers (Kurth et al, 2002).

2.2 AI in Education

Modern technologies such as Big Data, Machine Learning and Artificial Intelligence (AI) are used in global education systems, enabling a more personalized and student-centric approach. Thanks to these innovations, the modern education system is better able to meet the individual needs of pupils, which is a significant improvement compared to the often criticized traditional approach (Bhutoria, 2022). Thanks to the ability to analyze data and detect patterns, AI systems can optimize learning paths, tailoring content and teaching strategies to pupils' specific skills and preferences, which contributes to a more effective education process (Zhang and Begum, 2021). The development of education using artificial intelligence opens up significant opportunities for personalized learning for future generations, and the emerging challenges can no longer be underestimated. Issues related to data privacy, availability of digital resources, and accessibility limitations constitute significant obstacles that require attention and solutions for the effective implementation of AI technologies in educational practice (Ivanova et al, 2024).

Personalization of education is consistent with the practical solutions approach to teaching, because it is based on collected data regarding individual skills and needs of pupils. By analyzing this information, the educational system can adapt content and learning methods to specific requirements and goals, which in turn promotes a better learning process. Therefore, it is a practical approach based on research and evidence of the effectiveness of personalization in education (Yonezawa et al, 2012). Personalization in education has a long history and is crucial to effective teaching. Adapting content, activities and interventions to the needs of specific students aims to better understand problems and tailor the teaching process to individual needs, which can lead to better educational outcomes and pupil development. A thorough analysis of pupils' situations and needs is therefore a fundamental part of a personalized approach in education (Hwang et al, 2020). Artificial intelligence is playing an increasingly important role in innovative education systems, enabling interactive learning tailored to the individual needs of pupils. The use of modern tools supported by AI, such as virtual reality or intelligent teachers, allows for personalization of the teaching process and ensuring more effective knowledge transfer (Kabudi et al, 2021). In this context, there is growing interest in integrating artificial intelligence into educational systems to increase their efficiency and quality. Previous literature highlights the lack of research on AI in the context of education as a significant limitation and suggests the need for further research and practical implementation of AI technology in the education sector (Bhutoria, 2022). The integration of artificial intelligence in teaching is currently a dynamically developing field that is attracting more and more interest and investment due to the rapid development of AI technology and advances in education. Bibliometric research on this topic is becoming increasingly important to understand and track this dynamic process and innovation in the field of AI-powered education (Nja et al, 2023; Sajja et al, 2023; Farrelly and Baker, 2023; Bran et al, 2019; Nguyen et al, 2023).

As the education system evolves, there is a need to continually evaluate research and trends in education to adapt teaching methods to meet the needs of pupils. The integration of artificial intelligence technologies may prove to be a key factor in increasing the efficiency of the learning process and ensuring a personalized approach to learning. It is important to track these changes and adapt teaching programs to the new challenges that arise in the digital era (Dogan et al, 2023).

3. Characteristics of People With Special Needs in Polish Regions

The analysis of dynamics was carried out on the basis of data published by the Statistics Poland (Education, 2012; Local Data Bank, 212). The time scope of the study covered the years from the 2012/2013 school year to 2022/2023. The subject of the study are children with special educational needs studying in primary school (age range is 7-14 years) and young people attending secondary schools: general education profile (age range is 15-19 years) and technical secondary school (age range is 15-20 years). The research process used dynamics measures [9] to determine the direction and intensity of changes among pupils with selected types of disabilities over a 10-year period, broken down by school type, compared to the level from the previous period or the level adopted as the baseline (2012/2013).

Characteristics of the data used in the study (legend for charts 1, 2, 3 and table 1):

- Types of disabilities:

A-deaf;

B-hard of hearing;

C-blind;

D-vision impaired;

E-with impaired motor skills including aphasia;

F-with intellectual slight disability;

G- with autism including Asperger syndrome;
H-with multiple disability;
I- socially maladjusted;
J- threatened with social maladjustment.

- Types of schools:

Primary-pupils with special educational needs by type of disability in primary schools;
General-students with special educational needs by type of disability in general secondary schools;
Technical-students with special educational needs by type of disability in technical secondary schools.

- Voivodeships in Poland:

DŚ: Dolnośląskie Voivodship;
KP: Kujawsko-Pomorskie Voivodship;
LB: Lubelskie Voivodship;
LS: Lubuskie Voivodship;
ŁD: Łódzkie Voivodship;
MP: Małopolskie Voivodship;
MZ: Mazowieckie Voivodship;
OP: Opolskie Voivodship;
PK: Podkarpackie Voivodship;
PD: Podlaskie Voivodship;
PM: Pomorskie Voivodship;
ŚL: Śląskie Voivodship;
ŚK: Świętokrzyskie Voivodship;
WM: Warmińsko-Mazurskie Voivodship;
WP: Wielkopolskie Voivodship;
ZP: Zachodniopomorskie Voivodship.

3.1 Analysis of Dynamics According to the Division Into Types of Disabilities

Figure 1 shows the medium-term rate of change according to selected types of disabilities in Poland, broken down by type of school in the analyzed period.



Figure 1: Dynamics of changes by types of disabilities and types of schools in 2012-2023

The dynamics analysis shows that the largest medium-term increases in the number of people diagnosed with autism spectrum disorders (including Asperger's syndrome) are in the group of school children and in the group of young people attending technical schools. The scale of changes in the case of this type of disability is analogously at the level of +912% and +4289% in the 2022-2023 school year compared to the base year (2012-

2013). In turn, the stable dynamics (increases and decreases at the level of the medium-term rate of change of 1%) covers blind people and people with a diagnosis of social maladjustment (for children aged 7-14) as well as deaf people (for young people aged 15-19). The size of these changes concerns a reduction by 18 in the number of blind people and by 168 in the number of people diagnosed with social maladjustment in primary schools (although in the case of social maladjustment, the medium-term rate of change was positive). In the technical secondary school, the decrease in the number of deaf people was 14.3%, which is 20 people (compared to the base year). In Fig. 1, a clear similarity can be seen in the nature of the dynamics of changes according to the types of disabilities for school children and youth in technical secondary schools. Here, the annual changes are in most cases positive. In turn, young people attending general schools show decreasing dynamics every year. One can also notice the relationship between the types of disabilities - those that record declines in the first group discussed show increases in the second group and vice versa. The basic indicator for examining the structure of people with specific types of disabilities is the same for the analyzed population of people aged 7-20 in the period after 2017. Since the 2017-2018 school year, the domination of autism judgments (including Asperger's syndrome) has been visible in all types of schools examined. In turn, in the five years preceding this period, motor disabilities (including aphasia) were most often diagnosed among young people (15-19 and -20), while among children attending primary school, mild intellectual disabilities were mostly diagnosed.

3.2 Analysis of the Dynamics of People With Disabilities - Administrative Division

Analysis of changes in the total number of people with disabilities in Poland, broken down by voivodeships and types of schools in 2012-2023, calculated using the medium-term rate of change (Figure 2).

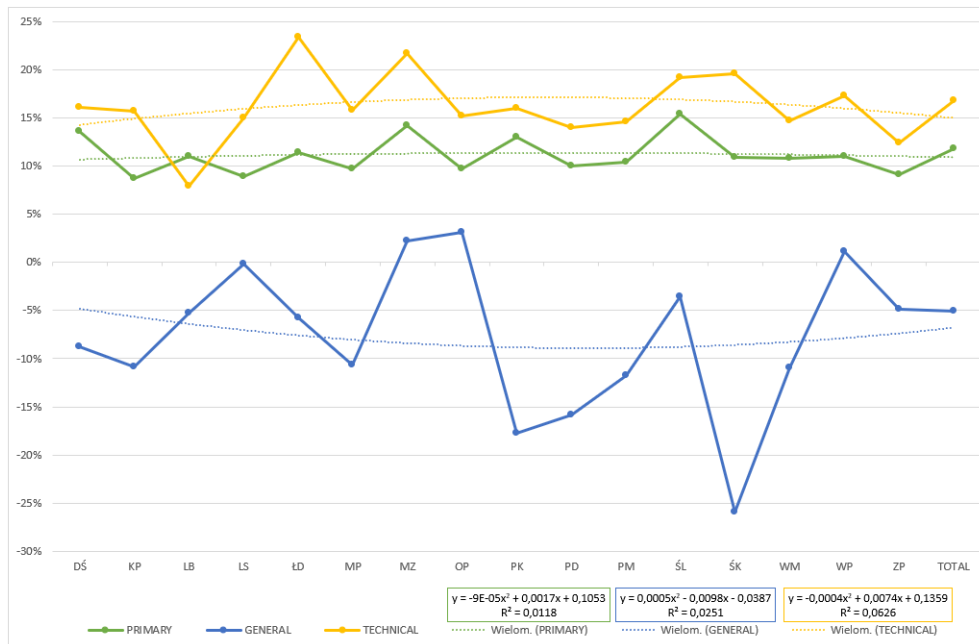


Figure 2: Dynamics of changes in people with disabilities by voivodeship in the analyzed period

The analysis of Polish regions in terms of the discussed types of disabilities allows us to notice similar relationships as in the case of study 3.1. The group of people aged 7-14 and 15-19 shows similar changes in dynamics (annual increases in the number of people with disabilities in individual voivodeships). In turn, the group of young people studying at technical secondary schools records a decline in dynamics and greater fluctuations for a given region in Poland. The highest positive dynamics of changes for primary schools and technical secondary schools occurs in the Mazowieckie and Śląskie Voivodeships (16,370 and 12,279 people with disabilities compared to the base year for primary schools and 1,323 and 1,291 for technical secondary schools, respectively). Youth aged 15-19 recorded the highest dynamics (compared to the base year) in the Pomorskie Voivodeship, and the highest average annual increases in the Mazowieckie Voivodeship (the number of people was -229 and +169, respectively). The analysis of the structure of the population of people requiring special educational needs showed that the largest share in Poland has the population of people learning in the Mazowieckie Voivodeship (on average 14%) and in the Śląskie Voivodeship (on average 12%).

3.3 Analysis of People With Disabilities Compared to Their Peers

The table below shows the percentage of the median of people with disabilities in the total number of people in the same age group in Poland, divided into voivodeships.

Table 1: Analysis of the median age structure

Polish region	Population in age group		
	aged 7-14	aged 15-19	aged 15-20
PL: Poland (total)	1,60%	0,18%	0,15%
DŚ	1,40%	0,20%	0,14%
KP	1,93%	0,19%	0,20%
LB	1,23%	0,14%	0,11%
LS	1,48%	0,17%	0,15%
ŁD	1,24%	0,17%	0,12%
MP	1,25%	0,12%	0,09%
MZ	1,78%	0,26%	0,16%
OP	1,67%	0,16%	0,18%
PK	1,51%	0,16%	0,17%
PD	1,56%	0,17%	0,20%
PM	1,86%	0,26%	0,15%
ŚL	2,05%	0,19%	0,22%
ŚK	1,44%	0,18%	0,17%
WM	1,97%	0,22%	0,21%
WP	1,31%	0,11%	0,11%
ZP	1,66%	0,19%	0,10%

The results of the share of people with disabilities in the total number of their peers indicate that in the Warmińsko-Mazurskie Voivodeship there are the most people in the age group of 7-20 years who require special educational needs, and the fewest in the Małopolskie Voivodeship. The analysis also shows the difference between children and adolescents. The median number of young people with disabilities is in the tens and hundreds, while children number in the thousands. For example, the lowest and highest numbers of people along with the corresponding voivodeship:

- children aged 7-14: min. 1187 (OP); max. 7911 (MZ);
- youth aged 15-19: min. 75 (OP); max. 685 (MZ);
- youth aged 15-20: min. 93 (LS); max. 539 (ŚL).

The analysis of the number of children in Poland in general shows that the highest median number of children is in the Mazowickie Voivodeship and the lowest in the Lubuskie Voivodeship, regardless of the division into children or youth.

4. Accessibility of Public Entities in Poland

Accessibility testing allows you to diagnose whether a facility/institution supports people with disabilities in their functioning in society. In Poland, the Accessibility Plus Program (APP, 2018-2025) has been implemented since July 2018, which is implemented in parallel with two acts: the Act of April 4, 2019 on the digital accessibility of websites and mobile applications of public entities (Journal of Laws "UDC", 2019) and the Act of July 19, 2019 on ensuring accessibility for people with special needs (Journal of Laws "UzD", 2019), obliges (mainly) public entities to conduct their activities in the digital sphere (including websites and mobile applications), architectural (including buildings free from barriers, horizontal and vertical communication spaces) and information and communication (including PJM translator, alternative access). The aim of such activities is to enable the use of the services of a given institution/entity, so that people with various types of disabilities (this also applies to people who are temporarily in a situation requiring support, such as pregnant women) can use them on their own.

The accessibility analysis was carried out on the basis of data published by the Ministry of Funds and Regional Policy in the "Report on the status of ensuring accessibility for people with special needs by public entities in Poland" (Report, 2021), presenting the status of accessibility of the surveyed entities as of January 1, 2021. The time range was as of January 1, 2021, but no later than March 31, 2021. The data was obtained using an electronic report form, which was made available on the reporting portal of the Statistics Poland. The acquired data were standardized to facilitate their comparison and interpretation, using the so-called accessibility index. This measure is expressed on a scale from 0 (no requirements met) to 1 (full fulfillment of requirements), and the percentage of elements that make up the whole (percentage of requirements met for the unit) expresses partial accessibility assurance or the percentage of units meeting the requirements for a given characteristic.

Characteristics of the data used in the study (legend for charts 3 and 4):

- Voivodeships in Poland (as specified in point 3 of the article).
- Types of accessibility indexes:

A-Accessibility;

A(Inf/Com)-Information and communication accessibility index;

A(Dig)-Digital accessibility index;

A(Arch)-Architectural accessibility index.

- Types of entities (schools):

A-Edu: Average accessibility index for Education;

Ns: Nursery schools;

Ps: Primary schools;

P-ps: Post-primary schools;

HEdu: Higher education.

4.1 Accessibility Index

Figure 3 presents the results of the analysis of the state of ensuring accessibility for people with special needs by public entities in Poland, broken down by region.

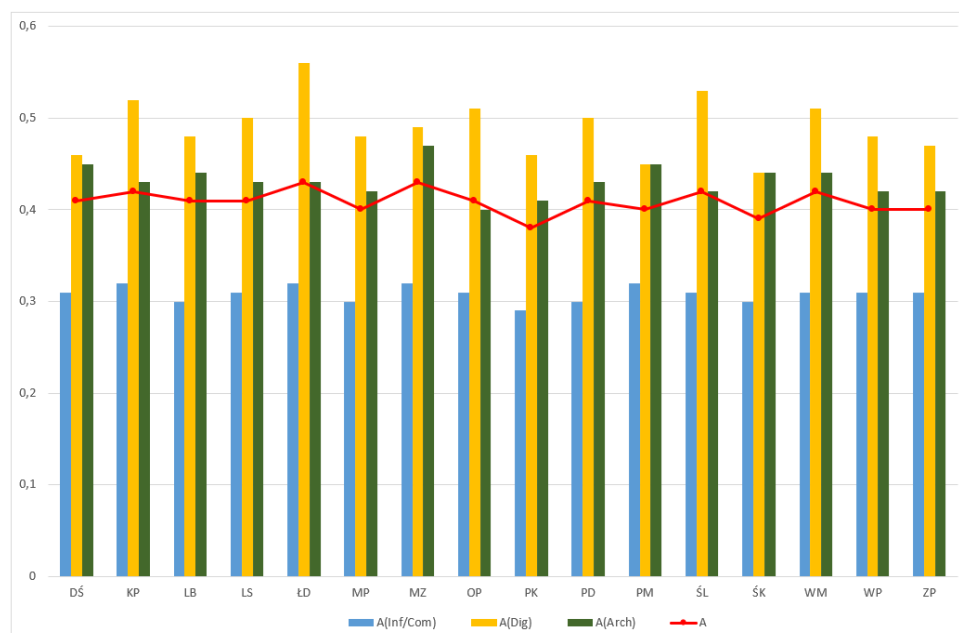


Figure 3: Level of accessibility of public entities located in Poland by voivodeship

The analysis of the accessibility index in public entities shows their small contribution to improving the everyday functioning of people with disabilities. Public institutions in Poland meet the minimum accessibility

requirements in accordance with the Act on ensuring accessibility for persons with special needs (UzD) at an average level of 40%. The requirements belonging to the information and communication group are the lowest met, at the level of 30%, and the highest (less than half on average) are the digital requirements. The Łódź and Mazowieckie Voivodeships are the leaders in the ranking of the overall accessibility index, while the Podkarpackie Voivodeship is at the bottom of the ranking. The Łódź Voivodeship also has the highest index in terms of digital accessibility and communication support. Architectural requirements are at the level of the average national indicator in general, and entities in the Mazowieckie Voivodeship are best adapted.

4.2 Digital and Information and Communication Accessibility Index in Education

The analysis of accessibility in the educational system in Poland, divided into types of schools, is presented in the chart below (Figure 4).

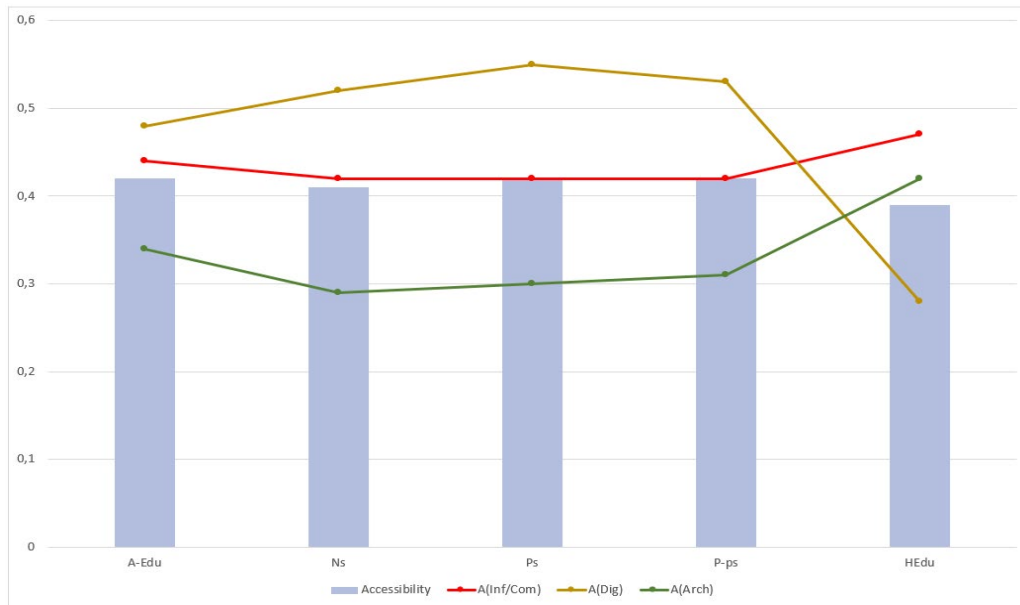


Figure 4: Level of accessibility in educational system institutions in Poland

The analyzed public entities directly related to education show an accessibility index of 0.4 on average, which is close to the national level. The highest ranking index is related to the website and mobile applications, which are compliant with the accessibility requirements specified in the UDC for kindergartens and schools. Public higher education units, unlike pre-school and school education, have a low digital accessibility rate. However, they show a proportionally higher indicator of architectural and information and communication accessibility.

4.3 Optimizing Education

Education to bring results to young people in the form of knowledge and skills is a challenge for both teachers and pupils themselves. Educating pupils with special educational needs is an even more difficult task for both parties, because very often the types of disabilities require dedicated tools and skills to educate them appropriately. However, thanks to technological progress that has led to the development of artificial intelligence, the possibilities of support for such students are increasing. This technology is already present in many aspects of our lives, and using it to assist in special education is an opportunity to optimize access to education. The use of advanced algorithms allows you to adapt the methods and pace of work to the pupil's needs, which creates the opportunity to take care of the child individually, without fear of exceeding his or her physical or intellectual abilities. The Government Education and Science Portal in Poland (ESP, 2023) on its website describes ChatGPT as one of the tools based on artificial intelligence that can support people:

- with visual impairments - no need to browse the websites, which often do not meet accessibility standards;
- with disabilities of the upper limbs - giving up the use of special keyboards, extending the time of searching for often scattered data;
- deaf people - shortening long texts that are difficult to translate into sign language
- with dyslexia - appropriate text reformatting;

- with intellectual disabilities - learning artificial intelligence to present data in the form of ETR (easy to read),
- sensitive to stimuli - removing barriers in browsing websites, such as distracting banners, widgets, or the so-called pop-ups) – all this effectively makes it difficult for people who are sensitive to stimuli to browse the website.

Artificial intelligence can also be helpful in a teacher's work (Czechowska, 2024):

- adapting teaching programs to individual difficulties through non-standard ideas for personalized tasks and materials, e.g. Khan Academy, Bing Chat, ScribeSense, Socratic by Google;
- supporting communication by using appropriate systems or applications, e.g. Replika, Cleverbot, Wordwall, Otter.ai, Brains;
- earlier detection of learning difficulties thanks to the analysis of test results or pupils' work, e.g. IBM Watson Education, immersive reader, DreamBox, One Note;
- support for remote learning by providing materials for homework, e.g. Chrome extensions, Quizizz, easy-to-read and understand texts ZPE or PSONI, Miro, Canva.

Professor Fazlagić (2022), in his publication describing the use of artificial intelligence in the education sector, reviews it according to subcategories:

- supporting the learning process;
- teacher support in administrative processes;
- management of the education system.

The teaching process can support the teacher by using artificial intelligence as a tutor in basic education, providing feedback on learning progress and knowledge/skill deficits, and replace it in consolidating the explained material, e.g. by departing from the standards in situations where the selected area requires improvement by, for example, increasing the intensity of testing tasks in the areas. This solution also allows for the elimination of social or emotional barriers, which are reflected, for example, in stress related to public ridicule resulting from a knowledge deficit. Artificial intelligence can support teachers in their administrative duties by performing automated (in whole or in part) assessment of learning outcomes or attendance. It may also, to some extent, act as a methodological advisor or provide feedback about the pupil to his or her parents/guardians. The administrative dimension itself can also be considered from the perspective of education management, where artificial intelligence verifies the criteria for professional advancement achieved by a teacher, or analyzes data sets affecting the quality of teaching or the education system itself.

5. Conclusions

The conducted research allows for a preliminary diagnosis of the situation of people with a judgment on the need for special education in Poland. Over the last 10 years, a relationship (similar dynamics of change reflected in the quantitative dimension of the study) can be observed between primary and general education, comparing them to the results of technical schools. In this context, there is a noticeable relationship with regard to the highest percentage of annual increases in disability resulting from diagnosed autism, including Asperger's syndrome, and the highest changes in dynamics observed in the region of the Mazowieckie and Śląskie Voivodeships. In turn, for pupils attending technical secondary schools, the highest average annual changes concerned the diagnosed risk of social maladjustment and the highest changes in the Mazowieckie and Pomorskie Voivodeships.

The analysis of time series in terms of their share in the structure of the studied population showed that the largest number of people diagnosed with the need for special education are in the Mazowieckie and Śląskie Voivodeships. However, the division by type of disability highlighted a breakthrough in 2017, after which all surveyed groups showed the highest share of people diagnosed with autism (including Asperger's syndrome). Before 2017, the disability of young people aged 15-19 and 15-20 resulted from the jurisprudence of motor disability (including Aphasia) and for pupils aged 7-14 from the jurisprudence of mild intellectual disability. Compared to peers in the context of the age group, the highest percentage of people with disabilities is among school children, and in the administrative context of the country in the Mazowieckie and Śląskie voivodeships.

Comparing the above research results with the analysis of accessibility, i.e. adapting the architectural, communication, digital and information infrastructure to the needs of people with disabilities, it can be noted that a small share of the accessibility index in Poland at the level of 40% (the highest is in the Łódź and

Mazowieckie Voivodeships) should meet the needs of a seemingly small percentage of people with a certificate, approximately 3% of the surveyed population. In the context of educational institutions, this indicator compares best with digital, which, in the perspective of the use of artificial intelligence in education (including special education), creates the possibility of equal access to education for all. Assuming that the development of education using the possibilities offered by artificial intelligence (both for healthy people and people with disabilities) will take place only among people aged 7-20, it can be estimated that this will allow for the elimination of barriers and equalization of opportunities in access to forms of education tailored to needs.

When building a long-term education strategy, the general situation of the country should also be taken into account, i.e. in the case of Poland, it is an aging society. Related activities aimed at activating seniors, or even the concept of lifelong learning, constitute a direction for further research on whether the accessibility requirements met at the current level will meet the needs of an ever-growing social group.

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