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:

- Students mastering basic skills and achieving a good/high level of professional competences
- 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 budget\(^1\). 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 all-inclusive school.

To reach these objectives, the government is focusing on increasing teacher competence with the strategy “Promotion of the Status and Quality of Teachers – a joint effort for a modern school of knowledge”. New professional background requirements for teachers state that teachers need at least 30 credits to teach the subjects Norwegian, English and Mathematics in years 1–7. For years 8–10, they need at least 60 credits to teach the same subjects, and in upper secondary schools they need 60 credits or the equivalent to teach all subjects. According to the Norwegian Directorate of Education and Training as many as 29,000 teachers in Norway do not meet this requirement\(^2\).

In order to improve the situation and make the transition easier for teachers, the government is increasing the funding for in-service training. One of the core initiatives in this strategy is the development of a MOOC for the in-service training of mathematics teachers in ISCED level 1\(^3\).

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 content, structure and organisation of upper secondary education. It introduced changes to it’s substance, structure and organisation from the first grade (in a 10-year compulsory school) to the last grade in upper secondary education and training. The reform has a greater focus on basic skills and knowledge promotion through outcome-based learning.

The evaluation of the implementation of the Knowledge Promotion reform has shown that the integration of basic skills lacked the necessary cross-curricular coherency. In 2013, there was a revision to the subject-specific curricula of the five main subjects in order to better integrate the five basic skills and to ensure cross-curricular coherency. The revision was based on the new Framework for Basic Skills. For more information, see 3. The Curriculum and ICT.

From 2010 on, general teacher education is being replaced by new four-year programmes: differentiated primary and lower secondary teacher education programmes for years 1–7 and years 5–10. In 2017, these four-year programmes will be replaced by five-year programmes and become a master degree. Applicants for Teacher Education Programmes must have a minimum grade of 3 in Norwegian and Mathematics in upper secondary school (6 is the best grade) and a minimum of 35 study points in total (the maximum is normally 60

\(^1\) https://www.regjeringen.no/no/dokumenter/Prop-1-S-20142015/ (in Norwegian)

\(^2\) http://utdanningsspeilet.udir.no/innhold/leder/ (in Norwegian)

\(^3\) http://matematikkmooc.no (in Norwegian)
study points) in order to meet entrance requirements for teacher education. For the academic year 2016/17, applicants must have a minimum grade of 4 in Mathematics unless they have studied Mathematics for Natural Sciences or Social Sciences. As of 2009, these requirements have also been valid for the five-year integrated Master Programme in Teacher Education at universities.

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. To support the schools, counties and municipalities in implementing digital skills as an integrated part of the curricula, the Norwegian Centre for ICT in Education has developed a tool: “the digital resource IKTplan”. IKTplan provides links and resources covering the competence goals in the curricula. 250 of 428 municipalities have started to use IKTplan as part of their strategy.

2. ICT IN EDUCATION POLICY

2.1. NATIONAL/REGIONAL ICT 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. To support the schools, counties and municipalities in implementing digital skills as an integrated part of the curricula, the Norwegian Centre for ICT in Education has developed a tool: “the digital resource IKTplan”. IKTplan provides links and resources covering the competence goals in the curricula. 250 of 428 municipalities have started to use IKTplan as part of their strategy.

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. The Directorate for Education and Training is the executive organ of the Ministry and is responsible for the development of primary and secondary education.

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.

The Norwegian Centre for ICT in Education, established in January 2010, is an executive agency of the Ministry of Education and Research. The primary tasks of the centre are linked to long-term policy targets for the education sector. The centre contributes to the development and implementation of the Government’s education policies, in cooperation with relevant actors both nationally and internationally.

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 country’s 428 local authorities lack sufficient competence. Statped is responsible for providing digital learning material for special needs education.
Sources:
- http://www.kd.dep.no/
- http://www.utdanningsdirektoratet.no
- http://www.iktsenteret.no
- http://www.statped.no

2.3. SPECIFIC ICT INITIATIVES

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

There are no national initiatives. For upper secondary school the counties are providing 1:1 learning for all 182,905 students in the public schools. For primary schools and lower secondary schools the average coverage is more than 1:2.

Several municipalities have local initiatives to reach 1:1 learning in lower secondary and primary education. The municipalities of Trondheim and Bærum municipalities are good examples. Trondheim is buying netbooks for all of their students in lower secondary school and increases the coverage in primary school. Bærum is planning 1:1 coverage with tablets in all of their schools.

For further information:
- Jostein.kvisteroy@iktsenteret.no
- http://monitor.iktsenteret.no
- http://www.trondheim.kommune.no/skole/ikt/
- http://www.baerum.kommune.no

Learning Analytics

The Ministry of Education and Research is allocating 25 million NOK (~2,7 Mio. Euro) over the next five years to fund a research centre on learning analytics. The University of Bergen has been selected and are contributing 40 million NOK (~4,3 Mio Euro) to establish the centre.

The Norwegian Centre for ICT in Education has published a report on the current state of learning analytics to inform administrations and policymakers in Norway.

For further information:
- morten.soby@iktsenteret.no
- https://www.regjeringen.no/no/aktuelt/fagmiljo-for-analyse-pa-laring-til-bergen/
- https://iktsenteret.no/ressurser/læringsanalyse

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

On behalf of the Norwegian Ministry of Education, a MOOC for CPD in Mathematics has been developed by the Norwegian Centre for ICT in Education, the University of Tromsø and Sør-Trøndelag University College. The MOOC will start in the fall of 2015.

There are also MOOCs in digital competence for teachers, for both initial teacher training and CPD. These are available from the Sør-Trøndelag University College, the University College of Østfold and the Norwegian University of Science and Technology.

For further information:
- Eirik.overnes@iktsenteret.no
- http://matematikkmooc.no

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

Students with special needs have well-defined rights under Norwegian law and regulations. Support is the responsibility of the local authorities, with the assistance of Statped (see Section 2.2 Responsibilities). The use of ICT to help students with special needs is widespread, due to the generally good ratio of digital devices to students.

The National Centre for Multicultural Education develops digital resources in several of the large
migrant languages in order to increase their inclusion and participation in education and the society.

**ICT for learning initiatives targeted to boost employability and entrepreneurship**

There are no national initiatives specifically using ICT to boost employability and entrepreneurship. However, several ministries are supporting initiatives to increase entrepreneurship and employability that have more traditional approaches. One example is Ungt entreprenørskap. This project has a nationwide impact and co-operates with many partners, among whom are four ministries, the Confederation of Norwegian Enterprise, the Norwegian Confederation of Trade Unions and the Norwegian Teachers Union.

*For further information:*

- [http://www.ue.no](http://www.ue.no)

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

Several local authorities use cloud services such as Google Education and Microsoft Office 360. There are no national initiatives.

Due to the high coverage of digital devices in Norwegian schools, a high percentage of schools have good internet connectivity.

*For further information:*

- [Jostein.kvisteroy@iktsenteret.no](mailto:Jostein.kvisteroy@iktsenteret.no)

**Other ICT initiatives of interest to other policymakers**

The Virtual School of Mathematics is a twofold initiative of the Ministry of Education which:

1) enables high-achieving students in lower secondary education to take mathematics courses in upper secondary education
2) motivates low-achieving mathematics students.

The Norwegian Centre for ICT in Education has been given the project and has developed an online class for the high-achieving students and online resources for the low-achieving students.

FEIDE is an initiative of the Norwegian Ministry of Education which offers a common identity management system with single sign-on solutions for all digital resources in the education sector. Using FEIDE provides great benefits for students, schools and content providers. 90.8% of students in Norwegian schools are using FEIDE.

You Decide (Dubestemmer.no) is a teaching programme on privacy and netiquette for children and young people aged 9 to 18. The programme’s objective is to increase awareness, reflection and knowledge of privacy and the choices young people make when using digital media. Digital judgment is about making students be responsible and safe internet users. The programme’s web page had 60,000 unique users during the school year 2014/15.

The Norwegian Centre for ICT in Education has two Future Classroom Labs (FCL), part of the FCL network of EUN. They are used for workshops and teacher training. They are also often used for e-Twinning, e-safety and EUN online courses.

Beginning with the school year 2016/17, a three-year pilot project introducing programming as an optional subject will be implemented in a number of secondary schools.

*For further information:*

- [Frode.lobersli@iktsenteret.no](mailto:Frode.lobersli@iktsenteret.no)
- [Oystein.nilsen@iktsenteret.no](mailto:Oystein.nilsen@iktsenteret.no)
- [Elin.reite@iktsenteret.no](mailto:Elin.reite@iktsenteret.no)
2.4. ICT PRIORITIES

A: Digital Competence Development

<table>
<thead>
<tr>
<th>Area</th>
<th>High</th>
<th>Mid</th>
<th>Low</th>
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<tbody>
<tr>
<td>Developing measures to support digital competence for future teachers</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing measures to support digital competence for in-service teachers</td>
<td></td>
<td>X</td>
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<tr>
<td>Developing measures to support school leaders in the integration of ICT</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>ICT for learning initiatives targeted to boost youth employability and entrepreneurship</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ICT for accessibility and inclusion: early school leavers, migrants, etc and special educational needs</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Reference to policy action measures related to Digital Competence Development:

- Lillehammer University College is developing a MOOC for school based assessment for learning: [http://moodle.sell.no](http://moodle.sell.no)

B: ICT in Curricula and Assessment

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<th>Area</th>
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</tr>
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<tbody>
<tr>
<td>Developing computer/programming skills</td>
<td></td>
<td>X</td>
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<tr>
<td>Developing key competences</td>
<td>X</td>
<td></td>
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<tr>
<td>Developing 21st century skills (critical thinking, problem solving, communication, collaboration, and creativity and innovation)</td>
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<td>X</td>
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<tr>
<td>Assessing with ICT/ICT based exams</td>
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<td></td>
<td>X</td>
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<tr>
<td>Learning Analytics</td>
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Reference to policy action measures related to ICT in Curricula and Assessment:

- New national centre for Learning Analytics will be established later this year. See [https://www.regjeringen.no/nb/dokumenter/Prop-1-S-20142015/id2005428/?q=læringsanalyse&docid=PRP201420150001_KDDDDEPIS&ch=1](https://www.regjeringen.no/nb/dokumenter/Prop-1-S-20142015/id2005428/?q=læringsanalyse&docid=PRP201420150001_KDDDDEPIS&ch=1)

C: System-wide innovation

<table>
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<tr>
<th>Area</th>
<th>High</th>
<th>Mid</th>
<th>Low</th>
</tr>
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<tbody>
<tr>
<td>Piloting and validating innovative uses of ICT</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Mainstreaming ICT in schools</td>
<td></td>
<td></td>
<td>X</td>
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</tbody>
</table>

Reference to policy action measures related to System-wide innovation:

- [http://dvm.iktsenteret.no](http://dvm.iktsenteret.no)
- [http://iktplan.iktsenteret.no](http://iktplan.iktsenteret.no)

D: Mobile Devices

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<th>Area</th>
<th>High</th>
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<tbody>
<tr>
<td>Use of tablets (a)</td>
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<td>Use of mobile phones</td>
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<td>X</td>
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<tr>
<td>Bring Your Own Device (b)</td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>Cloud computing</td>
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E: Use of digital resources

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<tr>
<th>Area</th>
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<tbody>
<tr>
<td>Developing educational content repositories/metadata (a)</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Supporting the development of open educational content and resources</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Supporting the development of educational content/resources provided by publishers (b)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promoting the use and sharing of educational resources with teachers (c)</td>
<td></td>
<td></td>
<td>X</td>
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</tbody>
</table>

Reference to policy action measures related to the use of digital resources:
The Norwegian counties have a joint platform for publishing open digital content, the National Learning Digital Arena. [http://ndla.no](http://ndla.no)

### F: Learning environments

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<th>Area</th>
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<tbody>
<tr>
<td>Linking formal and informal learning using ICT</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Providing equitable access to ICT (infrastructure, devices and content) (a)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing a safe learning environment to students and teachers</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Commissioning ICT related research</td>
<td></td>
<td>X</td>
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3. THE CURRICULUM AND ICT

3.1. ICT BASED ASSESSMENT

In 2014, the Norwegian Directorate of Education and Training ruled that students are allowed to answer exam questions using the digital resources used at the schools in the specific subjects.

Digital exams are likely to replace paper exams within a few years, for both administrative and pedagogical reasons. The Norwegian Directorate of Education and Training has developed a system for managing a digital-based system. The system consists of a test administration system and a test execution system. One major advantage is that both evaluators now get access to all the written answers simultaneously and delays due to slow mail services are avoided. This makes the assessment efficient and safe.

ICT-based assessment is offered as an option in both lower secondary education and upper secondary education. Some subjects offer a two-part exam in which there is no access to tools in the first part and the second part includes the use of ICT/internet. In the second part of the Mathematics exam in lower secondary education, students are expected to demonstrate their competence by utilising a spreadsheet and other tools, e.g. tools for a computer algebra system (CAS) and dynamic geometry. These tasks can also be solved manually, but in that case the student cannot achieve the maximum score.

The Norwegian Directorate of Education and Training is also conducting trials on the use of the internet in national exams. In the spring of 2014, 54 schools with 1,100 students and eight subjects were selected to try out the free use of the internet in the exams. The results are promising, and the trials are continuing in 2015. A final report will be ready by the fall of 2015.

In addition to traditional exams, the annual national tests in Norwegian, English and Mathematics are carried out digitally. All student data and the tests for traditional and digital exams and national tests are organised in a common administrative system. An annual digital survey on the learning environment, which targets students, teachers and parents, has also been developed. In 2014, 405,916 students in years 5-13 (71.2%) participated in the survey. The results showed high scores on the issue of social well-being and medium scores on the question of the physical learning environment, and suggest that bullying is—to some extent—an issue at schools.

For further information:


3.2. SCHOOL IMPROVEMENT WITH ICT

The Norwegian Centre for ICT in Education has a digital resource, ‘Skolementor’ (School Mentor), to help schools progress with ICT. This is a web-based self-assessment tool which serves as a resource for reflection and supports school managers and administrators in their work on enhancing digital competence. The use of ‘School Mentor’ helps to strengthen the school’s development
plans and strategies in meetings as regards the demands for digital competence. The tool has been developed with the aim of ensuring that the school's investment in ICT, in terms of equipment and the raising of the digital competence level of the staff, is carried out within the context of realistic goals.

Overall progress with ICT in Norwegian Schools is measured every second year in the Monitor survey. Students, teachers and school leaders complete the survey and are asked about the level of ICT use in the school and how it is used.

The Norwegian Directorate of Education and Training conducts a biannual survey of Norwegian schools. The survey targets school leaders. A recurring theme is the use of digital devices and resources.

### 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. ICT IN THE CURRICULUM

ICT is implemented in the curriculum as one of five basic skills: oral, reading, writing, numeracy and digital skills. A framework 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 a part of learning activities in schools. ICT should be an integrated part of learning activities for all students, at all levels of primary and secondary education and in all subjects. The actual implementation of ICT for the promotion of learning differs between subject-specific curricula. The major change from previous plans for ICT in education is the specific educational use of ICT in different subjects, often with specific learning goals for digital literacy itself.

The Norwegian Centre for ICT in Education has, on behalf of the Ministry of Education, developed guidelines and resources for the proper and effective use of digital tools in the classroom.

The national curricula are available online at the Directorate for Education and Training website: [http://www.udir.no/Lareplaner/](http://www.udir.no/Lareplaner/) (see also section 1.1 Key educational challenges and priorities).

### 3.5. STUDENTS’ ICT 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. Finally, DelRett is a resource on intellectual property rights for both students and teachers ([http://delrett.no](http://delrett.no)).

### 3.6. ASSESSMENT OF ICT COMPETENCE

**Digital skills are cross-curricular** in Norway. ICT-related skills are assessed through tests and exams in all school subjects. In 2013, a **national test for assessing digital skills for all students in year four was introduced**. Students are tested in digital judgment, digital production, digital communication and the use of standard software. A **national test for year eight is under development**, but will be conducted for the first time in autumn 2015. This test will do a formative assessment of the students ICT skills. Although both of these tests are voluntary, 41,340 out of a total of 60,991 year four students participated in 2015.

### 4. DIGITAL LEARNING RESOURCES AND SERVICES

#### 4.1. E-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)**. 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 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, but there is still some way to go before this goal is fully achieved.

**Ovtas** 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, teachers and others involved in the field of education. The portal was developed in co-operation with the Sami Parliament.

National centres have established digital learning resources in several subjects such as mathematics, and natural sciences, mother tongue and foreign languages. For details, visit the following links:

- [http://naturfag.no](http://naturfag.no)
- [http://viten.no](http://viten.no)
- [http://www.fremmedspraksenteret.no](http://www.fremmedspraksenteret.no)
- [http://kraftskolen.no](http://kraftskolen.no)
- [http://www.lesesenteret.no](http://www.lesesenteret.no)
- [http://www.matematikksenteret.no](http://www.matematikksenteret.no)

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](http://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.

#### 4.2. CONTENT SHARING

The Norwegian Centre for ICT in Education has started **‘ICT in Practice’**, a portal that encourages teachers to share resources and practices. The portal is edited by the centre and has already collected many examples of best practice and resources.
The National Digital Learning Arena (NDLA) initiative provides learning resources that are freely available to all for several central subjects in upper secondary school. The resources are published under the 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) 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 LEARNER WITH DISABILITIES AND SOCIAL INCLUSION

This is the responsibility of local authorities with the assistance of Statped 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 welfare 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 Mathematics. Digital resources are available free from NAFO to migrants and minority students (see Section 2.3 Specific ICT initiatives).

4.4. WEB 2.0

There is no national initiative that addresses the use of Web 2.0 technology in teaching or education. Nevertheless it is widely used, especially in secondary schools.

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 Pedi, Canvas and Microsoft’s Learning Gateway have smaller shares of the market. Although these systems are well developed, digital learning platforms have limitations and bottlenecks that hinder their use. The NMC 2013 Technology Outlook for Norwegian Schools listed the success and dominance of the major learning platforms in Norway as an obstacle to educational innovation. Learning management systems are increasingly viewed as too rigid to foster true innovation in teaching and learning. 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. 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. The Virtual School of Mathematics is starting its third year of school in the autumn of 2015 (see also Section 2.3 Specific ICT initiatives).
5. TEACHER EDUCATION FOR ICT

5.1. ASSESSMENT SCHEMES

For in-service teachers the Norwegian Centre for ICT in Education provides Lærer Mentor. This tool enables teachers to systematically map their own digital competence. Using Lærer Mentor, the teacher will reflect on his or her own competence. The teacher will then be guided to appropriate resources to increase their digital competence.

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 Skole Mentor and IKT Plan to support them in designing an ICT strategy for their school (see also sections 3.2 School improvement with ICT and 2.1 national/ regional ICT policies).

5.3. ICT FOR INCLUSION

Inclusion for learners with disabilities and other special needs is the responsibility of the local authorities. In Norway, the first priority is to have all learners included in mainstream classes, and ICT is an important tool to ensure this. Statped supports the local authorities in accomplishing this goal (see also sections 2.2 Responsibilities and 2.3 Specific ICT initiatives).

5.4. ICT IN INITIAL TEACHER EDUCATION

In 2013, the Nordic institute for studies on innovation, research and education (NIFU) carried out an evaluation of the implementation of ICT in initial teacher education. They reported that ICT is not implemented well in this area and is not widely supported by the management at the relevant institutions. ICT often depends on just one or two persons for implementation, making the effort vulnerable. ICT is not taught as a separate subject in initial teacher education, and it is not well integrated in relevant subjects. Teacher training institutions have different approaches to how they organise teaching with ICT. Schools as well as authorities have expressed concern that ICT is not sufficiently integrated in initial teacher training and that newly educated teachers lack the ICT competence they need for working in schools. While the revised curriculum framework for initial teacher training has developed some points regarding digital competences, it does not generally include sufficient integration of ICT.

5.5. ICT IN IN-SERVICE TEACHER EDUCATION

“Promotion of the status and quality of teachers – a joint effort for a modern school of knowledge” is a government programme to create schools where students learn more.

Research and education are top priorities for the government, and the programme includes a number of measures to further improve schools:

- All students should experience teachers who are specialised in Maths, English and Norwegian
- Teachers will do a five-year master’s degree
- Students will need a higher grade in Maths to go into teaching
- Record investment in continuing education for teachers
- New career paths for teachers will be piloted
- Building up the skills of counties, municipalities and head teachers in order to create a knowledge-rich education system
- Building teams and strong subject-based communities within schools

The government will carry on investing in continuing education in order to help all teachers to obtain the qualifications they need. As of autumn 2015, 5,050 teachers will be offered places on courses. In total, the government will invest over 1.2 billion NOK (~108 Mio. Euro) in further and continuing
education for teachers in 2015. This will enable municipalities and other school owners to plan and organise continuing education programmes for their teachers in order to ensure that they satisfy the new qualification requirements. Teachers who already fulfil the requirements will also be able to top up their skills. Nevertheless, the level of training a teacher receives varies greatly and depends on local priorities and decisions. In-service training initiated locally is provided by universities, university colleges or private companies on a commercial basis. Courses on the pedagogical use of ICT are available both as learning/blended learning courses and as traditional courses.

5.6. TRAINING THE TEACHER TRAINERS

There is no formal model or system for teacher trainers in Norway. Commercial providers and the universities and university colleges providing initial teacher education do most of the in-service training.

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