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ARTICLE

'The teachers do not see us.' The challenges of teacher education in rural areas

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'The teachers do not see us.' The challenges of teacher education in rural areas

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Abstract

The northernmost region of Norway has difficulties in recruiting qualified teachers, in 2019 9.5 % of the teachers in Finnmark were unskilled. To ensure education for people who, for various reasons, are unable to move to education centres to study, UiT the Arctic University of Norway offers a flexible teacher education model from campus Alta. This is a model which alternates between teaching on campus, home studies and online supported teaching in different nodes/localities. In this article we present a case study addressing some of the challenges with flexible teacher education connected to structure, technology and digital didactics. Through interviews and observations we have collected data from both teachers and students, which raises questions concerning the organisational forms of teacher education. ICT-support must be ensured by the educational institution and not be entrusted to the teachers. The opportunities for gaining relevant competence must be facilitated. Furthermore, a flexible education model demands adapted pedagogical and didactical thinking.

Keywords: teacher education, rural education, flexible education, digital didactics

Introduction

The last few decades have seen considerable growth in the number and diversity of distance education (DE) programmes and flexible education. University courses have moved from the classroom to online, not least as an alternative to address the lack of education in many rural areas. In Norway, teacher education programmes generally still attract too few academically strong applicants to fill out the admissions capacity of teacher education institutions, and the dropout rates during programmes and early-career teaching are still considerable (Elstad, 2020, p.39). The growth in distance teacher education is a result of the demand to address teacher shortages and provide enough appropriately qualified teachers to rural areas. Students in Norway, Iceland and Sweden have several opportunities to attend distance teacher education programmes made possible by certain technologies and ICT.

International studies exploring experiences with distance education have shown that ICT can increase education access, quality and performance enabling the development of more teachers (Janssens-Bevernage et al., 2005; Perraton, 2002; Robinson and Latchem, 2003). Most studies on flexible and/or distance teacher education focus on political issues, recruiting teachers from various social groups and recruiting teachers into subject areas with teacher shortages, and technical aspects, such as digital platforms and software, not on their pedagogical and didactic merits. We hope to shed light on the importance of bringing pedagogy and didactics to the forefront and explore how to improve flexible teaching that depends heavily on technology. Literature reviews have discovered research on distance education, but little research exists on *policy, system and education model thinking* (Høgmo, 2018; Støkken et al., 2005).

Thus, more research is needed to explore the theoretical priors of flexible teacher education models and the experiences of both students and teachers concerning digital, flexible professional-studies programmes. The challenges of flexible teacher education models are complex. To improve these programmes and identify the best solutions, we need knowledge and perceptions about what occurs in actual teaching and learning situations. More empirical research on learning environments, learning outcomes and didactics is required to ensure the right training, resources and quality assurance systems.

To meet these needs, we present a case study of a flexible teacher education model offered by the UiT The Arctic University of Norway (UiT). We discuss the model from the perspectives of both students and teachers, addressing the following features: 1) the information, structure and organisation of the study; 2) technology and usability; and 3) communication, teaching and didactics. Furthermore, the case study explores more holistic approaches to study design, didactics and digital resource use by discussing pedagogical learning theory connected to flexible professional education models and technological competence and support.

Theoretical background

Review of related research

Before the study and analysis, experiences in flexible education programmes for professional studies are of interest. The terms open and/or distance learning refer to online education, ICT-supported

education, DE and assembly-based education with different levels of administrative and pedagogical support. International studies have shown that DE is often initiated to overcome the challenges of access, equity, cost-effectiveness and education quality and that the suitability of distance education for teacher preparation in particular is a topic of interest in many countries (Perraton, 2002; Robinson and Latchem, 2003). Universities across the world have increasingly offered distance teacher education programmes to reach new students, and it has also been used to recruit students who cannot leave their homes (Robinson and Latchem, 2003). Many countries with large uneducated populations and many countries with large rural populations make extensive use of DE, often providing large-scale programmes to educate teachers. In some countries, it is a part of the national strategic plan, while in others, it is an alternative to on-campus programmes (Perraton et al., 2007, p.281). In both the United Kingdom and the United States, DE has been offered in response to problems with recruiting teaching staff (Robinson and Latchem, 2003). Most studies done in countries with large uneducated populations, such as Ghana (Sampong, 2009), Kenya and East Africa (Janssens-Bevernage et al., 2005) and India (Kumari and Anjana, 2018) have focussed on technical and digital solutions to increase access, completion levels and in-service training of active-but-untrained teachers and have asked questions concerning infrastructure, communication and student support.

A study by the Norwegian Agency for Quality Assurance in Education (NOKUT), an independent expert body under the Ministry of Education and Research, showed that half the flexible professional education programmes in Norway were assembly-based, not online. In fewer than half of the programmes studied was online teaching the default modality; the learning platform appeared to work better for administration and communication than for academic activity (Børsheim, 2012, p.15). Most of the research literature on flexible education and flexible learning revolves around the prerequisites for learning through digital media to be successful, and the report also showed that the education institutions invest few resources in developing teacher competence in technology use to promote student learning (Børsheim, 2012, p.15).

At the University of Iceland, teacher education is offered as a blended model, involving co-teaching of distance and campus-based learners in most courses, where on-campus students attend weekly in physical classrooms and distance students conduct their studies online and attend two physical assemblies on campus each semester (Jóhannsdóttir and Björnsdóttir, 2020). Jóhannsdóttir (2010), Johannsdóttir and Björnsdottir (2020) and Jakobsdóttir (2018) have for several years studied distance teacher education in Iceland, focusing on recruitment and the possibilities to enrol student teachers from a greater variety of social groups (Jóhannsdóttir and Björnsdóttir, 2020). In the last 15–20 years, half or more of the student teachers in Iceland have been enrolled as distance students. Jakobsdóttir (2018, p.157) evaluated the Icelandic education model, finding that both teacher students and educators were unsatisfied with co-teaching because “[m]any teachers felt it was easier to focus on and accommodate the needs of one group when the courses were taught separately; and students tended to feel that there was too much focus on ‘the other’ group when the courses were merged”. Most students nevertheless said that the opportunity to study was more important and that the flexibility model was the feature that decisively attracted them to the programme.

The Icelandic teacher education model bears several similarities with the education model at UiT, campus Alta, except that UiT Alta has no students who attend weekly classes on campus; all students attend the flexible model as distance students. A recent study on learning environments and technology in the flexible teacher education programme at UiT Alta focused on teacher students' experiences with physical and digital meetings. The study highlighted how the education programme's course plans promoted learning intensity and learning outcomes, as the students had regular coursework requirements and learning activities, whether on campus or at home. Nevertheless, the interviewed students wasted time on technical challenges in the digital assemblies and poor technological solutions as a whole, and they expressed that they missed physical meetings and desired increased physical, social and professional cohesion (Rist, 2019, p.206).

Learning theories

The contemporary teacher education model at UiT campus Alta is built on a socio-constructive/socio-cultural teaching pedagogy that emphasises active student learning. Recent research on learning and learning outcomes has concluded that traditional lectures are passivating (Hallaraker, 2012). In a socio-constructive view, developing knowledge is dynamic, and learning comes through experience and by constructing our own knowledge through communication with the world. Therefore, our preconceptions affect what and how we learn, understand and orient ourselves. In Vygotsky's (1978) view, social interaction and linguistic activity are vital for learning. According to Dysthe and Igland (2001), Vygotsky believed social interaction was essential to reaching higher-order mental processes, which he captured in the concept of the 'proximal zone of development': the distance 'between the actual developmental level as determined by independent problem-solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers' (Vygotsky, 1978, p.86). Hence, learning and development have to do with active involvement, cooperation with others and building on prior knowledge and understanding. As teachers, we must help students use their talents and include what they already know (Beach, 1999) and organise classes that maximise communication opportunities. No one enters a learning situation as an empty box (Freire, 1999) but brings experiences on which to build. Biggs (1999) also believed it was important that students cooperate and be in dialogue with each other and teachers because dialogues form, expand and underlie greater understanding.

In flexible, more digital educations, this theoretical thinking is vital for expanded classrooms, understood as sites for learning expanded through the increased use of digital media (Erstad 2014, p.9). It is a prerequisite that the teachers have a socio-constructivist approach using technology (Danielsen, 2019). Jahnke and Nordberg (2013) outlined a socio-constructivist learning theory when developing their digital didactical design. They demonstrated that teachers must learn *with* technology, not *of* technology, that the teacher's role must change to more of a supervisor than a lecturer and that students should engage more in active learning. Indeed, students should produce knowledge, not just consume knowledge. Toward this end, Jahnke and Nordberg (2013, p.4) claimed that learning is all about 'co-creating new knowledge' and is thus a social process. Studies on digital technology and learning have also shown that when used correctly, digital tools multiply opportunities to learn through sharing and cooperating

(Jahnke and Kumar, 2014; Kongsgården and Midtbøe, 2014). In addition, Kelentric et al. (2017) underlines how digital resources give opportunities to adapt teaching to individual needs, for instance by providing asynchronous lessons and individual assignments. Digital didactics thus starts with Vygotsky's theories as a point of departure.

Contextualisation and the flexible education model

In 2014, the Norwegian government decided that teacher education programmes from classes 1–7 and 5–10 should shift from a 4-year programme at a bachelor's level to a master's programme (Ministry of Education and Research, 2014). In 2017, these programmes were introduced and implemented across Norway to improve teacher quality and prepare teaching students for continuing professional development based on their 'knowledge of scientific theories and methods' (Ministry of Education and Research, 2016a, 2016b cited in Jakhellen et al., 2019, p. 123). However, the University of Tromsø (UiT) had already from 2010 piloted a 5-year master´s programme, and when UiT merged with the Høgskolen in Finnmark (Finnmark University College) in 2013, becoming UiT the Arctic University of Norway, a flexible and digital master programme in teacher education was implemented at the Alta campus in 2014. Alta campus is situated in Troms and Finnmark, the northernmost county of Norway. Finnmark (which merged with Troms in 2020) is 46,618 square kilometres and has only around 75,000 inhabitants, with several scarcely populated rural areas with vital needs for educated teachers.

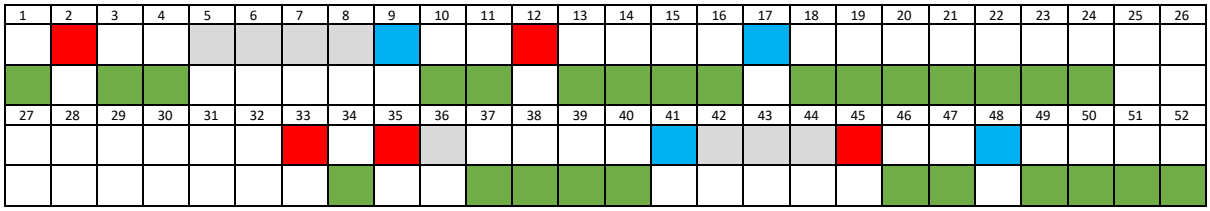
The teacher education in Alta has provided teachers to rural areas for decades, especially in the county of Finnmark. The main campus is in Alta, with nodes in parts of Finnmark and Northern Troms, such as Hammerfest, Kirkenes and Storslett, with distances from the main campus from 140 to 500 kilometres. The 2019–2020 academic year had around 100 teacher students. The aim of reorganising the education structure was partly to improve education quality, achieve better learning outcomes and enhance learning intensity and motivation, but mostly it was to increase the number of students. The flexibility of this model allows students to live at home during their education as many of them have families and work in their home district. A considerable number of the students work as unskilled teachers. Thus, the model provides qualified teachers to rural areas in Northern Norway.

This model was organised with physical assemblies (red weeks), digital assemblies connected to different nodes (blue weeks), assemblies in groups and/or individually (green weeks) and practice at university schools (grey weeks). Skype for Business and Canvas were the learning platforms and main channels of communication between the students and campus Alta. The students were organised in basis groups comprised of three to six students. Each basis group signed a contract committing them to cooperate, and each group had a teacher supervisor to support the students when needed. In these groups, students worked on their formative assignments and/or other assignments, which were discussed later when the students assembled (Pedersen and Zakariassen, 2017).

When the 5-year teacher education programme was introduced nationally, it had implications for the existing pilot model. The new national guidelines made the structure more complex with more subject choices for the students, complicating the supervisor roles and the organisation of basis groups. Because of these new changes, the basis groups disappeared, but the number of physical meetings

doubled. In 2020, the Covid-19 pandemic also hindered physical meetings in most red and blue weeks, and UiT introduced digital platforms, such as Zoom and Microsoft Teams.

Table 1: Example of a year planned for students in year 1, programme 1–7, 2019–2020



Methods

Case studies can yield in-depth information and provide opportunities to analyse the main characteristics of studied phenomena. Their main concern is understanding the case being studied (Berg, 2004; Hammersley and Gomm, 2000). When performing case-study research, one assumes that 'examining the context and other complex conditions related to the cases(s) being studied are integral to understanding cases(s)' (Yin, 2012, p.4). Thus, a case study is appropriate to determine whether flexible education models, such as ours, can achieve the aims of socio-constructive teaching pedagogy with a focus on active student learning and didactics and digital resource use.

We selected students and teachers in the 5-year teacher education programme at UiT for interviews to study their respective 'sides' of the story. It was vital that the participants had some years of experience with the model structure and thereby had developed opinions about it, so the interviewees had a minimum of three years of experience teaching and learning within the model. It was also essential that the selected students had experience in the nodes and at the campus Alta, so we asked third-year students living in Alta and in the nodes (or nearby) to participate. Five students participated: two from Alta and three from the nodes. There was only one male student. The participants were in their early 20s to mid-30s. Having teachers of different subjects participating as interviewees was equally important to study their different challenges and opportunities administering a flexible, partly digital education. Five of the seven teachers who were asked participated, so most teaching subjects were represented. Three were men and two were women, and all were in their mid-40s to early 60s with 5–20 years of experience in teacher education with various models and structures. In total, 10 participated in the study. Both of this paper's authors, two women with more than 10 years of teaching experience in the teacher education programme at UiT, have observed how the flexible model can influence how we teach students, and our ongoing discussions with teachers throughout the academic year also contributed to the study. The interviews with students and teachers, discussions with other teachers and our own observations likely represent a holistic perspective of the model under study. While collecting the empirical data, the Covid-19 pandemic began, deeply affecting the participant experience as all teaching went from flexible to full digital.

The interview questions were open and outlined so that the interviewees could elaborate freely. We sent the interview questions to the participants so that they could write down and reflect on the questions. We asked both the students and teachers to reflect on the model organisation, how the

model could generate both challenges and possibilities and the didactical or social challenges and possibilities in the various weeks. They were asked about their thoughts on possible changes to the model structure and what they thought would improve flexible teacher education. Their answers varied in length and depth but overall helped us explore this case study. In addition, our own reflections from observing and teaching within this model gave us further insight. The interviews were carried out over one month in spring 2020, but the observations by the researchers have been ongoing since 2014.

Consistent with ethical guidelines, the participants had rights to self-determination and autonomy (Johannessen et al., 2011), and the respondents checked and verified their responses afterward, improving the credibility of the results (Lincoln and Guba, 1985 cited in Nilssen, 2012). However, weaknesses in this research may have created challenges and limited its generalisation in the traditional sense, in which predicting and controlling are goals (Danermark et al., 2002; Lincoln and Guba, 2000). First, selecting only one teacher education structure limits generalisation. Second, the participants were not selected randomly but based on convenience. However, this sampling was important for greater access to informants with years of experience with the model. It was also easier for us to clarify possible misunderstandings during the research. Third, there were no follow-up interviews with the participants or observations in either the digital or physical classrooms. A follow-up study that applies interviews or more observations may provide further answers and would be reasonable after analysing the data from this research. Thus, this study cannot represent all flexible teacher education models, which was not its aim; the study was designed to deepen understanding and knowledge from which other flexible digital education models can learn and hopefully develop further. This case study is thus explorative because it aims to explore a phenomenon on which little research exists in Norway (Johannessen et al., 2011).

Teaching with technology can work better than traditional teaching methods when teachers properly capitalise on the technology's advantages for instruction, adaptation, visualisation and simulation. To explore these possibilities, Ehlers (2004) conducted a comprehensive analysis of 30 quality dimensions in education and identified seven quality areas that are essential for successful e-learning (cited in Børsheim, 2012, pp. 6–7). As e-learning shares key features with flexible, assembly-based learning, some of these features are essential for a distance teacher education model as well. Adapted to UiT's model for teacher education, the following areas function as a model that is suitable as a methodological instrument in our categorization of the empirical data:

1. Information, structure and organisation of the study
2. Technology and usability (e.g. whether the equipment is user-friendly)
3. Communication, teaching and didactics

Findings: The challenges and possibilities of flexible education in a rural area

Information, structure and organisation of the study

As teacher education is a professional study that combines theory and teaching practice to prepare students to be teachers, it faces challenges when offered as a flexible programme. One obvious challenge is that when physical meetings are few, teachers have less basis for both professional and

suitability assessments, shifting more responsibility to students (the subject and profession) and practical training supervisors (suitability). Both teachers and students felt they had too little time in the red weeks and focused too much on details; as one teacher said, 'There is too little time, and this restricts (…) what you can do. It is difficult to do larger assignments.' Some students also argued that when 'classes are not planned as discussions, dialogues and active participation, the lessons are not as good as they could be.' As participating observers, we also found that the scarce time spent with students made building relationships more difficult and thus frustrated the learning environment.

The programme description underlines that it is a full-time study in which students' effort is expected to correspond to full-time work:

> Student active working methods are central to the study and will be prioritised at the sessions/assemblies. This involves teaching activities that require that you have acquired the theory in advance. You must therefore commit to extensive work effort between the assemblies, both individually and in groups (UiT The Arctic University of Norway, 2021).

The information given at the start of the semester and the first physical meeting on campus also emphasised that this was a full-time study and that the term 'flexible' referred to students working from home during the green weeks. Many students, however, seemed to have misunderstood the term 'flexible', as most had full-time work in the green weeks. Statements such as 'The first year had a lot of group work that made it difficult to work outside school' and 'The weekly plans were filled as it was in primary school with little freedom and flexibility' showed that some students expected the green weeks to be either free from schoolwork or at least completely flexible with no schedule. Even though the programme description clarified that the students had to prepare for the assemblies during the green weeks, some students expected the term 'flexible' to apply to them personally. The teachers of the programme also found the organisation in the green weeks challenging, one saying that 'some students do not want to participate in these weeks'. One teacher said,

> It is challenging to make students work continually and to keep up the energy and motivation. When only working in groups, it can be challenging for students to organise. It is also a challenge that many of the students work full-time during these periods and that they expect that the education [will] adapt to them and not the other way around. This will be a problem as long as we organise the education like this and as long as the student loans don´t increase.

Another challenge with the organisation was the lack of a common understanding among the teachers on how to structure the green weeks. One teacher said,

> It varies how much these are administrated and how much contact you have with the students. It seems like there are different opinions amongst the employees [on] how these weeks shall be structured.

Another teacher did not think the green weeks worked out well: 'There has been little contact with the students even though they have assignments to do'. The individual practices among both teachers and students seemed to differ greatly during the green weeks. We also observed that green weeks' organisation varied widely; for some teachers, the green weeks worked well for exploring digital

didactics and practicing flipped classrooms, but for others, the green weeks were dedicated to other things, such as research.

Four weeks during the academic year are organised as digital assemblies on campus and in nodes (the blue weeks). Organising the assemblies in both physical meetings at campus Alta and the physical and digital assemblies in the nodes was the most problematic, challenging task. In the first and second academic years, when the students have common courses, it was possible to organise digital meetings and concurrent group work both in the nodes and on campus, but as one student put it, 'I find these weeks challenging because some are physically on campus and some are taking place digitally. It is difficult to get everyone to participate.' Another added that 'it is difficult for the teachers to involve the students in the peripheries.' From the third year onwards, however, the students have more individual subject choices, and in the worst case, we observed that students were forced to travel from their homes to nodes only to be the only ones to connect to digital meetings in specific courses. We also found little agreement among teachers on how these weeks should be executed. It was up to each teacher to find solutions to this complicated form of education, which again led to dramatic differences from subject to subject. One teacher expressed frustration over the fact that "[…] there were few guidelines except that there must be students on campus and in the nodes".

Technology and usability

It is interesting what the students and teachers expressed concerning digital technology and its usability in this flexible education model. The blue weeks gave the students and teachers many challenges. One student said that it was problematic to do group work across nodes: 'It should rather be a part of green or red weeks.' Another student said the digital technology was not working as intended: 'On campus, we must wait for connection with the nodes, and in the nodes, there are problems with sound and pictures. Thus, the quality of the lessons declines, as the teachers are not comfortable with the technology.' Another reported that 'the technique does not work well, especially not Skype for Business.' Finally, one student put it well:

> In discussions, we are asked not to interrupt but raise our hands as the students in Alta do, but this does not work since the teachers do not see us or are not aware [of] the screen and, thereby, we are not included. (…) In many of the classrooms in Alta, the microphones are hanging down from the roof with sensors on. Whenever the sensor registers sounds, the microphone is turned on. This may sound smart, but only in theory. In practice, the sound we should hear, for example the teacher, is drowned out by people slurping their coffee, sounds of a pencil writing, or the sound of someone scratching their head (…) The mic from the lecturer mutes".

Someone suggested that all the students should be online simultaneously: 'This worked better during the Corona-times. (…) It [was] much clearer, and you [could] see all the faces, hear everybody, instead of us online [seeing] a classroom with heads or only the lecturer.'

The teachers were just as dissatisfied as the students with the technology and its lack of user-friendliness in the blue weeks. One teacher chose to avoid Skype and instead met with students individually online. This teacher also expressed that the rooms organised for sound and pictures on campus were too small for doing practical work with physically present students. Another teacher said,

> The blue weeks are the most demanding because of technical problems, especially in the ordinary classroom. The screens are placed at the end of the room and are so small that you can hardly see the students [in] the nodes. Skype for Business [is] not very user friendly (…). It feels better lately when we only use Zoom. This is preferable for the future.

One teacher claimed that students in the nodes suffered the most from this. Another reported that the blue weeks were challenging and needed to stop: 'There are a lot of problems with sounds, pictures, sharing and connection. The technical support is absent and without the support or me knowing the technology, teaching is hard. (…) It creates a lot of frustration.' As one teacher put it,

> For some years, we have taught with the idea that technology will recreate and replace physical meetings. However, the technology, the ICT support and our own competence is not sufficient, and in this way, the blue weeks are the absolutely weakest part of our education.

Hence, an agreement exists between students and teachers that technology in the blue weeks hindered learning and teaching. There was obviously too little technical support, frustrating both teachers and students. There were few comments or reflections about technology in the green weeks except that the collaboration worked adequately on the learning platforms (i.e. Canvas and Skype), although the students preferred not working on them if physical rooms were available. The red weeks also lacked such technological issues.

Communication, teaching and didactics

Communication and collaboration

A flexible education with digital learning platforms should ease communication and collaboration and improve active student learning. Indeed, most students were satisfied with the teaching plans in the green weeks; they found it easy to contact teachers and experienced Canvas as an adequate learning platform. According to the students, the best characteristic of the green weeks was the opportunity to work individually, but they all stressed that collaborating digitally with other students was not problematic. 'It is easy to do co-writing online', as one student said. The students living in Alta appreciated having group rooms available on campus, arguing that these rooms gave them more opportunities to collaborate. However, the teacher–student interaction was sometimes challenging, as misunderstandings plagued communication about the weeks' structures. For example, some students thought there was excessive group work, overly detailed plans and a lack of flexibility. One claimed that 'if not handing in voluntary text within [a] deadline, you actually get told off!' This kind of communication was characterised as tiresome and stressful. Indeed, we observed that the voluntary work to which this student referred might have been preparation for the next physical or digital assembly but that this was not communicated adequately. Students perceive non-obligatory tasks as extra work. Detailed period plans can make this work predictable, but its goal and purpose must be communicated clearly. The teachers also experienced challenges with communication during the green weeks. According to two teachers, 'There are some students [who] do not wish to participate in the green weeks'. Three of the five teachers said that contact with the students varied or that there was 'little contact'. Although there was no clear guidance or agreement between teachers regarding student contact during the green weeks, all teachers said they were available for students for supervision and support.

A key factor regarding communication in the blue weeks was technology problems, which hindered the teachers' attempts to involve students in nodes. 'It is difficult to get everyone to participate', said one teacher, and continued: 'It is difficult for the teachers to involve the students in the peripheries'. The students in the nodes felt as if they were nuisances to some teachers. One student expressed that 'they [the teachers] do not want to use the technique, as they call it, at all'. One student living outside the campus area said that it was better to come to campus in these weeks since group work in nodes did not work. It was better to be on campus where it was much more social and one could have communication and discussion after the lessons. Both teachers and students agreed that blue weeks worsened communication and collaboration with the students.

Even though most teachers and students said that communication was decent in the red weeks, both the interviews and our observations and experiences showed that communication in the physical assemblies was too unilateral. Teachers tried to compensate for 'lost time' during the green weeks, and then gave lectures to ensure they taught the curriculum.

Teaching and didactics

Teaching online and teaching on campus are different ways of teaching; teaching distance students through digital platforms requires customised didactics and learning activities. This case study reveals significant potential for improvement regarding teaching and didactics in the flexible teacher education model at UiT.

The most critical factor is planning teaching and didactics in the blue weeks. Several students opined that online teaching with Skype was often not planned well and that the didactics were not adjusted to digital teaching and learning activities. Two students felt that the educators problematically treated the students in the nodes as troublesome, and most students were not satisfied with the co-teaching online and on campus. The teachers were not satisfied, either. One teacher expressed surprise that so little agreement existed among the teachers on how the blue weeks should be executed; '[…] it seemed up to each teacher to find solutions for this quite complicated form of education'. The blue weeks, according to three teachers, were characterised by poor didactics, which created distance from the students and depressed the motivation of both teachers and students. All the teachers were afraid the digital node organisation had ruined the reputation of teacher education and contributed to bad learning for both those physically present and those connected over Skype.

The green weeks offered other challenges concerning didactics. Two teachers highlighted the importance of designing assignments for the green weeks that required sharing and responding on which the teachers could comment as well. Most teachers seemed to plan the students' reading and writing smaller assignments in the green weeks. Interestingly, only one teacher reported flipping the classroom. This teacher tried to plan activities so that the students understood the value of continuity in reading and effort, but underlined that this 'demand thinking through the didactics: quality of feedback and guidance, relevance and designing requirements, how we reach out to the students between the assemblies with, for example, videos or other platforms'. Another teacher was planning for more flipped

learning in the green weeks but faced the difficulties of follow-up teaching when seldom seeing the students and being unfamiliar with the basic theory of flipped classrooms.

Without a comprehensive implementation of flipped classrooms, the physical meetings (red weeks) were not used optimally, either. Even though most students were more satisfied with the red weeks than the blue, they also reported that teachers planned work in the red weeks that might as well have been in a blue or green week, such as watching films, documentaries and lectures with a PowerPoint presentation. This resulted in poor learning intensity and low motivation. They requested more reflections and explorations of what they studied in the green weeks, and all students argued for the importance of the red weeks being used properly, with discussions, dialogue and active participation, as many incurred substantial costs travelling to campus. 'Lectures for hours is not working, and a way to improve this is to make videos or podcasts the students can listen to in the green weeks', one student expressed. Another student suggested more work in the green weeks to culminate in working together in the red weeks so the students could work and discuss together what they did not understand when working alone.

The case study also revealed that some teachers found it difficult to plan the red weeks due to time scarcity. Teachers in practical-aesthetic subjects found it especially difficult to have all the assignments done in these weeks, as 'these are the only weeks the students have access to machines, tools and materials, and all the time is spent on trying out methods and introducing techniques'. One teacher said the red weeks felt like 'a rare commodity, and it is too easy to become too detailed and too filled with subject matter, not allowing enough time to work thoroughly through problems'. Also, the teachers reported having too little time for each subject during the red weeks: only 10 hours for each of the four assemblies. This restricted them and made it difficult to assign larger didactical assignments.

The main impression was that because of how the study was structured, with little agreement about what to do in the various weeks, several teachers spent time in the red weeks lecturing without the hoped-for communication and collaboration. There was too little facilitation of co-creating new knowledge and too much emphasis on consuming knowledge. Rooms organised for advantageous communications were also not provided (Biggs, 1999), especially in the red and blue weeks, nor were there enough contact points between students and teachers in green weeks, even though student interactions seemed adequate.

Discussion

DE has been defined as an educational process in which a significant proportion of teaching is conducted by someone removed in space and/or time from the learner(s) (Perraton et al., 2007, p. 14). Research has shown that this improves access to teacher education for rural inhabitants and thus addresses teacher shortages. Teacher education, however, is not only about completion rates but more importantly about educating *competent* teachers. In studying the flexible teacher education programme at UiT Alta, we have identified key factors that may ensure a more holistic approach to study design, didactics and digital resource use.

The basic pedagogical theory underlying the model

The researchers' experiences and the interviewed teachers' and students' answers illustrated that the teaching and didactics were not necessarily adapted to a flexible education model that demanded different didactic approaches depending on the week. Clearly, basic pedagogical ideas and didactic perspectives must be adapted to be appropriate for flexible education programmes. Research has shown that technology can activate students' motivation and open attitudes towards learning. Proper pedagogical and expedient use of technology promotes collaboration and interaction between students, achieving better learning outcomes than traditional activities, such as lectures. However, this presupposes that a teacher has a (socio-)constructivist approach to using technology, allowing the students to construct their own knowledge, often in collaboration with fellow students, while the teacher assumes the role of a supervisor (Danielsen, 2019, p.36). According to Kongsgården and Midtbøe (2014) and Jahnke and Kumar (2014), technology can multiply opportunities to learn through sharing, collaboration and reflection when used properly. A flexible education programme must consider this.

The teachers', students' and researchers' experiences, together with prior research on DE, suggest that flipped classrooms seem to be the pedagogical approach that adapts best to a flexible model. The core idea is to flip the common instructional approach and remove most information-transmission teaching. In a flipped classroom, the physical meeting becomes the place for learning activities that are active and social, the place to work through problems, advance concepts and engage in collaborative learning. This best maximises the scarcest learning resource in a flexible model: time. Indeed, flipped classrooms generate opportunities to be asynchronous so that learning, teaching and talking can occur at different paces than physical meetings. This increases flexibility and gives students more time to plan, elaborate, discuss and edit as needed. The teachers' experiences in this study showed that forming basis groups with permanent mentors ensures better communication, formalised cooperation and personal relationships among students and between the students and teachers, a factor highlighted in both socio-constructive teaching pedagogy with active student learning (Dysthe and Igland, 2001). Flipped classrooms alone, of course, do not change teaching and didactics miraculously. First, they require students to complete pre- and/or post-class activities to fully benefit from in-class work. Second, teacher-created videos and interactive lessons are not the decisive factors; how they are integrated is the key. The chief goal is for the teacher to capitalise on digital resources to develop a constructive, inclusive learning environment that adapts teaching to individual needs (Kelentric et al., 2017, p.8). To make this possible, the teacher needs professional knowledge, educational and didactic knowledge and technological knowledge.

A model appropriate for professional studies

A flexible teacher education model must consider specific professional issues and adapt to its target group: adult students who cannot or do not want to spend their everyday lives on campus. Being a professional study, teacher education has key factors, such as pedagogy, relational skills and suitability assessment. According to the teachers, old-fashioned physical presence best ensures these elements, and they requested more assemblies on campus to improve the education quality. As it is, the programme descriptions, course plans and organisation are not particularly adapted to these features

of a flexible model, and an adjustment of programme descriptions and course plans is required, not only to make changes that adapt teaching practice and didactics to a flexible model but also to define routines for professional skills and suitability assessments. The programme plans must also include guidelines regarding important relational and professional skills.

Jóhannsdóttir and Björnsdóttir (2020) found that self-studies played a crucial role in this form of teacher education, one question of which is how the education's overall organisation, the subject descriptions and ICT allow *optimal learning* in the target group from a socio-constructivist/socio-cultural perspective. Most students work as teachers alongside their studies; how can a programme integrate these teaching experiences into its organisation and didactics? From a professional perspective, then, one challenge with the flexibility of this education model can be turned into a strength. Several students saw the possibility of working as a substitute teacher while studying as a strength of the education model, as it enabled them to connect the theory acquired from their classes with their practice over a longer period than only the organised practice offers. Perhaps one solution to this challenge is formal cooperation between the university and the municipalities, where students can work part-time as teachers in their municipalities as a part of their teacher education, which would benefit both the education programme and address the recruitment challenges in rural municipalities.

Technology and competence

A last key factor is technology. Our study shows that both students and teachers agreed that technology offered challenges in the blue weeks. This is in accordance with Rist (2019), who found that too many technological issues hindered learning. When asked what would improve the flexible education model, both students and teachers agreed on the importance of appropriate technological and digital resources and ICT support. Co-teaching online and on campus is difficult in terms of both technology and didactics. One solution is to replace the organisation of nodes in the digital assemblies (blue weeks) with digital assemblies where all the students connect individually. During the Covid-19 pandemic, the students connected from home to Teams or Zoom, equalising all students socially and professionally. Instead of combining one or two digital connections with one physical meeting on campus, all students were online simultaneously in a fully digital assembly in each blue week. This equalised the students and allowed the teachers to plan in accordance with digital didactics only.

Also, ICT support must be available at all times from the educational institution to support the teachers. The teachers did not necessarily have the relevant digital competence from either their education or their experiences as teacher educators in a traditional campus model. The opportunities to gain relevant digital competence depended on interest and willingness but mostly time. This is consistent with Børsheim (2012), who found that too little resources were spent on training to use digital technology. However, research on technology use in education has shown that introducing technology actually *supports* teachers' *existing* pedagogical practices; introducing technology does not necessarily change teachers' pedagogical views. The process can take several years, with courses, colleague guidance and practice experiences (Tondeur et al., 2017).

Conclusions

In this case study, we found that flexible education has the potential to reform teacher education. Although educational institutions have various strategic plans for offering flexible education, many are not necessarily operational or anchored in either a pedagogical platform or at all institutional levels, such as administrators and teachers. Different organisational forms demand different quality assurance systems and different structural, pedagogical and didactical platforms. This case study shows that a flexible teacher education programme requires a clear and adapted pedagogical teaching philosophy based on socio-constructivist/socio-cultural pedagogy with active forms of learning which emphasises more on producing rather than consuming knowledge. Moreover, it is important to consider the specific challenges that arise when we offer teacher education as distance learning. When physical meetings are few, teachers have less basis for professional and suitability assessments. This needs to be addressed in programme descriptions and course plans. The study also reveals that a key factor is developing technological competence among the teachers, as well as having technological support available at all time. The challenges of flexible teacher education are complex, involving learning environment, didactics, technology and policy and system thinking. But most important of all: the teachers have to see the students.

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