Defining competences for teacher educators

ITELab discussion paper input to D2.2.3
Final ITE Monitoring Report

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1 DEFINING COMPETENCES FOR TEACHER EDUCATORS

As part of the ITELab work package "Case studies and Monitoring of ICT in ITE" (WP2), the University of Agder led on the action defined in task (T2.5) 'Defining competences for teacher educators':

> In the final year of the project, UIA will work with all partners **to propose recommendations related to the level of ICT skills and competences required by student teachers and teacher educators**. UIA will present an initial discussion paper on this issue at the second Capacity Development Workshop in M24. Following this, webinars will be organised with interested workshop participants to develop a set of recommendations that will be a major item during the final Capacity Development Workshop in M36.

> Work will include interviews and case studies with teacher educators and student teachers to identify which key competences should be required from a teacher educator **in order to ensure adequate ICT training for student teachers**. Other areas that will be addressed are **the main challenges and roadblocks as perceived by teacher educators** with regard to ensuring the competences required. In relation to this, and based on interviews and case studies, the project partners will work together to propose recommendations on how ITE institutions can ensure an adequate level of ICT competence in their staff. These will be published as part of the third ITE Monitoring Report.

1.1 RESEARCH QUESTIONS

The main aim of this discussion paper is to identify which key competences should be required from a teacher educator in order to ensure adequate ICT training for student teachers. These key competences will constitute an important part of formulating recommendations on how ITE institutions can ensure an adequate level of ICT competence in their staff.

To be able to identify key competences, the following research question is developed:

> ***Which key competences should be required from teacher educators in order to ensure adequate ICT training for student teachers?***

To answer this research question, three different groups will be approached: authorities, teacher educators and student teachers. The following sub questions will be asked:

- **How do authorities define key competences?**
- **How do teacher educators define key competences?**
- **How do student teachers define key competences?**

To get knowledge about how institutions work with the development of key competences, another sub-question is included:

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How do institutions work with the development of key competences for teacher educators?

1.2 DESIGN

The research questions will be answered applying a mixed-methods design addressing the different groups.

To answer the first sub question: "How do authorities define key competences?", publications, reports and frameworks defining ICT competence will be used. These documents will also constitute the basis for the development of a survey to be distributed among teacher educators.

The second sub question: "How do teacher educators define key competences?" will be answered through a survey and focus group interviews, while the third sub-question: "How do student teachers define key competences?" will be answered through the work by the Student Teacher Ambassadors of the ITELab project.

To address institutional work with the development of teacher educators' key competences and be able to answer the fourth sub-question: "How do institutions work with the development of key competences for teacher educators?" two case studies will be developed, including interviews with key persons.

The different parts will build on each other and contribute to answer the main research question. The overall data collection and methods used are illustrated in figure 1 below.

Figure 1. Input to identify key competences for teacher educators and student teachers

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1.3 DEFINITIONS

A key question in the work of identifying key competences for teacher educators, is the need for a definition of what a teacher educator is. Following the European Commissions' report *Supporting Teacher Educators for better learning outcomes* (2013), teacher educators are all those who play a role in teacher education, including supervisors of practice in schools, tutors, supporting staff, etc. They have formulated the following definition: "Teacher Educators are all those who actively facilitate the (formal) learning of student teachers and teachers." (2013, p. 8). The present discussion paper is targeting institutions with Teacher Education, and thus Teacher Educators in this context are teachers at Higher Education Institutions who teach student teachers at the HEI institutions.

Another important concept is *key competences*. A competence includes knowledge, skills and attitudes needed in a specific context. In this discussion paper, competence includes knowledge, skills and attitudes needed to use ICT properly in a pedagogical context, in other words, have pedagogical digital competence. When the term key competence is used in this discussion paper it is about the pedagogical digital competence of Teacher Educators working in Teacher Education in a Higher Education Institution.

To define pedagogical digital competence, the definition from Laurillard 2012 is used: pedagogical digital competence is "proficiency in using ICT in teaching, applying pedagogical and didactic judgment, and being aware of its implications for learning".

1.4 METHODOLOGY

The mixed-method design consists of the following sub studies, and the outcome from each part informs the next sub study.

1.4.1 Literature review

To identify how authorities define key competences, different approaches were used. The literature review developed as part of the ITELab project was used as a starting point, and, following a snowball approach, relevant frameworks, publications and reports were included when adding relevant input to answer the research questions.

1.4.2 Survey

To collect information directly from the teacher educators themselves, a survey on self-assessed competence were designed. The process of designing the survey was divided in two steps: a pilot survey and a full-scale survey. The literature review was important for the design of the pilot survey, and the following tools and framework were selected as the most relevant in developing the pilot survey: the Digital Competence Framework 2.0 (European Commission, 2019), the Framework for Basic Skills for Norwegian schools (Norwegian Directorate for Education and Training, 2012)

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and the Norwegian Framework for Professional Digital Competence (Kelentrić, Helland, & Arstorp, 2017).

The pilot survey included both open-ended and closed questions related to competencies, skills and attitudes among teacher educators, as well as asking about specific tools and resources. The questions were divided into the following competence areas:

- Attitudes and personal ICT competence
- The use of ICT in planning, teaching and assessment
- Production of digital resources
- Communication and use of social media
- Reflection on own professional development in relation to ICT

The pilot survey was designed in Microsoft Forms and distributed to the heads of departments at one institution. The head of department distributed the survey to teacher educators at their department. The survey was anonymous and there was no follow up with those who did not answer.

To develop the full-scale survey, the competence areas and answers in the pilot survey were compared to the areas in *the European Framework for the Digital Competence of Educators: DigCompEdu* (Redecker, 2017). This comparison showed that some areas in the DigCompEdu framework were not covered in the pilot survey. The full-scale survey included a broader range of competences, skills and attitudes, since it contained some of the questions from the pilot survey, and other questions from other sources as the DigCompEdu framework and the Technology enhanced teaching self-assessment tool (TET-SAT; MENTEP, n.d.).

The survey was divided in three parts, preceded by non-identifying demographic information. In the first part the respondents were asked to rank the competence areas from DigCompEdu from 1 to 6, where 1 was the most important area and 6 the least important. The second part consisted of questions about the participants' attitudes and self-efficacy in relation to pedagogical digital competence, while the third part was related to skills and competence. In this part, the questions were organised following the competence areas in the DigCompEdu framework:

- Area 1: Professional Engagement
- Area 2: Digital Resources
- Area 3: Teaching and Learning
- Area 4: Assessment
- Area 5: Empowering future teachers

The questions were formulated as statements, and the respondents were asked to indicate their self-assessment by the following 5-step matrix: "totally agree", "partially agree", "neither agree nor disagree", "partially disagree", "disagree". Some of the statements were adapted from the DigCompEdu framework, while other statements were adopted from the TET-SAT tool. The statements from the DigCompEdu framework where chosen from the third level ("integrator"), while the statements from the TET-SAT tool were mainly from the third level ("capable"). All the statements were reformulated to fit the context of Teacher Educators recognizing that a TE needs a more complex

definition of own competence. Finally, the survey concluded with an open comments section.

The whole survey was formulated in English and then translated into Norwegian and Italian before publication. The survey was created in SurveyMonkey and the link was published on the ITELab website in English, Italian and Norwegian. A link to the survey was distributed by e-mail to the partners and associated partners with an invitation to participate in the survey, and the invitation was then forwarded to other relevant respondents. The survey was open for free participation without incentives, so the full survey sample is a volunteer sample. The data were analysed by descriptive statistics using Microsoft Excel.

1.4.3 Case studies

To go deeper into some of the findings from the survey, two cases were identified as interesting to compare. Two institutions were selected because both are engaged in developing Teacher Educators competence: Østfold University College from Norway and The Polytechnic Institute of Santarém (IPSantarém) from Portugal. In both cases, a person with a leading role in relation to the competence development at the institution were interviewed. As a second step, a group of Teacher Educators from both institutions was invited to participate in focus group interviews in order to listen to the Teacher Educators' voice.

Because of limited time, it was not possible to do real focus group interviews since only one Teacher Educator from the first institution and two Teacher Educators from the second institution agreed to participate. At Østfold University College, an individual interview was conducted, while at the Polytechnic Institute of Santarém (IPSantarém) a group interview was realized.

An interview guide was developed for the interviews, and the guide was sent to the interviewees by e-mail before the interviews. The structure of the interview guide was not followed in detail during the interview, and some additional questions arose during the interviews, so the interviews were semi-structured. The interviews were done in Skype for Business and recorded with the knowledge and consent from the interviewees. The interviews with the staff from Østfold University College were done in Norwegian, while the interviews with the staff from the Polytechnic Institute of Santarém (IPSantarém) were done in English. Relevant parts of the interview were transcribed before the cases were written out.

2 MAIN FINDINGS

2.1 LITERATURE REVIEW

To answer the research question *How do authorities define key competences*? relevant frameworks, publications and reports were studied. The findings from this part of the study were important in the development of the survey and case studies in the discussion paper.

Many frameworks have been developed to define ICT-competences, focusing on different competence areas. On European level, The Digital Competence Framework 2.0 was developed as a transnational framework, followed up by differentiated frameworks for different needs as the DigComp 2.1: The Digital Competence Framework for Citizens (Carretero, Vuorikari & Punie, 2017) and the Digital Competence Framework for Educators (DigCompEdu). As mentioned in the Eurydice Report from August 2019, even though these general frameworks exist, different countries still develop and use their own frameworks. The existence of many different frameworks makes it a complex task to formulate a set of common key competences. When the DigCompEdu was published in 2017, this framework was chosen as the basis of the ITELab project. This framework is also used in the research approach, including the work with the development of the survey and case studies in this discussion paper.

In the work with the different frameworks, it has been clear that none of the consulted frameworks addresses the specific role of the Teacher Educator. The report *Supporting Teacher Educators for better learning outcomes* from the European Commission in 2013 addresses the complexity of the role and lack of training that Teacher Educators face. One of the conclusions of this report is that providing a framework of professional characteristics defining teacher educators will enhance the profession. Within this kind of framework, the pedagogical digital competence of Teacher Educators is vital to define.

Regarding the European Framework for the Digital Competence of Educators (DigCompEdu), the competence areas described are important to Teacher Educators to acquire. The framework details 22 competences organised in six areas. The focus is not on technical skills, rather, the framework aims to detail how digital technologies can be used to enhance and innovate education and training. As a TE must supervise student teachers in their development of these competences, the competence needed for a TE is more complex than described in this framework.

In addition to competences as described in frameworks, the importance of mindset was stressed at School Innovation Forum in Brussels in June 2019. In the discussion about the definition of competences for TE, the participants agreed upon the importance of a change in the mindset of TE. TEs must see themselves as learners to be able to keep up with the technical innovation and be part of a dynamic environment. As learners, TE need training possibilities and support to develop the competences they are required to have. With a growth mindset, TE will be open to take challenges in new situations and with new tools and technology (e.g. Dweck, 2019).

2.2 SURVEY

To answer the research question How do teacher educators define key competences? a survey on self-assessed competence was developed for the teacher educators. A pilot survey was tried out at one institution before a full-scale survey was conducted.

2.2.1 Main findings in the pilot survey

The pilot survey was responded by 20 teacher educators (n=20) from 7 different subject areas in March 2018. The main findings in the pilot survey were:

Regarding TEs' professional competences:

- Teacher educators have basic ICT-competence, they communicate digitally with colleagues and students, but they do not use Social Media as professionals.
- Teacher educators feel a need to develop competence both on specific tools and new practices.

Regarding TEs' pedagogical competences:

- Teacher educators report some difficulties in finding and selecting relevant resources, ref. digital competence
- Teacher educators report limited production of digital resources
- Teacher educators use tools for organising and planning their teaching
- Teacher educators do not use tools to engage students in collaborating activities
- Teacher educators report new assessment practices, but we need to expand this competence area to know more about what this means.

The areas regarding empowering learners and development of learners' competences were not covered in the pilot survey, but related to the tools mentioned, the limited use of Social Media and the limited production reported, which are practices that could engage learners, it seems like this is an area that is not really explored by the teacher educators. Teacher educators are not very confident about their guiding competence as stated in relation to their reflective practice, and less production and engagement could mean less focus on content creation also among learners.

2.2.2 Main findings in the full-scale survey

The full-scale survey comprised 162 respondents (n=162) from 18 different countries mainly in Europe. Regarding gender and age groups, 69 % were female and 31 % were male, 44 % in the age group 41-55, 27 % over 55 and 28 % in the age group 26-40. Less than 1 % were younger than 26 years. Almost half of the sample were teaching future primary school teachers (48 %), while 35 % were working with future teachers for both primary and secondary school and 17 % with future secondary school teachers only. With these characteristics, the sample seems to be a rather representative sample of the population of Teacher Educators in Europe.

In the first part of the survey, the respondents were asked to rank the competence areas from the DigCompEdu framework from 1 to 6, where 1 was the most important area and 6 the least important. The following figure shows that Area 4: Assessment was ranked as the least important area by the respondents, while Area 3: Teaching and Learning was ranked as the most important area by the highest number of respondents:
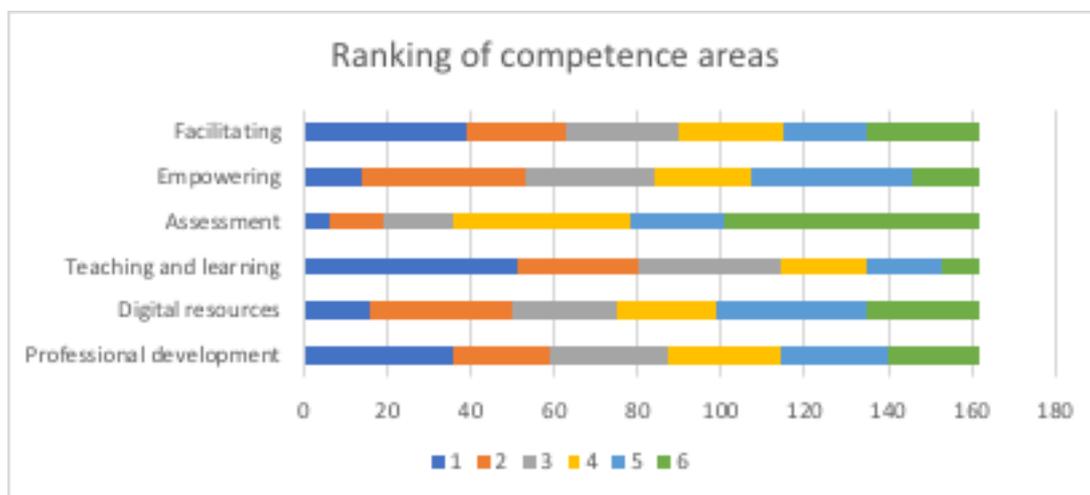

Figure 2. Ranking of competence areas

The second part of the survey consisted of questions about attitudes and self-efficacy in relation to pedagogical digital competence. Figure 3 summarizes the average values of agreement on the statements related to attitudes:
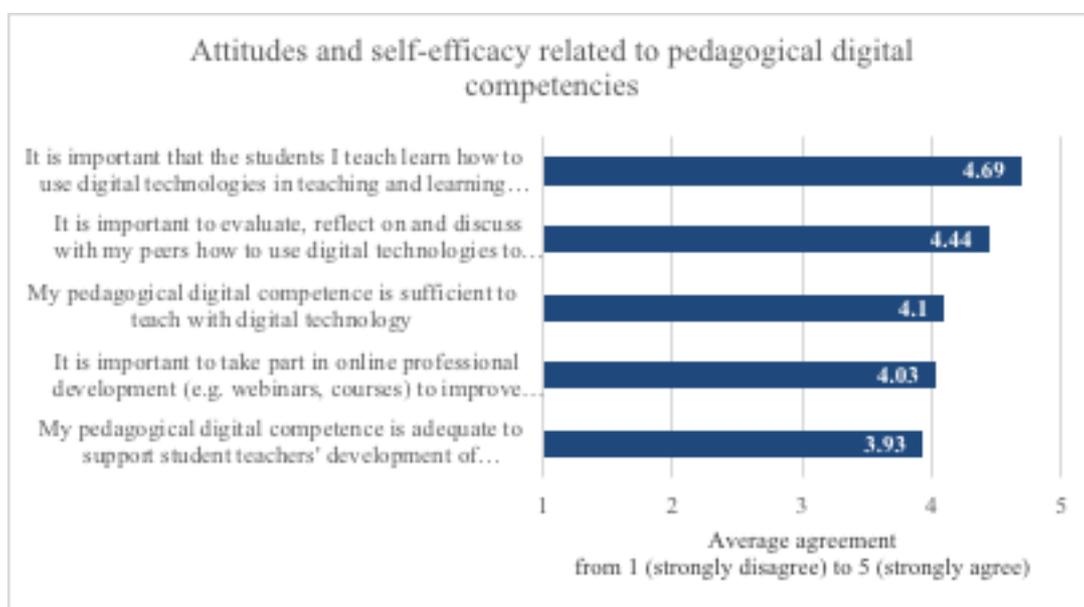

Figure 3. Attitudes and self-efficacy related to pedagogical digital competencies

In the third part of the survey, the questions were organised following the competence areas in the DigCompEdu framework and the respondents had to indicate their agreement with different statements in each of these areas. In *Area 1: Professional Engagement,* the statements covered the use of digital technology to communicate,

share and experiment with resources, as well as understand how schools use technology. The Teacher Educators have strong confidence in their abilities to communicate and share resources, while there is more variation when asking about their competences in experimenting and reflecting on new approaches. The statements "I understand how schools currently use digital technologies in teaching and learning." and "I feel competent in guiding student teachers in the development of their digital judgement." include the complexity of a Teacher Educator of both having knowledge about what is going on in schools and in Teacher Education, as well as having guiding competence.
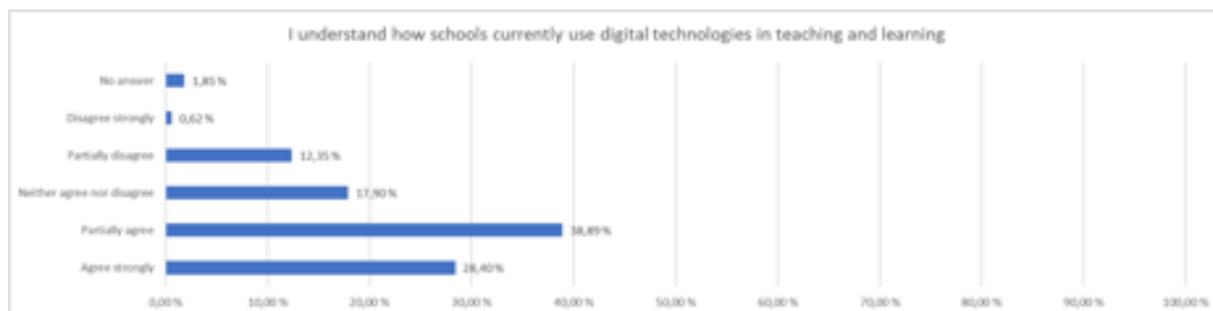

Figure 4. I understand how schools currently use digital technologies in teaching and learning.

Figure 5. I feel competent in guiding student teachers in the development of their digital judgement.

Both figures above show that the Teacher Educators are a little less confident about their knowledge of the situation in schools, and their guiding competence and may need some support on this issues.

Area 2 in the survey included nine statements about the Teacher Educators' competence in evaluating, designing and protecting digital resources. The responses in this part of the survey indicate a general strong confidence in own competences related to digital resources. The only question where the TE showed less confidence was when asked "I can indicate any copyright of resources and what conditions attach to their use, reuse etc..", as seen in Figure 6:
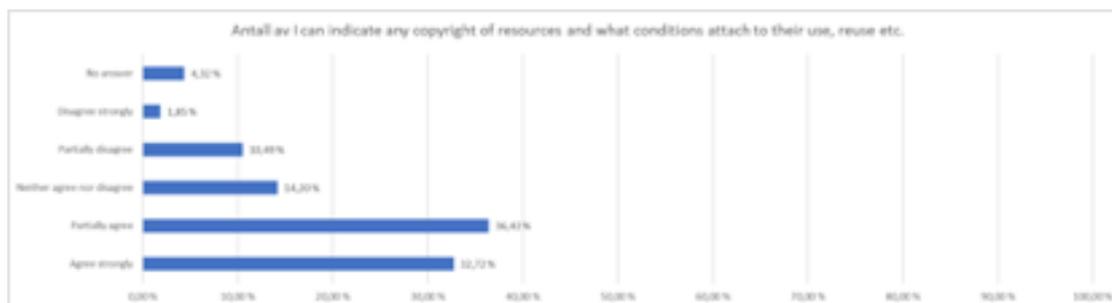
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Figure 6. I can indicate any copyright of resources and what conditions attach to their use, reuse etc.

Area 3 in the survey included six statements about teaching and learning. The Teacher Educators had to evaluate their competence in use of virtual learning environment, managing the integration of digital devices, designing collaborative learning activities and assessment. In general, the average percentage that agree strongly and partially is about 10 % lower in this area than in Area 2, but still over 60 % of the Teacher Educators feel confident about the statements regarding *Teaching and Learning*. As the average percentage of confidence is lower, there is also a higher percentage that disagree strongly or partially. About 10 % of the respondents in this area do disagree strongly or partially to having the competence mentioned in this area. The statement with highest percentage of disagreement is "I can use digital technologies for peer-assessment and as a support for collaborative self-regulation and peer-learning." as shown in Figure 7:
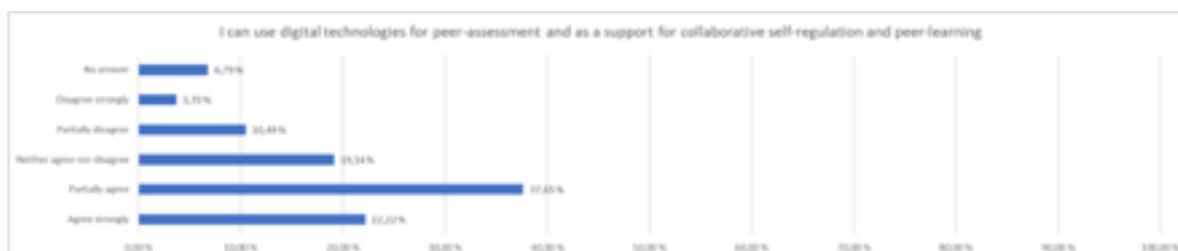

Figure 7. I can use digital technologies for peer-assessment and as a support for collaborative self-regulation and peer-learning.

This statement is also related to the role of a Teacher Educator as a coach guiding the student teachers to develop their competence in self-regulation and peer-learning.

Area 4 presents four statements related to assessment. The Teacher Educators show confidence in using digital technology for assessment and feedback, but they are less confident when evaluating their competence in more complex use of digital environments as we see in Figures 8 and 9:
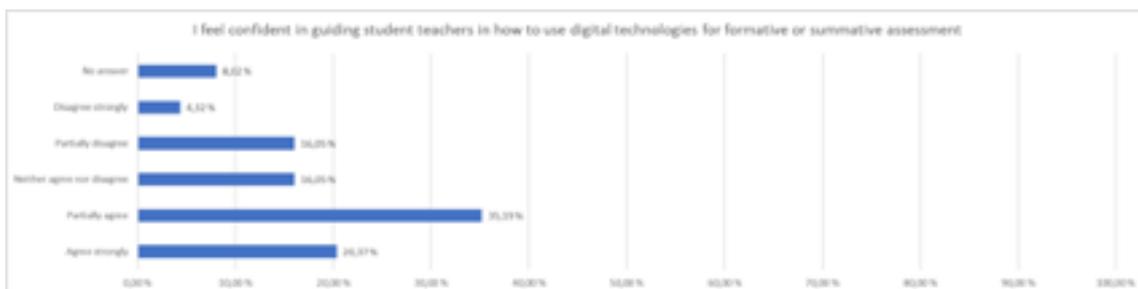
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Figure 8. I feel confident in guiding student teachers in how to use digital technologies for formative or summative assessment.
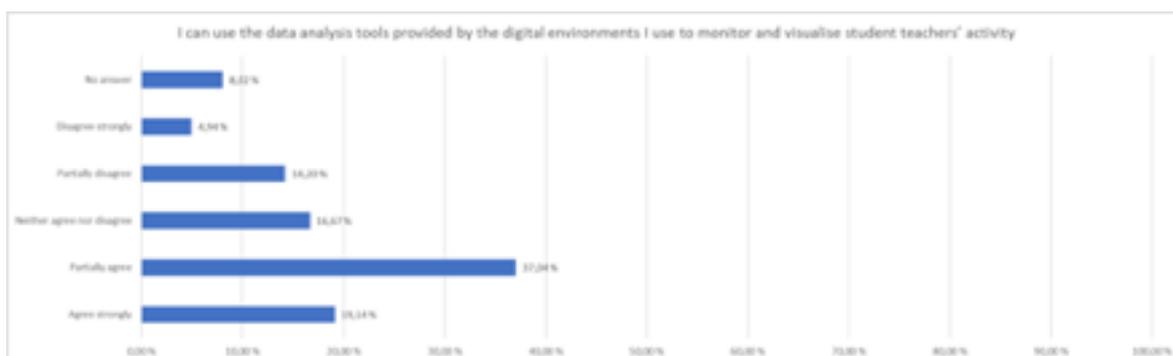

Figure 9. I can use the data analysis tools provided by the digital environments I use to monitor and visualise student teachers' activity.

The statements in Area 5 were related to the competence in empowering future teachers. This question included seven statements about implementing personalised activities, using compensatory digital technologies and guiding student teachers in the use of these technologies. Compared to the other areas, this area showed less confidence from the Teacher Educators. Specially the statements "I can use compensatory digital technologies for student teachers with special needs or disabilities." and "I feel confident in guiding my student teachers in the use of compensatory digital technologies for learners' in need of special support (e.g. learners with physical or mental constraints; learners with learning disorders)." had a higher percentage of *disagree strongly* than any other statement in the whole survey. Figures 10 and 11 show the distribution on both these statements:

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Figure 10. I can use compensatory digital technologies for student teachers with special needs or disabilities.

Figure 11. I feel confident in guiding my student teachers in the use of compensatory digital technologies for learners' in need of special support (e.g. learners with physical or mental constraints; learners with learning disorders).

Both statements are related to questions about inclusion and show that Teacher Educators lack to some extent competence in this area. One of the comments in the open-ended comment section at the end of the survey supports this interpretation:

> *"it's made me realise I need to research more inclusive ways of using digital technologies. Thank you!"* Teacher Educator Survey respondent

2.3 CASE STUDIES

To answer the research question *How do institutions work with the development of key competences for teacher educators?* and get an overview of the work with key competences in an institutional context, two case studies were identified. As part of the case studies, teacher educators from both institutions involved were interviewed, contributing to answer the second research question *How do teacher educators define key competences?*

2.3.1 Case study 1: Østfold University College

2.3.1.1 Background and context

In the new 5-year Teacher Education programmes in Norway, implemented from autumn 2017, a requirement of pedagogical digital competence is mentioned explicitly in the National Curriculum Regulations[1] . In order to work on the development of pedagogical digital competence at institutional level, the Ministry of Education and Research allocated about €90,000 to five institutions offering Teacher Education Programmes. One of the projects that was funded, was the DigiLU project[2] at Østfold University College, who received € 18,000 for a period of 3 years.

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[1] https://www.regjeringen.no/contentassets/c454dbe313c1438b9a965e84cec47364/forskrift-om-rammeplan-for-grunnskolelarerutdanning-for-trinn-5-10---engelsk-oversettelse.pdf

[2] https://www.hiof.no/lu/om/prosjekter/digilu/om-digilu.html

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At Østfold University College, Teacher Education is organized under the Faculty of Education[3] . The Faculty of Education is placed on the campus in Halden and they have 2 000 students enrolled in their Teacher Education Programme.

On the faculty's webpage, it is clear that they have an ongoing strategy with a focus on pedagogical digital competence in TE through the project "DigiLU". The link to the project website is easy to access and the project is mentioned in the description of the Primary and Secondary TE programs online. Note that the information is not available in English.

On the project website, there is information about funding (from government), the main goals, the plan for achieving the goals, the people involved and project activities. There are also links to relevant courses related to the project.

2.3.1.2   Development of pedagogical digital competence at institutional level

In conversation with one of the Project Managers for the DigiLU project, Ilka Nagel, she tells us that the institution and the DigiLU project has not developed their own definition of Teacher Educators' digital competence. Instead, they use the framework for the Teacher Education Programme which is built on the national Professional Digital Competence Framework for Teachers [4]. The motivation for using the framework for teachers is that Teacher Educators need this competence to be able to guide Student Teachers in their competence development. When asked about what she considers key competences for Teacher Educators, Nagel highlights that Teacher Educators should develop digital judgement. This means that a Teacher Educator needs to have digital literacy and know how to use digital tools responsibly, including knowledge about privacy and data, how to follow GDPR and how to apply privacy and copyright rules. But most importantly they need to have a broad knowledge of digital methodology and be able to critically assess how to apply these methods in their subjects as role models for their student teachers, she says.

With the DigiLU project, the institution has been able to establish a compulsory Programme for Competence Development for all Teacher Educators. The programme is organized in Modules and they currently have 65 participants. The programme doesn't have credits or certificates. However, the programme is viewed as part of the Teacher Educator's ongoing professional development.

A unit, called ICT in Learning, which is part of the Faculty of Education, is in charge of developing and running the programme. They are also in charge of following up the Teacher Educators. The competence development programme is supported by the Faculty leaders and the heads of study also follow up if necessary. The institution facilitates competence development by giving staff dedicated time to participate in the competence development programme.

The competence development programme follows the requirements in the Teacher Education Programmes at the University College. When for example student teachers

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[3] https://www.hiof.no/lu/english/

[4] https://www.udir.no/in-english/professional-digital-competence-framework-for-teachers/

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are supposed to learn about flipped classroom, the Teacher Educators learn about this in the preceding semester.

The institution has also opened a Learning Support Centre for Faculty staff, which is part of the Centre for Teaching and Learning. At the Support Centre the Teacher Educators can find support and help for both technical and pedagogical questions.

The feedback from the Teacher Educators enrolled in the programme is mainly positive. However, Nagel mentions time as one of the main roadblocks. Even though Teacher Educators are given dedicated time in their work schedules for this competence development programme, it can be challenging for them to prioritize the activities required.

To meet the challenge of prioritizing time, Nagel emphasises the importance of having an open dialogue with the Teacher Educators and the Faculty leaders. Open dialogue is important in order to find solutions and possible adaptations when necessary.

2.3.1.3 Development of pedagogical digital competence at individual level

At Østfold University College we discussed the development of pedagogical digital competence with Virginia Lockhart-Pedersen representing the Teacher Educators. In her opinion, it is important that a Teacher Educator has both practical knowledge about how technology works, and more theoretical knowledge about how digitalization influences society and the role of the teacher. It's also important to reflect together with the Student Teachers on how technology can contribute to learning, not simply how applications work technically.

The TE at HiØ commented on the complexity of the notion of pedagogical digital competence. She emphasises the importance of having different competences; including technical competence, theoretical competence, ethical competence and knowledge about how to use these competences to enhance learning.

Teacher Educators involved in the DigiLU-project have access to online resources, workshops and other activities, and also to staff in the Resource Centre who can assist if needed when trying out new digital resources or methods, which she sees as positive. In addition, the institution has allocated time to Teacher Educators in order to work on the development of their pedagogical digital competence during their work hours.

Among colleagues, there are different points of view regarding this programme. Some have participated with enthusiasm and collaborate a lot, while others participate because they have to, not because they want to.

The Teacher Educator feels that it is important to work collaboratively with colleagues and try out digital tools together and reflect on the learning involved. She suggests that for Teacher Educators with less experience in the use of ICT, it could be helpful to have a buddy where both have allocated time to work together. She also suggests that to get everybody to continue developing their own competence after completing the competence development programme, it is important to have someone who follows up and monitors individually, for example by asking about what the TE has been working on or trying out lately.

In reflecting on digital competence, the TE at HiØ, feels that it is important for Teacher Educators to develop a mindset where TEs are open to explore digital teaching methods they may not completely master. In addition, it's important to be able to critically and theoretically reflect on the use of this technology.

When talking about her own experiences with technology, the TE says that she likes to try out digital technology herself, as well as in class with the Student Teachers. When they become teachers, the Student Teachers may not have any support when trying out new resources, so she can be a role model for them to see how their teacher educators' also experiment with technology in teaching.

When asked about the main challenges, the TE mentions three: lack of time, lack of skills and technical issues. When asked about how she thinks the institution should work with further competence development, she suggests that one way of engaging all colleagues would be to include more concrete ICT competence aims in the descriptions of learning goals in the courses in Teacher Education. She says that:

> *"In teacher education it is important to bear in mind that there are ICT skills required for student teachers, and we must provide opportunities for the students to learn these skills." Teacher Educator, Østfold University College*

Lastly, she reflects on how to encourage Teacher Educators to prioritize time to develop their own digital competence. She says it can be challenging because digital competence is not valued from a professional point of view as much as, for instance, research. Teacher Educators have many responsibilities and expectations: research, teach, follow up students, and so on. If the institution wants to continue the work with digital competence development, making digital competence more valued may encourage further engagement.

2.3.2   Case study 2: The Polytechnic Institute of Santarém (IPSantarém)

2.3.2.1   Background and context

In Portugal the Ministry of Education has issued the 'National Promotion for School Success' as well as a new student profile framework for students when completing Upper Secondary Education. Both measures focus on innovative practices in schools where the use of ICT plays an important part.

In the work of supporting the change in the educational system in Portugal, The Polytechnic Institute of Santarém (IPSantarém) is playing an important role by offering innovative teacher training programs and hosting one of ten regional ICT Competence Centres in Portugal. The ICT Competence Centre (CCTIC) supports the development and training of pedagogical ICT skills to in-service. As a teacher training institution in a system of change, the skills of the Teacher Educators are important, and IPSantarém supports the development of skills through working with flexible learning spaces.

2.3.2.2   Development of pedagogical digital competence on the institutional level

IPSantarém Director of the School of Education, Susana Colaço, describes teacher educators' key competences to include knowledge about how to use ICT in the

classroom, to be able to learn from colleagues and work collaboratively as well as being lifelong learners. In addition, Teacher Educators must be researchers. This idea of competence development is implemented in the institution by organizing teacher educators to work in teams, trying new methods and learning from each other both in virtual spaces and in the classrooms.

The institution does not have a specific framework for digital competence for Teacher Educators, but they work with a framework for Primary School students developed by the Ministry of Education both in the development of the competences of Student Teachers and Teacher Educators. The framework is divided into four competence areas: digital citizenship, research, communication and collaboration, innovation and creation. The institution works with these areas to enhance both Student Teachers' and Teacher Educators' competences.

To address the development of teacher educators' competences, IPSantarém started to develop new learning spaces, assuming that by changing the environment, the practices could also change. Teacher Educators are organised in teams working on different projects, for example with the implementation of the modules and MOOCs in the ITELab. Three or four teacher educators work together in teams created through a bottom-up approach, led by Teacher Educators.

To support the competence development of TE, the institution has three different units: the CCTIC, which depends on the Ministry of Education and organizes sessions and modules; a technology centre in charge of training in-service teachers, but also offers training for TEs; and an e-learning unit developing best practice models for e-learning environment and MOOCs.

IPSantarém works with national competence frameworks and in close cooperation with schools. To develop Teacher Educators' competence, the institution has worked actively on the development of learning spaces encouraging Teacher Educators to work together and develop new practices trying out and learning together.

In addition, the institution has units that support the Teacher Educators in their development, although the work is not systematized. The main challenges and roadblocks to develop new competences are time and funding. Regarding time, Teacher Educators must do research, attend conferences and follow up their professional development, as well as teaching and following up the in-service teachers. Even when Teacher educators are interested, it is difficult both to find and try out new resources and to find time to engage in deeper discussions related to the implementation of new methods.

Not all Teacher Educators are interested in developing their pedagogical digital competence, and when asked why some teachers do not want to use ICT in their teaching, Colaço says that it may be because they do not feel comfortable with using new technology. One way to help these teachers is by offering co-teaching:

> *"Sometimes we do co-teaching, we go there and we say I can go to your class and I can experiment with you." Susana Colaço, Director of the School of Education, IPSantarém*

2.3.2.3   Development of pedagogical digital competence on the individual level

At IPSantarém we talked to two Teacher Educators about the development of their pedagogical digital competence as individual TEs. When asked to define the Teacher Educators' key competences, they responded that Teacher Educators need to be open-minded, innovative and be able to work collaboratively. The work in teams is important: team members can share expertise and ideas with each other.

A Teacher Educator must be open-minded and search for new resources and strategies, be open to try new things and in this way be a lifelong learner. The TEs interviewed also underline the fact that Teacher Educators must be researchers by doing research on methods and practices with technology.

It is also important that the Teacher Educators involve Student Teachers in discussions about classroom practices and how new ways of teaching affect students learning, this way the Student Teachers will develop their critical thinking.

> *"Technology is always in the classroom. We don't think about teaching and learning without technology in this moment. We can't prepare our student teachers without technology today because in the schools they already have the technologies."*
> *Teacher Educator, IPSantarém*

The institution has a centre that offers courses and sessions to develop Teacher Educators' competences, and they also support the Teacher Educator if he or she wants to implement new practices in the classroom. The sessions are not organised regularly, but when there is a need to learn something new or share a new idea.

It is a challenge to find and explore new resources that would be good to use in schools. It is also a challenge to get Student Teachers to reflect about how to use and implement good resources in class.

To develop their own digital competence, the interviewed Teacher Educators like to experiment and try out new resources. They also think it is important to participate in projects like ITELab to be exposed to new ideas and collaborate with more people. They also work with colleagues and learn from each other, conscious of the need to be lifelong learners. The main roadblocks they encounter are time to explore new resources and do research on the resources. It is also difficult to find time to work collaboratively and to be able to link resources with methodology. A Teacher Educator has many responsibilities: to prepare teaching, do administrative work, follow up student teachers in placements, do research and so on, so finding time is a challenge.

Regarding evaluation, IPSantarém has an evaluation system that follow up different competences and values the development of digital competences. The institution intends to be a reference point in the area of innovation and wants teacher educators to be examples in this field.

To summarise, teacher educators do not mention specific competences related to technology when reflecting about key competences needed for teacher educators. Neither do they talk about specific frameworks and a systematic and planned competence development.

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3 DISCUSSION AND RECOMMENDATIONS

Figure 12: Development of recommendations in T2.5

3.1 DISCUSSION AND RECOMMENDATIONS FROM THE LITERARY REVIEW

As mentioned in relation to the variety of frameworks, there is a need for a specific framework for teacher educators. This framework should include competences that are specifically related to the task of supervising students and bridging the gap between theory and practice. Teacher Educators at the HEI need a complex competence including knowledge about how schools work because they need to know something about the context student teachers will be working in.

When designing the pilot survey, frameworks for pupils and citizens were used to define competence areas. As mentioned in the evaluation of the pilot survey, some of the areas included in the DigCompEdu were not covered by the pilot survey. This discovery means that those areas were not covered in the frameworks used for the design of the pilot survey either. The most important area that was not covered, was Empowering learners which is mainly about being competent in matters of inclusion. A recommendation from this discovery would be that the framework for citizen and learners should include elements of themselves developing digital competence to compensate for own difficulties in different areas.

3.2 DISCUSSION AND RECOMMENDATIONS FROM THE SURVEY

In general, the survey shows that Teacher Educators have competence in the use of ICT in an educational context. Obviously, the sample is a voluntary sample, and it would be likely that TE with low self-confidence did not answer the survey. It is not possible then to use the survey to generalise about Teacher Educators competence. What is interesting to discuss, is the statements that indicate lower self-confidence, which give an idea of which areas should be developed to a greater extent.

The first part of the survey included a ranking of importance of the areas, and this ranking shows that assessment is seen as the least important area to use digital technologies. In comparing the ranking and the responses on the statements related to assessment, TEs are less confident about their competence in more complex use of digital environments for assessment. It could be stated that less competence in the advanced use of digital tools for assessment also results in evaluating this area as less

important. A recommendation will then be to work more closely with TE in developing competence in digital tools for assessment and guiding.

Regarding the statements with lower percentage of confidence, all of them seem to relate to the guiding role of TE, that is guiding student teachers in their development in different areas. A recommendation regarding this point, could be a stronger focus on the complex role of a TE and the need for more specific training in this area.

3.3   DISCUSSION AND RECOMMENDATIONS FROM THE CASE STUDIES

There are some similarities and some differences in the two case studies, which together give a broad view on the development of Teacher Educators' pedagogical digital competence. In both cases, national initiatives and plans are an important driving force for the institutions' work, and institutional leaders prioritize and follow-up the development of pedagogical digital competence in the staff. Neither institution works with a framework developed at the institution or developed for Teacher Educators; both use national frameworks developed for Student Teachers or pupils.

In the TE-survey mentioned in the introduction, the Teacher Educators reported high levels of self-confidence in their own competence, and the Teacher Educators we interviewed in both case-studies also consider that they have a high level of professional digital competence. These findings suggest that there are many digital competent Teacher Educators across Europe, but of course less confident Teacher Educators may not have responded to the survey.

When discussing the topic in both cases, the picture is more varied. Each institution reports that some of Teacher Educators are not interested in developing their digital competence, and others do not feel enough confidence in their abilities. The Teacher Educators interviewed agree that it is important to change mindsets: a Teacher Educator should have an open mind and try out new things. This view also emerged as a key issue in discussions about Teacher Educators' competences at the School Innovation Forum in Brussels in June 2019. There, it was stressed that Teacher Educators are still learners and they need to improve their skills and keep up with technical innovation. In the following sections, three important issues emerging from the case studies: factors contributing to competence development; definition of Teacher Educators' competence and changes in the role of the Teacher Educator.

3.3.1   Factors contributing to competence development

Having the funding and being able to prioritize dedicated time in the TEs' schedules for Professional Development are important factors in ensuring a large-scale commitment at the University College of Østfold. A third factor is having a resource centre, a space where the TE's can go to get support and help.

The programme at Østfold University College is led by the head of studies and if someone is falling behind, he or she will be followed up by his or her line manager. The individual Teacher Educator has time and support to develop their skills, but as

competence development is time consuming, other measures such as a system for accreditation may be necessary as mentioned by the TE interviewed in the case study.

At IPSantarém, developing and using innovative learning spaces to help with TEs' Professional Development is a key success factor. Through the use of these spaces, the TEs are 'forced' to change their practice. IPSantarém has also ensured that TEs have support to make those changes. And, like UC Østfold, a support centre for TEs has been created.

There is little doubt that TEs are pressed for time, and they find that technical issues are a challenge, issues mentioned by all three TEs interviewed in the two case studies. Having funds to ensure dedicated time for CPD and ensuring a solid support system for TEs, as in these case studies, can alleviate the challenges of time and help with the technical issues.

The challenges with having enough time for their own competence development is influenced by all the other pressures the TEs face as academics. They are expected to do research and publish articles etc., which is time consuming. Being published is a qualifying measure more than teaching merits and having digital competence. TEs are also expected to be experts and continue to develop their competence and knowledge in their subject field, which often is not Teacher Education. So how can TEs be expected to prioritize developing their pedagogical digital competence, in competition with so many other expectations?

3.3.2 Definition of Teacher Educators' competence

How concrete skills and competences needed by TEs differs from one institution to another, and a broader discussion about key competences may be needed to arrive at an agreed set of common competence areas. One topic discussed on the School Innovation Forum was the need for a shared framework for teacher educators, at a time when many frameworks are in use. The institutions in our case studies use several different frameworks, none of which is specifically made for Teacher Educators, but for teachers and students in schools and educators in general. This suggests that the aim of competence development for TEs in the case studies is related to giving the TEs the competence they need to keep up with developments in schools. So, instead of being the driving forces for change in Teacher Education, the focus is on developing necessary competences to use the technology already implemented in schools. This raises the question about the role of Teacher Education and TEs. Shouldn't Teacher Education be a place for innovation and critical use of technology? With TEs being exemplary role models?

When considering the frameworks used and the skills developed, the TE from University College Østfold emphasised that TEs need to have both theoretical and practical skills and competences. There is a need for technical skills, but they should be combined with knowledge about how technology influences schools and society as well.

As seen, Østfold University College has decided to use funding to establish a compulsory competence development programme for all Teacher Educators. The programme is structured and includes specific competence aims, and Teacher

Educators are followed up if they need support. The programme builds on what is regarded as important competences for Student Teachers, and do not address specifically the role and competence needed for Teacher Educators. The aim of the programme is to give all Teacher Educators a basic knowledge about how technology works, as well as practical competence they can use with their students.

The Polytechnic Institute of Santarém (IPSantarém) has a strong focus on developing teacher educators' key competences through the development of new learning spaces and support from special units in charge of supporting the development of pedagogical digital competence.

At the same time, engagement in this development depends on each individual TE. They are encouraged to try out new practices and develop new competences, but they can choose to not participate. Further, competence development is not systematized through the use of a framework to define specific competences or through a planned competence development of all teacher educators.

When responsibility for their own competence development is left to the individual Teacher Educator, as in the case of IPSantarém, the TEs with less interest in developing pedagogical digital competence are less likely to devote time to their own development, and in turn are more likely to lack the competences required. At UC Østfold the TE interviewed also raised the question about what will happen when the programme is finished. At one point, TEs will have a certain level of competence, but then it will be up to each individual if he or she wants to continue to develop his or her competence.

Important questions to follow up in further work are: Is it possible to define what professional competence Teacher Educators must have that is different from other educators? Is it a problem that in the end the competence development depends on the individual TE's interest and engagement?

3.3.3   Changes in the role of Teacher Educators

The Director of IPSantarém talked about TEs co-teaching and helping to support each other in their Professional Development. Traditionally, teaching staff at Higher Education Institutions, including TEs, are seen as experts in their field. There may not have been a widespread tradition for collaborating when it comes to teaching, but when developing their own pedagogical digital competence and the use of technology in their own teaching, the TEs in these cases all agreed on the importance of close collegial collaboration. The TE from UC Østfold even suggested using a buddy system.

The same TE pointed out the importance of experimenting in her own teaching, so that the Student Teachers see that it's acceptable to try new things. This also challenges the expert role that traditionally associated with HEI teaching staff. Perhaps there is a need for a shift or a change in how we view the TE's role in educating future teachers? Perhaps there's less need of an expert role and more need for an experimental or innovative approach to teaching in Teacher Education, with and without technology? Two important questions then are how this aligns with other

demands TEs face in their academic field, and how to ensure that the development of TEs' pedagogical digital competence is made a priority.

The two case studies outline a number of good ideas for how HEI can make pedagogical digital competence a priority and underline the importance of leaders in prioritizing funding and other facilitators, such as dedicated time, in the competence development of their TEs.

3.4 FINAL RECOMMENDATIONS

Work to build greater awareness about the need for pedagogical digital competence development for teacher educators.

- Work closely with teacher educators, schools, student teachers and policy makers to define which competences should be required and develop a framework for teacher educators.
- Recognize the complexity of the role of the teacher educator.
- Recognize that the role of the teacher educators is changing from an "expert role" to a more "guiding role".
- Institutions should dedicate time and resources for pedagogical digital competence development for teacher educators, and recognize that this is an area that is valued at the same level as development of other competences.

4 LITERATURE

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