Chapter 14
Report on ICT in Education in the Republic of Poland

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14.1 Overview of the Country

14.1.1 History

The history of Poland dates back to 966, when the first ruler Mieszko I was baptized and converted to Christianity. His son was crowned to become the first king of Poland. In the twelfth century Polish lands went into the period of fragmentation, which lasted for 150 years, just to become united again at the end of the thirteenth century. In the sixteenth century the Kingdom of Poland started to have close relations with the Grand Duchy of Lithuania, which led to the creation of the Republic of the Two Nations (the Polish-Lithuanian Commonwealth)—one of the largest countries in the political history of Europe. The end of the seventeenth century was the country's golden age, but then it went into a period of decline and it ceased to exist at the end of the eighteenth century due to three partitions conducted by its neighbors. In the meantime, some vestigial forms of the country emerged from time to time, but Poland did not regain its independence until the end of World War I, at the beginning of the twentieth century. The Second Polish Republic existed until 1939, the beginning of World War II, when its lands became occupied by German and Soviet armies. After WWII Poland found itself behind the Iron Curtain and governed by the communists (in 1952 the country's name was changed into the Polish People's Republic). The Polish United Workers' Party ruled in Poland until 1989. In 1980, after massive strikes, Solidarity trade union emerged (whose leader, Lech Wałęsa, became later the president of Poland). These events began the process of democratization and economic reforms, which allowed the Republic of Poland to join NATO in 1999 and the European Union in 2004.

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14.1.2 Geography

Poland is one of the biggest European countries. Its area extends 649 km from south to north and 689 km from east to west, covering over 300,000 km^2. Poland borders Russia, Lithuania, Belarus, Ukraine, Slovakia, the Czech Republic, and Germany. The northern border is partly a sea border (the Baltic Sea). Over 50% of the country's area is lowland, with elevation between 100 and 200 m above sea level. There are mountains along the southern border, with the highest point being Mount Rysy: 2499 m above sea level. Poland's climate is moderate, with average annual temperatures between 6 and 9 °C and precipitation of about 400 mm.

14.1.3 The Political System

The standing political structure in Poland was introduced by the Constitution of Poland[1] on the 2nd of April 1992. It is based on the principles of democracy, individual and religious liberty, freedom of convictions and association. The constitution divides the authority into legislative, executive, and judiciary. The Seym and the senate make up the legislative body. The Seym is the lower house of the Polish parliament. It consists of 460 MPs, elected in general elections, which are universal, equal, direct, and proportional, by means of secret ballot. The Seym is elected for a 4-year term of office.[2] The senate of Polish Republic—the upper house of the Polish parliament—consists of 100 senators, elected in universal and direct elections by secret ballot, in single-mandate constituencies for a 4-year term of office, which begins and ends with the term of office of Seym.[3]

The executive power is in the hands of the President (elected for a 5-year term of office) and the Council of Ministers with the Prime Minister at its head. The judiciary power is the responsibility of autonomous courts and tribunals. Another important Polish institution is the National Bank of Poland, whose primary responsibilities include keeping a stable level of prices while supporting the economic policy of the government.

The territory of Poland is divided administratively into three levels of subdivision: *voivodeships* (16 units), *powiats* (380 units), and *gminas* (2478 units).

In 1994 Poland decided to join the European Union and has been part of European Community since 2004. Currently operative legislative and political solutions in Poland are conditioned by the legal status binding all members of the EU.

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[1]Constitution of the Republic of Poland. http://www.sejm.gov.pl/prawo/konst/polski/kon1.htm. Accessed 27 Mar 2019.

[2]Dane o posłach wg stanu na dzień wyborów. http://www.sejm.gov.pl/Sejm8.nsf/page.xsp/poslowie_poczatek_kad. Accessed 27 Mar 2019.

[3]DANE O SENATORACH WG STANU NA DZIEŃ WYBORÓW. http://www.senat.gov.pl/o-senacie/senat-wspolczesny/dane-o-senatorach-wg-stanu-na-dzien-wyborow/. Accessed 27 Mar 2019.

14.1.4 Current Situation of Economic Development

In 2015 Poland was the 6th economy in the EU when it comes to the size of GDP—GDP (nominal) per capita was €11,123 (38.7% EU average). According to the data of IMF,[4] Poland was second in the EU as to the rate of growth of GDP per capita in the years 2004–2015. Between 1990 and 2015 Poland was the second fastest developing country among current members of the EU. Poland is considered by the UN as a "very highly developed" country when it comes to social development index (HDI for Poland was 0.855 for 2015, giving it 36th place in the world among 188 countries and dependent territories considered). Polish national debt amounted to about 51% GDP in 2015. Polish economy is of mixed type. The share of public sector in gross value added in 2015 totaled 19.8% and the private one—80.2% (including foreign one—16.6%).[5]

14.1.5 Population

At the end of June 2017, the population of Poland numbered 38,422,346 people. Population decline has been observed in Poland for 6 years. In 2017, 60% of population lived in cities and 40% in villages. The most populated cities were Warsaw, Cracow, and Lodz.[6] In the general number of people there were almost 52% of women.[7]

According to the Institute for the Structural Research EU, the process of aging of the Polish society has accelerated. It is anticipated that in 2050 people aged 65 and over will already constitute 31.5% of the population. In accordance with the forecasts of UN's Population Division, the demographic burden index (the ratio of people aged over 64 to people aged 15–64) in the perspective of the next 50 years will almost get tripled compared to the current number of 22%.

The most numerous group, constituting at least 61.8% of Poland's population, were people in the working age: 23,641,000 (men aged 18–64 and women aged 18–59).[8] There were 6,908,000 people (of which 51% were men) in the pre-working age and 7,873,000 (of which 32% were men) in the post-working age.

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[4]Report for Selected Countries and Subjects, International Monetary Fund. http://www.imf.org/external/pubs/ft/weo/2016/02/weodata/weorept.aspx?pr.x=46&pr.y=9&sy=2003&ey=2015&sort=country&ds=%2C&br=1&c=946%2C137%2C122%2C181%2C124%2C918%2C138%2C964%2C182%2C960%2C423%2C968%2C935%2C128%2C939%2C936%2C961%2C172%2C132%2C184%2C134%2C174%2C144%2C944%2C178%2C136%2C112%2C941&s=NGDPRPC&grp=0&a=. Accessed 27 Mar 2019.

[5]Rocznik Statystyczny Rzeczypospolitej Polskiej (2016).

[6]Główny Urząd Statystyczny (2017).

[7]Ludność (2017).

[8]Ibidem.

The group of professionally active people numbered 17,260,000 while there were 13,433,000 professionally inactive people in 2016.[9]

Labor market analysis in the second quarter of 2017 shows that there were 16,281,000 people working, economic activity rate was 56.2%, employment rate amounted to 53.2% and the unemployment rate was 5.4%.[10] In 2016 the employment rate of people aged 20–64 in Poland totaled 69.3%.

Currently Poland has been one of the lowest employment proportions of the disabled people in the EU. This comes as a result of the lack of flexibility while designing work environment and in comprehension of body limitations.

14.1.6 The Relationship with China Under the "16 + 1" Cooperation Framework

Since the announcement of the "16 + 1" cooperation framework in Warsaw in 2012, Poland has been focused on its successful and constructive development. For Poland, the "16 + 1" cooperation framework has had an extra dimension in the cooperation with China, due to which mutual relationships can be intensified and economic interests' realization can be supported.

Within this project Poland has taken care, among others, of the cooperation mechanism for maritime affairs (Latvia 2017). The secretariat for maritime affairs may be used in the future to strengthen cooperation within the Maritime Silk Road and increase the role of Polish harbors and ports in trade exchange and investment cooperation with China.

Poland appreciates the multidimensionality of the "16 + 1" initiative. It allows deepening contacts with China not only at the level of administration, but also business, science, or culture. At the meeting in Bulgaria in 2018, Poland was represented by the Minister of Science and Higher Education. The Polish authorities believe that the "16 + 1" initiative may play an important role in the development of geographically balanced transport routes and logistic connections between the European Union and China. Poland declares its readiness to continue its involvement in the "16 + 1" format and expects intensification of contacts and the development of economic exchange as part of a comprehensive strategic partnership between countries.

Political dialogue between Warsaw and Beijing is very dynamic, and the best proof of this is many new initiatives, e.g. a "strategic partnership" and numerous cooperation mechanisms both at the central level; strategic dialogue, as well as the local level; the forum of regions. Poland is one of the first countries to have signed a memorandum on building an international "Belt and Route" agreement.

With the current legal form and the amounts provided, Chinese infrastructure investments are smaller than EU funds.

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[9] Ibidem.

[10] Aktywność ekonomiczna ludności Polski (2017).

14.2 Overview of the Educational Development

In 2017, public expenditure on education and upbringing from the state and local governments' budgets amounted to 71.9 billion PLN (3.6% of GDP).

Money for education and upbringing from the budgets of local governments (together with money received from the state budget) in the sum of 70.2 billion PLN was mainly assigned to running of primary schools—23.3 billion PLN (i.e. 33.3%), lower-secondary schools—9.6 billion PLN (i.e. 13.7%), kindergartens—11.5 billion PLN (i.e. 16.4%), vocational schools of various types (including art schools)—7.3 billion PLN (i.e. 10.4%) and upper-secondary schools—4.3 billion PLN (i.e. 6.1%).[11]

The analysis of education structure according to gender shows that women are a better educated group than men and more often achieve higher education degrees (in 2016 30.1% of women had a higher education degree, compared to 20.3% of men). At the same time, the percentage of people with only vocational, lower-secondary, primary, and incomplete primary education has decreased by 3.5% as well as the percentage of people with post-secondary and secondary education (by 0.2%).[12] The number of people with higher education among 15–64-year-olds in 2016 was 25.2% and with secondary and post-secondary education 34.9%.

14.2.1 Enrollment Rate, Years of Schooling, Academic Performance

The organizational structure of the education system in Poland is aimed at ensuring the right to education through teaching, upbringing and care. The system includes public and private nursery schools, kindergartens, primary schools, upper-secondary schools, post-secondary schools, art schools, and special needs education or institutions. Higher education is not included in the education system.[13]

Pre-school education (children aged 3–6) is considered to be the first level of education system in Poland. In 2017 81.1% of children aged 3–5 were subject to pre-school education.[14] A six-year-old child has to attend one-year kindergarten preparation for school.

Education obligation is imposed by the Constitution of Poland and lasts until the end of primary school. Education is obligatory until the age of 18. This obligation can be fulfilled in a public or private school, in a school for children or teenagers, but also outside of school (homeschooling).

Since September 1st 2017 there has been a new school structure in force in Poland:

[11] Oświata i wychowanie w roku szkolnym 2017/2018 (2018).

[12] Główny Urząd Statystyczny (2017).

[13] Available at: https://pl.wikipedia.org/wiki/System_oswiaty_w_Polsce.

[14] Główny Urząd Statystyczny (2017).

Until 31st August 2017	Since 1st September 2017
Primary school (6 years) (*obligatory*)	Primary school (8 years) (*obligatory*)
Lower-secondary (3 years) (*obligatory*) Existing until 31st August 2019.	
Upper-secondary schools to choose from by pupils:	*Secondary schools to choose from by pupils:*
General upper-secondary school (3 years) They offer the matriculation examination that leads to the receipt of the matriculation certificate	General upper-secondary school (4 years) They offer the matriculation examination that leads to the receipt of the matriculation certificate
Technical upper-secondary school (4 years) They offer external examinations confirming vocational qualifications and the matriculation examination that leads to the receipt of the matriculation certificate	Technical upper-secondary school (5 years) They offer external examinations confirming vocational qualifications and the matriculation examination that leads to the receipt of the matriculation certificate
Basic vocational school (3 years) They offer external examinations confirming vocational qualifications	Basic vocational school level I (3 years) They offer external examinations confirming vocational qualifications
	Basic vocational school level II (2 years) In professions that have a continuation on the technician level They offer external examinations confirming vocational qualifications in the profession taught at the level of a technician and the matriculation examination
Special school preparing for vocation (3 years) For mentally handicapped students in a moderate or severe degree and for students with multiple disabilities	
Post-secondary school (up to 2.5 years) They offer people with secondary education external examinations confirming vocational qualifications	

The results of the end-of-school examinations, conducted at the end of primary and lower-secondary education, can also be the indicators of the condition of Polish education. Between 2009 and 2011 there was a considerable increase in the average amount of points obtained from the whole test, whereas a decrease was observed in 2012. Students attending schools in big cities had better marks than those who studied in towns or villages. The final exam at the end of primary school is continued at the lower-secondary level in three areas: humanities, math and science (STEM), and languages. In the years 2009–2011 a downward trend was noticed in the amount of points obtained by students. The achievements of lower-secondary students are less dependent on the location of their school than in primary education.[15]

The standard of education in Poland is quite high and comparable to teaching standards in other countries. On the basis of observation of lower-secondary students'

[15]Dzieci w Polsce. https://www.unicef.pl/Co-robimy/Publikacje/Dzieci-w-Polsce. Accessed 27 Mar 2019.

results, as part of OECD coordinated Programme for International Student Assessment (PISA), which is repeated every three years, we can draw conclusions about the quality of the education system in Poland. The study tests the skills of 15-year-olds in three competence fields: reading and interpretation, science, and mathematics. In the field of understanding science, Poland came twentieth among the countries that took part in the study (eleventh in the EU). The results achieved by Polish students were worse in comparison to the previous study. In the field of reading and interpretation, Poland came twelfth (fifth in the EU) and when it comes to the mathematics, Poland came fifteenth (ninth in the EU).[16]

Until 2017 lower-secondary graduates mostly preferred general upper-secondary schools, but there has been a systematic increase in the interest in schools allowing acquiring a profession (technical upper-secondary schools and basic vocational schools). Last year the percentage of secondary students attending technical upper-secondary schools was 38.8% and basic vocational schools 14%.

General and technical upper-secondary schools' graduates can take the matriculation examination, which grants access to tertiary education (university, polytechnic, college). 258,372 upper-secondary graduates took the matriculation examination in May 2016.[17] The number of graduates that passed the exam was 205,361 (79.5%).[18]

For many years the most popular faculties among tertiary students have been social studies, journalism, information, economy, administration, and law (34.4% graduates in 2016), but recent years have seen an increase in the popularity of fields of study connected with science, technology, industry, and building.[19]

Polish adult education in a broad sense (people aged 25–64), in all its forms, has a very low position among the EU countries. The rate of Polish adults participating in education was almost two-thirds lower than in the EU countries and in 2016 amounted to 3.7% (with average for 28 EU countries being 10.8%).[20]

14.2.2 Policies and Measures Taken for Educational Inclusiveness, Educational Equity and Educational Quality

There are regulations in Poland with guidelines regarding the education of students who are disabled, socially maladjusted or at risk of being so. The school is required to provide comprehensive help to such students. Chronically ill pupils in kindergarten or school have the same rights as any other children.

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[16] Ibidem.

[17] Centralna Komisja Egzaminacyjna w Warszawie/Central Examination Board in Warsaw. Available at: https://cke.gov.pl/images/_EGZAMIN_MATURALNY_OD_2015/Informacje_o_wynikach/2016/sprawozdanie/Sprawozdanie_ogolne_2016.pdf.

[18] Ibidem.

[19] Ibidem.

[20] Ibidem.

Disabled students who can attend school, but require some of the classes in individual form or in small groups, have such classes at school. Special education (at the level of primary, lower-secondary and upper-secondary schools) takes place in independent special schools or in general schools which have one of the following classes: special, integration, or therapeutic; there are also special educational centers, various educational institutions or medical ones (including health care resorts and facilities). Students, whose health condition makes it impossible for them to attend school, are able to have classes at home. Special education is organized even for 24-year-olds and primary school education can be prolonged until the student is 20.

There has been a noticeable increase in the number of integration classes—from 515 in the school year of 1995/1996 to 3927 in the school year of 2010/2011 in primary schools and from 234 in the school year of 2000/2001 to 2083 in the school year 2010/2011 in the case of lower-secondary schools.[21]

An individual educational and therapeutic program is created for disabled students. It is required and supervised that the school cooperates with the parents in terms of organizing education of disabled children and adapting the conditions of such education to the type of disability.

14.2.3 Teachers' Training and Development

14.2.3.1 Initial Teacher Training

The legislation regulates the standards of teacher training and indicates which institutions and in which mode can train future teachers.

Qualifications required to practice the teaching profession are provided at university or polytechnic. Moreover, future teachers have to obtain pedagogical qualifications, which allow them to work in school. Studies with a teacher specialization track prepare their graduates for comprehensive realization of all school goals: educational, pedagogical, and custodial.[22] There are about 670 institutions in Poland that train teachers and every year each of them promotes from a dozen or so to a couple of thousand teachers.[23]

In Poland there are also public and private pedagogical colleges, teacher training colleges, and foreign language teacher training colleges. The main purpose of their existence is training teachers in such specialties in which universities or polytechnics are not able to provide enough teachers to satisfy the needs of education.

[21] Dzieci w Polsce, unicef. https://www.unicef.pl/Co-robimy/Publikacje/Dzieci-w-Polsce. Accessed 27 Mar 2019.

[22] PODSTRONY. http://www.pedagog.uw.edu.pl/strony/awilkomirska/index.php?id=6. Accessed 27 Mar 2019.

[23] Organizacja kształcenia nauczycieli. https://sites.google.com/site/ksztalcenienauczycieli/organizacja-ksztalcenia-nauczycieli. Accessed 27 Mar 2019.

Owing to basic psychological and pedagogical competences that they gain, teachers should individualize the education process; become a tutor and a guardian. Education in the field of information technology and using it in the didactic process as well as learning a foreign language in order to achieve a high level of competence in it, measured by all-European standards, have become the leading elements of training future teachers.

14.2.3.2 Teachers' Professional Development

Operating of the educational system is based on activities performed by teachers and other employees of educational units.

Teachers in public schools and other public educational institutions work under the regulations of the Teacher's Charter. This act states in details the conditions of teachers' work, their responsibilities and rights and also specifies professional promotion grades and teachers' remuneration.

In the school year 2016/2017, there were 498.3 thousand teachers employed in all types of schools and kindergarten units (in conversion to full-time teaching jobs). Currently, the public sector encompasses 87% of all teacher full-time jobs and the private sector—13%.[24]

The biggest group of teachers worked in primary schools (184.9 thousand full-time jobs) and in lower-secondary schools (98.2 thousand). Teaching staff of upper-secondary (together with post-secondary) schools numbered 117.4 thousand teachers in the school year of 2016/2017 (employed full-time and part-time, the number converted into full-time jobs).[25]

The legislator determined four grades of professional promotion possibilities for teachers in the Teacher's Charter. The career path starts with trainee teacher grade. After one year of work and passing the exam with positive marks, one can achieve the grade of contract teacher. After a further three years of work, filing documents required for the exam and finally after passing the exam, the teacher obtains the appointed teacher grade. Afterwards it is possible to gain the highest grade, i.e. chartered teacher (after minimum 4 years). Teachers have to raise their qualifications within the framework of professional promotion system. In the school year 2016/2017, the majority of the teaching staff was composed of chartered teachers (54.9%). Appointed teachers accounted for 23.1% of pedagogical personnel, contract teachers—15.1%, trainee teachers—4.0% and teachers without any promotion grade—3.0%.[26]

[24] Oświata i wychowanie w roku szkolnym 2016/2017 (2017).

[25] Ibidem.

[26] Ibidem.

14.3 New Progress of ICT in Education

In the age of digitization, informatization of schools and educational institutions in Poland has become a standard. Computers and the Internet are used in the learning process in the informatics labs, libraries with public access to computers and the Internet, classrooms and lecture halls. Digitization has involved the school administration, too, so we have electronic school registers and timetables, e-learning, electronic accountancy, and electronic systems of registration of students and their service.

All-Polish Educational Information System[27] has existed since 2005 and it came to life by act of law. It was created in order to gather one consistent information database in the field of all-Polish statistical reporting.[28]

14.3.1 Infrastructure

In teaching computer science and information technology (IT) it has been emphasized for years to teach such elements as logical and algorithmic thinking, use of computer applications, search and use of information from different sources, use of computers and basic digital devices, and application of these skills in other school subjects.

Computer and Internet access in schools has significantly improved in the recent couple of years, especially in primary schools. In 2011, the percentage of schools equipped with computers intended for students' use and with Internet access was 96% of primary schools in cities and 93% of primary schools in the countryside, with lower-secondary schools the percentage was accordingly 84% in cities and 80% in the countryside. However, many schools still use long-serving equipment in informatics labs, which was supplied by the projects of ministry of education in 2004–2008.

Renewal of the Internet infrastructure in schools and teaching programming are two actions that were taken by Polish government in 2017. An All-Polish Educational Web is planned to come into existence—it is going to be an ICT web that connects all schools in Poland (about 30.5 thousand) and ensures access to educational contents.[29] In the new curriculum, the number of IT lessons has been increased from 210 to 280 h. Since 2017 programming has been included in the IT subject, which is obligatory for all primary students. The government appropriated 500 million PLN from the EU program Digital Poland for building the infrastructure of Internet access for schools.

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[27] Modernizacja SIO, Centrum Informatyczne Edukacji. https://cie.men.gov.pl/modernizacja-sio/. Accessed 27 Mar 2019.

[28] Available at: http://www.sio.edu.pl/index_urzad.php?pokaz=strona&id=3.

[29] POLSKA SZEROKOPASMOWA. https://www.polskaszerokopasmowa.pl/artykuly/klucz,cyfryzacja-i-szybka-siec-w-szkolach-to-priorytet-resortow-cyfryzacji-i-edukacji,akcja,wydruk.html.

Another 124 million PLN will be assigned to training teachers and pupils from grades 1–3 to learn programming.[30]

The vision of modernizing education increasingly indicates cultivating learner's independence and responsibility for their own development and education while gradually abandoning the model of absolute teacher authority. One of the prioritized directions of this change is the use of information and communication technologies. Employment of the potential of such technologies in education indicates that it is becoming absolutely essential to recognize the openness of educational resources. At present, the vision of using modern technologies at school is based on common involvement in creating, using, and distributing free educational resources by students, teachers, parents, and educational institutions.

14.3.2 Educational Resources

There are two groups of entities in Poland that make open resources accessible—public institutions and non-governmental organizations.

2012 saw the acceptance of the first government program for funding open educational resources for the needs of Polish education system, the long-term project "Digital school", which assumed equipping schools with computer equipment and digital teaching aids, ensuring equipment for the students, raising teachers' competences, and creating open educational resources.

The second government project, "Our ABC-book" (since 2014), presumes development and release of state-funded textbooks for grades 1–3 in primary school, made accessible on free license, similarly to e-textbooks. The project is not exactly an open resource, though, as the graphics are not on free license.

One of the first initiatives of public institutions has been the Polish digital library Polona—a project of the National Library of Poland which digitized Polish cultural heritage holdings that are in the public domain.[31] In 2005 the Ministry of National Education launched portal Scholaris.pl—open for general use platform containing free electronic educational resources for all stages of education, treated as the learning portal for teachers, currently managed by the Centre for Education Development.[32]

Open educational resources are also made accessible by academic institutions.

Apart from public institutions, non-governmental organizations are the second important group of entities which make open resources accessible.

As one of the first NGOs, Modern Poland Foundation in 2007 provided access to the website Wolne Lektury (Free Set Books)—an Internet library of school set books and literature classics which are in the public domain or available on free licenses.[33]

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[30] Ibidem.

[31] Nowa Cyfrowa Biblioteka Narodowa Polona. http://intro.polona.pl/. Accessed 27 Mar 2019.

[32] Scholaris. http://www.scholaris.pl/. Accessed 27 Mar 2019.

[33] Biblioteka internetowa Wolne Lektury. http://wolnelektury.pl. Accessed 27 Mar 2019.

In 2009 Orange Foundation began first in Poland grant program which used the openness principle. It introduced the obligation of free licenses for the results of cultural education projects funded from OF grants. It allowed 450,000 children and teenagers using Internet and technology in a safe and useful way, installed multimedia learning and entertainment places for children in 80 hospitals, helped 900 social organizations in their campaigns in favor of developing digital competences of Poles and many more.[34]

A foundation called Center for Citizenship Education makes its own resources accessible on open-source licenses and it also trains teachers in the field of creation and usage of open educational resources and new media in education.[35]

A big database of lesson plans made available on Creative Commons licenses is offered by the Panoptykon Foundation (which manages portal Cyfrowa Wyprawka[36]—Digital School Supplies—which includes lesson plans on the topic of safe usage of new technologies). Modern Poland Foundation creates access tools for free cultural goods, builds media education programs, makes available lesson plans, exercises and materials for classes about media education.[37] Digital Centre Project: Poland is carrying out the project "Otwarte Zabytki" (Open Monuments) and manages open information website about monuments. All educational materials created within this project are made available as open educational resources.[38] Another interesting example of using open educational resources is the program "Mistorzowie Kodowania" (Masters of Coding) managed by Samsung Poland. Educational materials about teaching programming in primary schools are made available on free license.[39]

14.3.3 ICT Integration into Practices

Polish teachers are aware that if they want to educate effectively and prepare their students for life, as the idea of long-life learning suggests, they should use modern information and communication technologies for teaching purposes. Research indicates that more than half of active teachers have the experience of e-learning (or blended-learning), in the form of online courses, educational projects, post-graduate studies, training courses, IT courses, or language courses. The most commonly acquired skills were the use of multimedia interactive board in class, distant education methodologies and the use of ICT in education, or the use of multimedia in the education process. Less often, the teachers took part in more specialized courses,

[34]Fundacja Orange. https://fundacja.orange.pl/. Accessed 27 Mar 2019.

[35]Centrum Edukacji Obywatelskiej. https://glowna.ceo.org.pl/. Accessed 27 Mar 2019.

[36]Cyfrowa Wyprawka. http://cyfrowa-wyprawka.org/. Accessed 27 Mar 2019.

[37]Fundacja Nowoczesna Polska. https://nowoczesnapolska.org.pl/. Accessed 27 Mar 2019.

[38]Otwarte Zabytki. http://otwartezabytki.pl/. Accessed 27 Mar 2019.

[39]Mistrzowie Kodowania. http://mistrzowiekodowania.samsung.pl/. Accessed 27 Mar 2019.

such as computer graphics, computer lab administration, website creation, or the use of an e-learning platform in the didactic process.

Teachers conduct classes using an interactive whiteboard and appropriate software. They apply interactive exercises and electronic materials attached to textbooks. Discussion forums, blogs, and social websites are treated by the majority as forms of out-of-school contact, not as tools indicated in the education process. A small number of teachers conduct lessons in a computer lab where each student has access to a computer.

14.4 Policy and Strategy of ICT

The development of the information society in Poland was initiated in 1997 when the Organization for Economic Cooperation and Development of OECD set up a Working Party for Indicators on Information Society (WPIIS). The definitions and methodology for the development of data on various aspects of the information society were formulated.

14.4.1 ICT in Enterprises

In the planning of development and the study of the effects of implementation in various areas, among others IT competences, the rapid development of information and communication technologies forces to take into account the use of advanced online services and electronic economy, e-commerce, security in networks and IT systems as well as investment and expenditure on ICT, the development of issues related to the use of open-source tools and the impact of ICT on the environment, mobile Internet access, use of social media and services in the cloud.[40]

The 2016 research indicates that there were 2278 companies operating in the ICT sector in Poland, of which 89.4% provided ICT services. IT services were offered by about 75% of companies dealing with ICT services, where 70.5% of ICT workers were employed.

95.6% of Polish enterprises (below the EU average) made use of computers in their activities. The number of enterprises using broadband connections increased. In 2018 84.0% of enterprises had a fixed broadband connection, while the mobile

[40]Społeczeństwo informacyjne w Polsce. Wyniki badań statystycznych z lat 2013–2017. https://stat.gov.pl/obszary-tematyczne/nauka-i-technika-spoleczenstwo-informacyjne/spoleczenstwo-informacyjne/spoleczenstwo-informacyjne-w-polsce-wyniki-badan-statystycznych-z-lat-2013-2017,1,11.html?contrast=black-white. Accessed 27 Mar 2019.

ones—67.6%. About 13% (2017) of enterprises in Poland employed ICT specialists. The number of companies selling and buying online increased.[41]

Almost two-thirds of the companies carried out administrative procedures only electronically, without paper documents.

In 2016, over 94% of enterprises used the Internet to contact public administration bodies. About half of the companies invested in the purchase of ICT equipment mainly from the finance, insurance, and energy sectors.

14.4.2 ICT at Work

In 2018, 59% of professionally active Poles used computers, laptops, smartphones, tablets, other portable devices or computerized devices, or equipment at work. The difference between professionally active inhabitants of towns and villages reached 28%.

14.4.3 ICT in Households

The percentage of households with at least one computer has systematically increased in recent years (in 2018 it was approx. 83%). Over 80% of households had Internet access, mainly broadband, at home. In 2017, 72.7% of people aged 16–74 regularly used the Internet. The highest percentage were students (99.9%), people with higher education (96.9%), as well as residents of big cities (82.0%). The most common purposes of using the Internet in Poland include reading, downloading magazines, and using e-mail. Statistics show that over half of Polish Internet users are e-consumers.

The percentage of citizens aged 16–74 using e-government services in 2018 is around 35%. Most often applications and forms are submitted this way. The research conducted in 2017 showed that in the group of people aged 16–74 using the Internet, approximately 30% were people with a low level of general digital skills, about 25%—people with a basic level of those, and 21% of the above-mentioned digital skills.

The use of advanced information and telecommunications technologies also covers having smartphones. The results show that over 60% of Poles aged 16–74 have a smartphone. Most preferably the device is used by the youngest, as well as by primary school learners and university students.

[41] Społeczeństwo informacyjne w Polsce w 2018 roku. https://stat.gov.pl/obszary-tematyczne/nauka-i-technika-spoleczenstwo-informacyjne/spoleczenstwo-informacyjne/spoleczenstwo-informacyjne-w-polsce-w-2018-roku,2,8.html. Accessed 27 Mar 2019.

14.5 The Main Sources of Financing Educational Projects in Poland

14.5.1 European Union

In the period 2014–2020, the EU allocated over PLN 80 billion to the European Social Fund. About 13.2 billion euro was allocated from this pool for Poland. Funds from the European Social Fund are used at two levels: national and regional. At the national level, there is one Operational Program—Knowledge Education Development (POWER), which received EUR 4.4 billion, i.e. approximately 34% of the total funds. The remaining over 66% funds were divided between 16 regional programs.[42]

Projects supported by the European Social Fund are addressed to various social groups. The ESF characteristic feature is that there are two types of beneficiaries: beneficiaries (project promoters) and target group/final recipients (project participants).

Beneficiaries include various types of employee and employer organizations, non-governmental and charity organizations, universities, government and self-government administration bodies, public and private institutions related to education, health services, etc. and enterprises. They take part in and then implement the projects.[43]

The Knowledge Education Development (POWER) Program, at the national level, to which 4.4 billion euro is allocated from the European Social Fund, provides for six types of activities, including the following:

- Effective public policies for the labor market, economy, and education—ESF allocation EUR 739 million: implementing system and structure reforms in selected areas of public policies, key for the Europe 2020 strategy and national reform programs.
- Higher education for economy and development—ESF allocation 1056 million: supporting the quality, efficiency, and openness of higher education as an instrument for building a knowledge-based economy.

Activities aimed at improving access to education, improving the quality of education and training play an important role at the level of regions. Schools got support in the field of teacher education and development, equalizing educational opportunities of students, and equipping the educational and scientific base of schools. Regional and local authorities use ESF funding in projects improving the efficiency of institutions and services provided. The implementation of information technologies and initiatives related to e-government plays an important role, as it aims at increasing the access of citizens to information and better service by local authorities.

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[42] Czym jest Europejski Fundusz Społeczny, Portal Funduszy Europejskich. https://www.funduszeeuropejskie.gov.pl/strony/o-funduszach/europejski-fundusz-spoleczny/przeczytaj-o-europejskim-funduszu-spolecznym/. Accessed 27 Mar 2019.

[43] Ibidem.

The use of EU support brings about many advantages. However, receiving EU subsidies is also dependent on numerous obligations. First of all, you need to complete the investment in accordance with the application, respect the time limits and settle it correctly.

14.5.2 The Norwegian Financial Mechanism and the Financial Mechanism of the European Economic Area (The So-Called Norwegian Funds and EEA Funds)

These funds are related to Poland's accession to the European Union and the simultaneous entry of our country into the European Economic Area (EU + Iceland, Liechtenstein, Norway). The Norwegian Financial Mechanism and the Financial Mechanism of the European Economic Area (the so-called Norwegian and EEA Grants) are a form of non-returnable foreign aid granted by Norway, Iceland, and Liechtenstein to new EU members. In return for financial assistance, donor countries benefit from access to the internal market of the European Union (although they are not its members).[44]

Negotiations for the launch of the third edition of the Norwegian and EEA Funds in Poland have now come to an end. For this edition, the donors (Norway, Iceland, Liechtenstein) allocated over 2.8 million euro. Poland will be the largest beneficiary and will receive 809 million euro for projects.

As part of the fund, 12 programs are planned to be launched, including: Entrepreneurship development and innovation—85 million, Research—110 million, Education—20 million.

It is assumed that the first calls for proposals of the 3rd edition of the Norwegian and EEA funds 2014–2021 will take place in 2019.

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