Norway

Country Report on ICT in Education

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1. THE EDUCATION CONTEXT

1.1. Key educational challenges and priorities

The three key policy objectives for primary and secondary education in Norway are:

- Ensuring that all students master basic skills and are well prepared for higher education and employment
- Providing students with a positive and inclusive learning environment
- Increasing the number of students completing ISCED level 3

These objectives are outlined in the government’s national budget1. Education shall provide all students with the skills, attitudes and values that will enable them to master their own lives, participate in society and the workplace and take care of themselves and others in the community. Everyone should have the opportunity to fulfill their potential for learning in an inclusive school.

To reach these objectives, the government is focusing on increasing teacher competence and improving the status and attractiveness of the teaching profession with the strategy “Promotion of the Status and Quality of Teachers – a joint effort for a modern school of knowledge” (2014).2

The strategy has five main action areas:

- New 5-year teacher education programmes (Masters). The new programmes are operational from 2017.
- Increased entry requirements for teacher education: applicants must fulfill minimum attainment levels in key subjects.
- New professional requirements for teachers: 30 ECTS credits to teach Norwegian, English and Mathematics for years 1–7, 60 credits to teach the same subjects for years 8-10, and 60 credits or the equivalent to teach all subjects for years 11-13. According to the Norwegian Directorate of Education and Training, the share of teachers who do not yet meet these

1 https://www.regjeringen.no/no/dokumenter/prop.-1-s-gul-bok-20172018/id2574460/sec1 (in Norwegian)
requirements varies between 20% (years 1-7 Norwegian) and 50% (years 1-7 English).³

- Increased funding for in-service training. This includes, among other things, capacity building of in-service training providers and a programme of grants/cover for teachers to acquire the necessary ECTS credits. A MOOC for in-service training of mathematics teachers in ISCED level 1 has been developed.⁴

- Pilots to establish new career paths in school education for teachers who want to advance professionally without entering into administrative leadership positions. The pilot currently supports the training of teacher specialists in mathematics and Norwegian. From 2018, the pilot will be expanded to include teacher specialists in digital competence.

In 2017, the Ministry of Education published the strategy “Teacher Education 2025. A National Strategy for Quality and Cooperation in Teacher Education”,⁵ with four main aims:

- A teacher education which is demanding and rewarding for students.

- Academically strong and well-organised teacher education communities – this includes strengthening professional digital competence at the institutions.

- Knowledge-based, active partners in the pre-primary, primary and secondary education sector

- A stable and mutually enhancing cooperation between teacher education institutions, pre-primary institutions and schools.

The National Curriculum is currently being revised in order to improve the coherence between the different parts of the curriculum, and to give pupils better opportunities for in-depth learning. See 1.2 below.

### 1.2. Education Reforms

The current Norwegian curriculum was implemented in 2006 as a part of the Knowledge Promotion reform. The reform introduced changes to the substance, structure and organisation of the Norwegian education system from the first

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⁴ [http://matematikkmooc.no](http://matematikkmooc.no)

⁵ [https://www.regjeringen.no/contentassets/d0c1da83bce94e2da21d5f631bbae817/kd_nasjonal-strategi-for-larerutdanningene_nett_11.10.pdf](https://www.regjeringen.no/contentassets/d0c1da83bce94e2da21d5f631bbae817/kd_nasjonal-strategi-for-larerutdanningene_nett_11.10.pdf) (in Norwegian)
grade of the 10-year compulsory school to the last grade of upper secondary education and training. The reform introduced a greater focus on basic skills and learning outcomes.

As outlined in the Ministry of Education’s Report (White Paper) no. 28 (2015-2016) to the Storting⁶, a revision of the National Curriculum is currently underway. The aim of this revision is to meet the challenges that are posed by wide-ranging and rapid changes in society. The revision aims to improve the coherence between the different parts of the curriculum, and to give pupils better opportunities for in-depth learning. Such learning develops competences that are crucial when facing change. Learning how to continuously acquire new knowledge and skills throughout life will be essential for young people today. The revision does not entail any changes to the number of subjects or the time allocated to each, nor to the general structure of the National Curriculum. The basic skills reading, writing, oral skills, numeracy and digital skills will still be central. In addition, three cross-curricular topics will be introduced: sustainable development, democracy and citizenship, and health and life skills.

From the 2017-2018 study year, the teacher education programmes (previously four-year programmes) have been replaced by five-year Master degree programmes. New national frameworks and national guidelines have been developed (see 1.1 above).

2. DIGITAL EDUCATION POLICY

2.1. National/ regional digital education policies

Digital skills are one of five basic skills in the curriculum, the others being oral skills, reading, writing and numeracy. Digital skills are defined in the Framework for Basic Skills and in the curriculum for each separate subject.

The Ministry of Education has published a digitalisation strategy for primary, secondary and vocational education for 2017-2021.⁷ This strategy has a dual goal, namely:

- Pupils shall develop the digital skills they need to participate in society and to succeed in private life, education and work, and

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⁶ [https://www.regjeringen.no/no/dokumenter/meld.-st.-28-20152016/id2483955/](https://www.regjeringen.no/no/dokumenter/meld.-st.-28-20152016/id2483955/) (in Norwegian)

⁷ [https://www.regjeringen.no/contentassets/dc02a65c18a7464db394766247e5f5fc/kd_framtid_fornyelse_digitalisering nettsteder.pdf](https://www.regjeringen.no/contentassets/dc02a65c18a7464db394766247e5f5fc/kd_framtid_fornyelse_digitalisering nettsteder.pdf) (in Norwegian)
• Schools shall effectively use the possibilities offered by digital technology and resources to enhance pupils’ learning outcomes.

The strategy underlines that digital competence does not only entail learning how to use digital tools, but must include elements like critical thinking, technological understanding, basic skills and social skills. Education has an important role in ensuring that society is able to deal with the digital developments taking place now and in the future. Society needs people with technical understanding, but also people who can understand the consequences of our technological choices for the individual and for society.

Starting with the school year 2016-2017, the government has introduced programming as an elective subject in lower secondary school. The subject aims to contribute to increased programming competence in schools, and to offer an opportunity for in-depth study for interested pupils. Currently, this is a pilot which will run for 3 years, with an evaluation planned for 2019. However, the government has already decided to introduce programming as a permanent elective subject from 2019, and to start trials of programming and modelling in upper secondary school as well.

The strategy “Teacher Education 2025. A National Strategy for Quality and Cooperation in Teacher Education” (see 1.1. above) underlines the need for increased professional digital competence for teachers, to enable teachers to evaluate and exploit the new working and learning methods offered by digital technology.

2.2. Responsibilities

The Ministry of Education and Research has the overall responsibility for the administration of the educational system and implementation of national education policy.

From 1 January 2018, the Directorate for Education and Training and the Norwegian Centre for ICT in Education have been merged to form a new Directorate. This Directorate is the executive organ of the Ministry and is responsible for the development of pre-primary, primary, secondary and vocational education, including curricula and digital development.

In each of Norway’s 19 counties, the County Governor represents the central government at regional level, contributing to the implementation of national education policies in schools at all levels. The County Governor ensures that appropriate schooling is provided for young people in compliance with regulations and also ensures the provision of adequate adult education facilities.

Municipalities are the school owners for primary and lower secondary schools, while counties are in charge of upper secondary schools. They are responsible for providing schools with sufficient learning materials, including ICT infrastructure and access to digital learning resources. They are also responsible for teacher CPD, local strategies regarding in-service training and school improvement for ICT.

Statped is a national service for special needs education. Statped assists local authorities in their work and provides special teaching services on both individual and system levels in areas where the local authorities lack sufficient competence. Statped is responsible for providing digital learning materials for special needs education.

Sources:

- http://www.kd.dep.no/ (in Norwegian)
- http://www.utdanningsdirektoratet.no (in Norwegian)
- http://www.statped.no (in Norwegian)
### 2.3. Specific digital education initiatives

<table>
<thead>
<tr>
<th>Area</th>
<th>Short description (objective, timeframe, target audience, key actors, number of schools, teachers involved, level of implementation (national, regional local))</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student identity management and School management systems</strong> (e.g. linking educational services and student data or supporting links between educational pathways for students)</td>
<td>Feide – joint electronic identity – is the preferred solution for secure identification in the education sector, chosen by the Norwegian Ministry of Education and Research. With Feide, students and staff have access to a wide variety of services related to research and education using just one username and password. Feide can be used by universities, university colleges and research institutions whose Internet service provider is UNINETT (institutions that are connected to the research and education network). In addition, Feide is available to all schools in the Norwegian primary and secondary education. All end users must be affiliated with a home organization that is a Feide participant. For more information about Feide: <a href="http://example.com">website (also in English)</a>.</td>
</tr>
<tr>
<td><strong>New learning spaces</strong> (reorganising classroom and school architecture Future Classroom Labs, Fab Labs, Makerspaces)</td>
<td>FCL in initial teacher education is a national spin-off project from the Future Classroom Lab project. The goal is to support institutions who are building FCLs for their teacher students. There are currently three teacher education institutions who have set up their own labs, and there are at least three more on the way. This is an independent initiative from the HEI. However the MoE provides financial support for digital developments in Teacher Education Institutions in the form of a Call launched in 2017 for a total of NOK 90 mill. over 3 years. Five ITE institutions have received funding for their projects, which focus on digital competence development of teacher educators.</td>
</tr>
<tr>
<td><strong>Game based education</strong> (content, tools and scenarios)</td>
<td>Revised grey paper: Video games in schools, written by expert teachers and The Norwegian Centre for ICT in Education. Most of the games which are discussed are off-the-shelf games like Minecraft, Gone Home, This War of Mine, The Walking Dead etc.</td>
</tr>
<tr>
<td><strong>Implementation of computing, coding</strong></td>
<td>Beginning with the school year 2016/17, a three-year pilot introducing programming as an optional subject has been</td>
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<tr>
<td><strong>computational thinking initiatives</strong> (progress, challenges and evaluation results (where available))</td>
<td>implemented in a number of secondary schools. Professional development for teachers of programming has been developed as open web-based courses: kurs.iktsenteret.no Revised grey paper: Programming in Schools, written by The Norwegian Centre for ICT in Education. Grey paper: <a href="http://iktsenteret.no/ressurser/notat-programmering-i-skolen">http://iktsenteret.no/ressurser/notat-programmering-i-skolen</a></td>
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<tr>
<td><strong>Self- or peer assessment tools/frameworks for teachers and students digital competence including certification</strong></td>
<td>A Professional Digital Competence Framework for Teachers has been developed and is offered as a guidance for policy developers, teacher educators, teachers, student teachers and others to use as a reference. It does not contain a self- or peer assessment tool, but may be used as the basis for development of such tools. Framework (in Norwegian): <a href="https://www.udir.no/kvalitet-og-kompetanse/profesjonsfaglig-digital-kompetanse/rammeverk-larerens-profesjonsfaglige-digitale-komp/">https://www.udir.no/kvalitet-og-kompetanse/profesjonsfaglig-digital-kompetanse/rammeverk-larerens-profesjonsfaglige-digitale-komp/</a> (in English): <a href="http://iktsenteret.no/ressurser/professional-digital-competence-framework-teachers">http://iktsenteret.no/ressurser/professional-digital-competence-framework-teachers</a></td>
</tr>
<tr>
<td><strong>Tests (ICT or non ICT based) for teachers and students to test their digital competence</strong></td>
<td>A MOOC for teachers' professional digital competence, with ECTS credits, will be launched at the start of the 2018-2019 school year.</td>
</tr>
</tbody>
</table>
## 2.4. Digital education priorities

<table>
<thead>
<tr>
<th>Area</th>
<th>High priority</th>
<th>Medium priority</th>
<th>Low priority</th>
<th>Reference to policy action measure (if any)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A: Digital Competence Development</strong></td>
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<td></td>
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<tr>
<td>Developing measures to support digital competence of future teachers</td>
<td>X</td>
<td></td>
<td></td>
<td>9</td>
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<tr>
<td>Developing measures to support digital competence of in service teachers</td>
<td></td>
<td>X</td>
<td></td>
<td>10</td>
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<tr>
<td>Developing measures to boost youth employability and entrepreneurship</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ICT for accessibility and inclusion: early school leavers, migrants, special educational needs etc.</td>
<td></td>
<td></td>
<td>X</td>
<td>11</td>
</tr>
<tr>
<td><strong>B: Curricula and Assessment</strong></td>
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<tr>
<td>Developing digital competence/media literacy of students</td>
<td></td>
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<td>X</td>
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<tr>
<td>Developing computer/programming skills/computational thinking skills</td>
<td></td>
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<td>X</td>
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<tr>
<td>Developing key competences</td>
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<td>X</td>
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<tr>
<td>Developing 21st century skills (critical)</td>
<td></td>
<td></td>
<td>X</td>
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10 “Kompetanse for kvalitet”, strategy for teacher professional development (https://www.udir.no/kvalitet-og-kompetanse/etter-og-videreutdanning/artikler-videreutdanning/strategien-kompetanse-for-kvalitet/)

11 The National Centre for Multicultural Education (http://nafo.hioa.no); Statped (http://www.statped.no)

12 See EC Key competences for lifelong learning: digital competence, math science technology, communication in mother tongue, communication in foreign languages, learning to learn, social and civic competences, sense of initiative and entrepreneurship, cultural awareness and expression. http://europa.eu/legislation_summaries/education_training_youth/lifelong_learning/c11090_en.html
<table>
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<tr>
<th>thinking, problem solving, communication, collaboration, creativity and innovation)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessing with ICT/ICT based exams</td>
<td>X</td>
</tr>
<tr>
<td><strong>C: System-wide innovation</strong></td>
<td></td>
</tr>
<tr>
<td>Developing measures to support school leaders in the integration of ICT</td>
<td>X</td>
</tr>
<tr>
<td>Piloting and validating innovative uses of ICT</td>
<td>X</td>
</tr>
<tr>
<td>Mainstreaming ICT in schools</td>
<td>X</td>
</tr>
<tr>
<td><strong>D: Mobile Devices</strong></td>
<td></td>
</tr>
<tr>
<td>Use of tablets</td>
<td>X</td>
</tr>
<tr>
<td>Use of mobile phones</td>
<td>X</td>
</tr>
<tr>
<td>Bring Your Own Device</td>
<td>X</td>
</tr>
<tr>
<td>Cloud computing/services</td>
<td>X</td>
</tr>
<tr>
<td><strong>E: Use of digital learning resources</strong></td>
<td></td>
</tr>
<tr>
<td>Developing educational content repositories/metadata</td>
<td>X</td>
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<tr>
<td>Supporting the development of open educational content and resources</td>
<td>X</td>
</tr>
<tr>
<td>Supporting the development of educational content/resources provided by publishers</td>
<td>X</td>
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<tr>
<td>Promoting teachers’ use, creation and sharing of educational resources</td>
<td>X</td>
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<tr>
<td><strong>F: Learning environments</strong></td>
<td></td>
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<tr>
<td>Developing/adapting flexible learning spaces</td>
<td>X</td>
</tr>
<tr>
<td>Linking formal, non-formal and informal learning using ICT</td>
<td>X</td>
</tr>
<tr>
<td>Providing equitable access to ICT (infrastructure, devices and content)</td>
<td>X</td>
</tr>
<tr>
<td>Providing a safe learning environment to students and teachers</td>
<td>X</td>
</tr>
</tbody>
</table>

13 DVM – the virtual mathematics school (https://dvm.iktsenteret.no)
14 IKT-plan (https://www.iktplan.no)
15 The Norwegian counties have a joint platform for publishing open digital content, the National Learning Digital Arena (http://ndla.no)
3. INTEGRATION OF DIGITAL TECHNOLOGIES IN THE CURRICULUM

3.1. **Digital technology based assessment**

The Norwegian Directorate of Education and Training has developed a system for managing digital exams, consisting of a test administration system and a test execution system. The test administration system - used by teachers/graders and management/administrative personnel to handle the administrative side of exams – e.g. to register students, graders and other users, allocate exams, register results and generate reports. The system manages identities, access and data related to the exam. This system is not used by students. The test execution system is the system where students log on to access the exam. It also allows the school's administrative personnel to manage and monitor the exam procedure and to access students' completed assignments. ICT-based assessment is offered in both lower secondary and upper secondary education (primary education has no centralised assessment). Some subjects offer a two-part exam in which the first part has no access to tools and the second part includes the use of ICT/internet.

In the spring of 2018, candidates in upper secondary education will have access to the open Internet during final written exams in seven subjects. Finding information and discussing current topics are important parts of these subjects, and evaluating sources and information forms part of the competences pupils are required to demonstrate.

In addition to traditional exams, the annual national tests in Norwegian, English and Mathematics are carried out digitally. All student data and the tasks for traditional and digital exams and national tests are organised in a national administrative system.

3.2. **School improvement with ICT**

Overall progress with ICT in Norwegian Schools is measured every second year in the Monitor survey\(^\text{16}\). Students, teachers and school leaders complete the survey and are asked about how much and in which ways ICT is used in their school.

To support the schools, counties and municipalities in implementing digital skills as an integrated part of the curriculum, the Norwegian Centre for ICT in

\(^{16}\) [https://iktsenteret.no/sites/iktsenteret.no/files/attachments/monitor/sammendrag_monitor_2016_en_0_1.pdf](https://iktsenteret.no/sites/iktsenteret.no/files/attachments/monitor/sammendrag_monitor_2016_en_0_1.pdf)
Education has developed the digital resource “IKTplan”\(^{17}\). IKTplan provides links and resources covering the competence goals in the curriculum. More than 300 of Norway’s 426 municipalities have started to use IKTplan as part of their strategy.

3.3. **The curriculum framework**

The national curriculum is issued as a directive and is a legal obligation for local authorities, schools and teachers all over the country. However, within schools there is room for individual choice and adaptation regarding the methods and activities used. For each subject, the learning goals and annual number of lessons are well defined but with scope for local adaptation. A school curriculum adapted from the national curriculum and based on local authority priorities is the operative document from which most other plans derive. Typically, the school curriculum has detailed descriptions of learning goals, methods, teaching materials and evaluation.

3.4. **Digital technologies in the curriculum**

ICT is implemented in the curriculum as one of five basic skills: oral, reading, writing, numeracy and digital skills. A framework\(^ {18} \) describes how these basic skills function at different levels, covering compulsory and secondary education. It is a generic framework created to serve as a reference document for developing and revising national subject-specific curricula. Grids have been developed for these five basic skills, describing their progression through the different levels of education. The cells of each grid show what is required at each level. The requirements are general and serve as a basis and point of reference for developing subject- and grade-relevant competence aims. The framework divides the digital skills into four sub-categories:

1) searching and processing,
2) producing,
3) communicating,
4) digital judgment.

With this framework, the Ministry of Education and Research has put great emphasis on ICT as an integral part of learning activities in schools. ICT should

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\(^{17}\) [https://www.iktplan.no](https://www.iktplan.no)

\(^{18}\) The national framework for basic skills ([https://www.udir.no/in-english/Framework-for-Basic-Skills/](https://www.udir.no/in-english/Framework-for-Basic-Skills/))
be part of learning activities for all students, at all levels of primary and secondary education and in all subjects. The actual implementation of ICT varies between the different subject-specific curricula, which often include specific learning aims for digital skills.

The national curricula are available online at the Directorate for Education and Training website: http://www.udir.no/Lareplaner/. See also section 1.2 on education reforms and section 2.1 on national digital education policies.

3.5. Students’ digital competence

Targets for students’ ICT competence are mainly related to the use of digital tools and information assessment and management skills. In the national curriculum, the use of different digital tools – such as word processing and spreadsheet and presentation programmes – are, together with the use of the internet, the most frequently mentioned targets. Moreover, the use of digital tools is emphasised in subjects such as arts and crafts, music and science. In addition, the curriculum includes legal and ethical topics related to intellectual property rights and the critical use of sources. Although not well defined in the national curriculum, e-safety is still an important target as defined in other policy documents.

3.6. Assessment of digital competence

As a basic skill integrated across the curriculum, ICT-related skills are assessed through tests and exams in all school subjects. A national test for assessing digital skills for students in year four is offered to schools, but is not obligatory.

4. DIGITAL LEARNING RESOURCES AND SERVICES

4.1. Digital content development

For the upper secondary school level, 18 of the 19 county authorities (all except Oslo) have come together to establish a digital learning resource portal, the National Digital Learning Arena (NDLA)\(^{19}\). The counties fund the initiative by allocating a portion of the funds that they receive to provide students with free learning resources. Some resources are bought from publishers and commercial

\(^{19}\) [https://ndla.no](https://ndla.no)
content providers. The remainder of the resources are developed by teachers and moderated by universities and university colleges. The content provided is freely available to all students and teachers. The NDLA aims at providing high quality digital learning resources in all upper secondary subjects.

Ovttas is an educational portal in three Sami languages and Norwegian that provides a complete and searchable overview of Sami teaching resources. The portal shares images, books, films, audio files and articles on themes related to teaching, as well as pedagogical tips. It is a resource for kindergarten staff, school teachers and others involved in the field of education. The portal was developed in co-operation with the Sami Parliament.

National Centres have a key role in developing the quality of education in specific areas, like mathematics, natural sciences, reading, and foreign languages. The centres offer freely available digital learning resources which can be found through the following links:

- [http://naturfag.no](http://naturfag.no) - Resources on natural science for teacher, developed by the Norwegian Center for Science in Education (In Norwegian)
- [http://viten.no](http://viten.no) - web based learning resources in science for grades 8-12 (available in various languages), service of the Norwegian Centre for Science Education
- [http://www.fremmedspraksenteret.no](http://www.fremmedspraksenteret.no) - The Norwegian National Centre for Foreign Languages in Education (available in various languages)
- [http://kraftskolen.no](http://kraftskolen.no) - website for pupils and teachers in elementary school and upper secondary education. It includes movies and movie series. Each series consists of films with related tasks, resources and overview of current competence goals (available in NO, some movies and series are in EN)
- [http://www.lesesenteret.no](http://www.lesesenteret.no) - Norwegian Centre of Reading Education and Research (available in EN)
- [http://www.matematikksenteret.no](http://www.matematikksenteret.no) - Norwegian Centre for Mathematics Education (available in EN)

Paper-based learning resources are still widely used by teachers in Norwegian schools, but publishers and other ed-tech companies are increasingly developing internet-based learning materials and apps. The main content providers have co-operatively developed and opened the Brettboka.no webshop to promote the use of e-books and ease procurement. Products from Norwegian ed-tech companies already have more than 40 million users worldwide.

The Government provides support for development of learning resources in subject areas where there is no basis for a commercial market. Through the Statped agency, the Government also supports the development of learning resources for special educational needs.

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20 [http://ovttas.no](http://ovttas.no)
The Government has launched a project to develop quality criteria for learning resources for mathematics. These criteria are meant to help schools and teachers evaluate available learning resources and make informed choices. The criteria may also be useful for developers of learning resources. The criteria will form the basis of a web-based guidance resource. The Government will also consider developing such criteria for other subjects.21

4.2. Content sharing and creation

The Norwegian Centre for ICT in Education has established ‘ICT in Practice’22, a portal that encourages teachers to share resources and practices.

The National Digital Learning Arena (NDLA)23 initiative provides learning resources that are freely available to all for several central subjects in upper secondary school. The resources are published under a Creative Commons licence, and teachers and students are encouraged to enhance and develop them. Each subject in the upper secondary school has an online editor to ensure quality.

Kart i skolen (School Maps)24 is a free service that offers updated Norwegian maps from many public agencies and research communities, as well as data adapted for schools. The service includes base maps, thematic maps and readymade teaching plans that use up-to-the-minute data. Since 2006, the Ministry of Education has had an agreement with ‘Norway Digital’, a national geographic data project with around 600 partners, concerning the delivery of geographic data used in the school maps service.

4.3. Accessibility for learners with disabilities and social inclusion

This is the responsibility of local authorities with the assistance of Statped25 which is uniquely qualified in the field of teaching resources for children, young people and adults with special educational needs. One of Statped’s main tasks is to further develop and implement technology that can benefit users on an individual basis (see also section 2.2 Responsibilities).

Reducing the number of early school leavers is a high priority in Norway. One of the few initiatives using digital resources is the Virtual School of Mathematics26.

21 https://www.regieringen.no/contentassets/dc02a65c18a7464db394766247e5f5fc/kd_framtid_fornyelse_digitalisering_nett.pdf (p.19)
22 https://iktpraksis.iktsenteret.no
23 https://ndla.no
24 https://kartiskolen.no
25 http://www.statped.no
26 https://dvm.iktsenteret.no
Digital resources are available free from The National Centre for Multicultural Education\textsuperscript{27} to migrants and minority students.

4.5. Learning Platforms

Almost all schools, both primary and secondary, use a learning platform. By far the most widely used platforms are Fronter and itslearning, while PedIt, Canvas and Microsoft’s Learning Gateway have smaller shares of the market. The integration of information and resources in a simple yet safe manner is a challenge that applies to all systems. Security concerns have been raised by relevant authorities, although security within the systems has improved over time.

The Norwegian Centre for ICT in Education has, on assignment from the Ministry of Education, developed the Virtual School of Mathematics\textsuperscript{28}. This is an online school for students from lower secondary education who wish to do the more advanced mathematics of upper secondary education. The virtual school uses a flipped classroom approach. The students use online resources to prepare for class, then they discuss and solve problems in a shared class using an advanced conference call system, and then they use a new set of online resources to process the content.

5. TEACHER EDUCATION FOR DIGITAL LEARNING

5.1. Assessment Schemes

A Professional Digital Competence Framework for Teachers\textsuperscript{29} has been developed by the Norwegian Centre for ICT in Education and was launched in May 2017.

The main purpose of the framework is to establish a common ground and a common vocabulary for describing teachers’ professional digital competence. The aim is for the framework to be used by national, regional and local authorities, by teacher education institutions, teacher educators, etc. as a reference in the development of national guidelines for the different teacher education programmes, of the institutions’ own study programmes and curricula, of professional development programmes and courses, of local competence development plans, etc. The framework has been very well received by both national and local authorities and teacher education institutions since its launch, and is already being used in the development of guidelines and curricula.

\textsuperscript{27} \url{http://nafo.hioa.no} \\
\textsuperscript{28} \url{https://dvm.iktsenteret.no} \\
\textsuperscript{29} \url{https://iktsenteret.no/ressurser/professional-digital-competence-framework-teachers}
The framework describes competences but does not provide specific indicators. It is not meant to be used for assessment purposes directly. However, it may be used as a reference for schools, teacher education institutions or others when developing such assessment.

5.2. School leader support

Local school authorities are responsible for creating local plans and strategies supporting schools in the use of ICT. School leaders can also use the IKTPlan\textsuperscript{30} resource, developed by the Norwegian Centre for ICT in Education, to support them in designing an ICT strategy for their school.

5.3. Digital technologies in initial teacher education

Given that digital skills are integrated in the National Curriculum as one of five basic skills, all new teachers should be prepared to integrate ICT in their teaching of all subjects. However, research has shown that teacher education institutions do not generally have a systematic approach in this area, and that much is left up to the individual teacher educator.\textsuperscript{31} A 2014 survey of new teachers showed that many did not feel they had received sufficient training in this area during their initial teacher education.\textsuperscript{32}

In 2017, the Norwegian Centre for ICT in Education launched the Framework for Teachers’ Professional Digital Competence, in part to address this issue and to facilitate and encourage a more systematic approach (see section 5.1).

The recent reforms in initial teacher education (see section 1.1.) have entailed new national regulations and new national guidelines for teacher education. These include professional digital competence as an important element of teacher education programmes. The Government’s Strategy for Digitalisation of Higher Education\textsuperscript{33} and “Teacher Education 2025. A National Strategy for Quality and Cooperation in Teacher Education”\textsuperscript{34} have brought increased focus to this area.

\begin{itemize}
\item \textsuperscript{30} \url{https://www.iktplan.no}
\item \textsuperscript{31} \url{https://www.nifu.no/publications/1027114/}
\item \textsuperscript{32} \url{https://iktsenteret.no/ressurser/rapport-nyutdannede-laerere-om-egen-digital-kompetanse-og-ikt-i-sin-utdanning}
\item \textsuperscript{33} \url{https://www.regjeringen.no/no/dokumenter/digitaliseringsstrategi-for-universitets--og-hoyskolesektor---id2571085/} (in Norwegian)
\item \textsuperscript{34} \url{https://www.regjeringen.no/contentassets/d0c1da83bce94e2da21d5f631bbae817/kd_nasjonal-strategi-for-larerutdanningene_net_11.10.pdf} (in Norwegian)
\end{itemize}
5.4. **ICT in in-service teacher education**

There is currently no individual right or obligation for teachers to take part in in-service training, although this is under consideration by the Ministry of Education. It is the responsibility of the school owner (the municipalities) to ensure that teachers have the necessary competences, and that they are given the opportunity for professional development as required.\(^\text{35}\)

Through the “Kompetanse for kvalitet” (Competence for Quality) strategy\(^\text{36}\), the Ministry supports a programme of grants/cover for teachers taking part in professional development. The courses offered through the programme are required to include topics related to teaching with digital technology.

5.5. **Training the Teacher Trainers**

There is no national systematic approach. However, one of the four main aims of the Government’s Strategy “Teacher Education 2025” (see section 1.1.) concerns strengthening the competence of teacher educators, and “strengthened professional digital competence” is held up as a key element.

In 2017, the Ministry of Education committed NOK 90 million for digitalisation of teacher education. Five teacher education institutions have applied and received funding for their projects, which will run for three years. The aim is to ensure that student teachers develop the professional digital competence that they need. The institutions are required to share the results of their projects on a national level.\(^\text{37}\)


\(^{37}\) [https://www.regjeringen.no/no/aktuelt/nar-90-millioner-til-prosjekter-for-a-digitalisere-larerutdanningene/id2577668/](https://www.regjeringen.no/no/aktuelt/nar-90-millioner-til-prosjekter-for-a-digitalisere-larerutdanningene/id2577668/)