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New Technologies in Polish School: Reality and Prospects for Development

Abstract

The text presents a short overview of activities of the Polish Ministry of National Education over the last dozen years or so, with a particular focus on the activities that are the results of planned or already implemented reforms in Polish school in terms of both improving its competitiveness and taking practical steps aimed at teaching practical skills, and not just providing the theoretical knowledge on such topics as new technologies, usage of ICT tools as didactic aids, Internet accessibility, cyber-safety, e-textbooks, or international cooperation projects (for instance eTwinning). The article can function as the base for comparison with the actions of other countries' governments from our region in this field. The numbers given in this text are to give only the general idea of how many more challenges there are for the governing authorities, education financing system, and the Ministry of National Education. The school does not have to encourage students to use the Internet or multimedia, but it should teach how to use them in a safe and conscious way in order to develop one's self, qualifications, and competences.

K e y w o r d s: Poland, school, new technologies, Internet, cyber-safety, e-textbooks, eTwinning

Introduction

In the second half of the 20th century, the ideas about education were shaped by the directions of global changes: the knowledge and Information and Technology (IT) revolution, demographic revolution, revolution of simultaneous globalisation and localism, technological revolution, ecological revolution, aesthetical revolution, axiological revolution, political revolution (Dalin & Rust, 1996, in: Kwieciński, 2000, pp. 392–394). In the recent decades, a special meaning has been given to the IT revolution, which results in social changes and in socialisation of next generations, whose evolution and growth, and their own developmental crises overlap external crises.

Regarding the IT revolution, the experts were stipulating that the new media should lead to numerous significant changes in our lives, culture, and customs. They were making hypotheses about vanishing of direct interpersonal contacts. Bearing in mind that those changes are not instant, but they should be perceived as a process, some of the changes could be noticed already after several years since the opportunity of accessing the Internet arose in our country. In the 1990s, Alexander King and Bertrand Schneider were "certain that we are at the early stage of creation of a new type of global society, so different from the today's one, just as the society created by the industrial revolution was different from the long agricultural period's society preceding it" (1992, p. 21). The revolution of knowledge and IT led to perceiving knowledge as a form of capital. If we follow Zbigniew Kwieciński's idea that "education means all actions, processes, and conditions that are favourable to people's development, and the development is described, among the others, by better understanding one's self and relations with the world, more efficient control of one's own behaviours, and greater perpetration in external processes" (2000, p. 233), then teachers are facing a great challenge. They should help students meet the challenges of the information society. In a society respecting the rules of democracy, pluralism, and tolerance – and, above all, in the information society – education should serve not so much the state as the citizens, and especially each individual separately.

This text aims at being just an overview, that is, a presentation of actions of the Polish Ministry of National Education over the last ten years or so, with a particular focus on the activities being the results of reforms of Polish school (which are either already planned or still in the phase of implementing) in terms of improving its competitiveness and implementing practical skills, and not just providing the theoretical knowledge on such topics as new technologies, usage of ICT tools as didactic aids, Internet accessibility, cyber-safety, e-textbooks, and international cooperation projects, like eTwinning. Eugenia Smyrnova-Trybulska (2018) analyses and comments on many domestic and foreign documents, and describes the theoretical and practical aspects of the application of ICT in

contemporary education at various levels. The existing research covers only the state or the application level of new technologies at schools, and the expectations accompanying it. Definitely, after completing even the first stages of the reform, it will be possible to design the evaluation research. Therefore, here we would like to present the overview of activities managing Polish education in terms of using new technologies. This article may be used as a base for comparison with the activities of other governments of countries from our region in this topic (Smyrnova-Trybulska, 2009, 2017). To an extent, the text might seem to be too reporting, but for a foreign reader, it should serve as a source of knowledge about the recent reforms pertaining to using new technologies at schools.

The Beginning and the Aftermath of the Information and Technology Revolution in Polish School

Introducing new technologies in schools is a multi-faceted matter. Any changes are initiated by the Ministry of National Education. The 1999 reform of the educational system brought many changes, also in the department of implementing new technologies. Schools were introduced to the educational path of media and readership education, while the higher education level added the Media in Education course to pedagogical studies.

The Ministry of National Education devised strategies pertaining to implementation of information and communication technologies (ICT) at schools. A nationwide technology infrastructure – National Educational Network – was created, and its task was to monitor educational services connected with new technologies. The next step was constituting the National Educational Portal, and properly selecting educational platforms and learning environments.

Optimisation of educational processes, which are to be supported by computerisation, takes place on several grounds. The most important among them are: computer and methodological software, technological and organisational structure – i.e. equipment, multimedia, lessons' organisation, and proper preparation of teachers. Implementation of new technologies at schools depends on those indicators, deciding on the educational programme.

From 2012 to 2013 (over a one-year period), a governmental programme of developing competences of students and teachers in terms of using ICT – "Digital school" – was realised. The programme included four *e-components*:

- e-school: equipping over 400 schools with the necessary ICT infrastructure, i.e. modern educational tools;

- e-student: providing students from those schools with an access to the modern educational tools at home;
- e-teacher: developing teachers' skills in the field of using ICT during lessons; and
- e-educational resources / free of charge e-textbooks: access to public, educational, electronic resources.

The year-long "Digital school" programme in the selected schools did not transform into a nationwide project. In reality, most schools lacked the access to broadband Internet, multimedia boards, and IT classrooms. Lessons with new technologies were limited almost completely to computer science classes. As a result, in the PISA 2012 test of solving problems with the usage of the computer ("programming" a ticket machine or an air-conditioner), junior secondary school students got bad results – the 29th place among 32 countries. However, there were also exceptions; let us refer to Polish students reaching the 4th place in the all-time medal table ranking of International Olympiad in Informatics – they won 101 medals, while China collected 111, taking the 1st place.

New Solutions and the Educational Reform

The programme of digitalisation of Polish schools was revisited on 1 September 2016. A pilot programme of teaching programming was launched in schools. The skill of programming became a part of common computer education.

The undertaken actions had their enshrinement in the Act on Education. Article 1 section 18 stipulates "development of students' entrepreneurial and creative attitude […] through using, in the educational process, innovative programme and methodological solutions," while in section 21 "popularising knowledge about safety and teaching right attitude towards dangers – including those connected with using ICT, and unusual situations – to children and teenagers was considered." In section 22, "fostering the ability of using ICT efficiently has been added" ("Ustawa z dnia 14 grudnia…").

"School is to provide the students with conditions for gaining knowledge and skills needed for solving problems, with the use of methods and techniques based on informatics, including logical and algorithmic thinking, programming, using computer applications, searching for and using information from various sources, using computer and basic digital equipment, and students should employ those skills during lessons from various subjects, among others, in working with texts, doing calculations, processing information and presenting it under different forms" ("Podstawa programowa wychowania przedszkolnego…," p. 15). Importantly enough, the assumption was made not only to teach IT skills, but also "to prepare

students for making informed and responsible choices while using sources available on the Internet, forming critical analysis of information, safe moving about the digital space, including creating and maintaining relationships with other Internet users that are based on mutual respect" ("Podstawa programowa wychowania przedszkolnego…," p. 15).

Therefore, as Tadeusz Lewowicki states, the doctrine of the adaptive education (education consolidating the hitherto typical models of social life, blocking changes, preparing new generations for the stagnating reality) needs to be replaced by the doctrine of critical-creative education (1994, p. 17), stimulating innovation, creativity, and changes of the surrounding world. In the process of school education, the main focus should be on shaping a critical attitude towards contents on the Internet, making the youth aware of the dangers of surfing the cyberspace. Among the objectives of education, the primary issues should revolve around shaping *attitudes*, *skills/efficiencies*, and *information*. We need to take care of the specific quality of people who characterise themselves with openness, imagination, capacity for everlasting self-education and intellectual autonomy, creativity and initiative, an ability to think, and cooperation on a global scale. Thus sorted reflection leads to "transformative education," which prepares children and teenagers for transforming the world (Lewowicki, 1994, p. 26).

Programming

In the framework of fundamental trends in educational policy of the country, in school year 2016/2017 the Ministry of National Education assumed the development of computer competences of children and teenagers in schools and institutions. Five elements were established:

1. pilot: programming,
2. coordinators in educational offices: for innovations in education,
3. Council for IT Education: designing a tested core curriculum for the subjects of Computer Studies,
4. website: programowanie.men.gov.pl, and
5. recommendations: guidelines for equipment.

Programming teaches particularly logical thinking and precise presentation of thoughts and ideas, but also good work organisation while solving problems and development of competences needed for cooperation which are necessary today in almost every profession. After a year-long pilot for formal education on every level of schooling, conducted in over 2000 schools, teaching of programing was introduced.

Programming in the core curriculum is understood in a much broader sense than just writing a programme in a programming language. "It is a whole process, IT centred attitude to solving a problem: from specifying the problem (determining data and results, or more generally – aims of solving the problem), to finding and designing a solution, to programming the solution, testing its reliability, and – if need be – making corrections with properly chosen application or programming language" ("Podstawa programowa kształcenia ogólnego…," p. 10). The new computer studies core curriculum covers learning since the first grade of primary school. 280 hours are dedicated for computer studies lessons (apart from grades 1–3). The correlation of computer studies with other subjects has also been taken under consideration.

In 2016, in every province, a post of the coordinator for innovation in education was established. Their task is to supervise and monitor the actions on the level of their province, in the framework of the pilot programme of teaching programming. The programme was planned basing on educational innovations in selected schools at all levels of education since 1 September 2016. Additionally, among the coordinators' responsibilities, there are tasks resulting from implementing the governmental plan for responsible development. Apart from teaching programming, there are issues connected with supporting schools in implementing the actions and solutions using ICT providing added educational value, e.g. usage of e-textbooks and e-resources, implementing e-Register, and effective educational methods of activating students ("Powołanie wojewódzkich koordynatorów…").

The implementation of programming into the core curriculum of formal education requires additional skills from the teachers. At the leading stage of the pilot programme, an educational and informational campaign was being conducted, in the framework of which, during the second half of 2016, 159 training conferences were organised with 13,290 computer studies and early education teachers participating. The conferences were also conducted in 2017. Additionally, there was a series of training courses for teachers about programming. Departments of education, teacher training institutions, and Foundation for the Development of the Education System offer their support in the form of training courses. Teachers can get grants for developing curriculum under Measure 3.2 "Innovative solutions for digital activation" of Operational Programme Digital Poland. EU funding provided 124,211,127.00 PLN for this purpose.

Methodological support for teachers-advisors and methodical advisors is organised by the Education Development Centre and Teacher Training Centres, but also by publishers of textbooks for early schooling. Among others, Wydawnictwo Mac [Mac Publishing House] and the New Face of Education Association prepared free training courses about programming for teachers of grades 1–3 of primary school. Many universities have prepared programming courses for teachers of grades 1–3, unfortunately for a fee. During trainings, workshops, and courses,

teachers are prepared for shaping attitudes and skills, which are key to computer-based thinking with children, which is sometimes called algorithmic thinking.

The Internet and Its Accessibility

A necessary element of teaching programming is connecting each school to broadband Internet. This task is being accomplished together by the Ministry of National Education and the Ministry of Digital Affairs; it is also financed with EU funding from Operational Programme Digital Poland. A complex net connecting all educational institutions where students of age 6 to 19 are taught is going to be created.

The Computer and Media Education Council worked since June 2008. Their main task was to organise and support educational activities which were to help create an information society. The council was also to give opinions about projects of the Ministry of National Education and propose new solutions for teaching computer science and information technologies, and also how to use these solutions in teaching other subjects ("Rada ds. edukacji informatycznej…"). The experts who are members of the Council were working on the document "New Technologies in Education." In September 2010, Standards for preparing teachers in Information and Communication Technology were published. The Council for Computerisation of Education's works resulted in accepting the document created by Maciej M. Sysło: "Directions of development of technology supported education. New technologies in education. Proposal of the strategy and the plan of action for years 2014–2020" (Sysło). It is a "vision" of education supported with technology. The Council for Computerisation of Education supervises the works of digitalisation of education, preparing teachers of IT education and computer studies for primary schools and post-primary schools.

Execution of computer studies classes and learning programming are enriched by electronic resources on many Internet portals, such as programowanie.men.gov.pl.

E-textbooks

The last of the listed elements of a digital school are educational e-resources. The state budget has funds planned for realisation of many actions for creating new resources, development of e-textbooks, development of open sources on the Scholaris portal, starting the School of Practice (the pilot of the first school),

and also the works on e-resources for art subjects, multimedia resources for foreign languages for business. The leading role in these endeavours is kept by the Education Development Centre. The first electronic textbooks were presented in September 2013, and were accepted enthusiastically. In 2017, students could already use 62 free e-textbooks, available on the website www.epodreczniki.pl, and other educational resources accessible on the websites of school textbooks publishers.

The publishers and technology companies offer a wide range of solutions in the field of e-textbooks. This variety is the result of many interpretations of the concept of an e-textbook, but also of the differences in understanding the needs of teachers or in broader understanding of the educational market. It is considered that e-textbooks should meet the following criteria: "multimedia – understood as providing the textbook with multimedia elements, e.g. films, animations, simulations; interactivity – understood as providing the textbook with elements allowing for active work with them, e.g. interactive quizzes, experiments giving interactive results; availability on different devices – understood as a possibility of opening the e-textbook or/and its fragments on devices such as a computer, a laptop, a notebook, a tablet, or an interactive whiteboard; the possibility of printing the whole or the fragments of the e-textbook – understood as the possibility of printing any part of the e-textbook, chosen by the teacher; coordination with an e-learning platform – understood as the possibility of uploading the e-textbook onto an e-learning platform, which leads to the access to the information about using both the whole textbook and its parts; coordination with educational and/or social portals – understood as accessibility of the e-textbook at the level of an educational portal in any place and at any time, with the possibility of extending the textbook with additional resources, for example links to the latest developments in the given fields, as well as with social channels for communication; correlation with the traditional textbook – understood as curricular (content) concurrence with the traditional textbook functioning in paper form; possibility of doing exercises – understood as doing exercises and self-control tests by oneself from the level of the e-textbook; navigation – possibility of using page-by-page or free navigation throughout the textbook; and possibility of composing own textbook content – understood as the ability of creating own teaching materials, using resources available in the e-textbook, for any part of the curriculum, for example lessons" (Plebańska, p. 10).

A governmental programme of developing school infrastructure and competences of students and teachers in the field of ICT also includes equipping public and private primary schools and art schools in Poland and abroad (Polish schools abroad and schools with Polish as the teaching language) with interactive whiteboards, projectors, speakers, and interactive touch screens. Under the three-year governmental programme, approximately 15,580 public and private primary schools and art schools in Poland and abroad will be given teaching aids.

Safety in Cyberspace, Safety at School

An important element of actions in education is the implementation of programmes which are designed to promote solutions using cyberspace resources in Polish schools in a safe way. In the framework of the project Cyfrowobezpieczni.pl – Bezpieczna Szkoła Cyfrowa [Safe Digital School], information, educational, and consultative support will be ultimately provided to 2,200 primary, junior secondary, and secondary schools, including 165,000 pupils, 220,000 parents, and 22,000 teachers. The programme shall run until 2018 in the framework of the governmental programme Bezpieczna+ [Safe+]. The authors of the programme rightly stress that the basic element of digital safety at schools is knowledge and awareness of pupils – but also of teachers and parents – about the possible dangers and risks related with using the Internet and modern digital tools. The Cyfrowobezpieczni.pl project was created to address the problems and challenges of the safe use of the resources from the cyberspace in Polish schools. In the course of the project, the implementers pay special attention to encourage the school headmasters, teachers, and parents to an activity in the field of prevention and encouraging students to a responsible behaviour online. Systemic solutions have been proposed which will allow for a better use of digital tools for supporting the development of students, with simultaneous assurance of children's safety and teaching them the rules of using the Internet and digital devices wisely. Among the actions in the framework of the project's implementation we can list School Digital Safety Days, educational and informative events in schools which are conducted by educators in the form of workshops with students and meetings with teachers and parents (a total of 2,200 of those events will be organised). Since September 2016, those actions have been implemented in primary, junior secondary, secondary, and vocational schools. Additionally, a contest "We Are Cybersafe!" (3 editions) was organised, in which schools from the whole country could take part, organising original lessons about cyber safety. The prizes were mobile digital workrooms, educational camps for students, and for the particularly involved teachers – participation in summer Educamps. A consultation point for headmasters, teachers, and parents has also been established, where, via Internet and telephone, one may get answers for any questions pertaining to digital safety in a school environment. National Convents of Safe School were also organised (3 editions: October/November 2016, 2017, and 2018); these were two-day meetings with, among others, representatives of Ministry of National Education (MEN), and experts in the field of digital safety from scientific institutions and police. It is also hard to overestimate the trainings for 2,200 School Mentors for Cyber Safety: teachers who gain organised knowledge, which is helpful in coordinating actions for ensuring cyber safety in their schools. Cyfrowobezpieczni.pl portal has been created – it is an informative, educational, and promotion platform, realised in the model of a social portal,

dedicated to all groups related with the topic of digital safety in schools. A package of educational materials, reference books, scenarios, e-learning courses, educational games, and multimedia with open-source licences for teachers and educators has been prepared as well. The Cyfrowobezpieczni.pl project is co-funded by MEN in the framework of a public task "competence improvement of school staff, students and their parents in the field of safe using the cyberspace and reacting to dangers."

In 2016, another stage of "Cybernauci – kompleksowy projekt kształtowania bezpiecznych zachowań w sieci" ["Cybernauts – A comprehensive project for shaping safe behaviour online"] was realised. It is a training programme whose goal is raising the level of safety while using the Internet by children, youth, their parents, caregivers, and teachers. The project will have been finished by the end of 2018. The implementer is the Modern Poland foundation with the partnership of Collegium Civitas. The main activity of the project is conducting the workshops with students, parents, and teachers of schools at all levels from Poland. The aim of the project is raising the level of safety of using the Internet by children and teenagers, but also by the parents, caregivers, and teachers. Conducting workshops in schools countrywide for all target groups will contribute to accomplishing the goal. Additionally, complementary materials have been prepared, with all recipients in mind. In the supported schools, well-prepared coaches lead workshops for students, their parents, and teachers. Participation in the project is free of charge. In the framework of the project, a catalogue of publicly-available educational materials about safe using ICT and the cyber-safety has been published. The catalogue helps with easy search of the materials according to the described metadata, which include, among others, recipients of the materials, thematic scope, licences. The tool is intended for searching materials pertaining the topic of online safety. The project is financed by the Ministry of National Education. The project is held under the honorary patronage of Ministry of Digitalisation, the Ombudsman for Children Marek Michalak, and the Education Development Centre.

Instead of the End

New technologies in education in Polish schools are not a modern challenge anymore, but they have become a reality of the educational process. The numerical data indicated in the text give only the idea of how many more challenges there are before the governing authorities, the system of financing education, or the Ministry of National Education. For certain, there is no need to convince anyone of the legitimacy of using ICT – this is the emerging reality. Children and youth deal more often with new technologies outside of the school, and they get new skills there. The school does not have to promote the usage of the Internet or

multimedia, but it should teach how to be a safe and well-informed user, who develops one's self, qualifications, and competences. The future is drawn by the ambitious plans, projects, and reforms indicated in the text. Soon, their evaluation and modifications – depending on the results and drawn conclusions – will be needed.

What seems to be highly topical as well is the commitment in actions pertaining to the fight against bullying online. Cyberbullying (electronic bullying) or stalking are modern forms of bullying among kids: stalking, intimidation, harassment, ridiculing others with the means of the Internet and electronic devices e.g. texts, e-mails, websites, discussion forums, social websites, and so on. It is important for the whole school community to have the knowledge about the typology of cyberbullying, its forms, basic information from the studies on this phenomenon, the possible prevention, diagnosing, counteracting, working with students, and legal responsibility (Pyżalski, 2012, p. 318).

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Nowe technologie w szkole polskiej: rzeczywistość i perspektywy rozwoju

S t r e s z c z e n i e

Tekst prezentuje krótki przegląd działalności polskiego Ministerstwa Edukacji Narodowej w ciągu ostatnich dwunastu lat. Szczególna uwaga poświęcona zostaje działaniom, które są rezultatem planowanych i już wprowadzonych reform w polskich szkołach w celu poprawy ich zdolności do współzawodnictwa z innymi szkołami, a także wykonania praktycznych kroków w kierunku nauczania umiejętności praktycznych, a nie prostego przekazywania wiedzy teoretycznej z zakresu nowych technologii, wykorzystania narzędzi ICT jako pomocy dydaktycznych, dostępu do Internetu, bezpieczeństwa w sieci elektronicznych podręczników oraz projektów współpracy międzynarodowej, takich jak eTweening. Artykuł może stać się punktem odniesienia dla porównania z działaniami podejmowanymi w tym zakresie przez rządy innych krajów. Liczby przytoczone w artykule dają tylko ogólne pojęcie o tym, jak wiele wyzwań staje przed rządzącymi, systemem finansowania edukacji oraz Ministerstwem Edukacji Narodowej. Szkoła nie ma obowiązku zachęcać uczniów do wykorzystywania Internetu i multimediów, ale powinna nauczać, jak ich świadomie i bezpiecznie używać, aby uczniowie rozwinęli się jako osoby oraz zwiększyli swoje kwalifikacje i kompetencje.

S ł o w a k l u c z o w e: Polska, nowe technologie, Internet, bezpieczeństwo w sieci, e-podręczniki, eTwinning

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Новые технологии в польской школе: реальность и перспективы развития

Аннотация

В тексте представлен краткий обзор деятельности Министерства образования Польши в течение последних десяти лет с особым вниманием к мероприятиям, которые являются результатом запланированных или уже реализованных реформ для польской школы с точки зрения повышения ее конкурентоспособности, реализации преподавания практических навыков, а не просто передачи теоретических знаний в области новых технологий, использования инструментов ИКТ в качестве дидактических средств, доступности в Интернете, кибербезопасности, электронным учебникам, проектам международного сотрудничества, таким как eTwinning. Эта статья может быть основой для сравнения с действиями правительств других стран в данном направлении. Цифры, приведенные в этом тексте, должны дать только общее представление о том, сколько еще существует проблем для руководящих органов, системы финансирования образования, отдела образования. Школа не должна поощрять использование Интернет или мультимедиа, но она должна научить, как использовать их безопасным и сознательным образом для развития личности, квалификации и компетенций.

Ключевые слова: Польша, школа, новые технологии, Интернет, кибербезопасность, электронные учебники, eTwinning

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Nuevas tecnologías en el sistema educativo polaco: realidad y perspectivas de desarrollo

Resumen

El artículo presenta brevemente la actividad del Ministerio de Educación Nacional polaco a lo largo de los últimos doce años. Dedica una atención especial a estas acciones que son efecto de las reformas planeadas o realizadas ya en los centros de educación polacos con el objetivo de mejorar su capacidad de competir con otros centros, y, asimismo, de tomar medidas bien definidas para enseñar competencias prácticas, y no solo transmitir conocimientos teóricos acerca de nuevas tecnologías, uso de las TIC como herramienta auxiliar en la enseñanza, seguridad en la red, manuales electrónicos y proyectos de colaboración internacional como eTwinning. El artículo puede convertirse en un punto de referencia para comparación con las actividadas desarrolladas en este campo por los gobiernos de otros países de la región. Las cifras citadas dan solo una idea general sobre la multitud de retos que enfrentan los gobernantes, el sistema de financiamiento de la educación y el Ministerio de Educación Nacional. El sistema educativo no tiene obligación de animar a los alumnos a usar Internet y multimedia, pero debe enseñar como servirse de ellos conscientemente y sin peligro, para que los estudiantes puedan desarrollarse y aumentar sus habilidades y competencias.

Palabras clave: Polonia, nuevas tecnologías, Internet, seguridad en la red, manuales electrónicos, eTwinning