

TRENDS AND FUTURE SCENARIOS IN EDUCATION POLICY

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Abstract: *The scientific papers discussed in the present article enabled identifying the following trends in the education policy: increasing significance of information technologies and artificial intelligence, growing importance of Science, Technology, Engineering and Mathematics (STEM), leadership development remaining important. The analysis of education reforms in foreign countries demonstrates that the education system is becoming more flexible, more rapidly adapting to the altered circumstances, there is a striving for improvement of accessibility to education and decrease of social divide. Lithuanian scholars pointed out four future scenarios for education: ecoconcern-focused, divide-based, market-oriented schools and individual meanings.*

Key words: *education, reforms, trends, future scenarios.*

1. INTRODUCTION

The twenty-first century is becoming an increasingly more complex and undefinable. The changing social, technological and political context is the background for a growing understanding of the likely future to not lag behind the rapid changes. Immense changes were caused by the COVID-19 pandemic, which demonstrated that teachers and school students needed digital competencies and resources.

The European Commission Competence Centre on Foresight has formulated 14 megatrends, this way stimulating strategic, future-oriented culture in the process of building EU policy [1]. Megatrends are defined as long-term driving forces that are observed at the present moment and which will probably make a global impact and can help predict the most likely future.

Diversification of education and learning is one of the most important megatrends because the quality of education for the growing generation will mostly determine the quality of societal life in the future. Due to information and communication technologies, society's

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hyper-connectivity processes are rapidly developing, which provides increasing opportunities for creation and dissemination of information. Moreover, the recent educational technologies enabling learning and improvement in the global area of knowledge and experiences is developing in line, too. An ambitious term *pedagogics to the max* is raised: teachers are asked to do much more than just to explain the content of new knowledge; they have to perform other, usually new and diverse, activities which are important for the educational content.

In 2020, the Organisation for Economic Co-operation and Development (OECD) has set four scenarios for the development of global future of schooling until 2040 [2]:

1. *Schooling extended*: extension of formal and non-formal learning opportunities and accessibility from child's first years to person's senior age providing more choices of educational content based on individual needs. Digital learning systems, collaboration between public and private sectors in the field of education are promoted.
2. *Education outsourced*: a part of the educational content being rendered from outside of the education system when employers commission and deliver the training which is useful for the labour market increases. Community-based learning, autonomous experiential learning expand, coordination of formal learning with work activities proceeds, higher value is given to services provided by market consultants and career specialists.
3. *Schools as learning hubs*: education systems are no longer based on uniformity, the power of decentralised elements of the education system increases. Options of organisation of learning are flexible, the process of education takes place not necessarily in school; it involves not only teachers but also other specialists, community representatives; practice of classification of school students by marks is rejected.
4. *Learn-as-you-go*: learning is based on a rapid advancement and progress of artificial intelligence, virtual reality and augmentative reality and Internet of things. Vast public resources become important means of education. The learning becomes personalised, based on individuals' curiosity and needs, stimulating creativity and self-expression, bringing learners to build communities led by common goals. Differences of learning, work and leisure time vanish.

2. THEORETICAL FUNDAMENTALS OF THE TRENDS IN EDUCATION POLICY

Majority of scholars in the field of education trends emphasise importance of leadership in the education system. They underline that the research field of educational

leadership has greatly expanded in its content, areas of application and impact over the past 50 years. Specialised journals on educational leadership emerged. Various traditions in creating knowledge have formed and new knowledge became transferable to very broad audiences, from practitioners to scholars and builders of the education policy. Aims, methods, statements and meanings of their application were changing [3].

Investigation of educational leadership reforms in different countries reveals a string influence of general changes in the educational policy: decentralisation of education, enhancement of school autonomy, increasing emphasis on learning outcomes [4]. High significance is also held by external factors related to the state education system: changes in public management of the state, globalisation of the educational policy worldwide. Education leaders are in the centre of implementation of reforms; they have to timely respond to the changing conditions of governance, and this requires from them a high level of professionalism. Practice of leadership and a likely effect of leaders much depend on a context which may be favourable or unfavourable to changes. Leadership of education leaders much depends on the culture and traditions of collaboration between them and pedagogues, parents of school students, on managers' abilities to form a proper team of pedagogues through recruitment, employment, salaries and career progress, which is fundamental for implementation of leadership ideas.

Often, scientific literature points out that there is a lack of people who wish to undertake the role of a leader in education. Usually, school managers become leaders, and their work is emotionally highly intense. Such character of their performance has a direct effect on health and personal wellbeing of these school managers.

Recently, information technologies for education have attracted most of scholars' and education policymakers' attention [5]. Presently, efforts and means are being extensively invested in new technologies hoping that digital technologies will become a massive and effective teaching aid. However, information technologies are changing faster than the changes in implementation of them. Back in the early 1990s, there was a trend to use software, arrange specialised lessons and games in education. Now, new technologies enable implementation of a large part of the education process in virtual learning environment. The progress of application of information technologies in educational processes depends on the level of users' computer literacy and availability of information technologies. The industry of market technologies stimulates appropriate education trends, too.

Recent digital technologies in the education field may improve the quality of

education; however, it also becomes a new challenge for pedagogues and school students [6]. We must admit the advantages of artificial intelligence in the fields of knowledge rendering and accumulation. Moreover, we have to prepare participants of the education process for flexibility in adapting knowledge, creativity as well as connections to values and emotional support. Ethical standards and public educational policy norms related to artificial intelligence must be reviewed to make the opportunities of new educational technologies operate in a broader context of intelligence development and correspond to recognised public norms and values.

A research study conducted in 2021 in the USA demonstrates that education institutions more extensively use information from Facebook, Twitter and other social networks in the process of education [7]. Learning on-line and the usage of open social topics have also become an object of scientific research and fundamental of formulated new educational conceptions. Until 2020, platforms of social networks were mostly used for maintaining contacts with students' parents or society representatives. Under the conditions of the COVID-19 pandemic, having moved to partly distance (blended) learning, needs to search for information in social networks and use it in a direct process of education appeared. The education system faced the combination of rigidity of scientific knowledge provided in course-books, unreliability and subjectivity of empirical data found in social networks.

The Moodle information system is increasingly broadly used for Internet-based learning; this platform is a perfect tool for accumulating information and communication, completion and assessment of assignments. Using the Moodle platform, it is easy for pedagogues to accumulate and update teaching materials; moreover, school students can also fruitfully contribute to information search and accumulation while performing assigned individual or team tasks. Research studies suggest that the Moodle system is widely used in universities; nevertheless, this system is still insufficiently widely applied in comprehensive education schools [8].

In many countries, significance of Science, Technology, Engineering and Mathematics (STEM) is emphasised in the development of human resources in areas which are important for competitiveness of national economy [9]. Recent long-term national policy plans highlight an increasing need for transition to knowledge-based economy and educate high quality specialists holding good academic background in STEM areas. Nevertheless, despite many allocated resources, indicators of school students' national and international achievements show that students' attainments in STEM subjects improved insignificantly.

Young individuals still lack interest in studying STEM subjects and related professional career. There are still many gaps and underused opportunities in STEM education.

Scientific research works suggest that investigations of artificial intelligence (hereinafter referred to as AI) in the education area increase very rapidly. Personalised teaching systems forming a model of a learner are an important case; they are gradually becoming regular and evidence of their efficiency in improvement of learning increases [10]. These systems collect data on learners while they use that system performing actions with a keyboard, mouse and screen of their computer, phone or other devices connected to the AI system. Based on school student's needs, the AI system suggests performing the search for it, suggests corresponding information, assesses quality of submitted tasks by students, provides feedback to a student. *Explainable AI* (hereinafter referred to as EAI) is one of recent methods to be used for increasing trust in AI systems; it gives a user an opportunity to understand, trust and effectively control the forming AI partners. The EAI is based on theories of cognitive and learning sciences, collects information from the human-computer interaction, is human-centred AI, performs analysis of human's learning and carries out an educational process according to educational goals set by a human (see Fig. 1).

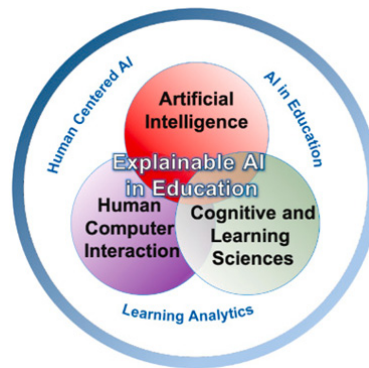


Fig. 1: Related fields to Explainable AI in education, Source: [10]

3. EDUCATION REFORMS AND TRENDS IN FOREIGN COUNTRIES

3.1. Trends in the Education Policy of the USA

When characterising new trends in the education policy of the USA, Spurrier et al. [11] has it that for several decades in the USA an opportunity to learn meant “*school choice*”, whereas now there is a shift to thinking of “*learning options*”. Education policy-makers more often give residents access to more flexible opportunities for learning. These new trends are presented in Table 1.

Table 1. New opportunities in the education policy of the USA, Source: [11]

Options	Situation and trends	
School choice	Opportunities for school students and their families to choose a school are provided. Traditional education standards are complied with. Programmes of giving a lift for commuting are being implemented.	
Flexible opportunities for learning	During the COVID-19 pandemic, learning outcomes, especially in reading and mathematics, worsened for part of school students who had less opportunities to learn individually. Families are still searching for more flexible learning opportunities for their children to supplement or alter education in traditional school.	
Trends in the school choice policy	New and developed curricula in schools	The USA increase the amount of curricula offered by schools and developed the content of curricula. Specialised courses for career development of employees are delivered. Curricula offered in parallel allow school students enter college-level courses and transfer the accumulated credits upon completion when entering a higher education institution. Learning at a workplace (e.g. internships, apprenticeship, other experience) allows school students explore careers they are interested in and build skills in real-life environment, accumulate credits for internships, projects and experience that are acquired outside classroom.
	More accessible choice	The USA have adopted legal acts that bind to provide more information and transparency on broader opportunities for students. Sometimes, priority can be given to specific groups of students, for example, economically disadvantaged or with special needs. Uniformed curricula allow applying to several state schools at the same time. Open registration allows students attend any state school.
Trends of the policy of flexible learning opportunities	Funding is increased for flexible learning opportunities, and appropriate support for school students is provided. Specified populations of school students, such as military families or foster home residents, are supported. Individuals and corporations donate money for student scholarships. Access to flexible learning opportunities outside traditional school and	

classroom environment are provided. Learning at home: school students are educated at home by one of the parents of teachers chosen by parents. Charter schools receive public funding and are usually governed by non-profit organisations. Agreements with these schools provide more autonomy and accountability for students' attainments.

The pandemic has made an immense negative effect on the quality of education system results; restoration of it requires specifically designed effective solutions. Throughout school year 2021–2022, school students returning back to schools all around the USA underwent many kinds of loss and challenges in learning, social and emotional needs. With regard to the scope and volume of the needs, a broader set of education opportunities is required, which would allow families and their children get the needed support. During the pandemic, families experienced quite many new education opportunities for their children. For three years, families had to consider accessible learning opportunities for their children and choose them. Many families want that these opportunities remained in the future, too. Majority of the US states implement the education priorities, including opportunities and policy to choose schools supporting expansion of a broader spectrum of flexible learning opportunities.

3.2. Implemented Educational Reforms and Policy Changes in Finland

Finland is considered to be one of the most advanced states implementing educational changes; it is usually given as an example to follow for other countries. In 2022, the *positive discrimination funding*, which is also called *equality funding*, was introduced in Finland [12]. It provides additional subsidies for early, pre-school and basic education, is distributed to education institutions that are located in regions where the following characteristics prevail: 1) low level of education of the residents; 2) high unemployment rate; 3) large part consists of speakers of other languages.

This specific funding aims at enhancing equality of education and reducing learning inequalities in specific regions, thus helping these regions where the rate of learning under-achievers increased. *Positive discrimination funding* should come into force starting from 2023. As expected, it will make a positive effect for the progress in school students' learning, effectiveness of subsidies will increase, implementation of the educational policy at the local level will become more enhanced.

In 2021, a minimum number of social workers and psychologists in Finnish schools

was approved. Both comprehensive and upper forms of secondary schools must have at least one social worker for 670 students and one school psychologist for 780 students. The law came into force at the beginning of 2022. It sets a position of a social worker and a psychologist at school based on a number of students and ensures a more evenly distributed accessibility and quality of these services in all schools of Finland. Better support to children and youth in schools helps solving learning and social welfare issues. Since 2023, employment of school psychologists and social workers is allocated 29 mln euros as a specialised state subsidy.

In 2021, Finland prepared a detailed action plan which aimed at preventing bullying, taunting, violence and harassment in schools. The action plan foresees 14 measures, for example: to supply necessary means for the development of child's emotional intelligence and social skills in early childhood education stage; to properly train teachers so that they could identify bullying and timely prevent it; to authorise teachers and school managers to interfere the disputes and, if necessary, to take action against bullying; to employ more psychologists in schools. There is a striving that each child and young individual could safely attend school, that bullying would be absolutely intolerable there.

Since August 2021, compulsory education in Finland lasts until 18 years, upon completion of comprehensive secondary education with a maturity exam or obtaining a chosen professional qualification.

3.3. Educational Reforms in Estonian National Schools

Seeking to increase attractiveness and appreciation of the profession of a teacher, the teacher minimum salary is increased in 2023 in Estonia from 1,412 euros to 1,749 euros (i.e. 23.9 per cent). Moreover, schools were allocated the differentiation fund comprising 17 per cent which will allow school managers to more flexibly regulate teachers' work and salaries, for instance, they will be able to reduce the workload for novice teachers and to pay for additional work of class-mistresses. The state budget for 2023 includes 106.6 mln euros for increasing teachers' salaries. The average salary of teachers increases up to 2,048 euros in 2023 [13].

In 2022, preparation of the action plan for delivery of education in the Estonian language was completed; in compliance with it, the transition to the teaching in the Estonian language in kindergartens and schools that teach in other than the Estonian language was

projected. In school year 2021–2022, there were 73 comprehensive education schools in Estonia (15 per cent of all schools) where subjects were being taught in Russian or in Estonian and Russian. More than 21,000 students were learning in the Russian language (13.5 per cent of students). Quite many students after graduation from schools teaching in Russian do not achieve the required level of the Estonian language command which is required to be level B1 or B2. The transition to education in the Estonian language will commence in kindergartens and primary school forms 1–4 in 2024 and will end by 2030.

According to the updated regulation of qualification requirements, the requirements for the Estonian language command will be included in the list of required qualification characteristics of teachers, school managers and auxiliary specialists since 1 September 2025. Until then, individuals holding these job positions will have to learn the Estonian language at a level set depending on a position, varying from B2 to C1. The amendments will come into force three years later, giving some time for staff of the education sector to improve their Estonian language skills.

Aiming to help schools cope with the negative effects of distance learning in the period of the COVID-19 pandemic, the state allocated additional funding to the development of hobbies and additional measures in schools seeking to support school students' motivation for learning, to develop their general competencies, to raise their interest in learning. In the summer of 2021, more than 65,000 school students from all over Estonia had an opportunity to participate in activities of 517 hobby camps.

In collaboration with local governance institutions, school students who needed support in learning in a distance mode were given a speedier Internet connection; and, thanks to cooperation with Estonian Union for Child Welfare, computers were purchased for home use. In collaboration with universities, graduates of basic and secondary schools were offered free preparatory courses offering support in preparation for final and entrance exams in mathematics, Estonian, English languages.

The training centre Education and Youth Board organised a cycle of 53 on-line seminars “Smarter from a Distance” for teachers. These on-line seminars were intended for supporting mental health and on-line education, bridging the gaps in on-line learning. Around 9,000 people participated in the online seminars, the recordings were viewed by more than 20,000 people.

4. EDUCATION SITUATION AND FUTURE SCENARIOS IN LITHUANIA

4.1. Situation of Education in Lithuania

Inhabitants of Lithuania are attributed to those most educated in Europe. In 2021, there were 694.5 thous. of inhabitants aged 25–64 who had completed higher education. They comprised 45.3 per cent of all inhabitants aged 25–64 in the country. This part is gradually increasing in Lithuania; in comparison to other EU countries, we are among the leaders in this aspect: the EU27 average is 33.4 per cent [14].

The potential of society development is revealed by a ratio consisting of young educated people. In 2021, higher education or equal to it was obtained by 60.3 per cent in Lithuania, and the average EU ratio was 41.6 per cent of all residents aged 30–34. Over the latter decade, this part remains gradually increasing.

A part of young (aged 18–24 years) individuals who haven't obtained secondary education and did not attend school is small in Lithuania. In 2021 it comprised 5.3 per cent (the EU average was 9.7 per cent). According to a part of individuals aged 20–24 and having secondary education (91.9 per cent), Lithuania exceeds the average of the EU countries (84.6 per cent).

However, a number of young inhabitants living in Lithuania is rapidly decreasing. At the beginning of 2022, 848.4 thous. inhabitants aged below 29 lived in Lithuania; they comprised 30.2 per cent of all residents living in the country. In comparison to the data of early 2021, a number of the said individuals shrank by 35.5 thous., or 4 per cent. A decreasing amount of inhabitants, aging society unavoidably influence the situation of education, especially the indicators of infrastructure for education.

Throughout the period of 2021–2022, a total amount of school students and students attending education institutions in the country was 460.3 thous, or almost every sixth resident of Lithuania. In comparison to the period of 2020–2021, the number of learners in education institutions decreased by 1.5 thous., or 0.3 per cent. In the period from 2018 to 2021, numbers of school students and students of vocational training and higher education institutions decreased the most.

Over the year, the number of comprehensive education schools shrank from 977 to 957. In the autumn of 2021, 28.8 thous. of first year students were enrolled to comprehensive education schools; these were by 0.9 thous. (3.2 per cent) more than in 2020. In total, at the

beginning of academic year 2021–2022, there were 330.3 thous. school students being educated according to comprehensive education curricula.

In 2021, 24.8 thous. school students (in 2020, 25.3 thous.) were awarded certificates of completion of basic education at comprehensive schools, 19.9 thous. graduates (in 2020, 20.4 thous.) were awarded maturity certificates. More than two thirds of school graduates (71.7 per cent) continue studies in education institutions of the country in the same year: 40.2 per cent in universities, 20.7 per cent in universities of applied sciences, 10.8 per cent in vocational training institutions. The decreasing numbers of school students and students who obtained basic, secondary and higher education throughout the period of 2012–2021 are demonstrated in Table 2.

Table 2. Numbers of school students and students who obtained basic, secondary and higher education, Source: [14]

Level	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
B	37,097	35,689	32,578	31,543	30,749	28,113	26,072	25,795	25,295	24,876
S	40,337	35,492	33,986	32,821	29,300	28,391	27,578	25,374	23,932	23,533
HA	12,698	10,855	10,012	9,570	8,887	8,312	8,016	7,438	7,473	7,425
HU	20,276	18,566	13,908	13,486	12,318	11,203	10,744	10,101	9,331	8,456

B – basic, S – secondary, HA – higher education in universities of applied sciences, HU – higher education in universities (Bachelor level)

As the numbers of school students decreased in 2012–2021, the number of comprehensive education schools decreased from 1242 to 957, too. Salaries (net) of public sector teachers increased from 578.8 euros to 1255.5 euros over the same decade under discussion.

An average amount of learners for one full-time position of a teacher in the period from 2018 to 2021 decreased: in primary education from 15.5 to 14, in basic education from 11.8 to 11.6, in secondary education from 12.2 to 11.3.

In 2021, parts of state and municipal budgets allocated for education comprised 4.7 per cent of the national GDP. One learning person was allocated 4.4 thous. euros of financial means. The lowest amount of financial means was allocated to university of applied sciences students: only 3.3 thous. euros, and comprehensive education school students: 3.5 thous. euros. Most of the financial means were allocated to university students: 7.7 thous. euros, and

vocational training students: 6.1 thous. euros. Pupils of pre-school education were allocated 4.9 thous. euros each.

4.2. Future Education Scenarios Discussed by Lithuanian Scholars

At the educational forum held in November 2022, Lithuanian scholars grounding on scientific research discussed four scenarios of future education in Lithuania [15].

1. *Ecoconcern-focused school.* According to this scenario, a school will become more open to changes, especially when facing crises: climate change, epidemics or wars taking place nearby. The orientation will be shifted to bringing community together, joint solution of critical situations. The ecological issue will be dominating, uniting. Besides social justice, eco-justice will prevail. The educational content in school will be oriented towards the climate change, recent ideas and knowledge generated by science will be grounded on. Critical and creative approaches will dominate in the educational content, healthy lifestyle and communication competencies will prevail.

2. *Divide-based school.* This scenario is based on a different socio-cultural context: there will be more migrants; they will form communities according to their nationality and beliefs. Separate schools for migrants from different cultures or multicultural migrant schools will form. Social divide will increase, and this will result in the differences with schools in terms of parents' social capacity. Some families will move to the learning at home. Communities will become more isolated in social bubbles divided according to social or cultural criteria. Information technologies will prevail in schools; they will de-humanise the education processes. Lessons will be recorded and easily accessible, they will be shared in communities or groups of schools. The learning will proceed mostly in a distance mode, even though real face-to-face meetings will be held, too, if schools of separate communities will be less technologically equipped. The education content will be digitalised, traditional, classical subjects will be being learnt. The content will be corrected according to a school profile or separate groups organised in school.

3. *Market-oriented school.* This scenario characterises a future comprehensive education school which is intended to meet the market changes. Schools will alter in compliance with the demand of the free market, will focus on solution of important problems, especially on modern trends of how to involve technologies into the educational content. A school will be open to various cultural experiences. Much attention will be given to high aspirations in economics. The educational content will have more focus on ecology.

Enhancement of information technologies will facilitate the decrease of the cultural divide; physical learning will become a rare phenomenon. Learning will be hybrid, a school student will choose environment himself/ herself, the process of learning will engage professionals, scientists, economists from various areas. The educational content will be interdisciplinary, will comprise 50 per cent of compulsory and 50 per cent of elective subjects. Teaching and learning forms and modes will be freely elective, there will be much of project-based learning, solutions of problems.

4. Individual meaning-based school. In this case, a school is perceived as a multifunctional centre. It will embrace different competencies obtained at school and outside it. The current “live” school will become an alternative, such schools will be rare, they will become luxury to afford. Information technologies for administration and controlling individual learning will dominate. In most cases, teachers will be substituted by artificial intelligence. A question of duration of education will be unimportant: neither duration in school years nor forms will be taken into consideration, the learning will be arranged in blocks which will be accounted for on the basis of a set level of attainments. The educational content will be oriented towards module-based learning; learners will be allowed to choose and individualise the content.

5. CONCLUSION

The world is more rapidly changing and becoming more complex. Processes of the societal change evoke significant changes in the system of education. Therefore, trends in the education policy are one of the most relevant topics for education strategy-makers and scholars.

The analysis of scientific literature and corresponding documents on educational changes in various countries enables pointing out the following trends in education policy: 1) emphasis on increasing significance of information technologies and artificial intelligence in educational processes; 2) importance of Science, Technology, Engineering and Mathematics (STEM) in the educational content is emphasised because these areas determine economy and progress; 3) leadership education remains important: society leaders determine the quality of

its life; 4) responding to critical situations (e.g. COVID-19 pandemic), the system of education is becoming more flexible, faster adapting to altered circumstances; 5) there is a striving in the education process to provide equal opportunities for children with various

social backgrounds, to improve accessibility of education and reduce social divide; 6) educational content is changing in response to the changing societal needs.

A part of residents of Lithuania aged 25–64 and holding higher education is one of the largest in Europe and it is gradually increasing. However, a number of young residents rapidly decreases in Lithuania. Therefore, numbers of learners, pedagogues and schools shrink accordingly; optimisation of infrastructure for education proceeds.

Lithuanian scholars presented four future education scenarios for Lithuania: 1) at school, more attention will be paid to ecology and other global changes, solution of critical situations; 2) increasing migration of society will result in formation of multicultural schools; 3) a school will become more liberal in terms of selection of the educational content and more focused on the free market demands; 4) information technologies and artificial intelligence will dominate in the future school, duration of education, its form and content will become individual.

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