



Czech Republic

Country Report on ICT in Education

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1. THE EDUCATION CONTEXT

1.1. Key educational challenges and priorities

International surveys show that the Czech Republic is among countries where students' socio-economic background is strongly associated with their performance at school. Also, educational mobility rates are among the lowest in the OECD. Compared to other OECD countries, both teacher salaries and the average expenditure per student aged 6 to 15 years are very low in the Czech Republic. A list of recommendations for the Czech education system is provided in an [OECD report](#) from 2016; within the Czech Republic an assessment of the situation of the school system, including recommendations, was initiated by EDUin – an independent organization (for [2017](#), in CZ). Recommendations at the school and system level are published by the Czech School Inspectorate in its [annual report \(in CZ\)](#).

At national level, an updated education policy is currently being implemented, focusing on improving the quality and accessibility of education. This policy is based on the strategic document entitled '[Strategie vzdělávací politiky České republiky do roku 2020](#)' (*Strategy for Education Policy of the Czech Republic until 2020* available in CZ and EN), which was approved by the Government of the Czech Republic in 2014. The Education Strategy 2020 is a key document and, at the same time, a precondition for participating in projects and receiving funds from the European Union.

The Education Strategy 2020 sets three key priorities:

- Reducing inequalities in education;
- Supporting high-quality teaching and teachers;
- Governing the system in a responsible and efficient manner.

This document mentions the role of digital technologies in today's world and the need to use ICT in teaching, but the area of digital education is not dealt in detail in the strategy, as it is addressed in a follow-up document '[Strategie digitálního vzdělávání do roku 2020](#)' (SDV, *Digital Education Strategy until 2020*, in CZ). The Strategy for Education Policy of the Czech Republic until 2020 was presented in more detail in the previous CZ EUN country [report from 2015](#).

1.2. Education Reforms

The [Amendment of Education Act](#), approved in May 2016, which took effect on 1 September 2016, includes the most important changes as follow:

- Guarantee common education for all pupils (including gifted pupils and pupils with special educational needs) in mainstream education, wherever this is in their interest.

This amendment also sets out a wide range of 'support measures' for which pupils

with special educational needs and gifted pupils are eligible. Support measures are financed from resources of Ministry of Education, Youth and Sports (MŠMT, in CZ and EN) as well as through European funds (OP VVV, Operational Programme Research, Development and Education). They are divided into five levels according to their organisational, pedagogical and financial requirements – they include for example a personalised education plan, adjustments to the schedule and organisation of teaching, compensation aids (including digital means) and aids for gifted pupils (including digital gadgets and software) and assistant teachers providing personal support.

- Introduction of compulsory final year of pre-school education (i.e. for children over 5 years) with effect from 1 January 2017.

The aim of this change is to ensure that children from various backgrounds are adequately prepared for starting their first year of school. At present, about 90% of children attend the final year of pre-school education.

- Single entrance examination in Czech language, literature and mathematics for secondary schools, following a graduation examination ('Maturita') in the end of secondary school. The examination is in effect from the 2016/2017 school year. This change should result in eliminating the admission of students who are very unlikely to complete their secondary school studies successfully. However, 'Česká školní inspekce' (ČŠI, *Czech School Inspectorate*) in its annual report notifies that there is currently no centrally prescribed level to pass the single entrance examination.
- Inclusion of mathematics in the common part of the graduation 'Maturita' exam, starting from 2020/2021 school year. Mathematics will thus become the third compulsory subject (in its current form, the 'Maturita' school-leaving examination allows students to choose between an examination in mathematics and an examination in a foreign language, while all students must take an examination in Czech language and literature). In connection with this change, activities are being prepared (such as teacher training) aiming to enhance mathematics lessons at both primary and secondary schools, as only 25% of students chose mathematics in 2017, of which 21% failed the examination (see [CERMAT data, in CZ](#)).

Approved in January 2017, the Amendment of Education Act changes the financing mechanism of regional education. Starting from 1 January 2019, the change will affect nursery, primary and secondary schools, conservatories and school clubs that are set up by municipalities and regions (i.e. the financing of private and church schools will continue under the existing rules).

The current system of financing, where schools and school clubs receive funding from the state budget through their founders (municipalities and regions) as a standard amount per pupil will be replaced with a system of per-pupil and per-teacher financing. The standard amounts will be set up centrally.

Additional detailed information on implemented reforms and the Czech education system is available e.g. on the [Eurydice](#) website.

2. DIGITAL EDUCATION POLICY

2.1. National/ regional digital education policies

Digital education can be considered as one of the important topics in Czech education system. The strategic document '[Strategie digitálního vzdělávání do roku 2020](#)' (SDV, *Digital Education Strategy until 2020*, in CZ), approved in 2014, is currently being implemented. 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." The aim of the proposed measures is to increase the competitiveness of the Czech education system.

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*, in CZ and EN), Digital Education Strategy is focused on putting in place suitable conditions and setting up processes so that the education complies with the latest findings and current requirements of society and the labour market that are affected by the development of digital technologies and the information society. The purpose of this strategy is to initiate changes to the objectives, methods and forms of education. A large number of changes will be needed and it cannot be expected that all of them will be implemented by 2020.

Another important characteristic of this Digital Education Strategy until 2020 is its openness for the future as developments in digital technologies are unpredictable and scientific knowledge in pedagogy are highly dynamic. The focus of SDV is therefore on the individual learner, 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 its future characteristics are not yet known. This is why SDV 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 Digital Education Strategy 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' competencies 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 three priority objectives mentioned above:

- 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 general public.

The implementation of SDV is monitored and coordinated by the SDV Steering Committee. Operational issues are addressed by the SDV Narrow Working Group.

The assessment of SDV implementation is regularly published on [separate web pages of the Ministry of Education, Youth and Sports \(in CZ\)](#), where all relevant information relating to digital education is published. Every year, a report on SDV implementation is sent to the government in order to keep it informed about the implementation of the Strategy. Currently, an update to the SDV is being prepared (the SDV is approximately halfway through its implementation period).

[An independent perspective](#) on SDV implementation is provided e.g. by the [Jednota školských informatiků](#) (*Union of School Informaticists*, a professional organisation of teachers and other professionals focusing on digital education, website in CZ).

Set up on the initiative of the MŠMT, the Czech National Coalition for Digital Jobs ([DigiCoalition, in CZ](#)) was established to support exchange of experience among public, private and NGO sector in the area of digital competences in December 2016.

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](#)' (*Digital Literacy Strategy of the Czech Republic for the Period 2015 to 2020*, in CZ). It aims to develop digital literacy among Czech population in order to boost the Czech economy and its competitiveness as well as to enhance the employability, the quality of life and to support life-long learning.

2.2. Responsibilities

The responsibilities for education as a whole are **distributed among the central government, regions and communities**. The Ministry of Education, Youth and Sports is responsible for the state, conception and development of the education system as well as for allocation of financial resources from the state budget. The Ministry also sets out the general content of pre-primary to secondary education. Regions are responsible for education on their territory (from pre-primary to tertiary professional level) and for the allocation of financial resources to schools. Regions are school founders for upper

secondary schools, conservatoires and tertiary professional schools, whereby communities establish nursery schools and elementary schools.

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 of schools. 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 curriculum documents (RVPs- curriculum documents, *Framework Education Programmes, see part 3.4*) 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 an **ICT coordinator/methodologist**, whose duties vary from school to school. According to the [ČŠI Thematic Report \(CZ\)](#), this position is filled at almost 90% of schools with more than 150 pupils, but at less than 50% of schools with less than 150 pupils. The most frequently mentioned reason for this situation is the lack of financial resources.

Administration of ICT equipment in schools is most often provided by third-party service, which – according to the ČŠI – does not fully correspond to needs of schools. At any time during their lessons, teachers should be thus able to immediately consult the use of ICT in teaching and any technical problems that might arise. In addition, given the lack of financial resources for this area, the ČŠI points out an alarming finding: “The administration of all ICT resources in a school is [on average] limited to a maximum of 10 hours per month. However, such an extent of administration is wholly inadequate, not only in smaller schools. It is also clear that this extent only includes implementing elementary activities to ensure the operation of basic technologies and ad hoc solutions to the most basic operational problems, but it does not include consistent user support (support for pedagogical staff) or any controlled development (e.g. in accordance with the school strategy, where it has been developed). It is also essential to note that there have been no significant changes in ICT administration over the periods under review (since 2009). The situation described above is therefore stable, or even slightly deteriorating...” (page 10, [ČŠI Thematic Report](#)).

2.3. Specific digital education initiatives

a. Student identity management and School management systems (e.g. linking educational services and student data or supporting links between educational pathways for students:

School information systems are used by almost all Czech primary, secondary and tertiary professional schools (in the case of small primary schools, i.e. schools with fewer than 150 pupils, the usage rate is slightly lower – systems are not used by about 10% of them). The systems are used both for pedagogical and administrative purposes (schedules, pupils' records etc.) as well as to communicate with pupils and their parents (electronic pupils' record books, information about school events etc.). ([ČŠI Thematic Report, CZ](#))

The most frequently used school information systems:

- Bakaláři (www.bakalari.cz)
- dm Software (www.dmssoftware.cz/zs)
- Škola OnLine (www.skolaonline.cz)
- aSc TimeTables (www.asctimetables.com/timetables_cz.html)

Within the 'Resortní informační systém' (*Departmental Information System*), the MŠMT is preparing an interface for communication with school information systems (depending on their needs, these are chosen by schools from products offered by commercial companies) in order to simplify the collection of statistical reports, data and other information within the education sector.

In connection with school information systems, it is also appropriate to mention the Regulation of the European Parliament and of the Council on personal data protection. The [General Data Protection Regulation](#) comes into effect in 2018, which must be respected by both schools and providers of school information systems. MŠMT published in October 2017 [a guide for schools](#) to help them cope with this regulation.

Information about learning management systems and cloud services is mentioned in chapter 4.5.

Almost all schools use their own websites to communicate with parents and the public. However, the [ČŠI's findings \(CZ\)](#) have shown that only a little more than half of nursery and small elementary schools use content management systems for administration, which suggests that many of these websites are rather static, with no regular updates.

The improvement of school websites is the aim of competitions, such as the [sCOOL web competition](#) (CZ, initiated by an independent organisation) which focuses on encouragement schools to create safe and user-friendly websites that provide the public with all necessary information. In the competition, an expert jury and the public recognise schools that have developed the best websites. The detailed criteria of the competition also provide all schools with guidance for improving their existing websites.

b. New learning spaces (reorganising classroom and school architecture Future Classroom Labs, Fab Labs, Makerspaces)

Thanks to European Schoolnet activities, which are coordinated by the ‘Dům zahraniční spolupráce’ (DZS, *Centre for International Cooperation in Education*) in the Czech Republic, Czech teachers have the opportunity to attend workshops at the [Future Classroom Lab](#) in Brussels.

Within the teaching community and inspired by FCL in Brussels, the FCL idea is supported and implemented by some schools, e.g. at the [E. Beneš primary school in Prague – Čakovice](#), where the Czech FCL Ambassador works. At this school, a laboratory equipped with digital technologies has been built, which allows the space to be flexibly arranged depending on the educational purpose. This laboratory is also available to teachers and education professionals who are interested.

The Prague-based EDUcational LABoratory (EDULAB) is also a member of the [FCL Network](#).

Arranging the educational space depending on the purpose is usual in alternative schools, and some of the components that are applied in alternative schools are also being adopted by some mainstream schools (on the initiative of the school management team or a specific teacher). For example schools that are based on the Step by Step programme (in which pupils spend a part of their day working in activity centres), the Montessori pedagogy (materials in the classroom are divided according to the educational area, furniture allows group, pair and individual work) and other alternative directions operate in the Czech Republic.

The new learning space forms, such as shared workshops for the public, where attendees can work with state-of-the-art digital technologies, are also newly emerging in the Czech Republic. For example, the first Czech FabLab opened in Brno in April 2017 ([FabLab Brno](#)). The equipment of this workshop includes digital devices such as a 3D printer and a 3D scanner, which can be used by students, entrepreneurs and others to create their products. For a small fee, the workshop is open to DIY-minded persons, while mentoring, experience sharing and mutual inspiration also play an important role.

Outside the FabLab network, similar open digital workshops also operate in [Ostrava](#), [Plzeň](#), [Pardubice](#) and [Brno](#). The [school laboratories](#) (including their equipment) of the ‘Fakulta strojního inženýrství, Vysoké učení technické v Brně’ (*Faculty of Mechanical Engineering, Brno University of Technology*) are primarily open to the school’s students.

In addition, new primary schools are also being set up which have close ties to a university (teaching is in part delivered at university laboratories, collaboration with university experts has been established etc.) – for example a primary school in [Prague](#) or [Brno](#).

There is also an initiative ‘[Architekti ve škole](#)’ (Architects at school) that is partly devoted to school architecture. The initiative aims to foster students’ awareness of architecture, landscape and city planning.

c. Game based education (content, tools and scenarios)

One of the first surveys on the inclusion of digital games in teaching in the Czech Republic was carried out by Karel Picka from ‘Masarykova univerzita v Brně’ (Masaryk University in Brno) in 2016. Based on a survey conducted among a group of primary school teachers, he states that

nearly half of the respondents use digital games in teaching. The survey also states that “while only 15% of respondents use digital games to explain new content, most respondents (71%) use it for practising. A large proportion of teachers use games to verify pupils’ knowledge (44%).” Most respondents agreed that the use of digital games increases pupils’ interest in the school subject itself. The most common reasons why the respondents did not use digital games in teaching included lack of time in lessons, lack of information on the possibilities of digital games, and inadequate technical equipment.

There are a number of digital games – which are available free of charge or for a fee – which can be used for teaching purposes. For example, the following games have recently been created in the Czech Republic:

- [Czechoslovakia 38–39 \(CZ/EN\)](#) – an educational simulation that allows pupils to experience key moments in Czech/Czechoslovak history in the 20th century. Historical events are shown from the perspective of different people with different motivations, which makes it possible to overcome the black-and-white view on the past. Pupils are drawn into the story and can actively influence it. The digital game was created and is being developed on a continuous basis at the ‘Filozofická fakulta a Matematicko-fyzikální fakulta Univerzity Karlovy v Praze’ (Faculty of Arts and Faculty of Mathematics and Physics at Charles University in Prague) and the ‘Ústav pro soudobé dějiny Akademie věd České republiky’ (Institute for Contemporary History of the Czech Academy of Sciences) in collaboration with other partners.
- [Matematika s radostí \(The Joy of Math, available partly in EN\)](#) – a website about secondary-school mathematics, whose development has been coordinated by the ‘Vysoká škola báňská – Technická univerzita Ostrava’ (VŠB – Technical University of Ostrava). It uses certain game elements known mainly from TV entertainment (a game similar to Jeopardy and others) to practice acquired knowledge. Applications that use adaptive learning are also an interesting tool to practice and develop specific skills, for example:
- [Včelka](#) (available in part in [English](#)) – an application that develops reading literacy. Based on an initial diagnosis of reading skills, the application generates a list of exercises tailored to the reader’s individual needs. The results of these exercises – along with the subjective difficulty as perceived by the reader – affect the exercises that are subsequently offered for developing reading skills. Parents, teachers and special educators can also use separate access to manually modify the list of exercises. The application is also suitable for readers with specific learning disabilities (e.g. dyslexia) and learners of Czech as a foreign language. The project was founded by Michal Zwinger, Michal Hudecek, Simon Rozsival, Marek Lisy, Veronika Pavlikova, Renata Wolfova.
- [Outline Maps \(CZ/EN\)](#) – a project of the [Adaptive Learning group](#) that works at the ‘Fakula Informatiky, Masarykova univerzita v Brně’ (Faculty of Informatics at Masaryk University in Brno). There are a number of outline maps available for practising various topographical names from all over the world (states, water bodies, mountain ranges etc.). The application uses data from previous users to evaluate which names are the most challenging and, at the same time, it works with the continuously updated results of the specific user (based on these results it adjusts the frequency of certain names and, if relevant, the form of the

question). The application is available in multiple languages (including English). Other projects of the Adaptive Learning group include e.g. Anatomy (practising human body parts) or Robomise (an introduction to programming).

d. Implementation of computing, coding, computational thinking initiatives (progress, challenges and evaluation results (where available))

The development of pupils' computational thinking is one of the key objectives of the Digital Education Strategy (for more information see Chapter 2.1). Therefore, as part of implementing this Policy, support is provided for various activities towards creating the conditions for the integration of computational thinking in teaching (revising the framework education programmes to emphasize computational thinking and digital literacy, preparing materials and courses for teachers, creating learning materials for pupils etc.).

For additional information on the progress of SDV implementation see other parts of this report.

In addition, there are sub-initiatives at the local/regional/national level which promote computational thinking, for example:

- [Jednota školských informatiků](#) (*Union of School Informaticists, CZ*) – a professional organisation of teachers and other professionals focusing on digital education.
- [Czechitas \(CZ/EN\)](#) – a non-profit organisation that mainly encourages girls/women to study coding, data analytics and web development. Workshops and other educational events are specially held for girls/women; activities intended for primary and secondary school students and teachers are organised in collaboration with private companies, such as '[Akademie programování](#)' (*Coding Academy*).
- [Europe Code Week \(EN\)](#) – this is an international campaign in which organisations from the Czech Republic also regularly participate.
- [Hour of Code \(EN\)](#) – in 2016, the Minister of Education declared support for the event.
- [Informatika pro každého](#) (*Informatics for Everyone*) – an electronic textbook dealing with the basics of algorithmisation and coding. The textbook is being continuously expanded by D. Lessner.
- [Informatikáři informatikářům](#) (*By informatics teachers for informatics teachers, CZ*) – the project supports the creation of local mutual-learning communities of teachers in order to improve the quality of informatics education and to support the teaching of computational thinking at schools.
- [Bobřík informatiky](#) (*Beaver of Informatics, CZ/EN*) – a competition for primary and secondary school students focusing on digital literacy, algorithmisation, understanding of information and problem solving ability.

[BBC micro:bit](#) – as part of the micro:la foundation fund's pilot project, which has been running in Lanškroun since spring 2017, handheld programmable computers have been distributed to 7th-year pupils (age 13-14) of all local primary schools and some other organisations (secondary schools, clubs).

e. Self- or peer assessment tools/frameworks for teachers and students digital competence including certification

Since 2015, the Czech Republic has been involved in the [MENTEP](#) project through DZS. As part of this European project, the TET-SAT on-line self-assessment tool for teachers focusing on digital competence has been created. The tool addresses four areas: Digital Pedagogy, Digital Content Use and Production, Digital Communication and Collaboration, Digital Citizenship. Upon completion, teachers immediately receive feedback and a link to a list of resources that enable them to further develop their digital skills. This tool was piloted at selected schools during the 2016/2017 school year. Analyses are currently being carried out, but the tool is available for free to all interested parties.

Teachers can also use a self-assessment tool prepared by '[Národní institut pro další vzdělávání](#)' (NIDV, *National Institute for Further Education*) entitled '[Kompetenční model učitele pracujícího s ICT](#)' (*Competency model of a teacher using ICT*).

The project '[Podpora budování kapacit pro rozvoj základních pre/gramotností v předškolním a základním vzdělávání](#)' (*Podpora práce učitelů, Supporting capacity building for the development of basic pre-literacy in preschool and primary education, Supporting Teachers' Work*, in CZ/EN) coordinated by the [NÚV](#), *National Institute for Education, Education Counselling Centre and Centre for Continuing Education of Teachers*, is currently preparing a tool entitled '[Profil Učitel²¹](#)' (*Profile Teacher²¹*). The tool will be adapted to the conditions of the Czech education sector, and is one of objectives of the Digital Education Strategy. This tool will be pilot-tested at schools and, once the tests are completed, it will be available on the Methodological Portal RVP.CZ as an addition to the existing (and currently updating) tool '[Profil Škola²¹](#)' (*Profile School²¹*). While Profile School²¹ is a self-assessment tool for monitoring and managing the integration of digital technology into teaching at school level (i.e. it is mainly intended for school leaders), Profile Teacher²¹ should be oriented towards all teachers. It is expected that the newly-created tool will enable teachers to assess their ability to integrate digital technologies into teaching and motivate them to pursue further development in this area.

For the time being, there are no plans to create a similar tool at the national level that would verify the digital competence of pupils using self-assessment or peer assessment. Nevertheless, the [annual report](#) of the Czech School Inspectorate for the 2016/2017 school year points out that self-assessment and peer assessment of pupils is – in general (not only in the area of digital competence) – underused in primary and secondary schools. The above report indicates that, during inspections in primary and lower secondary schools, self-assessment was present significantly in 17%, marginally in 40% and not at all in 43% of lessons across all subjects. The report also states that self-assessment of pupils was most often used in the Czech language and in special-pedagogical subjects. By contrast, it was used the least in the teaching of foreign languages and in the Man and Society and Man and Nature educational areas. A similar situation exists in terms of peer assessment, but it was used even less. In the case of upper-secondary schools, self-assessment of pupils was only present in 35% of lessons, and peer assessment in 23% of lessons. (Annual Report of the ČŠI, pp. 86, 240).

f. Tests (ICT or non ICT based) for teachers and students to test their digital competence

For teachers, there is no mandatory testing of digital competence. However, within the Digital Education Strategy, the Standard for Teachers' Digital Competence was created within the [Podpora práce učitelů](#) (*Supporting Teachers' Work*) project. The standard is supposed to be incorporated into the programmes of universities that prepare future teachers. In the future, it can thus be expected that teachers' digital competence will somehow be verified.

The verification of students' digital competence takes place continuously as part of their regular lessons in primary and secondary schools (for more information see Chapter 3.5). Also, students can take the 'Maturita' school-leaving examination in Informatics or a similar subject within the profile part.

In 2015, students and the general public had an opportunity to participate in the [IT Fitness test \(CZ\)](#), which was part of the eSkills for Jobs campaign that had been initiated by the European Commission, DG Enterprise and Industry. In the Czech Republic, the campaign was coordinated by DZS. Nearly 16 000 people, mostly primary and secondary school students, completed the freely-available test on-line. The test focused on the following five areas: Internet, Security and computer systems, Collaboration tools and social networks, Office suite and Complex task. After partial modifications, the test was reopened in 2016, attracting more than 10 000 participants. This version of the test is still available to anyone interested.

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 further job.

2.4. Digital education priorities

The priority objectives in the area of digital education and the measures and concrete activities leading to their fulfilment are described in '[Strategie digitálního vzdělávání do roku 2020](#)' (SDV, *Digital Education Strategy until 2020*, in CZ), see part 2.1.

3. INTEGRATION OF DIGITAL TECHNOLOGIES IN THE CURRICULUM

3.1. Digital technology based assessment

Within the framework of the [NIQES](#) project by ČŠI, the universal **electronic testing platform InspIS SET** – '[inspekční systém elektronického testování](#)' (*Electronic Testing Inspection System, CZ*) 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 public to use some tests and tasks made available by ČŠI 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 enables schools, pupils and parents to get feedback on knowledge and skills as needed.

In addition, the **InspIS SET mobile** application has been created for tablets and smartphones. The ČŠI uses the InspIS SET system to implement various surveys (for example, in 2016 this system was used to carry out a sample survey among 6th-year pupils of primary schools and the corresponding years of multi-year grammar schools focusing on mathematical, reading and social literacy).

In some vocational study programmes, it is possible to take the written part of the **final examination** electronically to obtain a certificate of apprenticeship. Since the year 2014/2015, final examinations in vocational study programmes take place based on a single assignment for each of the three parts: written, oral and practical (i.e. *The new final examination*). In addition, the number of study programmes in which the written part can be taken electronically is gradually growing. In 2016/2017 this option was available for 39 out of the 120 study programmes, within the next two years electronic verification should be available for all study programmes. The NÚV, which organises the [new final examinations](#), also works on adjusting the conditions to children with various disabilities.

For the 'Maturita' school-leaving examination, there are currently no specific initiatives to introduce electronic examination option in the near future.

3.2. School improvement with ICT

The use of digital technologies in teaching is one of the aspects that are the focus of the ČŠI's activities. For example, the latest published annual report for the 2016/2017 school year (CZ, p. 50) states that digital technology could be used more effectively, especially in nursery schools. According to the ČŠI findings, nursery schools quite often do not use their digital equipment at all or they use digital technology incorrectly. Besides, some computer programmes can be considered as inadequate (e.g. due to the excessive competitiveness aspect). ČŠI also warns that in some cases, children overuse digital technology (and the overusing reduces their development in other areas).

In 2017, ČŠI also found out the conditions of schools in the area of digital technology. , The 'Tematická zpráva – Využívání digitálních technologií v mateřských, základních, středních a vyšších odborných školách' (Tematická zpráva ČŠI, *Thematic Report – Use of digital technologies in nursery, primary, secondary and tertiary professional schools, ČŠI Thematic Report, CZ*) evaluates schools according to the five qualitative conditions for integration digital technology into teaching: school has an ICT strategy, school employs an ICT administrator, at least 50% of teachers have at disposal a computer/relevant device, school provides adequate computers/devices for pupils (devices are regularly renewed after max 7 years) and connectivity is adequately ensured (enabling also BYOD). The report summarises that only 5% of small schools (with less than 150 primary and lower secondary pupils) and 10% of big schools fulfill these conditions. In case of upper secondary schools and tertiary professional schools, the situation is slightly better – one of fifth schools meets the conditions. The report also indicates several recommendations on national level to improve this unfavourable situation.

Published by the ČŠI in 2016, the report entitled 'Žáci a ICT – Sekundární analýza výsledků mezinárodních šetření ICILS 2013 a PISA 2012' (*Students and ICT – A secondary analysis of the results of the ICILS 2013 and PISA 2012 international surveys*) brought some interesting findings on the use of computers in teaching and students' learning outcomes. On page 3, the report presents a comparison of schools in terms of the PISA mathematics test and the frequency with which students use digital technologies: "in less-successful schools, students use computers for various purposes more often compared with students of very successful schools." The report thus points out that a more-frequent use of digital technologies in teaching does not automatically lead to improved learning outcomes of students, but rather digital technologies need to be used in a way that supports the students' learning process.

For self-assessment, schools can use the 'Profil Škola²¹' (*Profile School²¹, CZ*) tool which is available on-line on the Methodological Portal RVP.CZ. This tool allows schools to assess how they are able to integrate digital technologies into school life, compare their situation with other schools, and set priorities for their further development in this area (for details about the tool see Chapter 5.2). According to the ČŠI's findings, less than 10% of schools (and even less than 1% of nursery schools) used the Profile School²¹ tool to set their priorities in the area of digital education in 2016. Overall, more than 80% of primary, secondary and tertiary professional schools have set digital education priorities for the current period (mostly in the form of an ICT plan or as part of the school's overall strategy),

but less than a half of nursery schools. (See the [ČŠI Thematic report](#))

Moreover, several Czech schools have already made use of the [European \(EUN\) eSafety Label](#) for ensuring the safety of their school. The advantage of this project is that the portal and queries are available in Czech.

3.3. The curriculum framework

Approved in 2014, the '[Strategie vzdělávací politiky České republiky do roku 2020](#)' (*Strategy for Education Policy of the Czech Republic until 2020*) is a key document that sets out priorities for the development of the education system at the most general level. This document contains three main priorities:

- Reducing inequality in education;
- Supporting high-quality teaching and teachers as a prerequisite for such teaching;
- Governing the system in a responsible and efficient manner.

The area of digital education is addressed by the [Digital Education Strategy](#) (see Chapter 2.1).

The objectives, forms, conditions and content of education are detailed in 'Rámcové vzdělávací programy' (RVPs, *Framework Education Programmes*) and 'Školní vzdělávací programy' (*School Education Programmes*). **Framework Education Programmes** for the different stages of education (preschool, elementary, secondary education) are developed centrally and published by the MŠMT, and they are binding on all schools. Among other things, they specify the framework content of education, expected outcomes (to be achieved by students) and the curriculum framework. Based on the Framework Education Programmes, each school creates its own **School Education Programme** that specifies in detail the curriculum and content of education for the given school (e.g. it places greater emphasis on certain education areas, beyond the mandatory framework set by the RVPs).

In 2016, the MŠMT approved a document setting the timeline for RVPs revisions. The NÚV is working on a revision of the RVP for nursery, elementary and secondary schools to take account of current trends in and needs of the society.

With effect from September 2017, Framework Education Programmes have also been modified to take account of the principle of inclusive education.

3.4. Digital technologies in the curriculum

The curriculum documents divide educational content into roughly defined educational areas (e.g. Man and Nature). Each educational area consists of one or more educational fields of similar educational content (e.g. Physics, Chemistry, Natural Science, Geography). Besides these educational areas, there are specified also key competences and crosscurricular topics that should be addressed across the curriculum.

Currently, the curriculum documents for elementary and for secondary general schools defined ICT only as one of the educational areas. In case of secondary vocational and technical schools, ICT is also part of key competences and crosscurricular topics.

As mentioned in the previous section, NÚV is working on the revision of curricular documents. Concerning digital technologies, the upcoming changes should revise the educational area ICT (update this area as it was defined in 2004 last, emphasize computational thinking in this area) and set up Digital Literacy as a new crosscurriculum topic.

In December 2017, NÚV presented the draft version of expected outcomes that pupils should achieve at the end of primary, lower secondary and upper secondary school. These outcomes are specified for the ICT (as a specific educational area) and for Digital Literacy (that should be taught across all school lessons). The expected outcomes are divided into 4 topics in ICT (Data, information and modelling; Algorithmization and programming; Information systems; Computer and how to control computer) and into 3 topics in Digital Literacy (Man, society and digital technology; Production of digital content; Information, sharing and communication in digital society). On the basis of these expected outcomes, the revised version of curriculum is to be prepared.

The revision of the digital curriculum will be supported by two projects financed by OP VVV. These projects are implemented by universities that prepare future teachers – one of them focuses on computational thinking (led by University of South Bohemia), the other one focuses on digital literacy (led by Charles University in Prague). Both projects are obliged to cooperate with NÚV and to verify in practice (in schools) the updated version of the curriculum documents. The projects also aim to prepare open resources for schools related to ICT and digital literacy, to provide trainings for teachers in schools (especially e-learning courses and MOOCs), to incorporate computational thinking and digital literacy into university courses for future teachers and to popularize these topics. Both projects are planned until 2020 as part of the implementation of the SDV.

However, the integration of digital technologies into teaching is also dependent on teachers' readiness, knowledge and skills together with the available school equipment. According to the ČŠI Thematic Survey, the ICT is taught by certified teachers in less than 50% of primary schools and 80% of secondary and tertiary professional schools. This relatively low certification rate may have a negative effect on the quality of teaching.

In addition, the report also states that roughly 12% of large primary schools, 20% of small primary schools and 5% of secondary and tertiary professional schools do not have a designated ICT classroom or sufficient number of portable digital devices to ensure that each student can be actively engaged into work at PC/other device in lesson. Moreover, even in schools where such classrooms are available, there are often only 1-3, therefore these classrooms are primarily used for teaching ICT (teachers of other subjects can rarely use them).

Another limiting factor is the relatively low availability (and also the condition) of computers and tablets for teachers. A computer or a similar device is available to at least every other teacher in only 15% of nursery schools, 60% of small primary schools (or 74% of large primary schools) and 72% of secondary and tertiary professional schools. These computers are moreover often obsolete.

The lack of equipment is cited by headmasters as one of the main reasons that prevent

greater integration of digital technologies into teaching. According to the ČŠI's report, other frequently-cited obstacles mainly include the lack of time and inadequate understanding of ICT operation.

In accordance with the above mentioned issues, headmasters of elementary schools consider the ICT equipment as the area where schools should invest the most (quite similar situation is in upper-secondary schools, according to the ČŠI annual report).

On the other hand, it is necessary to mention that many schools are very progressive in the area of digital technologies and actively use modern equipment and services (tablets, BYOD approach, cloud solutions etc.). Also, support for purchasing digital equipment for schools was provided by the European funds within calls in the previous programming period (OP VK 2007–2013) and financial support can also be obtained in the current OP VVV (2014–2020). Schools can use financial support from the current OP VVV not only for purchasing digital devices (such as tablets or laptops), but also for teachers' training in the area of digital education and for covering costs of IT support staff (to help teacher in implementing 1:1 computing)

3.5. Students' digital competence

Digital Competence (competence to use ICT and to work with information) is considered as a key competence only in the RVP 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. As mentioned in the preceding section, there are plans for a revision of curriculum documents and the associated greater emphasis on developing students' digital literacy and integrating computational thinking into education.

Competence to work with information is also monitored by the Czech School Inspectorate, as part of its inspection activities. As part of the NIQES project, the '[Metodika pro hodnocení rozvoje informační gramotnosti](#)' (*Methodology for assessing the development of competence to work with information, CZ*) was developed in 2015, which presents a set of indicators focusing on the conditions for and the process of developing this competence. The methodology also sets up the indicators of the achieved level of pupils when they enter primary school, finish the 5th year of primary school, finish the 9th year of elementary school, and leave secondary school.

In 2016/2017 school year, the ČŠI realized the thematic finding about the competence to work with information (and to adequately use digital technologies in this process) among pupils in the 9th (final) year of elementary school. The average results are slightly worse than ČŠI expected, the report is going to be published soon.

3.6. Assessment of digital competence

Schools have 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) 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 (or include the educational content of ICT into other subjects), 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. During the school year, students get continuous assessment that is usually set up by a teacher.

Students can also voluntary take varied tests/exams, such as IT Fitness test or ECDL testing, to assess their digital competence (see chapter 2.3).

4. DIGITAL LEARNING RESOURCES AND SERVICES

4.1. Digital content development

The production of on-line materials for teachers and teaching materials for students aimed at developing digital literacy and computational thinking is one of the activities planned under the Digital Education Strategy. As mentioned in section 3.4, two projects led by faculties that prepare future teachers have recently started. Consecutively on those projects, production of digital resources by schools is to be supported through OP VVV call in late 2018.

The important aspect of production educational resources under OP VVV represents the open access. Projects financed by OP VVV are required to use open licence (e.g. Creative Commons) and it is also planned to require metadata tags in order to facilitate sharing of those resources in the public database of educational resources. Related to digital resources, MŠMT prepared the document entitled '[Kritéria kvality digitálních vzdělávacích zdrojů podpořených z veřejných rozpočtů](#)' (*Criteria of quality for digital educational resources supported by public budgets, CZ*) that sets up copyright requirements, technical requirements and requirements for professional accuracy, pedagogics and didactics.

In order to promote open education, the '[Aliance pro otevřené vzdělávání](#)' (*Alliance for Open Education*) was established in 2015 on the initiative of the EDUin non-profit association. This is an informal association of various individuals, institutions and companies that aims to promote the principles of open education among the public and encourage the application of these principles in the Czech education system. On its website, it publishes links to resources dealing with open education as well as freely available teaching materials and other resources that can be used for educational purposes. In recent years, the Alliance along with additional partners participated in the [Open Education Week \(CZ/EN\)](#) in order to alert the general public to the advantages of open education.

Open to nursery, primary and secondary school teachers, the [DOMINO \(CZ\)](#) nationwide competition supports the effective use of digital educational resources. The award is given to teachers who present the best teaching activity including the use of a digital resource. Every year, the competition is organised by the NIDV, which also publishes submitted digital resources (including methodologies) on its website.

Teachers can also use an electronic textbook entitled '[Digitální nástroje a učitelé](#)' (*Digital Tools and Teachers, CZ*) by M. Hausner, J. Šindler, J. Palyza, J. Wagner that was published by NIDV in 2015. This textbook that is under Creative Commons licence focuses on e-safety issues, cloud computing and other useful online resources and tools for teaching and learning. The textbook also presents the best online tools according to the survey among teachers (up-to-date results are available [here](#)).

4.2. Content sharing and creation

The Czech MŠMT through its directly managed organization [NÚV](#) 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 digital learning resources with others. The quality and copyright issue of these resources are controlled before publishing. All resources available on <http://dum.rvp.cz> have a creative common licence. This repository contains almost 10 000 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.

Moreover, this portal is currently being modernised within the [Supporting Teachers' Work](#) (CZ, EN) project, which has received support from the OP VVV and which has been implemented by the NÚV since December 2016. The development and upgrade of the portal is part of implementing the SDV. The goal is to add metadata tags and user ratings (i.e. a reputation system) to educational materials and resources on the portal and, in turn, make it easier to search for relevant resources. The portal will also be linked with the database of OP VVV outputs.

As part of the Supporting Teachers' Work project, special web pages on reading, mathematical and [digital literacy](#) (CZ) have also been prepared which are available on the Methodological portal RVP.CZ and which support nursery and primary school teachers. The purpose of these web pages is to publish (or link) relevant documents and resources on a given topic – such as articles, teaching materials, methodologies etc. – in one place.

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 as well as educational communities which share ideas, best practice examples and resources.

Through the DZS, the Czech Republic also participates in European educational communities and projects. Within the MENTEP project, the '[national ecosystem](#)' has been created, a website for teachers containing links for selected freely-available resources related to digital education. Science and maths teachers use the [Scientix](#) portal featuring a wide range of freely available educational resources. The Scientix portal also enables to request for translation of available resources. The eTwinning National Support Service – which is part of the DZS – provides methodological and technical support to teachers who wish to implement educational projects with the support of digital technologies. The [eTwinning](#) community involves more than 9 000 teachers and 3 500 schools from the Czech Republic.

Selected on-line educational communities:

- Community of teachers and experts around national methodological portal www.rvp.cz
- [Jednota školských informatiků](#) - organisation bringing together informatics teachers

- [PEPOUS](#) - community of teachers sharing ideas and teaching materials
- [Google Edu Group CZ](#)
- [Klub moderních učitelů](#) - community teachers' association supported by Microsoft
- [Učíme moderně](#) – community of teachers sharing experience of using iOS devices in education
- [eTwinning ambassadors](#) providing teachers pedagogical and methodological support in educational projects carried through digital technology
- [iSEN](#) – community of teachers promoting the use of ICT in lessons for pupils with special needs

4.3. Accessibility for learners with disabilities and social inclusion

Support for students with special educational needs and their inclusion in mainstream schools, where this is in their interest, is one of the three main priorities set by the Ministry of Education, Youth and Sports (see Chapter 1.2).

There is currently no strategy at the national level that would directly support the use of digital technologies to educate students with special educational needs. The role of digital technologies is explicitly mentioned neither in the '[Akční plan inkluzivního vzdělávání na období let 2016-2020](#)' (*Action Plan for Inclusive Education for 2016–2018*) nor in the project entitled '[Podpora kvalitních poradenských služeb ve školách a školských poradenských zařízeních zaměřených na podporu inkluze: Kvalita-Inkluze-Poradenství-Rozvoj](#)' (*Support for quality counselling services in schools and school counselling facilities specialising in promoting inclusion: Quality-Inclusion-Consulting-Development*), which is being implemented by the NÚV in 2016–2019 in order to improve counselling services in the Czech education system.

However, there is a plan to support use of digital technologies in inclusive education. In late 2018, a call under OP VVV including this kind of support should be published by MŠMT.

Various activities that are not (directly) initiated by MŠMT are mentioned below.

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. The community focuses on using iOS in education and publishes articles about recommended online tools, provides teacher trainings, etc.

Microsoft initiated the creation of the guide for schools entitled '[Inkluzivní vzdělávání s využitím digitálních technologií](#)' (*Inclusive education supported by digital technologies, CZ*) by L. Gajzlerová, O. Neumajer, L. Rohlíková, which was published on-line in 2016. The guide responds to the changes taking place in the Czech education system and presents a brief description of the different groups of students with special educational needs,

including recommended applications that can support their learning. In addition, the guide contains a chapter devoted to BYOD, including a list of useful applications that can be used across operating systems.

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. The [TyfloCentrum Brno](#), active in the regions of Brno and southern Moravia, provides social services to visually impaired people. This centre offers also IT courses for those people (PC control courses, how to work with a PC aid, etc.)

Among other initiatives, there is a project [Blind Friendly](#) (CZ) 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 part of the programme relates to the education as well.

In 2016, a Universal Design guide entitled '[Jak vytvářet vzdělávací materiály přístupné všem – tipy a rady nejen pro učitele](#)' (*Creating educational materials accessible to all – tips and advice not only for teachers*, CZ) by J. Tomaňová was also published. Supported by a grant of the Education Support Program of Open Society Foundations, this guide is available under an open licence and it summarises the procedures for creating videos, presentations or text documents.

4.5. Learning Platforms

According to the [ČŠI Thematic Report](#), learning management systems (Moodle, Google Classroom and others) and cloud services (Google Apps / G Suite, Microsoft Office 365 etc.) are used in nearly 20% of small primary schools (up to 150 pupils), about a third of large primary schools and more than 60% of secondary schools and tertiary professional schools. On page 19, the report also states that “the proportion of the use of advanced cloud-based solutions is increasing in all segments, which is mainly due to their favourable operating parameters. In order to use specific products, schools are not required to invest in their own infrastructure (servers, storage etc.) and its administration and, instead, they use the given product as an application that is available on-line as a service. Despite this advantage, the usage is very low”.

The findings concerning support for BYOD in schools are also interesting – less than one quarter of primary schools and less than two thirds of secondary and tertiary professional schools allow students to use their own devices in the classroom ([ČŠI Thematic Report](#)). However, it is necessary to take into account that these data inform about the proportion of schools that do not prohibit the use of students' own devices in the classroom, rather than about schools where BYOD is commonly used in teaching across all subjects. In fact, the proportion of schools that are actively using BYOD will likely be significantly lower.

It is planned that support for schools' transition to cloud services or implementation of the BYOD approach will be provided within upcoming calls under the OP VVV (one of them is expected to be announced in late 2018).

5. TEACHER EDUCATION FOR DIGITAL LEARNING

5.1. Assessment Schemes

Since 2015, the Czech Republic has participated in the European project entitled [MENTEP](#) – within the project, a self-assessment tool for teachers (TET-SAT) was prepared and pilot-tested in the 2016/2017 school year. The testing took place in lower secondary schools (52 Czech schools participated in the project, more than 7 000 teachers participated from 11 countries). Currently, the tool is freely available for all teachers.

The self-assessment tool focuses on four areas: Digital pedagogy, Digital Content Use and Production, Digital Communication and Collaboration, Digital Citizenship. Each area contains several sub-items and, for each such item, teachers choose one out of five statements which they consider the most fitting (i.e. Newcomer – Beginning – Capable – Proficient – Expert). The TET-SAT tool is available in several European languages, including Czech. Upon completion, teachers immediately receive feedback and a link to a list of resources (the ‘national ecosystem’) that enable them to further develop their digital skills.

At the national level, a tool entitled ‘Profil Učitel²¹’ (*Profile Teacher²¹*) is currently being prepared – its creation is an activity under the SDV. This tool is being prepared within the [Supporting Teachers’ Work](#) project, which has been supported by the OP VVV and which is coordinated by the NÚV. The expected completion date is December 2018.

As part of the project, a Standard for Teachers’ Digital Competence has been compiled and is expected to be incorporated both into undergraduate teacher training and into the Profile Teacher²¹ tool, which is currently being prepared. The Profile Teacher²¹ tool will use the principle of self-assessment and it will target all teachers (regardless of their specialisation or type of school). The aim is to create a tool that allows teachers to assess how they are able to integrate digital technologies into teaching. Also, the tool should encourage them to further develop their digital competencies. When completed, it will be freely available on-line on the Methodological Portal RVP.CZ, where it will supplement the already existing (and currently updated) tool called ‘[Profil Škola²¹](#)’ (*Profile School²¹*, a tool for monitoring and managing the integration of digital technologies into teaching at school level).

However, there is currently no mandatory tool for verifying digital competencies of initial or in-service teachers.

5.2. School leader support

One tool enabling the evaluation of the use of digital technology in schools is the ‘[Profil Škola²¹](#)’ (*Profile School²¹*) - planning and self-evaluation tool. Profil Škola²¹ is an evaluation tool enabling schools to determine how successful they have been in incorporating digital technology 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 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

Currently, this tool is being updated as part of the [Supporting Teachers' Work \(CZ\)](#) project, which is expected to be completed in December 2018.

Another activity that is planned under the [Digital Education Strategy \(CZ\)](#) is the “Integration of strategic planning, change management and vision sharing in implementing digital technologies into the school life as a mandatory component of frameworks and programmes for future headmasters and deputy headmasters.” However, according to the published [assessment \(CZ\)](#), only limited progress has been achieved for this activity to date.

Members of school management may also collaborate with the school ICT coordinator on developing and implementing the school’s vision in the field of digital education (see Chapter 2.2). The Digital Education Strategy foresees the establishment of a network of ICT coordinators at the regional level.

The sub-initiatives that focus on supporting school leadership include for example the release of the publication entitled ‘[Jak zvýšit kvalitu škol pomocí otevřeného vzdělávání – tipy a rady pro ředitele a zřizovatel škol](#)’ (*How to improve the quality of schools through open education – tips and advice for headmasters and school founders*, author: O. Neumajer, publisher: EDUin, o.p.s., 2016) and [BYOD Bring Your Own Device – Příručka pro vedoucí pracovníky škol o možnostech využití mobilních zařízení žáků pro výuku a učení](#) (*BYOD – Bring Your Own Device. A guide for school leaders*, Jill Attewell, published by European Schoolnet in 2015, Czech translation provided by DZS / [EN](#)). The first mentioned publication is devoted to open education. It explains benefits for schools as well as the main concerns of schools, it briefly guides school leaders how they can support the open education approach at their schools. The second publication helps school leaders

to include BYOD into lessons, provides useful tips and recommendations.

In general, support for school leadership is addressed by a project of the NIDV entitled '[Strategické řízení a plánování ve školách a v územích](#)' (*Strategic management and planning in schools and territories*) supported by the OP VVV. Among other things, regional support centres are being established and educational programmes, methodologies and manuals for school leadership are being prepared as part of the project. In addition, the further education training of schools' leaders is also the focus of the current call no. 02_16_032 entitled '[Budování kapacit pro rozvoj škol II](#)' (*Capacity building for school development II*).

5.3. Digital technologies in initial teacher education

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. 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.

One of the aims of the Digital Education Strategy is to strengthen the preparation of future teachers in the field of digital technologies. As part of the [Supporting Teachers' Work](#) project, a Standard for Teachers' Digital Competence has been prepared and it should be subsequently incorporated into the degree programmes of universities that prepare future teachers. Under OP VVV, a call focusing on [undergraduate education](#) has been currently assessed. Under this call, support will be provided to all nine faculties of education in the Czech Republic, which train future teachers. The call aims to improve the training of future teachers, especially in the area of practical teaching experience and inclusive education. In terms of digital education, the call aims to promote the use of digital technologies in preparing, implementing and evaluating the progress and outcomes of education.

5.4. ICT in in-service teacher education

According to the Act on Pedagogical Staff, teachers are entitled to 12 calendar days off per year for their further professional development. However, the form (self-study, seminars etc.) and content of such education are up to the headmaster. Nonetheless, the [annual report](#) of the ČŠI indicates that courses and seminars focusing on the development of digital competencies rank to the frequent topics of teachers' further education, especially in case of upper-secondary schools teachers.

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’, ‘Učitel IN’ etc.

Also, a Standard for Teachers’ Digital Competence has been prepared. “Creating a universally available offering of education for teachers towards accomplishing the Standard for Teachers’ Digital Competence – i.e. a variety of on-line seminars and full-time and part-time studies using e-learning” is planned within the SDV. These activities should be implemented using financing from the OP VVV (e. g. by the project focusing on digital literacy implemented by universities that prepare future teachers – described in chapter 3.4).

5.5. Training the Teacher Trainers

Teachers can attend a special course called ‘Studium ICT koordinátor’ (*Study course of ICT coordinator*). The course is accredited by MŠMT and offered to those who want to become ICT coordinators at schools. According to the aforementioned report by the ‘Česká školní inspekce’ (ČŠI, *Czech School Inspectorate*), to date this study opportunity has been used by only 30% of teachers that are acting as ICT coordinators/methodologists in small schools and about 60% of teachers in large primary schools. The importance of the role of ICT methodologists in schools is also mentioned by the SDV, which envisages the implementation of measures to support them (e.g. revising the contents of the specialisation study, creating a network of ICT methodologists at the regional or municipal level etc.).

Optional: Studies on digital technologies in school education

Strategic documents:

- [Strategie vzdělávací politiky České republiky do roku 2020](#) (in English)
- [Strategie digitálního vzdělávání do roku 2020](#)
- [Dlouhodobý záměr vzdělávání a rozvoje vzdělávací soustavy ČR na období 2015-2020](#)
- [Akční plán inkluzivního vzdělávání na období 2016 - 2018](#)

Studies and Analysis:

- [Kvalita a efektivita vzdělávání a vzdělávací soustavy ve školním roce 2016/2017. Výroční zpráva České školní inspekce](#)
- [Žáci a ICT – Sekundární analýza výsledků mezinárodních šetření ICILS 2013 a PISA 2012](#) (Česká školní inspekce)
- [Tematická zpráva České školní inspekce - Využívání digitálních technologií v mateřských, základních, středních a vyšších odborných školách \(září 2017\)](#)
- [OECD Reviews of School Resources: Czech Republic 2016](#)
- [Audit vzdělávacího systému v ČR: rizika a příležitosti \(2017\)](#) – EDUin

- [Digital games in education from the perspective of teachers](#) (Picka, K., In Journal of Technology and Information Education, vol. 9, is.1)

The list of abbreviations

ČŠI	Česká školní inspekce <i>Czech School Inspectorate</i>
DZS	Dům zahraniční spolupráce <i>Centre for International Cooperation in Education</i>
ICT	Informační a komunikační technologie <i>Information and Communication Technologies</i>
MŠMT	Ministerstvo školství, mládeže a tělovýchovy <i>Ministry of Education, Youth and Sports</i>
NIDV	Národní institut pro další vzdělávání <i>National Institute for Further Education</i>
NÚV	Národní ústav pro vzdělávání, školské poradenské zařízení a zařízení pro další vzdělávání pedagogických pracovníků <i>National Institute for Education, Education Counselling Centre and Centre for Continuing Education of Teachers</i>
OP VVV	Operační program Výzkum, vývoj, vzdělávání <i>Operational Programme Research, Development and Education</i>
Podpora práce učitelů	Podpora budování kapacit pro rozvoj základních pre/gramotností v předškolním a základním vzdělávání <i>Supporting Teachers' Work / Supporting capacity building for the development of basic (pre-)literacy in preschool and primary education</i>
Tematická zpráva ČŠI	Tematická zpráva – Využívání digitálních technologií v mateřských, základních, středních a vyšších odborných školách <i>ČŠI Thematic Report / Thematic Report – Use of digital technologies in nursery, primary, secondary and tertiary professional schools</i>
RVP	Rámcový vzdělávací program <i>Framework Education Programme</i>
RVP ZV	Rámcový vzdělávací program pro základní vzdělávání <i>Framework Education Programme for Elementary Education</i>
SDV	Strategie digitálního vzdělávání do roku 2020 <i>Digital Education Strategy until 2020</i>

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