3 Five-year integrated research-based teacher education for primary and secondary school

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Introduction

Teacher education (TE) in Norway is nationally mandated and subject to much political attention because education is an important social and cultural phenomenon with a significant place in policy and everyday life. TE "has been a subject of debate in Norway ever since the teaching profession rose to become a central vocation during the nation-building process in the 19th century" (Norwegian Ministry of Education and Research, 2018, p. 5). A main purpose of the latest TE reform implemented in 2017 is to raise the status and professionalism of teachers. The ambition of the Norwegian government is to permanently strengthen the teaching profession, thereby strengthening the quality of schooling overall by introducing a five-year master's degree as a requirement for all newly qualified teachers in primary and secondary school. In this anthology, we argue that we have accomplished something extraordinary in Norwegian TE for primary and secondary schools by ensuring that TE is research- and practice-based for all levels of education. This chapter describes the Norwegian TE context of today and the national requirements for the five-year integrated master programs for primary and secondary schools. To give the reader a background understanding of the various innovations in our TE programs presented in Chapters 4–16, we exemplify how the various programs are organized and structured at UiT The Arctic University of Norway (UiT) and University of Oslo (UiO).

The Norwegian teacher education context of today

The five-year integrated and research-based TE programs reported on within this anthology educate professionals for the Norwegian educational system, which is organized into three levels: grades 1–7, or primary level; grades 8–10, or lower junior secondary level; and grades 11–13, or upper senior secondary level. Schooling is built on the principle of nondifferentiated classes while adapting to the individual needs of students. Curriculum reforms often occur and are the subject of much political attention. The current core curricula for grades 1–13 have the three interdisciplinary topics of health and life skills,

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democracy and citizenship, and sustainable development (UDIR, 2020) as an umbrella across the curriculum, connecting with other academic subjects. Attending school is compulsory and free of cost for children and adolescents between the ages of 6 and 16. All young people between the ages of 16 and 19 have a statutory right to three years of upper secondary education, which can be either vocational training or preparation for further study in higher education. Fewer than 4% of students attend private schools in compulsory education and fewer than 8% in upper secondary schools.

Since the 1970s, the higher education system in Norway has undergone numerous mergers, with fewer and larger institutions offering TE. In the past decade, reforms, research, and innovation in TE in Norway have emphasized the development of a research-based and practice-oriented TE for student teachers to become professional teachers who can continually develop their own and their school's collective practices. In *Teacher Education 2025—National Strategy for Quality and Cooperation in Teacher Education*, there is a stated goal that TE at the universities and university colleges should be research based and that professional teachers shall be educated in close partnership with schools (Norwegian Ministry of Education and Research, 2018). Reforms are used as a "governmental measure intended to improve quality of TE and school efficiency" (Werler, 2017, p. 134). This is significant because it emphasizes the position of the teacher rather than the practice of teaching. Another consequence is a strong focus on standards. According to Brennan et al. (2017), "[R]ising standards in education and raising attainment in schools will be managed effectively only if teacher quality is improved. The best way to reform the teaching profession, according to this policy movement, is by changing the teacher education programmes" (Brennan et al., 2017, p. xi). In Norway, school policy has been "steered" by politicians to a large extent. Even though there are promising possibilities embedded within its policy agenda, there is a sense of urgency regarding the many reforms (Hardy et al., 2020). Today, the stated aim of the national policy strategy for TE in Norway outlined in the strategy document *Teacher Education 2025* is the following:

> to lay the basis for attractive TE programs of high quality. It is a goal to have academically strong and well-organized teacher education providers. The study programs must be perceived to be academically challenging and rewarding by both staff and students.
>
> (Norwegian Ministry of Education and Research, 2018, p. 6)

Furthermore, the national strategy document emphasizes the need for teachers to develop research-based skills as part of their work and engage in collaborative learning with their colleagues. TE should "educate professional practitioners. Teachers need to acquire solid, research-based skills and to have access to continued professional development within a professional learning community

to make informed decisions in their day-to-day work in kindergartens and schools" (Norwegian Ministry of Education and Research, 2018, p. 5). The new expectations, however, signal a lack of research-based competence among teachers (Trippestad et al., 2017). Norway's five-year integrated master's program and strong focus on research can be seen as an example of education for innovative and autonomous teachers who have the ability to develop and change the school. Thus, on the one hand, the policy seems to build on progressive and constructivist views of education like those of John Dewey and Lev Vygotsky and ideas about teachers being educated to become autonomous and professional in their work. On the other hand, there is a tension between the politicians' domination of the TE by using documents that indicate a lack of trust in the upcoming teachers and schools (Kemmis et al., 2020), thus setting the grounds for the reforms.

In the following paragraphs, we introduce the reader to the three current models for organizing TE in five-year integrated master's programs for primary and secondary school (grades 1–7, 5–10, and 8–13 have separate programs). In addition to the three integrated five-year master's programs, there is a one-year Postgraduate Certificate in Education program (grades 5–13) that requires an already completed master's degree. The four main TE programs in Norway are illustrated in Table 3.1.

In this book about ProTed, we concentrate on the three integrated five-year master's programs, which are marked with an (*) in Table 3.1. In the following, we describe the central courses specific for primary and lower secondary school TE (grades 1–7 and 5–10), after which we describe TE for lower and upper secondary school (grades 8–13). We argue that these three varying and overlapping TE programs have some fundamental similarities that may be seen as hallmarks of Norwegian TE and that educational research, higher education, and politics in Norway have been crucial for the development of teaching as a profession, including improving the status of the teaching profession. A closer look at the latest reforms for TE shows that they have influenced each other. TE programs for grades 1–10 have been expanded to five years, becoming more academic and more research oriented, while the 8–13 program was shortened to five years and with an increased orientation toward practice.

The master's thesis, required by all TE programs, has had the greatest impact on the transformation of TE and therefore requires a description. The MA thesis should be research based and related to the professional field teachers will be entering. The typical MA thesis written by student teachers is between 30 and 45 ECTS points, consisting of an introduction, theory, methods, results, analysis, and discussion/conclusion. Students have an internal advisor to guide them in their work. The thesis is judged on a scale of A–E (pass) and F (fail) by an internal and external evaluator at the end of the professional five-year study. Coursework during the last three semesters, including methods and advanced subject didactics, guides students on the development of their MA thesis.

Table 3.1 Four different teacher education programs in Norway for primary and secondary school

Teacher education programs	*Primary and lower secondary school (age 6–15)*			*Upper secondary school (age 16–19)*
	Lower primary level grades 1–4	*Upper primary level grades 5–7*	*Lower secondary level grades 8–10*	*Upper secondary level grades 11–13*
Master of Teacher Education for grades 1–7 (4 teaching subjects)*				
Master of Teacher Education for grades 5–10 (3 teaching subjects)*				
Master of Teacher Education for grades 8–13 (2 teaching subjects)*				
One-year Postgraduate Certificate in Education for grades 5–13 (1–3 teaching subjects)**				

* Five-year Master of Education programs.
** Students have been required to have a master's degree to be admitted to these programs since 2019.

Five-year Master of Education programs for primary and lower secondary schools, exemplified by the UiT model

Norwegian programs for primary and lower secondary schools TE have undergone six reforms since the mid-1970s, with the latest launched in 2017 (Trippestad et al., 2017). The most recent reforms have moved this TE from an experience-based tradition to a stronger focus on research and practice development, resulting in a paradigm shift inspired by Finnish educational reforms (Afdal & Nerland, 2014; Lillejord & Børte, 2017; Stølen, 2016). This shift has been implemented through two reforms: first in 2010, with a stronger focus on in-depth knowledge and research, and later in 2017, with a change from a four-year program at the bachelor's level to a five-year master's program (300 ECTS).

An international expert panel (the APT) was commissioned by the Norwegian Agency for Quality Assurance in Education (NOKUT) with the aim of following and evaluating the latest TE reform for primary and lower secondary schools. The APT report *Transforming Norwegian Teacher*

Education (Cochran-Smith et al., 2020) provides a description of the goals for the Norwegian TE reforms:

> Norway's reforms aim to establish stronger links between theory and practice and to make research central throughout the program. This is being accomplished in part through ground-breaking 5-year integrated programs and through the highly ambitious requirement that all student teachers complete master's theses that are practice-oriented and that treat research and practice as inherently inter-connected rather than as dichotomous. Norway's reforms also reflect high expectations regarding research rigor and educators' research capacity. This is being accomplished through sustained, innovative, and high-priority efforts to build research capacity for Norway's school-based teachers and leaders, for teacher educators at higher education institutions, and for student teachers.
>
> (Cochran-Smith et al., 2020, p. 48–49)

This latest national reform is intended to have high academic quality and ensure coherence between subjects, subject didactics, pedagogy, and practice placement. TE programs are expected to have close interactions with professional practice and the surrounding municipalities governing schooling. TE programs for primary and lower secondary schools are organized into two programs adjusted to the Norwegian educational system, namely grades 1–7 and grades 5–10 (The Norwegian Ministry of Education and Research, 2016a, 2016b). TE institutions have partnership agreements with schools for practice placement, and those who mentor student teachers are required to complete a formal mentoring course (minimum 15 ECTS) provided by TE institutions. The vision of the new TE is to cultivate a teacher identity that is marked by an inquiring attitude toward teaching. The national requirements for five-year integrated TE in grades 1–7 and 5–10 include the following:

- The program consists of 300 ECTS (five years) qualifying for a master's degree. The degree qualifies for postgraduate studies in education.
- The course of study should include at least four subjects for 1–7 and three for 5–10 and their associated didactics. All school subjects should be profession-oriented TE subjects and include subject didactics.
- Pedagogy and pupil-related skills (pedagogy), 60 ECTS, should be included, where knowledge of religion, philosophy of life, and ethics should make up a module equivalent to 15 ECTS.
- The teaching practice must consist of at least 110 days of supervised and assessed practice and at least five days of organized observation in school early in the course of study. Teaching practice must be a part of the program in four of the five years, and there should be progression in the practice placement. It should be an integrated element in all subjects forming part of the program.

- The TE should qualify the student teachers to provide instruction in Sami themes, including knowledge of the status of indigenous peoples globally, along with how to safeguard Sami pupils' right to education in accordance with the Education Act and the current national curriculum for primary and secondary education and training.
- In the third year of study, the student teachers should write a profession-oriented R&D paper combining a school subject and the subject pedagogy and pupil-related skills. Students will deliver a profession-oriented and practice-based master's thesis (minimum of 30 ECTS) at the end of the fifth year related to subject 1.

The guidelines are prescriptive for the institutions' provision of TE program and leave room for innovation and institutional adaptation in local planning and program development. At UiT, about 75 teacher candidates from grades 1 to 7 and 5 to 10 graduate each year. The two programs with their subjects are organized as a "matrix" and coordinated by the Department of Education, a unit under the Faculty of Humanities, Social Sciences, and Education. The subjects are steered by a coordinator responsible for preparing their own action plans for the programs based on the evaluation, study barometer, and the department's action plan. A steering committee, including the leader of the department, representers of the teacher educators, the student teachers, and the practice teachers, oversees the quality of the programs.

In Table 3.2, the current model for integrated TE for grades 1–7 at UiT is exemplified by the distribution of obligatory and examples of optional courses. Professional subjects, Norwegian (subject 1), mathematics (subject 2), and research and development courses (R&D) are compulsory courses. For the optional courses (subjects 3 and 4), student teachers can choose from among English, KRLE (Christianity, religion, beliefs, and ethics), physical education, arts and crafts, food and health, music, science, and social studies. In addition, the student teachers for grades 1–7 choose among the following six subjects for their master's subjects: beginner's education (literacy), English, mathematics, science, Norwegian, or social studies.

The current model for integrated TE for grades 5–10 at UiT differs from the program for grades 1–7. Subject 1 is identified as the master's subject and student teachers can choose between English, mathematics, science, Norwegian, and social studies. Subject 2 is chosen between English, mathematics, science, Norwegian, social studies, KRLE (Christianity, religion, spirituality, and ethics), physical education, arts and crafts, food and health, and music. Subject 3 is chosen between KRLE, physical education, arts and crafts, food and health, music, science, and social studies. Table 3.3 gives an example of the distribution of courses in the current model for integrated TE for grades 5–10.

The TE program at UiT builds on the experiences of seven years of piloting five-year integrated TE programs (see Chapter 5). All subjects are taught in the Department of Education with an integrated study design, allowing for close collaboration between the teacher educators of the academic subjects

Table 3.2 The UiT model for integrated teacher education for primary schools (grades 1–7), exemplified with Norwegian as subject 1 (master subject), mathematics as subject 2, arts and crafts as subject 3, and science as subject 4

Semester						Days in practice
10 9	Method 15 ECTS		Subject 1 Early Years Education in Norwegian Master's thesis 45 ECTS			
8	Subject 1 Early Years Education in Norwegian Master course 30 ECTS					10
7	Pedagogy 30 ECTS					20
6 5	Subject 4 Science 30 ECTS			Subject 1 Norwegian 15 ECTS	R&D paper 15 ECTS	20 10
4 3	Pedagogy 10 ECTS	R&D 5 ECTS	Subject 1 (obligatory) Norwegian 15 ECTS	Subject 2 (obligatory) Mathematics 15 ECTS	Subject 3 Arts & Crafts 15 ECTS	15 15
2 1	Pedagogy 10 ECTS	R&D 5 ECTS	Subject 1 (obligatory) Norwegian 15 ECTS	Subject 2 (obligatory) Mathematics 15 ECTS	Subject 3 Arts & Crafts 15 ECTS	15 5

Table 3.3 The UiT model for integrated teacher education for upper primary and lower secondary schools (grades 5–10) exemplified with Norwegian as subject 1 (master's subject), mathematics as subject 2, and science as subject 3

Semester						Days in practice
10 9	Method 15 ECTS		Subject 1 Norwegian Master's thesis 45 ECTS			
8	Subject 1 Norwegian Master course 30 ECTS					10
7	Pedagogy 30 ECTS					20
6 5	Subject 1 Norwegian 20 ECTS		Subject 2 Mathematics 20 ECTS	R&D paper 15 ECTS	R&D 5 ECTS	20 10
4 3	Pedagogy 10 ECTS	R&D 5 ECTS	Subject 2 Mathematics 30 ECTS	Subject 3 Science 15 ECTS		15 15
2 1	Pedagogy 10 ECTS	R&D5 ECTS	Subject 1 Norwegian 30 ECTS	Subject 3 Science 15 ECTS		15 5

and the professional subjects. Practical training is an integrated part of all subject studies and involves collaborating with approximately 35 schools, of which 10 are university schools (see Chapter 11). The progression of academic literacy, research literacy, and teacher proficiency throughout the program, along with how this is coordinated, is further described in Chapters 6 and 7.

Five-year Master of Education programs for secondary schools, exemplified by the UiO model

Traditionally, the way of becoming a subject teacher for lower and upper secondary schools in the Norwegian school system (grades 8–13) was to earn an academic subject degree at the bachelor's or master's level, followed by a year of postgraduate study in education. In 2003, the Norwegian authorities initiated a quality reform that reflected changes in higher education in Europe referred to as the Bologna process. Together these reforms allowed for the establishment of the integrated Master of Education program for TE for secondary schools. The new program qualified students for the position of lecturer in schools, thus becoming an alternative to the already existing add-on year. The latest reforms to the TE program for secondary schools were made in 2013. The national goals for preparing teachers for teaching in secondary schools include providing high-quality programs, integrating academic subjects, professional subjects (including pedagogy and subject didactics), and school practice. All TE programs in Norway are regulated by national guidelines that provide the minimum requirements for institutions. The national requirements for five-year integrated TE for secondary schools (grades 8–13) include the following:

- The program consists of 300 ECTS (five years) qualifying for a master's degree. The degree qualifies for postgraduate studies in education.
- Three subjects make up the minimum standards for the program:
  1) Academic major—with a minimum of 160 ECTS in a subject giving teaching competency for grades 8–13.
  2) Academic minor—with a minimum of 60 ECTS in a subject giving teaching competency for grades 8–13.
  3) Profession-oriented pedagogy—with a minimum of 60 ECTS consisting of 30 ECTS generic pedagogy and 30 ECTS in subject didactics related to the major and minor subjects in points 1 and 2 above.
- The profession-oriented pedagogy subject shall include scientific theory and methods; be connected to the practice field (schools); include knowledge about how pupils learn in a multicultural landscape and with different backgrounds; and include knowledge about youth culture.
- The teaching practice must consist of at least 100 days of supervised and assessed practice and must be connected to all three subjects mentioned above. The teaching practice must be a part of the program in four of the five

years, including progression in practice competency. Successful completion of practice is required to advance the study program. Student teachers should have practice in both lower and upper secondary schools.
- Student teachers deliver a master's thesis (minimum of 30 ECTS) at the end of the program and related to the major academic subject.

Institutions providing TE for grades 8–13 are free to organize study programs, as long as the minimum requirements are met. At UiO, about 200 teacher candidates graduate each year, making UiO the largest TE program for five-year integrated TE for secondary schools in Norway. The UiO model is a highly integrated study program involving five faculties and collaboration with 130 partner schools. The program consists of five specializations—English, foreign languages, culture and social studies, Norwegian, and science (mathematics and natural science)—and is seen as the largest and most complex interdisciplinary program at the university. Student teachers choose courses to fulfill their major and minor academic subjects from regular discipline offerings taught within an academic faculty (e.g., math, and science or humanities), while the professional courses are taught at the Faculty of Educational Sciences. The program is organized as a "matrix" and is coordinated by the Department for TE at the Faculty of Educational Sciences. A steering committee, including the deans of the five faculties and two student teachers, oversees the quality of the program, ensuring that the content and activities of the TE program are anchored across faculties and departments. The UiO model uses an integrated study design to provide coherence within the system and for student teachers. Table 3.4 shows the current model and the typical distribution of courses over five years, including academic major and minor subjects, professional courses, and practice.

Chapter 4 discusses the internal coherence found in professional courses, including pedagogy, subject didactics, and practice. The model assumes progression in research literacy leading to the master's thesis and in all activities and courses toward becoming a professional teacher. In the final three semesters, student teachers can choose a discipline-oriented or subject didactic master's specialization in their major subject. In Chapters 8 and 9, we show how student teachers work with research projects that will provide meaning for their coming profession. A profession-oriented mentoring program is offered to all student teachers throughout the entire program, where a focus is on the development of a teacher identity (see Chapter 13). From 2021 to 2022, all TE programs for grades 8–13 were evaluated by an external academic committee. Concerning UiO, the committee stated: "It is the committee's overall assessment that UiO has managed to create an excellent, well-structured and well-functioning TE that is well informed by research in the field, not least conducted by UiO's own researchers" (NOKUT, 2022, p. 207) (author translation).

Table 3.4 The UiO model for integrated teacher education for secondary schools exemplified by math and science courses

⟵ Profession-oriented mentoring program ⟶	10	Master's thesis Physics or Science Education (30 ECTS)			
	9	Physics or Science Education	Physics or Science Education	Physics or Science Education	15
	8	Physics and Math education in practice	Physics or Science Education	Methods	
	7	Professional courses (pedagogy/subject didactics)			45
	6	Physics Education	Professional courses (pedagogy/ subject didactics)		25
	5	Thermodynamics and Statistical Physics	Philosophy	Geometry	
	4	Quantum Physics	Oscillations and Waves	Astronomy	
	3	Linear Algebra	Electromagnetism	Professional courses (pedagogy/ subject didactics)	15
	2	Calculus and Linear Algebra	Probability and Statistical Modeling	Classical mechanics	
	1	Calculus	Introduction to Programming with Scientific Applications	Mechanics and modeling	
Semester		10 ECTS	10 ECTS	10 ECTS	Days in practice

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