



How different national strategies of implementing digital technology can affect teacher educators

A comparative study of teacher education in Norway and New Zealand

Siri Sollied Madsen

Associate professor, Department of Education, UiT the Arctic University of Norway, Tromsø, Norway
siri.s.madsen@uit.no

Sara Archard

Lecturer, Faculty of Education, the University of Waikato, Hamilton, New Zealand
sara.archard@waikato.ac.nz

Steinar Thorvaldsen

Professor, Department of Education, UiT the Arctic University of Norway, Tromsø, Norway
steinar.thorvaldsen@uit.no

ABSTRACT

Over ten years have passed since Norwegian educational reform implemented the use of digital tools as a required basic skill in all subjects and at all levels of Norwegian schools. However, government surveys show that there is still a significant gap between the intention of educational policies and what is actually practiced in Norwegian education. This gap has often been attributed to practitioners' skill deficiency. This paper challenges the notion of practitioners' skill deficiency as being the sole causal explanation for lack of progress, and attempts to explore this through a comparative study between initial teacher education in Norway and New Zealand. Our analysis has shown some significant differences between the countries, and based on our findings, this article discusses how such differences may be connected to policy development and political influence. This analysis contributes to a broader understanding of the complexity behind this gap. Understanding the bigger picture is essential for being able to work constructively towards diminishing the difference between policy intentions and practice in the future. Our findings suggest that top-down governance of the educational use of digital technology could create resistance among teacher educators. It could therefore be understood as counterproductive regarding progress. Prioritising policy goals above pedagogical goals in this field is contrary to teachers' understanding of teacher proficiency.

Keywords

Teacher educator, higher education, curriculum, digital development, political governance, education, digital technology, curriculum

INTRODUCTION

This article is based on a study conducted in both Norway and New Zealand, involving teacher educators at initial teacher education programmes at the Arctic University of Norway (UiT) and at the University of Waikato (UoW), New Zealand. A survey was conducted to investigate the gap between policy and practice regarding the use of digital tools in higher education (Norgesuniversitetet, 2015; Ørnes, Wilhelmsen, Breivik, & Solstad, 2011). The results from the quantitative analysis, published in Madsen, Thorvaldsen, and Archard (2018) show an interesting picture regarding the difference between the two countries.

When comparing the two countries it was evident that despite the similarities, there was some significant differences in the results of the survey. One finding indicated that there is a statistically significant difference in opinions between Norwegian and New Zealand teacher educators regarding whether or not the use of digital tools is essential to good teaching (see Figure 1). In Norway the majority disagreed with the statement that digital tools are essential to good teaching, while in New Zealand the majority agreed.

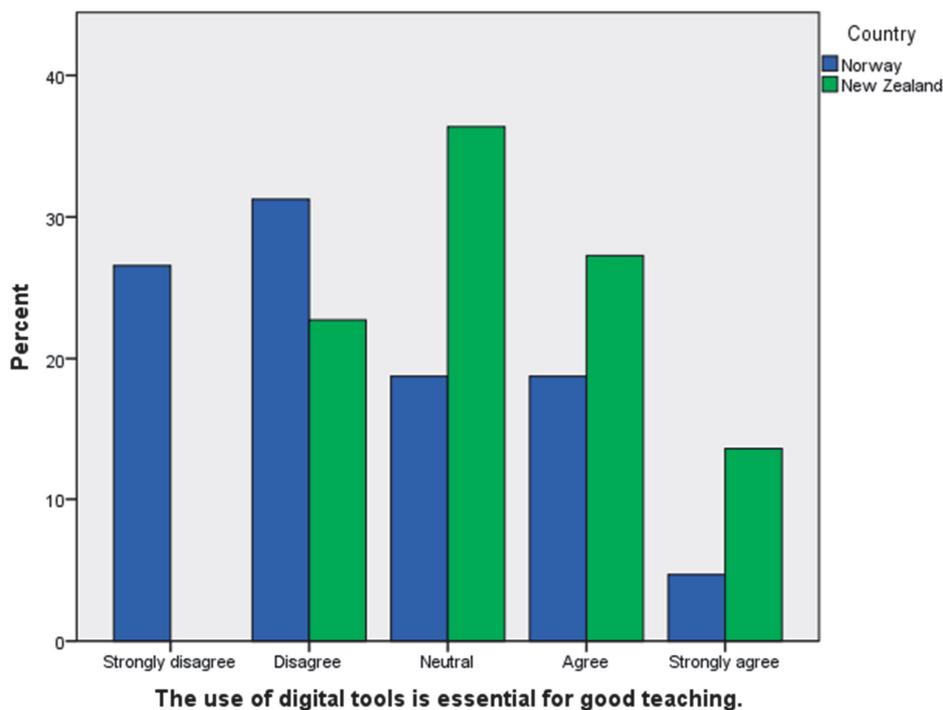


Figure 1: The use of digital tools is essential for good teaching (Madsen et al., 2018)

Regarding whether expectations concerning the impact of digital tools in academic debates at the university are exaggerated, the findings between the two countries were also significantly different (see Figure 2). As described in Madsen et al. (2018), only 12.5% of the Norwegian respondents replied that they disagreed or strongly disagreed, while 50% of the participants responded that they agreed or strongly agreed with the statement. The majority of the New Zealand participants on the other hand disagreed. 36.3% disagreed or strongly disagreed with the statement, while 25% agreed or strongly agreed.

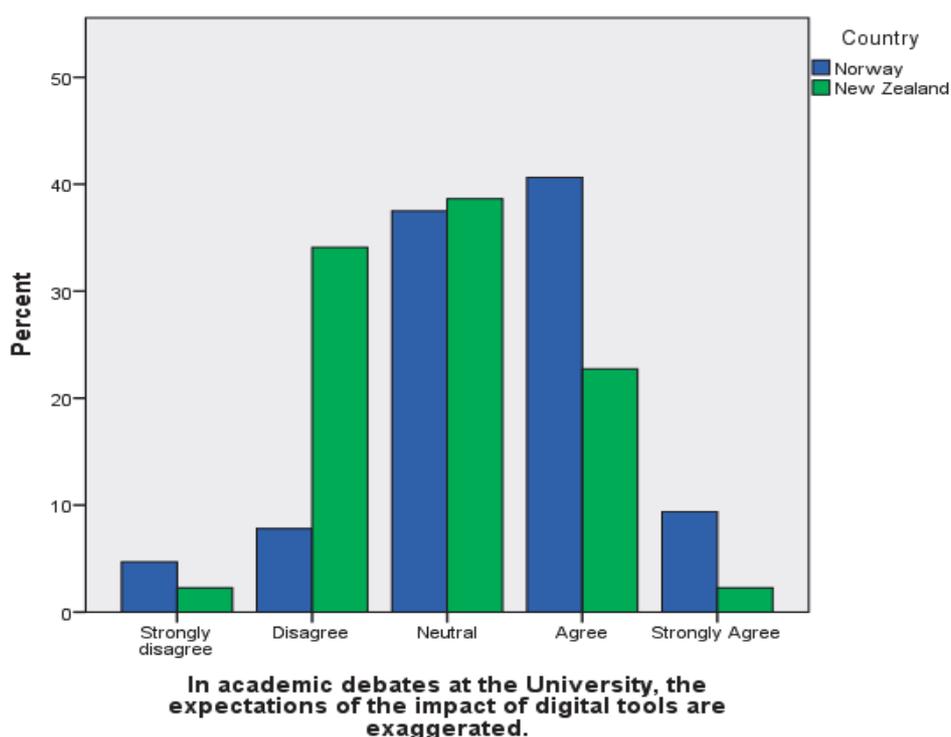


Figure 2: In academic debates at the University, the expectations of the impact of digital tools are exaggerated (Madsen et al., 2018)

Regression analysis carried out separately for each country also revealed an interesting story. It appears from the analysis that the influence and contribution of digital practice is carried out quite differently in the two countries. In Norway, the influence and contribution is dominated by attitude, while in New Zealand it is dominated by digital competence. At the same time, digital competence is somewhat lower in New Zealand than in Norway (Madsen et al., 2018). Norway and New Zealand are in many ways similar countries and have similar educational systems. That makes us wonder how the difference in responses between the two countries can be explained. One difference that would be relevant to look deeper into is the political governance of education and the policy differences between the two countries:

In what way are the Norwegian and New Zealand educational systems governed regarding digital technology in education?

THEORETICAL AND METHODOLOGICAL FRAMEWORK AND BACKGROUND

This article is based on an explanatory sequential design, where inter-method mixing is used (Johnson, Onwuegbuzie, & Turner, 2007). We initially conducted a survey to map teacher educators' digital competence, attitudes toward digital technology and their own use of digital tools. The results were analysed, but they also served as basis for strategically

selecting participants for interviews. We conducted maximum variation sampling (Creswell, 2013, p. 156) among the digitally skilled participants. The category *attitudes towards digital technology* painted a spread picture of the participants within both countries, and participants who responded as most critical and most positive towards digital technology were selected for interviews. This was done to strive for informed answers, and to cover the span of attitudes.

Participants

Sixty-seven of the eighty invited teacher educators from UiT responded to the survey, a response rate of 83.75%. At UoW, forty-seven out of sixty-four invited to participate in the study responded, a response rate of 73.44%. The study was strategically limited to sixty-four Norwegian respondents and forty-four New Zealand respondents, due to a chosen criterion to only include the teacher educators with 30% teaching or more, versus those with more administrative tasks. The total number of participants in the target group is N=108. For the interviews that were conducted, ten teacher educators from Norway and ten teacher educators from New Zealand were selected. Among the selected participants within each country five were positioned as critical and five were positioned as positives. This amounted in a total of twenty interviews.

Ethics

The study as a whole was approved by NSD (Norwegian Centre for Research Data). The New Zealand part of the study was in addition approved by the Faculty of Education at the University of Waikato Research Ethics Committee.

Survey based on Theory of Action

The survey was based on the Theory of Action by Argyris and Schön (1978), a theoretical framework that offers an analytical distinction between attitudes towards practices (espoused theory) and actions in practice (theory in use). This was used to structure and describe the data. To gain insight into the respondents' theories in use, the teacher educators at both universities were asked about the extent of their use of different digital tools when teaching and how they perceived their own digital competence. The term 'digital competence' was operationalised by using definitions by Tømte and Olsen (2013) and Lund, Furberg, Bakken, and Engelién (2014), and focused on pedagogic and didactic understanding, subject-specific understanding and technological understanding. To gain understanding of teacher educators attitudes (their espoused theories), statements were prepared based on the OECD report *Connected Minds: Technology and Today's Learners* (2012) and its description of the field's existing attitudes towards technology. Ranging from optimistic to a more catastrophic view on the matter. The survey resulted in a construct that contains three overall variables: *the extent of use of digital tools*, *the level of digital competence* and *the attitudes towards digital tools in an educational context*. For further details regarding the survey, see Madsen et al. (2018).

The interviews: Curriculum theory

When interviewing the participants it became clear that the field of curricula and teaching is a complex field, and curriculum theory was used to analyse the interviews. Goodlad, Klein, and Tye (1979) distinguish between five domains of curricula: *Ideological curricula*, the ideological and political ideas and underlying values of a curriculum. *Formal curricula*, curriculum as a formal, officially sanctioned document. *Perceived curricula*, how an actual curriculum is perceived, for instance by parents, by school management and by teachers. The *operational curricula* refers to how a curriculum is carried out in daily teaching in classrooms. The term *experienced curricula* refers to how a curriculum is experienced by students. The interviews were conducted to study if insight in the teacher educators perceived curricula could contribute to broaden the understanding of the described gap between perceived and operationalised curricula. Both countries have overarching frameworks for what are understood as prerequisites for learning in all subjects at all levels through school. New Zealand refers to them as key competencies, and in Norway they are referred to as basic skills.

Table 1 Example of curriculum differences between Norwegian and New Zealand curricula

New Zealand key competencies (Ministry of Education [MoE], 2007, p. 12)	Norwegian basic skills (Directorate for Education and Training [DE], 2006)
<ul style="list-style-type: none"> - Thinking. - Using language, symbols and texts. - Managing self. - Relating to others. - Participating and contributing. 	<ul style="list-style-type: none"> - Oral skills - Reading - Writing - Digital skills - Numeracy

These assemblies were used to discuss curricula and teaching philosophy with the participants. The two lists do not represent the two curricula as such, as it is not certain that they are intended to serve the same purpose in the curricula. They were used as a means of presenting perspectives related to a span between skills and competencies, and between a technical and a holistic view of learning. Detailed results from the interviews will be presented in an independent article.

For this article, it is important to illustrate the knowledge obtained through the interview process, as it has implications for our understanding of this complex field. When presented with the two different perspectives on learning, all but one of the Norwegian and the New Zealand participants expressed themselves as either explicitly critical towards the Norwegian basic skills or explicitly positive towards the New Zealand key competencies. Three of these participants also expressed a nuanced position, acknowledging strengths and weaknesses within both assemblies. Only one participant solely expressed him/herself as critical towards the New Zealand assembly and positive towards the Norwegian. This was a surprising finding, and we found it interesting that the Norwegian teacher educators seemed to find the New Zealand key competencies more in line with their teaching philosophy. We therefore found it relevant to include questions regarding Norwegian teacher educators' relationship to the core curriculum (DE, 2011a) as part of the Norwegian curriculum, as this part includes many of the qualities emphasised in the New Zealand key competencies. But when asked about the core curriculum, very few included this in their

teaching when preparing teacher students; it was often described as implicitly existing in the background. This article builds its discussion on the quantitative findings presented in Madsen et al. (2018) and the preliminary findings from the qualitative interviews, and herefrom discusses the research question through document analysis.

Document analysis

Documents chosen as relevant for understanding the teacher educators' different frameworks for working as teacher educators were Norwegian and New Zealand curricula for primary and secondary education and training. This is the main framework for working as a teacher, and should be a focus when educating teacher students. When analysing these documents, we were searching for how the use of digital technology was expressed regarding teaching and learning. Additional political documents relevant for the use of digital technology in education in line with the curricula were also included in the analysis.

THE NORWEGIAN POLICY

The Norwegian reform from 2006 consists of three main documents: the core curriculum (*den generelle delen av lærerplanen*), the quality framework (*prinsipper for opplæringen*) and the subjectcurricula (*den fagspesifikke læreplanen*). The core curriculum was retained from the reform in 1997, and covers a more holistic perspective of the student (DE, 2011b): "The quality framework summarises and elaborates on the provisions in the Education Act and its regulations, including the National Curriculum for Knowledge Promotion in Primary and Secondary Education and Training, and must be considered in light of the legislation and regulations" (DE, 2011a). The subject curricula address the objectives of the different subjects, competence objectives, assessment, teaching hours, as well as the basic skills. The basic skills are integrated into the competence objectives for each subject. One of the changes introduced through the reform was the implementation of digital skills as a pervasive skill throughout Norwegian education. This was a big change in the curricula. Plans, strategies and projects were carried out to support the field of education to work in line with the policies.

Supplementary documents and strategies regarding digital technology in education

Prior to the reform in 2006, the Norwegian education system and its use of IT was guided by a strategy called *IT in Norwegian education*,¹ *Plan for 1996–99* (Kirke-, Utdannings- og forskningsdepartementet [KUFD], 1995). This document focuses on integrating IT as a tool in ordinary teaching, and to use IT for better learning. An expressed goal was to make Norwegian pupils and students capable of using IT in a way that it creates value for their learning processes. The strategy contained a politically expressed focus that learning resources should be based on a Norwegian pedagogical tradition, and a main goal was to improve the pupils' learning situation. The main focus in this document was IT as a strategy for learning, and teacher education was seen as central to this work. In accordance with

1. *IT i norsk utdanning. Plan for 1996–99.*

this, thirty-one measures were compiled and different levels of the educational system held accountable for carrying out the strategy (KUFD, 1995).

Following this, the department published a new strategy called *ICT in Norwegian education*,² *Plan for 2000–2003* (KUFD, 1999). The field of digital technology had been subjected to rapid changes, and the new strategy had a stronger focus on external societal factors, as digital technology was becoming a bigger part of day-to-day-life. The increasing globalisation of the economy, internationalisation and technological development were mentioned as reasons for challenges concerning ongoing competition within both national and international business. Because of these developments, the educational system must, according to the strategy, adapt to this. The strategy also emphasises the need for increased focus on the pedagogical use of information and communication technology (ICT). Three main areas were listed as being challenges for the field of education: 1. The use of ICT will be a big part of future occupations and tasks; 2. digital development will create demands for Norway as a nation to develop expertise in ICT as a subject and the use of ICT in other subjects; and 3. ICT will serve as an important tool for learning. In line with the strategy, ICT had, at this point, also been integrated into curricula for teacher education. An expressed goal was to give teacher students training in pedagogical use of ICT, and increase the level of digital competence of teachers already working in schools. The strategy also aimed to establish forums for representatives from different sectors of the educational system to meet, exchange ideas and views, and discuss the challenges for future education (KUFD, 1999). As Søby (2007) describes, the plan for 2000–2003 prioritised school development and a comprehensive perspective on professional and pedagogical use of ICT through national projects like PILOT and PLUTO.

The project called PILOT (Project Innovation in Learning, Organisation and Technology) was the largest innovation project related to pedagogical use of ICT in Norwegian schools, with 120 schools involved (Forsknings- og kompetansenettverk for IT i utdanning [ITU], 2004). The findings from this project suggest that pedagogical use of ICT has a positive effect on pupils' learning outcomes. A conclusion made, regarding how to succeed with the strategy, was that the restructuring of education must be implemented in cooperation with school management, teachers, parents and students (ITU, 2004). In other words, the implementation of policy must be tightly linked with ongoing practices. Erstad and Frølich (2003) report that there were challenges regarding technical issues, and that innovation takes time. When the technical challenges were handled, the schools involved started pedagogical debates and changes were observed on different levels regarding attitudes and practice. Most schools experienced disunity among staff (Erstad & Frølich, 2003), which suggest also a range of attitudes among teachers. The project called PLUTO (Programme for Teacher education, Technology and restructuring 1999–2003) was aimed at changing teacher education by focusing on ICT, the structuring of students tasks and ways of working, and the relationship between education and schools as educational arenas. The conclusion was that the project had a great impact on both teacher educators and students involved in the project. It also concluded that changes in education systems will not spread on their own.

2. *IKT i norsk utdanning. Plan for 2000–2003.*

For educational restructuring to happen, negotiation is crucial in every local context (Ludvigsen & Rasmussen, 2006). The Programme for digital competence for 2004–2008 builds on former strategies and projects, but also with a new perspective. This programme contained new and ambitious goals and priorities regarding how ICT affected the quality of education, motivation for learning, ways of learning and learning outcomes (Søby, 2007). The programme contained a vision stating that everyone is to have ownership of digital competence, and the programme was aimed at every level of education (Utdannings- og forskningsdepartementet [UFD], 2004). It is stated in McFarlane's (2008) evaluation of the execution of this plan that the competence level within teacher education is still a challenge, and that a great number of teacher educators do not fulfil the knowledge promotion goals set for digital competence. The programme has succeeded overall in implementing digital technology as a key focus in educational policy, but McFarlane (2008) states a need for more assessment and research regarding teacher education and teacher educators' digital competence.

THE NEW ZEALAND POLICY

The New Zealand Curriculum is a statement of official policy relating to teaching and learning in English-medium New Zealand schools³. Its principal function, according to the Ministry of Education, is to set the direction for student learning and to provide guidance for schools as they design and review their curriculum. According to the ministry, individual schools are required to base their school curriculum on the principles of *The New Zealand Curriculum*, to encourage and model the values, and to develop the key competencies at all year levels. However, as stated by the Ministry of Education, the curriculum is a framework rather than a detailed plan. "This means that while every school curriculum must be clearly aligned with the intent of this document, schools have considerable flexibility when determining the detail. In doing this, they can draw on a wide range of ideas, resources, and models" (MoE, 2017).

Supplementary documents and strategies regarding digital technology in education

In practice, especially in the 1990's, the implementation of curriculum regarding the use of digital technologies in New Zealand was very ad hoc and often reliant on the individual teacher's own initiative. However, the government's introduction of key policies, such as *Interactive Education: An Information and Communication Technologies Strategy for Schools* in 1998; *Digital Horizons: Learning Through ICT* in 2003; *Enabling the 21st Century learner: An e-Learning Action Plan for Schools* between 2006 and 2010; and *Foundations for Discovery* in 2005, were aimed at providing a cohesive plan for supporting and guiding the practice of teachers in all education sectors in New Zealand (Ham, Wenmoth, & Core Education, 2010). The introduction of such policies were not directives, but offered a more coherent and aspirational framework, identifying strategies and goals (Ham et al., 2010). In

3. A parallel document, *Te Marautanga o Aotearoa*, serves the same function for Māori-medium schools, equivalent to primary school.

New Zealand there is currently a shift to a more top-down governance regarding the inclusion of digital technology in the curriculum, as the New Zealand Government implements a policy to move towards digital fluency in the education sector (MoE, n.d.). The policy has broad-ranging strategies for achieving the goal of digital fluency, with one being “digitally literate teachers and students” (MoE, n.d.). One step taken to support this strategy is the Education Review Offices’ inclusion, from mid-2016, of digital literacy as an indicator when reviewing school performance (MoE, n.d.). However, the New Zealand Education Review Office (ERO), which is the “New Zealand government department that evaluates and reports on the education and care of students in schools and early childhood services” (ERO, n.d., para. 1), has moved away from its mid-1990’s managerialist approach, to a more supportive role where it aims to “assess and assist” (Thrupp, 2005, p. 47). So in essence, the addition of the ERO’s digital literacy indicator in its reporting is one of many strategies that aim to support the development of teacher’s digital fluency in a collaborative, bottom-up approach. This change in the ERO’s policy also coincides with the New Zealand government’s announcement in July 2016 that by 2018, digital technology will be formally introduced as a subject into the New Zealand curriculum (Parata, 2016).

The New Zealand government initiative called *Taking the next step – The interim Tertiary eLearning framework* (2004) was directly concerned with providing guidance and direction for the implementation of digital tools in tertiary education. In the framework, seven key action areas were identified, one of which was professional development for staff in higher education, which includes teacher educators (MoE, 2004). The goal of professional development was later further developed by an initiative called *Professional Development for e-Learning: A Framework for the New Zealand tertiary education sector* (2008). This project sought to draw from research, and the perspectives and experiences of lecturers, to develop a framework for supporting professional development in higher education (Shepherd, Stein, & Harris, 2008). This would also include the practice of teacher educators in initial teacher education programmes, whose eLearning practice not only supports the teaching and learning of student teachers during their own study, but also influences student teachers’ own nascent teaching practice (Kane, 2005). The focus on providing professional development for lecturers in higher education would seem to be a strategy by the New Zealand government to implement policy at individual teacher educator level. However, the success of these frameworks may be called into question, as some schools in New Zealand have initiated programmes to support novice teachers’ implementation of digital tools in their practice, as the schools feel that initial teacher education programmes are not preparing graduating student teachers with current pedagogy and competencies in the use of ICT (Hipkins, 2015). This concern is also reflected in the voices of novice teachers, who acknowledge that they had an introduction to the use of digital technologies in their initial teacher education programmes, and felt unprepared for implementation in the classroom (Nohr Elliot, 2011).

DISCUSSION

The school systems in Norway and New Zealand are quite similar, and both countries have implemented different strategies towards succeeding with the digital changes in education. Upon studying the curricula, some differences can be seen. The New Zealand curriculum

is suggestive in its form, and the implementing of digital technology in education is done with wordings like “should” or “could”. For instance, e-learning is described in the New Zealand curriculum (MOE, 2007, p. 36) as being a method that *may* assist the making of connections by enabling students to enter and explore new learning environments, overcoming barriers of distance and time. It *may* facilitate shared learning by enabling students to join or create communities of learners that extend well beyond the classroom. It *may* assist in the creation of supportive learning environments by offering resources that take account of individual, cultural, or developmental differences. Further it is stated that schools *should* explore not only how ICT can supplement traditional ways of teaching but also how it *can* open up new and different ways of learning. The Norwegian curriculum has made digital technology mandatory. The ability to make use of information and communication technology has in Norway been added as a fifth basic skill in all school subjects, at all levels (Ministry of Education and Research [MER], 2006, 2016a). Digital skills have therefore a status equal to oral skills, reading, writing and numeracy (MER, 2016b). The New Zealand curriculum for schools (years 1–13) resembles the Norwegian curriculum and is based on five key competencies: thinking; using language, symbols and texts; managing self; relating to others; and participating and contributing (MOE, 2007). A difference is that digital competence is not a key competence in itself, but it is listed in relation to the “use of language, symbols and texts” (MOE, 2007). This key competency is described as the confident use of ICT to access and provide information, and to communicate with others (MOE, 2007).

Despite a reform that appears to be based on international consensus, the Norwegian policies regarding digital technology in education are not effectively changing practice in schools or the education of initial teacher education students (Engen, Giæver, & Mifsud, 2015; Instefjord & Munthe, 2016). The gap between policy intention and practice has been explained by practitioners’ deficiencies (Norgesuniversitetet, 2015; Wilhelmsen, Ørnes, Kristiansen, & Breivik, 2009; Ørnes et al., 2011). The results from *Digital Status 2014* show that only four out of ten academic staff members believe that the use of digital technologies contributes to increased learning for students (Norgesuniversitetet, 2015). This concern is echoed in New Zealand, where despite Jones noting in 2003 that initial teacher education had a responsibility to support student teachers’ use of digital technology for educational purposes in the sector, little change has taken place (Merry, 2017). There seems to be several possible reasons for the challenges described.

Strategies for implementation

It seems that the implementation of digital technology is not tightly linked with ongoing practices in higher education. Despite widespread intentions regarding the use of digital technology in Norwegian education, policies regarding ICT have been found to have been implemented on a national and an institutional level in Norway, but not at the individual level of teacher educators in higher education (Egeberg et al., 2012). Furthermore, Engen et al. (2015, p. 81) suggests that “there is an obvious disparity between the terms that the curriculum sets for the education of digitally competent pupils and those that the governing documents of teacher education set for the education of digitally competent teachers”. Even if curricula for schools contains a more coherent view on digital competence, teacher edu-

cation contains a lesser and somewhat random understanding of the same (Engen et al., 2015, p. 81). This is likely to be one of the reasons for the gap found between policy and practice in teacher education, bearing in mind the conclusions made in PLUTO (ITU, 2004) regarding how to succeed with the strategy.

Professional disagreement and resistance

The similarities between Norway and New Zealand are more evident than the differences. Still, there are more critical attitudes towards digital technology among Norwegian teacher educators. The interviews conducted suggest that there is a lot of resistance towards the mandatory implementation of digital technology in Norway. And, from a professional perspective, Norwegian teacher educators communicate that they are working more in line with the New Zealand key competencies than the Norwegian basic skills. Bearing in mind that a similar holistic view of learning is implemented in the Norwegian curriculum, it is interesting that the teacher educators seem to focus their own work as teachers on the more instrumental part of the curriculum. This makes us question how the reform has been communicated to staff in higher education, and it makes us ask what is guiding the teacher educators' perspectives when working with curricula for schools.

Haddad (2008, pp. 4–5) claims that “almost every decision maker in every school system across the world is under tremendous pressure to provide every classroom (if not every student) with technologies, including computers and their accessories and connectivity to the Internet”. Following Krumsvik (2014), we question whether the widespread enthusiasm for more technology in education is mainly based on external and political eagerness for innovation in education, or whether it is based on solid research findings that reflect the experiences of practitioners. If external and political eagerness is the driver for implementation, one could suspect that this affects how it is being communicated to teacher educators. Cohen, Salomon, and Nijkamp (2002) claimed that the knowledge upon which public policy decisions are based differ in two main aspects: a knowledge gap and a communication gap. The knowledge gap is uncertainty about the actual impacts of ICT, and the communication gap relates to the biases and noise emanating from the process of communicating knowledge between different actors on potential ICT impacts. “As knowledge accumulates through the communication of tentative explanations about reality, the communications gap relates to that part of the knowledge gap, which can be attributed to miscommunications between the parties involved” (Cohen et al., 2002, p. 42). This was described in 2002, and this paper's claim is that both a knowledge gap and a communication gap can still be understood as a challenge concerning policy related to digital technology in education. Both the knowledge gap and the communication gap could be underlying reasons for the gap between policy and practice in Norway. As described in Cohen et al. (2002), the rational model of policy-making assumes that decision-makers base their actions on knowledge. However, they also write that the notion of what constitutes knowledge is dubious, and is not just what the scientific community regards as legitimate knowledge. “The objective of identifying the rules which explain ‘reality’ is often characterised by competing explanations for complex situations, which emphasise the presence of uncertainty” (Cohen et al., 2002, p. 42). Cohen et al. (2002) claim that this

uncertainty is particularly evident in the discourse about the relationship between technology and society at large, as well as between technology and various interfaces within an individual's daily life.

Strand (2001) claims that organisational change can be difficult, and uncertainty is often a challenge regarding educational change. He presents three different perspectives regarding resistance towards change: analytical-based resistance, interest-based resistance and emotional resistance. These forms of resistance are hard to separate from each other, as they intertwine. All three forms of resistance were observed when interviewing the participants, but analytical-based resistance was the most prominent position. It became clear that the Norwegian policy was not justified sufficiently in the view of the Norwegian teacher educators. The implementation of technology in education has clearly created a new pedagogical context (Hatherly, 2010; Somekh, 2007), and we are in many ways, as Krumsvik (2014) claimed, in the infancy of this digitisation of initial teacher education.

The conclusion that labels the teacher educators as deficient in ICT competency and practice could be understood in different ways. Although policymakers define through policy what they think should be implemented, to understand the bigger picture one has to include the practitioners' perspective and evidence-based research. The claim that digital technology could raise the quality of teaching and learning appeared early on to have an evidential basis. Yet such claims, when exposed to critical review, often proved to be insubstantial and rhetorical (Reynolds, Treharne, & Tripp, 2003). Livingstone (2012) claims that few independent evaluations comparing an educational setting with versus without an ICT intervention have been conducted, and those that exist are rather equivocal in their conclusions. Recent research shows that students who often use computers or smartphones have a tendency to do worse than students who use fewer of such tools in educational contexts (Beland & Murphy, 2015; Carter, Greenberg, & Walker, 2016; Elstad, 2016; OECD, 2010). A study conducted by Mueller and Oppenheimer (2014) concluded that the use of laptops negatively affected students' test results.

If political motives govern education, a gap between policy and practice would therefore be understandable. The results from the Norwegian part of the study could indicate a conflicting culture within the educational context, in which teacher educators have attitudes towards digital tools that indicate that the majority do not consider digital tools essential for good teaching, at the same time as more than 70% reported using digital tools often in their own teaching. It has been asserted that the field of practice of teaching has not changed at the same pace or in the same direction as politicians have been promoting new policies for the implementation of digital tools in schools (Egeberg et al., 2012). From a societal perspective, it is perhaps not surprising that teacher educators feel that the expectation of the effect of digital tools is exaggerated in the public domain, considering the political impetus for increased digitisation (MER, 2016b). Nevertheless, one factor that creates concern in the findings is that there is a greater contradiction within the educational context at the Norwegian teacher educators' workplace, and this is significantly different from the New Zealand context.

Professional inconsistency

The fact that the majority of the Norwegian participants believe that academic debates show signs of excessive confidence in the use of digital tools may indicate several things. These attitudes may be connected to a desire to be politically correct and not wanting to stand out as one who does not agree with, or is not up-to-date with current policies. Being digitally slow is according to Elstad (2016) a disrespectful label often given to teachers when painting a picture of today's situation. Another explanation may be that it is those who are positive towards technology who express themselves in this debate, and those who are critical choose not to express themselves. When these results are seen in relation to how the Norwegian teacher educators are positioning themselves when asked if digital tools are essential for good teaching, one can understand this as being incoherent.

Table 2 Incoherence

New Zealand (coherent):	Norway (incoherent):
The majority is not agreeing to the fact that colleagues have exaggerated expectations towards the effect of digital tools in education.	The majority is agreeing to the fact that colleagues have exaggerated expectations towards the effect of digital tools in education.
The majority do believe digital tools are essential for good teaching.	The majority do not believe digital tools are essential for good teaching.

This contradiction could suggest that the private attitudes are not congruent with the publicly expressed attitudes, and that the Norwegian teacher educators' espoused theories differ from responses in a survey and what they express among colleagues. A possible reason for the inconsistency in the results in Norway regarding debates in the workplace might be that teacher educators, under the new national curriculum for schools and the new General Plan for teacher education, are exposed to a stronger educational top-down implementation of ICT in pedagogy and other subjects than teacher educators in other countries are (Krumsvik, 2014). Even though the curricula are based on many similar values, they present different perspectives regarding what is emphasised as essential for learning and developing. For example, in the New Zealand curriculum, it is stated that students learn best when they feel accepted and when they enjoy positive relationships with their fellow students and teachers (MOE, 2007). This can relate to the overarching part of the Norwegian curriculum called "the core curriculum". This part specifies the overall objectives for education and contains the values and the cultural and knowledge-related foundation for Norwegian education (Directorate for education [DE], 2011b). It is stated in the core curriculum that the goal of education is to prepare children and adults to meet life's tasks and to overcome challenges in collaboration with others. The aim of education is to expand the individual's capacity to perceive and experience, and to empathise, express and participate (DE, 2011b). But this part of the curriculum is not emphasised by Norwegian practitioners when discussing their own practice. The width of values stated in the Norwegian "core curriculum" are difficult to identify in the Norwegian basic skills, and the implementation of basic skills in the Norwegian curriculum is understood by many of the participants in the study as a result of political pressure, with political institutions like the PISA rankings as an underlying motive.

One can question whether the ongoing indiscriminate progression towards an increased use of digital tools in Norway is an explanation of the differences found between the two countries. Jacobsen, Schnack, and Wahlgren (1987) claimed that people often immediately accept proposals if they are described as ‘effective’, ‘appropriate’ or ‘expedient’. They also found that when ideology is in control, there is often little focus on what the goal of the proposal is or what the benefits of the proposal are. Livingstone (2012) raises an ideology critique regarding ICT. If ICTs are shaped by the society that produce them, one should situate technology within the underlying unequal power relationships that exist in society (Warschauer, 2003). It is important to ask whether such changes are empowering or whether they extend the interest of established forms of commercial and state power (Livingstone, 2012). The findings could also indicate that the Norwegian teacher educators are exercising resistance towards the politically inflicted policies when the majority of Norwegian teacher educators are stating that they do not see digital tools as essential for good teaching, even though the majority claim to use digital tools a lot in their teaching.

From a global perspective, political eagerness to digitalise is evident. The European Commission stated in a press release in February 2016 that new figures show that “action is needed if we want to catch up with Japan, the USA and South Korea” (European Commission [EC], 2016). This international political eagerness affects the field of education. It is therefore critical to assess policies related to education and to discuss education’s role in a larger political picture. Public policies do not operate in a vacuum. Most actions in complex systems require a balanced approach that take into consideration the common and the conflicting views of many stakeholders, each with his own agenda (Cohen et al., 2002).

CONCLUSION

As Sjøby (2007) writes, the place for digital competence within teacher education in Norway must be identified and challenged, and our findings suggest that the challenges at hand are complex and not one sided. Our findings could indicate that pervasive policies regarding digital tools create critical and conflicting attitudes. Are unexpected limitations revealed through experience? There is no way around the rapid progress in digital development, and the computer revolution was described as a technological inevitability as early as 1967 (Auerbach, 1967, p. 12). This computer revolution, to quote Auerbach (1967), could contribute to changing education for the better. As Muñoz-Repiso and Tejedor (2012) conclude, universities must fulfil the expectations of a new society, which is characterised by being more open, flexible and competitive, and they must promote the use of ICTs. On the other hand, regarding the mandatory use of technology in teaching, Yeung, Taylor, Hui, Lam-Chiang, and Low (2012) found that compliance with requirements was found to be negatively correlated with digital competence and uncorrelated with frequency of use. The results indicate that mandating use of digital technology may not be productive, and could even prevent progress. This makes it crucial that digital development is implemented constructively in education and that a balanced approach is needed. As Yang (2012) writes, there are limits to how much progress the top-down approach can achieve towards the transformational effects expected of digital technology. An important basis for further constructive work towards expanding the pedagogical use of digital tools in education

would therefore be to further base this development on a solid research foundation, and to base the development of practices on current practices. This work must be done locally and in collaboration with the professional staff within educational institutions, perhaps to a greater degree than it is being done today.

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