CZECH REPUBLIC

Country Report on ICT in Education

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Contact: Barbora Grečnerová,
Centre for International Cooperation in Education (DZS)

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1. THE EDUCATION CONTEXT

1.1 KEY EDUCATIONAL CHALLENGES AND PRIORITIES

1) Strategy for Education Policy of the Czech Republic until 2020

In July 2014, the government of the Czech Republic approved the strategic document "*Strategie vzdělávací politiky České republiky do roku 2020*" (*Strategy for Education Policy of the Czech Republic until 2020:* here in English). The 2020 Education Strategy is a key document and is also a prerequisite for drawing European Union funds. The document contains three key priorities.

I. The first is to **reduce inequality in education**.
II. The second is to **support quality teacher training,** which is linked to the completion and introduction of the career system and enhancing the quality of training for future teachers at universities.
III. The third priority is the **responsible and efficient management** of the education system.

This document outlines the role of digital technologies in the modern world and the need to use ICT in teaching, although digital education itself is not covered in detail in the strategy, as it is the subject of the related document *'Strategie digitálního vzdělávání do roku 2020'* (*Strategy of Digital Education until 2020*) (*see. 2.1 National/regional ICT policies*).

Priorities:

1) **Reducing inequality in education**
   a. increase the availability and quality of pre-school education and early care, **introduce a compulsory last year of pre-school education**, specifically support the involvement of groups and localities at risk of social exclusion in the pre-schooling of children
   b. **reduce the number of school attendance delays**, or permit them only in exceptional cases, and **link this up with a system of preparatory classes**
   c. improve the quality of upper elementary school education as the educational mainstream
   d. support compensation for all types of disadvantages and the development of all types of talents, based on the principle of individualised support
   e. **make mathematics a compulsory part** of the common part of the school leaving examination, as of 2020, related to systemic changes in the way this subject is taught in elementary and secondary education
   f. support the professional growth of secondary education graduates with no school leaving examination by **introducing a master examination**
   g. maintain open access to tertiary education

2) **support quality teaching and teachers**
   a. **complete and introduce the career system** for teachers and improve their working conditions
   b. **modernise initial teacher training** and initial training for school heads
   c. boost the importance of quality teaching at universities
   d. modernise the assessment system at the level of children, pupils, students and schools

3) **and efficient management of the education system**
   a. set up '*Národní rada pro vzdělávání'* (*National Education Council*)
   b. improve the availability and quality of information about the education system
   c. make systematic use of the results of selective testing of students' results as feedback on how effective the education system is

d. present changes to parents and the general public in an open and comprehensible manner
e. improve communication between those involved in education, including the general public

The strategy has been prepared and approved as an umbrella document, the main purpose of which is to determine basic priorities and general objectives for the further development of the education system, with specific measures to be elaborated and described in detail in related documents created on a gradual basis.

In 2015, the Ministry of Education, Youth and Sports (MoEYS) prepared the *'Průběžné hodnocení implementace Strategie'* (*Ongoing Evaluation of the Implementation of the Strategy*)**,** which states that "Most of the measures foreseen in the Strategy have not yet reached the implementation phase." And also "In any case, a major success last year was the completion of the implementation structure of the Strategy and the reflection of its vision, priorities and goals in other official departmental documents (particularly long-term plans and the Operational Programme Research, Development and Education). Although compared to the text of the Strategy, progress has to some extent been made in grasping certain topics, overall, the "transfer" of the general priorities into the most important implementing documents has been a success."

2) Strategy of Digital Education until 2020

The objective of this strategy is to put in place an education system that will support everyone alike with competencies that enable them to find their place in the information society and to take advantage of the offer of open education throughout their lives.

In accordance with the priorities of the '*Strategie vzdělávací politiky České republiky do roku 2020'* (*Strategy for Education Policy of the Czech Republic until 2020),* this '*Strategie digitálního vzdělávání'* (*Strategy of Digital Education until 2020*) is focused on putting in place suitable conditions and setting up processes to ensure that educational objectives, methods and forms are in line with the latest findings and current requirements of society and the labour market, by guiding the development of digital technologies and the information society. Further details in *2.1 National/ regional ICT policies*

3) Inclusion

The Czech education system is undergoing some significant changes in the field of inclusive education and support for students with special educational needs. A fundamental change to the Education Act was adopted in spring 2015, which from the **2016/2017 school year will introduce a system of support measures** and **represents a significant paradigm shift** in the approach to teaching children, pupils and students with special educational needs. The actual amendment to the Act, which is set to enter into force on 1 September 2016, must be followed up by other documents, such as the *'Akční plán inkluzivního vzdělávání'* (*Action Plan for Inclusive Education*) (as assumed in '*Strategie vzdělávací politiky České republiky'* do roku 2020).

1.2 EDUCATION REFORMS

There have not been any fundamental educational reforms in the Czech Republic in the last two years, but several key documents have been created which specify the priority areas of the Czech Republic's education policy in the coming years. The Czech government has approved the '*Strategie vzdělávací politiky ČR do r. 2020*' (*Strategy for Education Policy of the Czech Republic until 2020*) (*see. Section 1.1 Key Educational Challenges and priorities*) and the '*Strategie digitálního vzdělávání do roku 2020'* (Strategy of Digital Education until 2020, *see. Section 2.1 National/regional ICT policies).*

On 1 July 2015, the government of the Czech Republic approved the *'Strategie digitální*

gramotnosti ČR na období 2015 až 2020' (*Digital Literacy Strategy of the Czech Republic for the Period 2015 to 2020*), Ref. No. 763/15, which particularly refers to public further education. These strategies, which define the aims and needs of the education policy at the general level, are or will be followed by a series of secondary strategic materials and projects, mostly funded from ESF.

2. ICT IN EDUCATION POLICY

2.1. NATIONAL/REGIONAL ICT POLICIES

The main action taken in relation to digital education in the Czech Republic was the creation and approval of the '*Strategie digitálního vzdělávání do roku 2020'* (*Strategy of Digital Education until 2020*), which was approved in 2014. The objective of this strategy is to put in place an education system that will support everyone alike with competencies that enable them to find their place in the information society and to take advantage of the offer of open education throughout their lives.

In accordance with the priorities of the '*Strategie vzdělávací politiky České republiky do roku 2020'* (*Strategy for Education Policy of the Czech Republic until 2020*), this '*Strategie digitálního vzdělávání*' (Strategy of Digital Education until 2020) is focused on putting in place suitable conditions and setting up processes to ensure that educational objectives, methods and forms are in line with the latest findings and current requirements of society and the labour market, by guiding the development of digital technologies and the information society. The purpose of this strategy is to initiate changes to the methods and forms of education as well as to it's objectives. A large number of changes will be needed, and it cannot be expected that all of them will be implemented by 2020. The aims of the strategy are to map out the situation and take steps to eliminate the main obstacles to achieving the above mentioned objectives of digital education. The strategy proposes measures aimed at increasing the competitiveness of the Czech education system, as if they were not introduced this would lead to serious problems in the long term.

Another important characteristic of this '*Strategy of Digital Education until 2020'* is its openness for the future. Developments in digital technologies and thus also curricular content and scientific knowledge in pedagogy are highly dynamic and cannot be reliably predicted. The focus of attention for the Strategy is therefore the individual, who, with the assistance of school and others in the education sphere and outside school, must become a multi-faceted person, prepared for life and work at a time when many of their future characteristics are not yet known. This is why the Strategy cannot be seen as a document that will remain static in the long term; it must be evaluated and updated on a regular basis.

The '*Strategy of Digital Education until 2020'* formulates three priority objectives on which the first interventions will focus:

I. opening- up education to new teaching methods and techniques through the use of digital technologies,
II. improving students' competence in working with information and digital technologies, and
III. developing computational thinking amongst students.

The strategy groups the measure into seven main directions of intervention, aimed at fulfilling the main objectives of the strategy:

1) Ensure non-discriminatory access to digital learning resources.
2) Ensure conditions for the development of digital competencies and computational thinking amongst students.
3) Ensure conditions for the development of digital competencies and computational thinking amongst teachers.
4) Ensure the construction and renovation of educational infrastructure.

5) Support innovative procedures, monitoring and evaluation and the dissemination of their results.
6) Put in place a system to help schools to develop in the integration of digital technologies in teaching and in school life.
7) Increase the understanding of the aims and processes involved in integrating technology into education among the general public.

A document that goes beyond the framework of initial education, approved by the government on 1 July 2015, is the *'Strategie digitální gramotnosti ČR na období 2015 – 2020 2020' (Digital Literacy Strategy of the Czech Republic for the Period 2015 to 2020).* The aim of this material is to develop optimal tools that ensure that new workers are ready to start their job, and also to support current employees facing changes in information and communication technologies and globalisation. Other objectives include reducing the digital divide and ensuring or increasing digital literacy, thus boosting the Czech economy and its competitiveness.

Important initiatives relating to the development of ICT include operational programmes funded from the ESF, focusing on the purchase of ICT equipment and on teacher training in the field of ICT (*see section 2.3 specific ICT initiatives*).

2.2. RESPONSIBILITIES

Schools are not directly managed by the MoE. Regional or local authorities are school founders, who are responsible for financial and control issues. The MoE, to a lesser extent, has some responsibilities according to the number of students in a school.

The use of ICT is an inseparable part of the strategic objectives and planning of schools today. Conceptual steps to be taken in this area are, as a rule, part of an ICT plan. When organising teaching, the majority of schools take the use of ICT into account. The implementation of ICT into curricula is the responsibility of each school director, but the subject of ICT is included in the FEPs for elementary and secondary education. Schools can have official ICT plans if they feel that it is useful for their own work.

At most schools there is a job/position of ICT coordinator/methodologist, whose duties vary from school to school. Teachers can attend a special course called "Studium ICT koordinátor" accredited by MoEs (Study course of ICT coordinator)" offered to those who want to become ICT coordinators at schools. Support for ICT coordinators in the field of methodology was the focus of the *'ICT profesionál' (ICT professional)* project implemented by the National Institute for Further Education (NIFE), although this was a sub-project which has already been completed.

2.3. SPECIFIC ICT INITIATIVES

1:1 mobile learning initiatives (including the use of netbooks, laptops, tablets, mobile phones or other mobile devices)

National projects funded from ESF:

One important project was Call 51 of the Operational Programme **Education for Competitiveness for the submission of individual other projects aimed at supporting further training for staff at schools and educational institutions** (2014 – 2015), designed to increase the competence of teaching staff at elementary and secondary schools in the integration of information and communication technologies into lessons. Over 1.6 billion CZK was distributed as part of this Call, and with these funds each of the 2000 supported elementary and secondary schools were able to purchase up to 20 mobile touch devices. It is assumed that these will mostly be tablets. The project also included training for teachers in how to work with tablets.

The grant Operational Programme Education for Competitiveness enabled extensive funding from the European Social Fund between 2007 and

2013. These initiatives particularly include the implementation of the project **Zlepšení podmínek pro vzdělávání (EU peníze školám) (Improving Conditions for Education (EU Money to Schools))**. During a three-year period (2010–2012) around 4000 schools in the Czech Republic benefited from grants to cover costs associated not only with the modernisation of school hardware, but also with creating electronic teaching materials or with further teacher training in ICT. This was not a project aimed directly at 1:1 teaching, although the project did enable school equipment to be updated and also opened the way for many schools to purchase 1:1 technology.

Pilot projects:

1:1 teaching has also been supported by several other smaller projects, although these were pilot projects affecting only selected localities and fewer schools:

1) the project of the district of Prague 6 (11 million CZK, 15 schools) – Škola na dotek
2) the Microsoft project 'Vzděláváme pro budoucnost' (4 schools and 4 different scenarios)
3) Through DZS the Czech Republic was involved in the European CCL project (2013 – 2015), which focused on methodological support for the use of tablets in education (approx. 30 schools involved from all over the Czech Republic)
4) 'Škola dotykem' (School by Touch), a project with 12 pilot schools by EDUlab and Samsung

Publications and studies:

- Publication: Učíme se s tabletem - využití mobilních technologií ve vzdělávání (O. Neumajer, L. Rohlíková, J. Zounek)
- CCL project: Martina Baseggio (Gymnázium Hladnov), Petra Boháčková (ZŠ Dr. E. Beneše), Pavla Šabatková (DZS) , Report here
- Škola nNa Dotek project: Ondřej Neumajer (independent expert)
- Vzděláváme pro budoucnost (Educating for the Future) project - Daniela Růžičková (National Institute for Education) / Ondřej Neumajer (independent expert) Report *here*
- Study about using tablets by children age 0-8, Masaryk university in Brno "Byl jednou jeden tablet"

Learning Analytics

No significant national initiatives; some Czech entities are involved in international projects on this topic, such as the project LEA's BOX: A Learning Analytics Toolbox", which involved SCIO representing the Czech Republic, as well as other partners abroad - however, this was not a particularly important national project.

MOOCs for teacher professional development or initial teacher training or MOOCs for students

MOOCs are not yet widespread in the Czech Republic, although the first attempts have been made at MOOC's in Czech, e.g. Palacky University Olomouc – MOOC in Family Law.

Some universities and educational organisations do not offer MOOC's directly, but provide lectures online or hold virtual conferences. Short webinars are also becoming more popular, and are supported by a range of educational organisations and the teachers' community for mutual training and sharing experience (RVP.cz, communities such as PEPOUŠ and GEGR, Národní podpůrné středisko pro eTwinning (eTwinning National Support Service) and many more – more about these communities in *section 4.2 Content Sharing*).

In the Czech Republic, DZS offers Czech teachers the chance to participate in European MOOC's within the framework of the EUN Academy, although here foreign language skills could prove to be a barrier. The Czech ambassador has been involved in a MOOC focusing on lessons using tablets, and has helped participants to overcome the

language barrier. Some university workplaces, such as KISK at MU in Brno, recognise MOOC's.

ICT for inclusion (early school leavers, migrants, etc.) and special needs (physical, mental, emotional)

There are currently no major nationwide projects focusing particularly on supporting the use of ICT for inclusion in the Czech Republic. However, there are a number of smaller sub-projects focusing on various aspects of inclusion.

One of the most important activities is **iSEN - a community website** and initiative that also shares and brings together not only teachers and parents of disadvantaged children but also mainstream schools and teachers, students in the relevant fields, and social, health and technology workers and initiatives. http://www.i-sen.cz/onas

For further information:

- iSEN project, Lenka Říhová http://www.i-sen.cz/kontakty

ICT for learning initiatives targeted to boost employability and entrepreneurship

The year 2015 was declared Rok průmyslu a technického vzdělávání (**Year of Industry and Technical Education**) by Svaz průmyslu a dopravy ČR (Confederation of Industry of the Czech Republic) and other partner organisations. This is a nationwide campaign promoting the new, modern form of industry of the 21st century and the diversity, innovation and social responsibility of existing industries. It also aims to highlight the importance and indispensability of quality technical education both for the future of industry in the Czech Republic, as well as from a personal, individual point of view. The campaign is supported by MoEYS, amongst others. The campaign will also include other, smaller events.

The **POSPOLU project** ("Podpora spolupráce škol a firem se zaměřením na odborné vzdělávání v praxi" ("**Support for Cooperation between Schools and Businesses, with a Focus on Professional Training in Practice**")) was a national project, financed from the European Social Fund and the Czech state budget. It was prepared by the Ministry of Education, Youth and Sports (MOEYS) of the Czech Republic in collaboration with employer associations (2012 – 2015). The project was implemented by MoEYS in collaboration with Národní ústav pro vzdělávání (National Institute for Education). The aim of the Pospolu project was to support cooperation between secondary vocational schools and employers, to ensure that school-leavers are better prepared, to make students better prepared for the real work environment and to seek further opportunities for cooperation amongst schools besides professional training and work experience.

The Czech Republic was involved through DZS in 2014 and now again in 2015 – 2016 in the European Commission campaign eSkills for Jobs, which promotes the importance of electronic skills for employment. The campaign also includes an IT skills test, IT Fitness.

The Czech ICT Alliance is working to set up on the 'Česká národní koalice pro digitální pracovní místa' (**Czech National Grand Coalition for Digital Jobs),** which should be similar to the Grand Coalition at the European level.

For further information:

- Rok průmyslu
- POSPOLU project, Petr Naske

Cloud computing and connectivity (e.g. wireless Internet, optical fibre connections)

The construction and renovation of digital educational infrastructure is one of the points of Strategie digitálního vzdělávání do roku 2020, which also defines several measures, although no project or initiative has yet been implemented for this area.

Other ICT initiatives of interest to other policy-makers

The Czech Republic has been involved in several national and partial pan-European initiatives in the field of ICT in education, which have brought European ICT trends to the Czech Republic. The most important of these with a nationwide impact are:

Computational thinking and programming

- Codeweek

Internet safety

- eSafety Label
- Web We Want

Support for women and girls in IT

- CISCO Girls in IT Day in the Czech Republic
- Czechitas, a new non-profit organisation has been set up - also promotes coding for girls

Support for open education:

- Týden otevřeného vzdělávání (Open Education Week), see http://www.eduin.cz/clanky/zveme-vas-na-tyden-otevreneho-vzdelavani/
- The Alliance for Open Education Aliance pro otevřené vzdělávání) was set up in 2015

Other initiatives:

- The National Grand coalition for Digital Jobs – there are current efforts to set up a national Grand Coalition, it was initiated by Czech ICT alliance, in cooperation with Czech MOEYS and Ministry of Labour and Social Affairs.

2.4. ICT PRIORITIES

A: Digital Competence Development

Area	High	Mid	Low
Developing measures to support digital competence for future teachers	*X*		
Developing measures to support digital competence for in service teachers	*X*		
Developing measures to support school leaders in the integration of ICT		*X*	
ICT for learning initiatives targeted to boost youth employability and entrepreneurship		*X*	
ICT for accessibility and inclusion: early school leavers, migrants, etc… and special educational needs		*X*	

B: ICT in Curricula and Assessment

Area	High	Mid	Low
Developing computer/programming skills	*X*		
Developing key competences	*X*		
Developing 21st century skills (critical thinking, problem solving, communication, collaboration, and creativity and innovation)		*X*	
Assessing with ICT/ICT based exams	*X*		
Learning Analytics			*X*

C: System-wide innovation

Area	High	Mid	Low
Piloting and validating innovative uses of ICT		X	
Mainstreaming ICT in schools	X		

D: Mobile Devices

Area	High	Mid	Low
Use of tablets *(a)*	X		
Use of mobile phones		X	
Bring Your Own Device *(b)*		X	
Cloud computing		X	

E: Use of digital resources

Area	High	Mid	Low
Developing educational content repositories/metadata (a)	X		
Supporting the development of open educational content and resources	X		
Supporting the development of educational content/resources provided by publishers (b)		X	
Promoting the use and sharing of educational resources with teachers (c)		X	

F: Learning environments

Area	High	Mid	Low
Linking formal and informal learning using ICT		X	
Providing equitable access to ICT (infrastructure, devices and content) *(a)*		X	
Providing a safe learning environment to students and teachers		X	
Commissioning ICT related research			X

3. THE CURRICULUM AND ICT

3.1. ICT BASED ASSESSMENT

Electronic school-leaving examination

There are no significant initiatives in the Czech Republic aimed at supporting the use of ICT for assessment purposes. As far as long term perspectives are concerned, discussions are taking place on introducing an electronic school-leaving examination, although no precise date has been set.

Electronic Testing Inspection System

Within the framework of the NIQES project *'Česká školní inspekce' (Czech Schools Inspectorate)*, the universal **electronic testing platform InspIS SET** – *'inspekční systém elektronického testování' (Electronic Testing Inspection System)* has been developed, which can be used to electronically check students' results in any year, any subject, using sample and blanket survey methods. This application enables schools and the general public to use the tests and tasks made available by 'Česká školní inspekce' or enter and use their own

tests and tasks. The system may be used for testing during lesson time as well as for study at home. It will enable schools, pupils and parents to acquire feedback on knowledge and skills as needed.

3.2. SCHOOL IMPROVEMENT WITH ICT

Surveys & projects

The use of ICT in lessons is one of the many aspects focused on by '*Česká školní inspekce*' in its annual reports. It's latest published annual report from 2013/2014 contains data on how often ICT is actively used in lessons and how schools are equipped with technology. The report is only available in Czech.

Moreover, **'ICILS 2013'** (*International Computer and Information Literacy Study*) was an important source of information for the Czech Republic on the use of ICT and the mapping of students' real skills and abilities regarding the use of ICT. The Czech Republic was successful in the eighth-grade students' category, ranking first.

The **'Survey of schools: ICT in Education'** carried out for the European Commission by European Schoolnet (in the Czech Republic coordinated by DZS) provides a comparison of the use of ICT in the Czech Republic within the European context. A separate report about the Czech Republic is available.

Partial assessments of the use of technology in schools have resulted from smaller-scale projects, such as the Microsoft project *'Vzděláváme pro budoucnost (Educating for the Future)'*, as well as the project *'Škola na dotek'* implemented by the district of Prague 6. However, these assessments focus solely on the secondary aspects of ICT use on which these projects have focused in a few selected pilot schools.

Self-evaluation assessment tools

Another tool enabling the assessment of the use of ICT in schools is the self-evaluation tool **Profil Škola 21**.*'Profil Škola 21'* is an evaluation tool enabling schools to determine how successful they have been in incorporating information and communication technology (ICT) into their school life. The tool does not concentrate solely on technical parameters, but mainly shows how technology actually helps the teaching process. It can also be used to plan and subsequently check compliance with individual objectives.

Development from the lowest stage (the school does not concern itself with technology) to the highest (the school even integrates technology) is described in four phases:

1. 'Starting out'
2. 'Our first experience'
3. 'Gaining confidence'
4. 'Setting an example to others'

Each of these phases is specified further in five areas:

1. Management and planning – leadership and management
2. ICT in the school educational programme – ICT in the school curriculum

   & professional development
3. Integration of ICT into school life
4. ICT infrastructure

Moreover, several Czech schools have already made use of the European eSafety Label for ensuring the esafety of their school. The advantage of this project is that the portal and queries are available in Czech.

Since 2015, the Czech Republic has been involved, through DZS, in the MENTEP project, the aim of which is to develop and pilot a self-evaluation tool for assessing teachers' ICT skills. The tool should be available to schools and the teaching community in 2017.

MoEYS is currently working on a digital competence standard for teachers, as well as the online

tool 'Profil Učitel[21]', which will be a methodological instrument to help integrate digital technologies into teachers' work and develop their skills and competence in this area.

Finally, the Czech School Inspectorate (ČŠI) has been running a project called '**NIQES'**. The project has resulted in a comprehensive approach to themed inspections in schools to determine conditions, progress and results in relation to the development of information literacy. Information literacy will be developed in schools together with other forms of literacy, such as mathematical, reading and science literacy.

3.3. THE CURRICULUM FRAMEWORK

System of Curricular Documents

Curricular documents are developed at **two levels – state and school.** In the system of curricular documents, the state level is represented by the **National Education Programme** (NEP, *still in preparation*) and **Framework Education Programmes** (FEPs). While the NEP formulates the requirements for education which are applicable in initial education as a whole, the FEPs define the binding scope of education for its individual stages (for preschool, elementary and secondary education). The school level is represented by **School Education Programmes** (SEPs), on the basis of which education is implemented at individual schools. The School Education Programme is created by each school according to the principles prescribed in the respective FEP.

The NEP, the FEPs and the SEPs are public documents, available to the teachers as well as the general public.

In the current FEP, the educational aims connected to the use of digital technology do not reflect the current situation of the society and labor market. The Strategy of Digital Education is planning a revision of the FEP. It is planned to **introduce a new compulsory subject 'computer science'**. In all areas of the FEP the learning outcomes for all subject areas should be re-defined so that they support the use of digital technology and the development of students´ digital skills in all subjects **(***see also Section 1.1 key educational priorities and challenges*).

3.4. ICT IN THE CURRICULUM

For **elementary education**, the FEP EE divides educational content into nine, roughly defined educational areas. Each educational areas consists of one or more educational fields of similar educational content. One of them *is Information and Communication Technologies.* The nine educational areas are as follows:

1. **Language and Language Communication** *(Czech Language and Literature, Foreign Language)*
2. **Mathematics and Its Application** *(Mathematics and Its Application)*
3. **Information and Communication Technologies** *(Information and Communication Technologies)*
4. **Man and His World** *(Man and His World)*
5. **Man and Society** *(History, Civics)*
6. **Man and Nature** *(Physics, Chemistry, Natural Sciences, Geography)*
7. **Arts and Culture** *(Music, Fine Arts)*
8. **Man and Health** *(Health Education, Physical Education)*
9. **Man and the World of Work** *(Man and the World of Work)* - the educational content of this field is divided into four compulsory thematic areas, one of them is *Use of Digital Technologies* focusing on pupils´digital competences

The Framework Education Programme for Secondary General Education (FEP SGE) defines

eight roughly defined educational areas for the secondary education. Each educational areas consists of one or more educational fields of similar educational content.

1. **Language and Language Communication** *(Czech Language and Literature, Foreign Language, Second Foreign Language)*
2. **Mathematics and Its Application** *(Mathematics and Its Application)*
3. **Man and Nature** *(Physics, Chemistry, Biology, Geography, Geology)*
4. **Man and Society** *(Basics of Civics and Social Sciences, History; Geography)*
5. **Man and the World of Work** *(Man and the World of Work)*
6. **Arts and Culture** *(Music, Fine Arts)*
7. **Man and Health** *(Health Education, Physical Education)*
8. **Information Science and Information and Communication Technologies** *(Information Science and Information and Communication Technologies)*

The Framework Education Programme for Secondary Technical and Vocational Training (FEP STVT) regards the 'compentence to use ICT and work with information' as a key competence (as part of the educational area 'Education and ICT'), which is not the case for general secondary education.

Using ICT in school education and related support of information literacy is one of the priorities of the curricular reform in the Czech Republic. The position of ICT within the curricula is defined not only as an independent school subject but as a tool for solving problems and as a basis for creating an educational environment. The use of ICT is included in the Framework Educational Programmes for individual levels of education:

1. The Framework Education Programme for Elementary Education (National Institute for Education)
2. Framework Education Programme for Secondary General Education (National Institute for Education)

In 2014, steps were taken to revise the framework educational programmes (RVP), including those for ICT, although these have not yet been implemented. The RVP need to be revised for ICT, as touched upon in the ICILS report:

"Despite the very rapid developments in computer and information technology, which are increasingly affecting everyday life in and outside school, the fact remains that the issue of ICT education has not once been revised within the framework of the RVP for elementary education since being created in 2004. According to the professional community, the educational content and anticipated outcomes defined in the RVP for elementary education are now out-dated and inadequate as regards the current need to develop pupils' computer and information literacy and integrate ICT into the education process"

Source: ICILS National Report, other analytical reports on ICILS by ČŠI

Standards have been outlined as recommendations for ICT teaching in the RVP for elementary education. These standards are based on the anticipated outcomes of the educational fields specified in the RVP for elementary education. These outcomes, along with indicators, define students' expected competence in applying knowledge of their subject matter at the end of grades 3, 5 and 9.

3.5. STUDENTS' ICT COMPETENCE

Digital Competence is considered as a key competence only in the FEP for Secondary Technical and Vocational Training (not for elementary schools and generally oriented secondary schools), but it is integrated in the curriculum as a separate educational area called 'ICT'. The position of ICT within the curricula is defined not only as an independent school subject but as a tool for solving problems and as a basis for creating an educational environment.

FEP EE

Stage 1 (age of students: six to ten)

a. Basics of working with a computer

- use the basic, standard functions of a computer and its most common peripheries
- respect safety rules when working with hardware and software, and proceed in an informed manner in case they are faulty
- protect data from damage, loss or abuse

b. Information searching and communication

- utilise simple and suitable ways when searching for information on the Internet
- search for information on web portals, in libraries and in databases
- communicate by means of the Internet and other common communication devices

c. Information processing and application

- work with text and pictures in text and graphics editors

Stage 2 (age of students: 11 to 15)

a. Information searching and communication

- verify the credibility of information and information sources and assess their importance and interconnectedness

b. Information processing and application

- be able to work with text and graphics and table editors, and use suitable applications
- apply basic aesthetic and typographic rules for the work with text and pictures
- work with information in accordance with legislation on intellectual property rights
- use information from various information sources and evaluate simple relationships between data
- prepare and present information in text, graphic and multimedia forms at user level

Attitudinal targets are part of the expected outcomes.

FEP SGE

Digital Competence is considered as a key competence only in the FEP for secondary schools with a vocational orientation, not for the general secondary schools. In general secondary schools, following competences are defined within educational area called "ICT"

a. Digital technologies

The student shall:

1. manage, combine and apply the ICT tools available
2. utilize his/her theoretical as well as practical knowledge of the functions of individual components of both hardware and software to solve problems creatively and effectively
3. organize data effectively and protect it from being destroyed or abused

4. be familiar with the possible uses of ICTs in various areas of social knowledge and practice

b. Information resources and searching, communication

The student shall:

1. utilize the services of information networks available to search for information, to communicate, as well as for self-learning and teamwork
2. make the best of the offer provided by information and educational portals, encyclopedias, libraries, databases and educational software
3. assess topicality, relevance and reliability of information resources and information creatively; use information and communication services in compliance with ethical, safety and legislative requirements

c. Information processing and presentation

The student shall:

1. process and present the outcomes of his/her work while using advanced functions of application software, multimedia technologies and the Internet
2. apply an algorithmic approach to problem solving

Publications about ICT competency – in Czech only, all published by the National Institute for Education.

- Literacy in Education: includes also characteristics of ICT literacy, assessment etc. (two publications)
- Development of students´ ICT literacy – a methodological support for teachers how to implement ICT in education (how to plan a lesson improving ICT literacy, best practice examples)

ASSESSMENT OF ICT COMPETENCE

a. Assessment in general

Teachers' assessment of students is continuous (during the school term) and then final (at the end of the term). Secondary school students are assessed for their results in particular subjects and receive an overall assessment of their study results. Students receive paper school reports in the mid-term (January) and at the end of the school year (June). Assessment rules are part of the school regulation of each school. The concrete tools for continuous assessment are usually set by the teachers of particular subjects - written examinations (unseen, written or on the computer), multiple choice tests, oral examination (open book), oral questioning after the submission of a research project, direct observations and presentations, self-assessment, interactive tests, e-learning platforms etc.

b. ICT competence assessment

While assessing ICT knowledge is within the competence of each school (as mentioned above), each school has to comply with the national curriculum in the area of ICT. ICT competencies are assessed in the same way as other competencies; a common assessment framework scheme dedicated especially to ICT competencies has not been defined. In secondary education, digital competence (knowledge, skills and attitudes) is assessed as part of the **"ICT" subject;** students at secondary schools are obliged to pass the **subject "Computer Science**".

In primary education, schools can choose themselves if they offer "ICT" as a separate subject, although most of the schools go for that option.

In most cases, students are graded (classification scale: 1 - 5; 1 is the best mark, 5 – fail) at the end of every term, some schools mainly at primary level choose a verbal assessment rather than an assessment with grades. One example of assessment within the "ICT" subject:

The fields of assessment:

1. Ability to manage, combine and apply the ICT tools
2. Utilize his/her theoretical and practical knowledge of the functions of hardware and software
3. Capability of using the Internet as a source of information, searching the information, ability to assess its topicality, relevance and reliability
4. Work on projects – in pairs, individual work

c. Special initiatives

ICILS survey

The Czech Republic is also involved in the international survey 'ICILS' on ICT literacy, the survey is carried out in the Czech Republic by the Czech School Inspectorate. Results of ICILS 2013 were published at the end of 2014, a national report is available.

IT Fitness test

In 2014, the IT Fitness test as a part of the 'e-Skills for Jobs' campaign was offered to schools and the wider public. The free test was available online. More than 13 500 people got tested; most of the respondents were primary and secondary school pupils coming from almost 850 schools in the Czech Republic.

'NIQES' project

The 'NIQES' project of the Czech School Inspectorate published in 2015 a methodology how to evaluate a progress in the areas of ICT in education. The methodology is available online n Czech only.

Certificates

Teachers and students in the Czech Republic also have a possibility to obtain the f.ex. "European Computer driving license" (ECDL) or CISCO Academy certificates. All such certificates are helpful when students look for a job.

4. DIGITAL LEARNING RESOURCES AND SERVICES

4.1. E- CONTENT DEVELOPMENT

Open education is part of the vision for digital education as defined in the **Strategie digitálního vzdělávání do roku 2020** (p. 11):

"Open education. The vision of modern education is based on the principle of lifelong learning and aims to create an open environment enabling every person to continue learning throughout their lives, equally and with no restriction. As it makes use of available digital technology and supports individuals in the use of such technology, this form of education will increasingly be seen as an activity that is not linked to a specific place or time. It will involve providers from the public, private and non-profit sectors - organisations and individuals who will offer content, education opportunities and lessons to learners of all ages. It will provide access to shared educational infrastructure (quality, cheap, high-speed connections from home, from school, from one's work, while on the road and in public areas) and to quality educational resources (open educational resources, digital teaching materials and other resources that can be used for teaching and learning). The education system will permeate all levels, ensuring that that everyone, regardless of their socio-economic background, can enter it at any time throughout their lives and continue their education or build on their skills to suit their abilities and needs."

One of the aims of the strategy is also to "Create a working system of thematically annotated links to open digital resources, broken down into various categories. The content and assessment of these resources will be created by users (p. 21). However, there are currently no national projects or initiatives in this area.

In 2015, the EDUin non-profit organisation, which is active in education, set up the Aliance pro otevřené vzdělávání (Alliance for Open Education). This informal association was intended to

bring together firms and institutions from the public and state sector and promote the idea of open education.

Electronic textbooks were created also in ESF funded projects as for example Call 44 from ESF OP EC led to the creation of 62 electronic textbooks for secondary education courses with fewer numbers of students, which should be available to all schools free of charge.

4.2. CONTENT SHARING

The Czech MoEYS through its directly managed organization National Institute for Education runs a national portal for teachers. This portal is based on sharing content among teachers in different forms – via articles, discussions, and also a repository of digital learning resources. The repository of digital learning resources is open to all teachers who can upload and share their DLO with others. The quality and copyright issue of DLO are controlled before publishing. All DLO available on http://dum.rvp.cz have a creative common licence. Until March 2012, authors of DLO were given a small fee (from the European Structural Fund) for each of the objects. Today, it is still possible to upload new DLO, but teachers are not paid anymore. This repository contains almost 8000 learning materials created by teachers mostly for their own use. This repository is at the moment also connected to five other Czech repositories and to the LRE portal.

Apart from the national portal, there is a wide range of examples of regional and school projects which gather digital content on a local basis, or repositories run by private companies. So far no system, evaluation or rules for sharing the digital educational content have been introduced in the Czech Republic. Despite this fact, digital content and on-line services have become an integral part of modern education in schools and their importance is constantly rising. Examples of projects are Khanova Škola or Wikimedia.

Electronic textbooks are getting more popular, but the choice of textbooks is the responsibility of each school and it is not controlled nor recorded centrally. The concept of electronic textbooks vary from publisher to publisher. Some publishers label their electronic textbooks as "interactive textbooks" – these textbooks comply with the English term e-textbooks (which retain a close fidelity to the original physical text's printed page organization and design). Unlike e-textbooks modern adaptive e-textbooks are still less common in the Czech Republic. Textbooks including electronic textbook can get an official certification of the MoE, list of all certified textbooks is available on the website of MoE. Examples of publishers producing among others also electronic textbooks: Nakladatelství Fraus, Nová Škola, Computer Media, Nakladatelství Alter etc.

Communities of teachers sharing ideas and resources:

- Community of teachers and experts around national methodological portal www.rvp.cz
- JŠI – Jednota školských informatiků (organisation bringing together informatics teachers)
- Google Edu Group CZ
- iSEN – community of teachers promoting the use of ICT in lessons for pupils with specific needs
- PEPOUS - community of teachers sharing ideas and teaching materials
- Klub moderních učitelů - community teachers' association supported by Microsoft
- H- MAT – community of teachers promoting innovative math teaching according to principles set up by Czech teacher Prof. Mila Hejný https://www.facebook.com/groups/hmatcz/?fref=ts#_=_
- DOMINO - nationwide teaching object competition for elementary and secondary school teachers

4.3. ACCESSIBILITY FOR LEARNER WITH DISABILITIES AND SOCIAL INCLUSION

See Section 5.3 ICT for Inclusion.

4.4. WEB 2.0

No specific national initiatives. In 2015 a new school competition "sCOOL web 2015" has been launched. This competition http://www.scoolweb.cz/ awards schools that have got schools website open to public and open to communication with community outside the school.

4.5. LEARNING PLATFORMS

In the majority of cases, schools use one of the licensed school information systems/programmes such as:

- LMS (Learning Management Systems) – f.ex. Moodle
- schools IS (f.ex. Škola OnLine, Bakaláři, iŠkola, dm Software, SAS, aSc atp.)
- education social networks: (f.ex. Edmodo, Schoology, iTřída)

In most cases, school information systems give students access to their results (grades), number of hours they missed, or current activities and events. Parents can access these programmes easily via the Internet (using a simple login and password) and check the study results of their children.

5. TEACHER EDUCATION FOR ICT

5.1. ASSESSMENT SCHEMES

There is currently no tool available in the Czech Republic for testing the ICT competence of teachers.

Since 2015, the Czech Republic is involved, through DZS, in the MENTEP project, the aim of which is to develop and pilot an self-evaluation tool for assessing teachers' ICT skills. The tool should be available to schools and the teaching community in 2017.

MoEYS is planning to create a digital competence standard for teachers, as well as the online tool Profil Učitel[21], which will be a methodological instrument to help integrate digital technologies into teachers' work and develop their skills and competence in this area.

The Czech School Inspectorate is preparing the aforementioned methodology for developing information literacy within the framework of the NIQES project.

5.2. SCHOOL LEADER SUPPORT

One tool enabling the evaluation of the use of ICT in schools is the Profil Škola 21 planning and self-evaluation tool. **Profil Škola21** is an evaluation tool enabling schools to determine how successful they have been in incorporating information and communication technology (ICT) into school life. They do not concentrate solely on technical parameters, but mainly show how technology actually helps the teaching process. They can also be used to plan and subsequently check compliance with individual objectives.

Development from the lowest stage (the school does not concern itself with technology) to the highest (the school even integrates technology) is described in four phases:

1. Starting out
2. Our first experience
3. Gaining in confidence
4. Setting an example to others

Each of these phases is specified further in five areas:

1. Management and planning
2. ICT in the school educational programme
3. Professional development
4. Integration of ICT into school life
5. ICT infrastructure

5.3. ICT FOR INCLUSION

In the Czech Republic, students with special educational needs are taught both in schools specially set up for those students, as well as in separate classes, departments or study groups with modified curricula and also through individual integration into regular classes. The RVP for elementary education defines the appropriate conditions for teaching students with disabilities and other physical handicaps and serves as the basis for the school educational programme. The educational programme then serves as the basis for the individual curricula.

The Czech education system is undergoing some significant changes in the field of inclusive education and support for students with special educational needs. A fundamental change to the Education Act was adopted in spring 2015, which will introduce from the school year 2016/2017 onwards a system of support measures and represents a significant paradigm shift in the approach to teaching students with special educational needs. The actual amendment to the Act, which is set to enter into force on 1 September 2016, must be followed up by other documents, such as the Akční plán inkluzivního vzdělávání (Action Plan for Inclusive Education) (as assumed in Strategie vzdělávací politiky České republiky do roku 2020).

Basic information on education of students with special needs

According to FEP, students with special educational needs are those who suffer from chronic health conditions, physically handicapped students and those that are socially disadvantaged. Special schools exist from pre-school to upper secondary level. Their curriculum and qualifications are as close as possible to those of mainstream schools, the methods are appropriate to the specific educational problems (mainly mental, physical, visual or hearing disability).

At compulsory level, the *základní škola speciální* can be established for students with medium and severe mental disabilities and multiple mental disabilities and *základní škola praktická* for students with mild mental disabilities. Students with mild disabilities are educated according to the appendix to the Framework Education Programme for Elementary Education. Students with severe mental retardation, students handicapped with multiple disabilities and students with autism who attend a special elementary school are educated according to an individual Framework Education Programme *(see pages 111 - 116).* After primary education, students with mild disabilities can continue their education in courses at *praktická škola* (ISCED 2C) or *odborné učiliště* (ISCED 3C) – two secondary schools set up for students with lesser study prerequisites – or in other special vocational courses at upper secondary level (ISCED 3C) for students with mild mental disabilities and for those who have not successfully completed lower secondary education.

In the last few years there are lively discussions about the role and maintenance of these schools and integration of these students in mainstream schools is one of the main goals of these discussions.

Special needs and ICT

There is no national strategy on the use of ICT to support inclusion in mainstream classes. The assistive technology recognized widely in the world has not been broadly adapted in the Czech Republic yet. Unfortunately the majority of special needs teachers has not recognized the usefulness of mobile devices for SEN education yet. A range

of smaller projects/initiatives are ongoing, a lot of them are financed from different financial sources including ESF.

The National Institute for Education coordinates a project financed from ESF that supports the work of regional "centres of support of inclusive education". These centres offer a wide range of services including counselling in the field of ICT.

A number of Czech universities run special centres that support university students with special needs. One of the biggest is the Teiresias Centre (the official name is the Support Centre for Students with Special Needs) of Masaryk University in Brno. Since 2001, the Centre has been entrusted with the printing of the tactile version of the state secondary school leaving exam for the blind, and the centre also provides the National Comparative Exams for Students with Visual and Hearing Disabilities, especially for those preparing for the entrance exams to universities. The TyfloCentrum Brno, active in the regions of Brno and southern Moravia, provides social services to visually impaired people. This centre offers also an IT centre and a summer camp for youth focused on ICT.

Among other initiatives, there is a project Blind Friendly focusing on a webpage accessible for visually impaired people. An annual conference INSPO on ICT for users with special needs is being organized by a union of different NGOs.

The iSEN project community website and initiative offers a place to come together and share knowledge and experience not only for teachers and parents of disabled children, but also to mainstream schools and teachers, students in the relevant fields, and social, health and technology workers and initiatives.

5.4. ICT IN INITIAL TEACHER EDUCATION

The **'Strategie digitálního vzdělávání do roku 2020'** defines future teacher training in the field of ICT as a priority. It also claims that the current situation is unsatisfactory:

"The use of digital technologies at teacher training faculties has not yet become a regular and inseparable part of the teaching process, on either the theoretical or practical level. So far, emphasis is placed on technical skills for using technology and on-line services; lessons at these faculties do not adequately focus on the use of digital technologies for teaching practice in the given field, nor do they integrate digital technology directly into subject didactics. Despite the fact that under the RVP for primary education ICT is taught at lower primary school (since the RVP from 2004), existing curricula (p.8) for training lower primary school teachers do not reflect this fact at all."

Teacher Training curricula - for primary and secondary education - are defined at the local level by the university or teacher training institution itself. There are separate curricula for primary and secondary education.

Generally, the system of university education of future teachers looks as follows:

- 3-year bachelor study programme: nursery school teachers
- 3-year bachelor + 2- year master study programme: primary school teachers
- 3-year bachelor + 2- year master study programme: lower secondary school teachers
- 3-year bachelor + 2- year master study programme: upper secondary school teachers
- 3-year Ph.D. study programme

There are some exceptions from the above mentioned system as for example University of Hradec Králové that has got accreditation for whole continuous 5 years master programme, other universities may follow in the future.

Students – future teachers at secondary schools – choose a subject specialization, future teachers usually choose two specializations/subjects and one of the can be ICT (the study programme is usually called Information technologies in education). Primary school teachers and nursery teachers are usually thought in overall curricula.

5.5. ICT IN IN-SERVICE TEACHER EDUCATION

For some time now MoEYS has been preparing a teacher career system. This is the primary focus of the Kariérní systém project (Career System, abbreviated to Kariéra) implemented by National Institute for Further Education (NIFE). The project is to put in place the long-anticipated educational career system, giving teachers and school heads the lifelong opportunity to further their careers and the quality of their work on the basis of a motivational system, according to transparent rules. Increasing professionalism and improving working conditions for teaching staff have long been priorities for MoEYS.

The outcomes of the project include the **'Teacher Standard'** (Standard učitele) and the

'Evaluation of the Quality of Further Teacher Training in the Career System' (Hodnocení kvality dalšího vzdělávání pedagogických pracovníků v kariérním systému). The Career System has not yet been introduced. In January 2015, the Act on Educational Staff was updated, which tightens the qualification requirements for teachers for the relevant school grades.

Further teacher training is currently part of every school's development plan, and depends not only on the school's vision, but also on the level of interest amongst teaching staff. Further teacher training courses are provided by a number of national and regional organisations and companies, while universities are also important providers of further training for teacher. In recent years, there has also been a **rise in the number of online courses and webinars** (e.g. the eTwinning webinars, the webinars on rvp.cz, online meetings within the framework of Google Edu Group CZ, etc.). **Another form of ICT education are conferences**; some of the largest national conferences on the subject of ICT include the 'Počítač ve škole' (Computer at School), 'ICT ve školství' (ICT in Education), the regional conference 'KVIC on ICT', the nationwide conference 'Digitální technologie ve výuce - praktické využití ve školách' (Digital Technology in Teaching – Practical Usage in Schools, organized by National Institute for Further Education), etc.

In the past, further teacher training in ICT has been supported by ESF grant programmes (ESF), e.g. the Call 51 of the Operational Programme Education for Competitiveness to submit individual other projects aimed at supporting further training for the staff of schools and school facilities 2014 – 2015 and 'Improving Conditions for Education (EU Money to Schools)' ('Zlepšení podmínek pro vzdělávání (EU peníze školám)', both of which provided schools with funds for purchasing technology and equipment and also for training teachers in working with ICT. Initially, activities focused primarily on teachers' computer literacy skills and use of digital technologies, although later attention was also devoted to the use of digital technologies in teaching and didactics.

5.6. TRAINING THE TEACHER TRAINERS

No special initiatives.

6. ICT STUDIES

Stategic documents (in Czech only):

- Strategie vzdělávací politiky 2020
- Strategie digitálníhovzdělávání do roku 2020

Studies and analysis (in Czech only):

- ICILS 2013, National Report
- TALIS 2013
- Czech School Inspectorate: Výroční zpráva za školní rok 2013/2014
- Czech School Inspectorate: VÝBĚROVÉ ZJIŠŤOVÁNÍ VÝSLEDKŮ ŽÁKŮ 2015

Project results (in Czech only):

- O. Neumajer, D. Růžičková - Souhrnná zpráva projektu Vzděláváme pro budoucnost

Portals about education in the Czech Republic (in Czech)

- www.rvp.cz
- http://spomocnik.rvp.cz
- www.ceskaskola.cz
- www.eduin.cz

Documents available in English:

- Strategy for Education Policy of the Czech Republic until 2020
- Survey of Schools: ICT in Education
- EC: Education and Training Monitor 2014
- EUN: Creative Classroms Lab, Observation visits Final Report
- EUN: Creative Classroms Lab, Innovative teaching and learning with tablets

Other sources (in Czech):

- Iva Stuchlíková, Tomáš Janík: Oborové didaktiky: bilance a perspektivy
- Maturitní zkouška 2015
- Vybraná zjištění výzkumu stavu a pojetí rozvoje informačně technologických kompetencí na základních školách Jiří Štípek, Petra Vaňková
- O. Neumajer: STRATEGIE DIGITÁLNÍHO
- VZDĚLÁVÁNÍ DO ROKU 2020 jakožto příležitost pro změny ve vzdělávání
- Ondřej Neumajer: Strategie digitálního vzdělávání v oblasti otevřených zdrojů
- O. Neumajer: Mobilní technologie do škol Information and Communication Technologies in Education Rožnov pod Radhoštěm 9. září 2014

Publisher: European Schoolnet (EUN)

Author: Barbora Grečnerová, Centre for International Cooperation in Education (DZS)

Editor: Katja Engelhardt (European Schoolnet)

Coordinator: Anja Balanskat (European Schoolnet)

Annex: System of curricular documents