2 Quality in teacher education programs

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Introduction

The quality of a teacher education (TE) program has an impact on student teachers' competence development and, in the long run, is important for enhancing the quality of teaching practice in schools (Boyd et al., 2009; Darling-Hammond & Youngs, 2002). Conceptions of quality in TE are contextual and reflect current understandings of what the desirable aims are to work toward. In this chapter, the term quality is used as a positive description of necessary preconditions for and various characteristics of what constitutes good professional university-based TE programs.

Teaching is an exceptionally demanding profession, resulting in complex and interdisciplinary professional TE programs with challenges related to coherence and integration. Complexity and tensions are features of both learning in different arenas and teachers' professional knowledge (Hermansen & Mausethagen, 2023). Thus, quality in professional TE programs involves descriptions of various aspects of and actors in the programs. Previous research has identified several divisions of dimensions and various features and indicators of quality in professional and higher education in general and TE in particular. However, there is an "urgent need for conceptual frameworks and shared instruments as means to investigate quality features of teacher education" (Klette & Hammerness, 2016, p. 28). The aim of this chapter is to provide a conceptual framework and comprehensive overview of the quality features of professional TE programs that serve as the basis for designing professional research-based and practice-oriented programs. This chapter provides a theoretical framework describing quality features, particularly focusing on program coherence and integration; quality work; transformative partnerships with schools; professional knowledge base; continuing education of teacher educators; student teachers' agency and study engagement; and learning opportunities on campus and in schools. The description of the various quality features builds on high-profile studies found in the international and national literature on quality features in TE. The described features may serve as a framework to analyze and discuss how the innovations described in Chapters 4–16 contribute to enhancing the quality in the TE programs at

the University of Oslo (UiO) and UiT The Arctic University of Norway (UiT). The framework may also serve as an inspiration for programs at other institutions.

Describing quality in teacher education

Although there is an overlap and interconnections between descriptions of quality in TE and quality in schools (quality in schools is described, for instance, in Blikstad-Balas et al., 2021; Hattie, 2011), the focus of this chapter is on quality in TE programs. The argument is that describing quality features in TE is a necessary starting point for analyzing and developing quality in research-based programs. However, the concept of "quality" in education can be perceived and described in various ways (Elken & Stensaker, 2018; Vestøl, 2016; UNESCO, 2021). The term "quality" has also been criticized for being contentless, vague, and fuzzy. Thus, the term quality needs to be operationalized and connected to something concrete, such as a description of the essential characteristics of objects, products, processes, institutions, or educational programs (Wittek & Kvernbekk, 2011). In this chapter, the term *quality* is used as a positive description of what the literature characterizes as the necessary preconditions for and features of good, desirable, and transformative TE programs.

A transformative perspective on teacher education

Living in the world today involves meeting challenges related to rapid climate change, equity issues, and artificial intelligence; in addition, in many countries, democracy is under pressure. For teachers and teacher educators, the rapid development of knowledge, society, and curriculum implies that teachers must constantly refresh and develop their professional competence. In Norwegian TE, it is a stated goal to educate teachers who have the competence to use research-based knowledge to observe, analyze, and further enhance their teaching practice and develop their professional competence (Norwegian Ministry of Education and Research, 2018). Thus, teachers and teacher educators face complex challenges requiring them to be agents that have the competence to change the situations they find themselves in, using resources or developing innovations "to break out of status quo and transform the situation" (Lund & Vestøl, 2020, p. 1). The concept of transformation is used to describe a significant or qualitative change, and a transformative perspective understands quality as a dynamic change and as a process that leads to increased value (Vestøl, 2015). Transformation is not a superficial change and cannot be reversed. Instead, transformation amounts to deeper and more sustained processes, meaning that we change as human actors (Lund & Vestøl, 2020). In the past decade, a transformative perspective has been used in at least three ways to describe quality in TE. First, it has been applied to describe the transformative processes linked to the development of TE as an organization and as

educational programs (Ellis & McNicholl, 2015; Lund & Eriksen, 2016). Second, a transformative perspective has been used to describe transformative learning activities that may lead to transformative learning processes within the individual student (Cheng, 2014; Hatlevik, 2018a; Mezirow, 2009). Third, a transformative perspective is utilized to describe desired learning outcomes, namely the transformation of knowledge and transformative agency (Fosse, 2016, 2023; Lund & Vestøl, 2020; Vestøl & Lund, 2017).

Underlying all three ways of using a transformative perspective on quality in TE is the premise that student teachers are at the center of attention and that those who take part in efforts to transform are agentive; through transformation, student teachers become empowered (Aagaard & Lund, 2020, Vestøl, 2016). In this chapter, those agents who take part in efforts to transform include both student teachers and teacher educators on campus and in schools. Furthermore, transformation involves a dialectical relationship between context and actors—both change along the way (Lund & Vestøl, 2020). When the actors are teacher educators, it is the program and learning opportunities provided that are transformed, and when the actor is a student teacher, it is professional competence and teacher identity that develop.

Quality dimensions and features of teacher education

In this chapter, a transformative perspective on quality in TE is acknowledged and supplemented by research focusing on other features of and preconditions for quality in TE programs, educational provision, and student learning. In doing so, various quality features of professional TE programs are outlined. The aim of this description is to operationalize and raise awareness of various characteristics of what constitutes good professional TE, that is, what are desirable aims to work toward in TE. In line with the three ways of using a transformative perspective in describing quality in TE, a distinction is made between quality features that describe the following three quality dimensions inspired by Gibbs (2010): 1) program quality—what precedes the educational provision; 2) process quality—what goes on as student teachers learn; and 3) product quality—product of the education, student teachers' competence, and identity development.

Product quality is understood in terms of the number and characteristics of student teachers graduating, the outcomes of their learning, and whether they have developed sufficient professional competence and identity as teachers. The indicators of product quality can provide a general indication of how well educational provision in total is functioning. However, the aim of this chapter is not on product quality but rather to describe features that particularly address what research literature provides of knowledge about the characteristics of good professional research-based and practice-oriented TE that can be used in designing, developing, transforming, implementing, and analyzing TE programs. Thus, this chapter concentrates on the first two quality dimensions.

Figure 2.1 illustrates the three quality dimensions in separate circles. The outer circle represents program quality, the middle circle represents process quality, and the inner circle represents product quality. Thus, the various circles illustrate that both program quality and process quality influence student teachers' competence and identity development (inner circle). The placement of different elements in the circles illustrates that the program quality features (outer circle) set the framework for process quality features (middle circle) and that student teachers' agency and study engagement and what happens in the various learning activities offered on campus and in schools (process quality) have the greatest direct influence on student teachers' learning and professional competence development (product quality— inner circle) (Gibbs, 2010).

Figure 2.1. is a static snapshot; in reality, the individual elements are in dynamic and reciprocal relationships with each other, which are commented upon in the following sections. The keywords in the outer and middle circles in Figure 2.1 represent the overarching quality features of the program and process quality described in more detail in the following text. Table 2.1, at the end of this chapter, summarizes the sub-features for each overarching quality feature in professional TE programs useful for analyzing, designing, developing, and transforming TE programs. The sub-features are also marked in italics in the main text.

Figure 2.1 Illustration of quality dimensions and overarching quality features in teacher education.

Program quality—What precedes the actual educational provision (outer circle)

There is a range of different quality features describing the context before student teachers start learning. First, the context includes funding and national standards and regulations for programs. TE in Norway is publicly funded, and learning outcome descriptions for the TE programs are nationally regulated (see Chapter 3 for more information). Second, the context concerns the characteristics of the student body admitted to the individual study program. Third, the context includes enabling inputs, such as physical infrastructure and facilities, teaching and learning materials, and human resources. These three quality features set the framework for TE programs and influence what learning activities are possible to offer. These are frames teacher educators must plan according to and may only have an indirect impact on. For instance, teacher educators are experts on TE and may, as experts, be consulted or actively seek to influence educational policy. Although this aspect is important, activities aimed at influencing educational policy are not the focus of this chapter.

Finally, the context is about the actual design of the study program and the characteristics of processes and work related to program design, assurance, maintenance, development, and transformation. A transformative perspective on program quality focuses on transforming TE through strengthening collaboration between teacher educators at the university and in schools, and student teachers (Ellis & McNicholl, 2015). In addition, this perspective emphasizes how knowledge sharing between stakeholders leads to creative innovations that enhance the quality of programs (Ellis, 2016; Ellis et al., 2019; Jakhelln et al., 2017). In the following sections, we focus on quality features for what precedes the actual educational provision that institutions have direct impact on and can do something about and that are especially relevant for designing and transforming research-based and practice-oriented TE programs, including coherence and integration, quality work, transformative partnerships with schools, teachers' professional knowledge base, and the continuing education of teacher educators.

Program coherence and integration

Program coherence plays a significant role in shaping what student teachers take away from their studies (Buchmann & Floden, 1992; Hammerness, 2006) and has been described as a key feature in strong TE programs (Darling-Hammond, 2006; Grossman et al., 2008; Klette & Hammerness, 2016). Previous research has emphasized program–fieldwork coherence (Grossman et al., 2008), conceptual coherence, structural coherence (Hammerness, 2006), students' sense of coherence (Hatlevik & Havnes, 2017; Lejonberg & Hatlevik, 2022), and coherence as process (Richmond et al., 2019) as important features for coherence in TE. *Program–fieldwork coherence* entails coherence between learning on campus and during practice periods in schools (Grossman et al., 2008). Klette and Hammerness (2016) propose that

quality teacher education is designed around a clear and shared vision of good teaching; it is coherent in that it links theory with practice and offers opportunities to learn that are aligned with the vision of good teaching and it offers opportunities to enact teaching.

(p. 28)

Opportunities to enact teaching are also a feature of process quality, which is further elaborated upon in the section "Learning opportunities on campus and in schools."

Conceptual coherence implies shared visions of good teaching—what and how student teachers learn—among the teacher educators on campus and in schools (Hammerness, 2006) and if student teachers "also share the vision, they will be motivated to gain the envisioned knowledge, skills, and dispositions" (Floden et al., 2021, p. 9). However, "Simply having a vision of good teaching is not enough. The vision needs to inform program design, curriculum, and pedagogy, and shape what and how new teachers learn" (Klette & Hammerness, 2016, p. 29). *Structural coherence* concerns designing the various components (courses on campus and practice periods in schools) in the program so that they build on each other and reinforce each other (Hammerness, 2006). A program that is conceptually and structurally coherent implies that different actors can "identify the central ideas that undergird the program across course syllabi, reading lists, and main assignments" (Klette & Hammerness, 2016, p. 29). Furthermore, Klette and Hammerness (2016) conceptualize coherence as

a consistent approach to teaching and learning that informs program construction both within coursework, across courses and between field-work and university classes. A coherent program has a set of courses that are conceptually linked, is designed to deliberately build understanding of teaching over time, and has careful alignment between university coursework and field placements.

(p. 29)

In addition, Floden et al. (2021) underline that to promote coherence, individual teacher educators need to "take responsibility for moving beyond the individual course they teach and consider how this set of experiences fits into the program vision and into the scaffolding of learning opportunities across the program" (p. 7). Coherence and integration are used as closely connected concepts in the description of ProTed's objectives, which aim to develop integrated TE programs. Integrated programs imply a "coherent study design where scientific subjects, school subjects, pedagogy, subject didactics, theory, and practice constitute a whole as the basis for teaching as a profession" (Vestøl, 2016, p. 74). Additionally, integration refers "to the way teacher education programs try to facilitate productive intersections between fields of knowledge such as scientific content knowledge, pedagogical knowledge and practical knowledge" (Vestøl, 2016, p. 76).

However, the core of the coherence problem is the extent to which student teachers perceive the study program as coherent (Canrinus et al., 2017). Floden (2021) describes this as the "insider/outsider" problem, meaning that individuals within the system (teacher educators) who regularly work with are collectively committed to a set of visions of good teaching that are not visible to those who do not live and work within this system (student teachers). The insider/outsider problem may lead to confusion, frustration, and a perceived lack of coherence among student teachers as they make their way through their program. Hatlevik and Havnes (2017) argue that student teachers' perceptions of educational content and demands being comprehensible, manageable, and meaningful are the core components of sensing coherence in professional education. Design principles related to *student teachers' sense of coherence* entail facilitating student teachers to 1) perceive the content of the education as understandable, structured, and coherent (comprehensibility), 2) become confident that they have sufficient resources alone or in cooperation with others to manage and master the requirements of education and later professional practice (manageability), and 3) perceive the content of the education as meaningful, relevant, and useful for professional practice as a schoolteacher (meaningfulness) (Lejonberg & Hatlevik, 2022). The last element—meaningfulness—is in line with what, according to Grimen (2008), can serve as an integrating element in professional programs, namely that the different parts of the program and different types of professional knowledge in various ways are relevant to professional practice. It is in professional practice in schools that one can see how different types of knowledge and skills play together, forming the necessary basis for planning, justifying, implementing, and reflecting on practice. Thus, clarifying the connection between the theoretical and practical parts of education entails providing practical justifications for the learning content. This especially applies to theoretical pedagogical knowledge that cannot be directly applied in teaching but that instead is suitable for explaining and providing a greater understanding of professional practice. However, tensions and inconsistency between different types of knowledge and learning in different arenas cannot be completely abolished (Hammerness, 2006) but are something student teachers must learn to manage. Buchmann and Floden (1992) point to the difference between consistency, which is logical relations without contradictions, and coherence, which "allows for many kinds of connectedness, encompassing logic but also associations of ideas and feelings, intimations of resemblance, conflicts, and tensions" (p. 4). Experiences of tensions and contradictions may provide an opportunity for the development of a deeper understanding of the learning content, thus promoting transformative learning (see the section "Learning opportunities on campus and in schools") and professional identity development (Engeström & Sannino, 2010). Therefore, students managing inconsistencies and experiencing a sense of coherence are something that the students themselves must create. This means that student agency is an important prerequisite for student

teachers' learning and competence development (see the section "Student teachers' agency and study engagement").

Coherence as process addresses variation about program goals and visions among teacher educators working in any given program and represents an ongoing principled reflection about program quality; it is characteristic of a high-quality program (Richmond et al., 2019). Collective reflection among teacher educators is important to ensure that visions of good teaching are not understood by individual student teachers in a variety of ways that are not intended by teacher educators (Floden et al., 2021). Facilitating program coherence—particularly coherence as process—requires an institutional culture that supports the time and space for teacher educators in the university and in schools (with distinctly different visions and commitments) coming together to recreate a whole that is coherent, with shared understandings of what student teachers should learn, how they should learn, and why (Floden et al., 2021). Coherence as a process is an essential characteristic of quality work in professional programs and a well-functioning transformative partnership with schools that is elaborated upon in the following section.

Quality work

The concept of quality work was launched by Elken and Stensaker (2018) as particularly suitable for analyzing the processes related to the enhancement and maintenance of the quality of educational programs in higher education. In the process of ensuring and increasing the quality of educational programs, there may not only be a need for significant transformation but there is also a need for maintenance and minor changes and adaptations, which can be better described as enhancement and further development. Elken and Stensaker point out that there are several activities and practices at educational institutions that address efforts to enhance and maintain quality in educational programs and label these as quality work. Quality work encompasses a dynamic and pragmatic understanding of quality that addresses the many processes, activities, and dilemmas involved in developing and running educational programs. Quality work involves *multiple processes, coordination*, and *communication between different actors* involved in TE. In TE, different actors typically include the representatives of partner schools, teacher educators with various professional backgrounds, administrative staff, and student teachers. An ongoing principled discussion among teacher educators about visions of good teaching labeled coherence as process in the prior section is an example of communication between different actors.

Furthermore, it is important that quality work take a practice-oriented approach, "where quality work *can span multiple organizational levels* and arenas within higher education institutions, *encompasses both formal and informal processes*, and involves a variety of actors within these institutions" (Elken & Stensaker, 2018, p. 190, emphasis added). In addition to spanning various

arenas within the TE institution, quality work includes cooperation with the field of practice. University–school partnerships represent an important strategy to ensure quality work in cooperation with the field of practice that helps ensure that TE is professionally relevant (see the section "Transformative Partnerships with Schools" and Chapter 11). Furthermore, a key dimension in quality work is that it "is purposeful and intentional, yet the outcomes need not to be predetermined" (Elken & Stensaker, 2018, p. 195).

Moreover, quality work is *based on the need to renegotiate and balance different points of view*, and it requires an open process in which the *intention can be to find good solutions to specific problems, innovation, or maintenance of educational programs*. Therefore, central to quality work is both collective collaboration and the role of the individual actors and their actions as a basis for understanding both the development and maintenance of educational programs. The various actors who put intention and effort into quality work become both problem solvers and innovators; however, their success cannot be taken for granted (Elken & Stensaker, 2018). In line with Fullan and Quinn (2016), Floden et al. (2021) argue that for program leaders, this involves "conversation about several topics to ensure high-quality implementation related to program goals:

> (a) focusing direction to build collective purpose; (b) cultivating collaborative cultures, which build collective capacity to do the work; (c) deepening learning, which can accelerate program improvement and innovation; and (d) securing accountability based on capacity built from within the program out to university leadership.
>
> (p. 9)

By emphasizing quality work as an important feature of quality in TE, this chapter highlights the importance of educational leadership and various actors' participation in the activities that aim at quality maintenance, development, and transformation in educational programs. In the following section, a transformative partnership with schools is elaborated upon as an important strategy to ensure the continuing quality work and transformation of TE programs.

Transformative partnerships with schools

Partnerships between TE institutions and schools are a prerequisite for good TE (Darling-Hammond, 2006) and can describe somewhat different arrangements regarding cooperation on student teachers' practical training and mentoring provision in schools (Farrell, 2023; Green et al., 2020; Smith, 2016). Jones et al. (2016) distinguish between connective, generative, and transformative partnerships. Transformative partnerships are characterized by collaboration and "active involvement of all partner members in planning and

delivery of curriculum for the purpose of professional learning" and as "on-going and embedded in the programs of the collaborating institutions" (p. 115). In addition, Jones et al. (2016) point out that a transformative partnership facilitates professional development among both student teach-ers and teacher educators at schools and the university. Since 2009, estab-lishing this type of transformative partnership between TE institutions and a few selected university schools (also named TE schools) has been an impor-tant strategy put forth at both UiO and UiT to ensure continuing quality development of TE programs, strengthen the quality of practical training, and increase research-based development in schools (Hunskaar & Eriksen, 2019; Jakhelln, 2015; see Chapter 11).

Previous research indicates that well-functioning partnerships with univer-sity schools can influence the quality of TE programs by contributing to the management and implementation of study programs, including courses, teach-ing, evaluation, and practical training on campus and within school practice (Hatlevik et al., 2020). However, partnerships between universities and schools involve challenges and tensions (Breault & Breault, 2010). Zeichner (2010) has introduced the term *third space* as a metaphor for a participatory approach to professional practice *where teacher educators on campus and in schools, together with student teachers, collaborate and co-construct knowledge about teaching.* In a scoping review of partnerships as third spaces for profes-sional practice, Daza et al. (2021) find that previous

> studies conceptualize the third space as a construct where identities are in constant negotiation and where epistemologies converge. The poten-tial of the third space to support a less hierarchical structure in school–university partnerships is evident across the studies. However, the studies also acknowledge tensions in the third space relating to both the partici-pants' relationships and the sustainability of the third space in teacher education.
>
> (p. 12)

Moreover, the third space is an ongoing effort and a continuous process, requiring continuous negotiation and underlining the importance of facilitat-ing coherence-as-process, which has been described in the section "Program coherence and integration."

In addition, previous systematic reviews of research on partnerships in TE (Green et al., 2020; Lillejord & Børte, 2016) have highlighted a range of pre-conditions and elements of successful partnerships between TE institutions and schools. First, s*trong academic and administrative leadership in TE insti-tutions and engaged leadership in schools, coordination, sufficient resource*s, *and predictable funding* are highlighted as keys to successful partnerships. Second, it is important that the partnership emphasizes *symmetry* in the sense that the university and school are equal contributors to TE and that teacher educators

in the two arenas have complementary roles. *Equality* is about both parties recognizing that the actors in both learning arenas contribute important and complementary knowledge in TE. Third, a successful partnership is characterized by open and trusting relations that evolve over time between school and university personnel, which, in turn, implies the importance of clear communication and facilitating *dialogue between the parties on how the collaboration should be formulated and implemented*. This means both that meeting places are established for collaboration and that the various parties participate and contribute to each other's arenas. Fourth, it is important that both schools and TE institutions recognize that they benefit from the partnership, meaning that they *collaborate in ways that both parties perceive as meaningful and useful for their primary social mission*. For the TE institution, this means that the university–school collaboration contributes to the development of the quality of TE, thus promoting the student teachers' learning. Similarly, this means that university schools find collaboration to be a benefit for the professional development of the school and individual teachers, hence having a positive influence on students' learning. Fifth, *mutual and realistic expectations*, *a common goal, and a shared understanding and vision* are important preconditions for successful partnerships, which implies that partners must fully understand what the partnership expects of them and how they may contribute. Sixth, *concrete collaborative projects* are those in which the partners jointly create a common product. Seventh, the cooperation is not static entities but constantly evolving. Therefore, partnerships should be perceived and treated as *dynamic and continuous processes*.

Professional knowledge base

Teachers' professional knowledge has an impact on teaching quality and students' learning in schools (König & Pflanzl, 2016; Kunter et al., 2013). Thus, an overview of the main features of the professional knowledge base is a necessary starting point when selecting or making changes to learning content and curriculum in TE programs. The knowledge base of professions is a complex phenomenon, which can be described as an amalgam of theoretical knowledge drawing on different scientific disciplines and practical skills and familiarity with specific situations. Thus, teachers' professional knowledge base is not well connected theoretically, and various knowledge elements in curriculum in TE programs are chosen because they can illuminate and/or provide a basis for action in professional practice (Grimen, 2008; Hermansen & Mausethagen, 2023). Shulman (1987) provides a well-known framework of categories of the knowledge base for teachers that has inspired research on the development of teachers' professional knowledge and selection of learning content in TE. In more recent studies, the descriptions of the categories have been somewhat altered, and additions have been made. Inspired by Shulman, a recent review by Metsäpelto et al. (2022) and other relevant research literature, the description of the professional knowledge base student

teachers need to learn is divided into seven main types of knowledge: 1) content knowledge, 2) pedagogical knowledge, 3) subject didactics, 4) professional digital competence, 5) contextual knowledge, 6) practical knowledge, and 7) research literacy.

Content knowledge refers to

> domain specific knowledge, of facts, concepts, and key phenomena, comprehension of the structure of the subject knowledge and how such knowledge is generated [Shulman, 1987; see also Ball et al., 2008], and thorough understanding of the curricular content to be taught [Baumert et al., 2010].
>
> (Metsäpelto et al., 2022, p. 11)

Content knowledge concerns the educational *what* while both pedagogical knowledge and subject didactics concern the educational *why, how, when*, and *whom* but at different levels of abstraction.

Pedagogical knowledge is generic and domain general and includes "broad principles and strategies of classroom management and organization that appear to transcend subject matter" (Shulman, 1987, p. 8), knowledge about the learners and their individual characteristics, the learning processes, motivation, instruction, assessment (Guerriero & Révai, 2017), and adaptation—how to deal with heterogeneous learning group (König et al., 2011).

Subject didactics, which is also called pedagogic content knowledge, combines the subject content with teaching (Shulman, 1987) and concerns teachers' understanding of how to help students understand specific subject matter (Magnusson et al., 1999, p. 96). Subject didactics consists of the knowledge of the curriculum, the most regularly taught topics in one's subject area and their most useful forms of representation, an understanding of what makes the learning of several topics easy or difficult for students, curriculum, assessment, and the purposes and goals of teaching (Evens et al., 2018).

For the past 10 years, the integration of digital technology into pedagogy has emerged as a crucial teacher competency (Gudmundsdottir & Hatlevik, 2018; Ottestad et al., 2014). *Professional digital competence* concerns "how to make optimal use of ICT and make the best of potential that lies in ICT for teaching and learning" (Brevik et al., 2019, p. 1), which implies that student teachers acquire "the ability to develop innovative ways of using technology to enhance learning environment, and to encourage technology literacy, knowledge deepening and knowledge creation" (UNESCO, 2011, p. 8). Professional digital competence involves both the ability to adapt teaching practices to digitalization and to design and enact learning environments and activities conducive to their students' learning (Lund et al., 2014). Thus, professional digital competence "is highly contextual and requires student teachers who can assess the affordances of digital resources and connect them to learning objectives to achieve optimal outcomes" (Brevik et al., 2019, pp. 1–2).

Contextual knowledge is an understanding of the sociocultural context in which the teaching occurs (Metsäpelto et al., 2022). Contextual knowledge involves knowledge of and critical reflection on micro, meso, and macro levels and understanding how the different levels interact and are influenced by each other (Darling-Hammond, 2006; Hovdenak, 2014). The micro level is about the school and the classroom: Who are the students and the teachers, and what resources do they have at their disposal? The meso level concerns the normative guidelines for the content of the school: What do the curricula say about what to teach, and how is this curriculum operationalized in the classroom? The macro level is about the society for which teachers educate: What values should form the basis for our society, what is useful knowledge for the future (Hovdenak, 2014), and what is the purpose of and what constitutes good education? (Biesta, 2009).

Practical knowledge, also called wisdom of practice (phronesis) (Shulman, 1987), refers to the knowledge of and a capacity to grasp the salient features of situations in the classroom holistically and to make ethically and practically sound judgments in specific situations. Practical knowledge requires methodological knowledge (techne) and theoretical knowledge (episteme) (Hovdenak, 2014), which builds on knowledge from previous practices and is acquired through deliberative reflection about these practices (Cochran-Smith & Lytle, 1999). Practically wise teachers are aware of and concerned with not only their own interpretations in practice, but also the dialogic possibilities implicit in the recognition of the interpretations of students, coworkers, and others (Kinsella, 2012). A practical wise teacher deliberately seeks to make ethical choices and aspires toward the Aristotelian ideal of doing the right thing to the right person at the right time in the right way and for the right reason (Sellman, 2012).

Research literacy is defined by Evans et al. (2017) as "the ability to judiciously use, apply, and develop research as an integral part of one's teaching" (p. 404). The BERA-RSA report (Furlong et al., 2014) uses the term research literacy to describe a teaching profession that can develop schools from within, and research literacy is seen as a key dimension of the teacher as professional. Eriksen and Brevik (2022) conceptualize research literacy as more than engagement *with* research, arguing that simply reading, understanding, and applying research is not enough for student teachers "to get" research. They emphasize that active engagement both *with* and *in* research is essential for developing a research literacy way of thinking. This is in line with Edwards et al. (2002), who point out that the ultimate quality goal in TE is to educate professional teachers who are "users and producers of knowledge about teaching, in communities of practice which are constantly refreshed through processes of professional inquiry, in partnerships between practitioner and researchers" (p. 125). Chapters 6 through 10 shed light on how student teachers' participation in research and writing of master's theses contributes to developing research literacy in TE. This description of the complexity of the

various knowledge domains in teachers' professional knowledge base points to the complexity of competence requirements and the need for continuing education for teacher educators.

Continuing education of teacher educators

A good academic environment is important for the program quality and presupposes competence profiles among the teacher educators that contribute to the professional development of the study program and achievement of learning outcomes, good interaction between employees, thoughtful use of external teachers, cooperation on the development of the study program, and the inclusion of the student teachers in professional communities (Aarstad et al., 2019). Thus, teacher educators play a crucial role in the learning process of student teachers (van Veen, 2013); here, the role of teacher educators and the didactics of TE are highlighted as crucial to raising the quality of TE. It has been pointed out that the teacher educator must be recognized and supported in this work (OECD, 2019). Therefore, a description of the quality features of TE also touches on a description of the knowledge base of teacher educators and competence requirements and routines for educating the educators. A teacher educator is "someone who provides instruction or who gives guidance and support to student teachers, and who thus renders a substantial contribution to the development of students into competent teachers" (Koster et al., 2005, p. 157). Thus, the concept of "teacher educator" includes both teacher educators in schools and on campus (Andreasen et al., 2019).

In schools, teacher educators are schoolteachers with mentoring responsibilities during student teachers' practical training periods. Clarke et al. (2014) point out that teacher educators in schools, in addition to being schoolteachers, are key contributors to TE by offering an authentic learning context, modeling professional practice, providing feedback to student teachers, facilitating the development of their practical knowledge and professional reflection, being agents of professional socialization by including student teachers in colleague communities, being gatekeepers to the profession, and acting as change agents in the school community. In the literature, these schoolteachers are called cooperating teachers (Clarke et al., 2014), supervisors (Burns et al., 2016), and mentors (Hobson et al., 2009; Schwille, 2008). In this anthology, the concepts of mentor and mentoring are used to signal a less hierarchical and more dialogical understanding of the task of guiding and supporting the student teachers in their practical training. Schwille (2008) points out that "good teachers do not automatically become good mentors" (p. 165) and that mentoring is a professional practice. Conceptualizing mentoring as a professional practice implies that mentors, in addition to possessing professional teacher knowledge (outlined in the previous section, "Professional knowledge base"), need to learn a repertoire of mentoring strategies (skill sets), knowledge about the student teachers, and how to connect the various knowledge elements

(Schwille, 2008, p. 165). The complexity of mentoring tasks indicates that special knowledge and expertise are required to be a mentor and that this should have implications for who should be responsible for the mentoring and how they are prepared and supported for this work (Burns et al., 2016; Hobson et al., 2009; Schwille, 2008). In a review, Nesje and Lejonberg (2022) found that, when used strategically, the use of technological, discursive, and epistemic tools in mentoring may contribute to quality in mentoring by linking theoretical knowledge to student teachers' experiences in school. Thus, TE institutions' engagement in developing mentoring tools may enhance quality in student teachers' practical training periods in schools (see Chapters 12 and 16). In addition, Burns et al. (2016) point out that mentors should have the competence to evaluate their own practice (conduct self-study) and participate in research and innovation to improve mentoring provision. Self-study entails that mentors have the competence and time to collect and analyze information about their own practice. Examining one's own practice can be jointly carried out between mentors to increase the collective mentoring competence at the school. By participating in testing and research on new models and methods and tools that can be used in mentoring, the participants can both increase their own mentoring competence and contribute to producing knowledge about mentoring. In short, mentors need to be *carefully selected*, participate in *mentoring programs* provided by the university, and *conduct self-study*; in addition, there should be *routines for follow-up of the mentors from the school's management and from the university*.

Being a university teacher educator is a diverse and complex profession (Flores, 2017; Langørgen & Smith, 2018), and teacher educators at universities have diverse backgrounds and may differ in their professional identity and understandings of their role as teacher educators (Vanassche & Kelchtermans, 2014). Davey (2013) has identified three pathways for working as a university teacher educator: 1) previous work as schoolteachers (the practitioner pathway), 2) holding a doctorate degree in an academic discipline or in the field of education/pedagogy (the academic pathway), and 3) a combination of both 1) and 2) by starting out as a schoolteacher and gaining a doctorate degree later in their career. There is scant research on what constitutes the knowledge base of teacher educators at universities (van Veen, 2013). However, Mork et al. (2021) have outlined the knowledge domains for science teacher educators that can be transferred to other groups of teacher educators at the university level; they underline that, even though subject knowledge is essential, being a university teacher educator involves much more than being a competent schoolteacher. University teacher educators are expected to have in-depth and meta-level knowledge and skills building on and extending those possessed by schoolteachers and need knowledge of teaching and learning for students in higher education (see the section "Process quality—What goes on as student teachers learn (middle circle)") to model how to teach in schools and demonstrate research-based teaching. Being a teacher educator differs from other academic positions at the university because teacher educators

model the profession for which they educate (Ulvik & Smith, 2016). Thus, being a teacher educator is constantly holding a dual role (Ben-Peretz et al., 2010). On the one hand, they must teach student teachers about academic knowledge and pupils' learning, and on the other hand, they must constantly be aware of their own teaching and modeling, both of learning and of the role of a teacher. In addition, Loughran (2013) argues that, implicit in the term university teacher educator, there is a premise that "a teacher educator should be a scholar, and that scholarship itself is deeply embedded in an interactive process of research and practice that has a major focus on learning about the teaching of teaching" (p. 20). Thus, a prerequisite for developing professional TE is *professional teacher educators who research and develop their own practice and ensure teaching quality in a community of teacher educators.*

However, formal education or training of university teacher educators has traditionally received little attention (Grossman, 2013; Loughran, 2014; Lunenberg et al., 2014), and few countries have designated programs for becoming a teacher educator at university (van Veen, 2013). The lack of formal education to become a teacher educator and the lack of guidelines and standards for the work they do contribute to the fact that what characterizes what teacher educators do tends to be private (Dinkelman, 2011). To sum up, there is a need for *induction programs for newly appointed teacher educators* that address the diverse competence requirements for teacher educators described earlier, as well as other quality features for professional TE programs. In addition, a *culture for collegial collaboration among teacher educators* can enhance peer learning among colleagues and increase their knowledge of other parts of the program than what they themselves teach, thereby affecting their possibility of promoting coherence. Peers can provide each other with relevant and useful feedback on teaching practice (Curlette & Granville, 2014). Peer-based feedback on teaching can provide support regarding handling challenges while motivating teacher educators to experiment creatively to improve their teaching practices (Price et al., 2011).

Process quality—What goes on as student teachers learn (middle circle)

Learning is a complex phenomenon. On a general level, learning is about change in the form of increased mastery and understanding. However, there are different views regarding what kind of change and what mechanisms underlie and promote it. The most important distinction is between an individual-oriented cognitive perspective and a situated contextual perspective. In the 1990s, there was a strong tendency to highlight the differences between the perspectives (Anderson et al., 1997), whereas there are now several attempts to see cognitive and situated perspectives on learning as partially overlapping and with an emphasis on different aspects of learning (Illeris, 2009). Sfard (1998) argues that one loses something if one chooses only one of the perspectives. However, it is uncertain whether it is possible to create a

common theory of learning that does not have its main emphasis within one of the two positions. Instead, we must build on what Sfard (1998) describes as "patches of coherence." In this chapter, learning is understood as a phenomenon that encompasses both cognitive and social processes. A common feature of both perspectives is student teachers' participation in academic activities and self-effort are premises for learning. Specifically, a transformative perspective on quality in TE puts student teachers at the center, so there is a focus on empowering the learner (Vestøl, 2015). The individual is an actor in their own learning, and learning involves constructing meaning and understanding between new and already acquired knowledge, between different professional knowledge components, and between professional knowledge base and probable future competence needs. Thus, quality features concerning student teachers' learning processes in TE comprise their agency and study engagement and learning opportunities on campus and in schools. Gibbs (2010) points out that the features that describe process quality are those that are the most influential on students' learning. Thus, knowledge about process quality features is important both to those designing (educational leaders), the student teachers, and those implementing the program (teacher educators on campus and mentors in schools) that provide teaching and learning opportunities to student teachers.

Student teachers' agency and study engagement

Student teachers' agency is important for both learning on campus and in schools. Agency is understood "as a multifaceted construct describing the idea that human beings make choices, act on these choices, and thereby exercise influence on their lives as well as their environment" (Goller & Paloniemi, 2022, p. 3). The concept of transformative agency goes even further and is described by Virkkunen (2006) as "breaking away from given frame of action and taking initiative to transform it" (p. 233). Transformative agency is linked to meaning making, emerging as a capacity in humans when they seek to alter the circumstances they face by assessing alternatives, overcoming potentially conflicting motives, or making decisions with the help of resources that are available or invented (Aagaard & Lund, 2020; Vestøl & Lund, 2017). Transformative agency is especially relevant for teachers when they are facing concrete challenges by seeking to transform the situation and create new conditions and is a desirable learning outcome of TE. Transformative agency is consistent with ideas about teachers as "change agents in ensuring quality in education as a human right for the common good" (Cochran-Smith et al., 2022, p. 447). However, student teachers cannot be expected to possess transformative agency when they start studying. Transformative agency and becoming change agents emerge ecologically as an interplay between individuals' capacities and the educational environment (Priestly et al., 2015). Thus, transformative agency is something that educational provision should

foster. Still, student teachers can be expected to take responsibility for their own study efforts and actively engage in the educational provision offered. Therefore, central to student teachers' agency is student engagement, which refers to being socially and academically integrated and belonging to a learning community. Two examples where one of the objectives is to contribute to social and academic integration and student engagement are presented in Chapters 13 and 14.

How successful students in higher education go about studying has been thoroughly investigated in the research on student engagement (Kuh et al., 2014; McCormick et al., 2013), students' approaches to learning (Ramsden, 2003; Watkins, 2001), and self-regulated learning (Pintrich, 2004; Schunk, 2005). Although these three research perspectives have different academic origins, they have come up with similar results in terms of what characterizes students who succeed with their studies and what characterizes the learning environment and teaching that promotes students' learning (for a detailed comparison, see Hatlevik, 2018b). Previous research within all three perspectives highlights the importance of *students being agents in their own learning* and that they can influence their own learning situation and learning outcomes. Successful students are characterized by *taking responsibility for and being active and engaged in their own studying and learning.* These students put in *great effort, manage to endure, spend energy on going into depth of the subject matter, and seek to understand the learning content* (Hatlevik, 2018b). Research on self-regulated learning emphasizes student teachers as agents in their own learning and provides detailed descriptions of how they can *monitor, regulate, and control cognitive, motivational, emotional, and behavioral aspects of their own learning* and some aspects of the context in which learning takes place (Pintrich, 2004). Instead of learning being something that happens as a result of participation in teaching, according to the theory of self-regulated learning, learning is an activity that the learner does for their own sake (Zimmerman, 2001). In addition, the research on self-regulation provides a thorough description of the complexity of students' study motivation, how motivation can be a driving force for students' involvement in their own learning, how it can be controlled and regulated by the learner, and how students' study motivation can be promoted by teaching (Pintrich, 2004; Wolters & Taylor, 2012).

Agency is also highlighted as essential for professional placement learning (Eteläpelto et al., 2013; Goller & Paloniemi, 2022). Billett (2011, 2014) and Eraut (2012) have pointed out that there is a correlation between the student teachers' own efforts, the quality of practical training given, and the students' learning outcomes. Furthermore, Hobson (2009) points out that previous research indicates that successful mentoring depends on the "willingness" to be mentored on the part of the student teacher. This implies that student teachers themselves are responsible for *being proactive and making the most of their practical training*, which includes having an awareness of their own limitations and potential. Therefore, in TE, both on campus and in schools, it is

crucial to design learning activities that are open, allowing and enabling student teachers to engage and take control. This means facilitating learning processes that are learner and not teacher led.

Learning opportunities on campus and in schools

Professional competence development requires three distinct levels of learning: assimilative, accommodative, and transformative learning (Illeris, 2009). Assimilative learning involves adding new theoretical and practical knowledge to existing knowledge. Knowledge learned through assimilative learning is relatively easy to remember and apply in similar situations, but it can be difficult to transfer and use in new contexts. Accommodative learning goes beyond assimilative learning and involves changing and reconstructing existing knowledge in light of new knowledge. This is demanding and requires great mental energy and motivation. However, what is learned through accommodative learning can easily be remembered and applied in new situations because one has thoroughly understood the knowledge content. Transformative learning presupposes that assimilative and accommodative learning has taken place, which implies using metacognitive reasoning that applies critical thinking that involves becoming aware of, considering, and revising one's assumptions, attitudes, and preconceptions by considering new experiences and newly acquired knowledge that challenge the existing ways of understanding and acting (Cheng, 2014; Hatlevik, 2018a; Mezirow, 2009). Transformative learning is an advanced form of learning that is profound, highly demanding, and connected to professional competence and identity development. Illeris (2014) points out the following:

> If and when genuine transformative learning takes place, we have to do with the processes that pave the way for what truly can measure up to the buzzword of competence development when changes in mind and behavior are followed by more concrete changes in understanding and acting.
>
> (p. 160)

Transformative learning can be promoted and take place in a social context through dialogue, by gaining new experiences, and by becoming familiar with others' perspectives and theoretical and research-based knowledge. Examples of learning activities that may lead to transformative learning include experiencing authentic placement situations with real students and discussing and critically reflecting on cases and professional practice with other student teachers and teacher educators, both on campus and in schools. A literature review on transformative learning in TE indicates that *transformative learning activities can promote critical reflection on teachers' professional practice*, leading to a change in the perception of teaching and learning, increased social awareness about how diversity and equity issues affect students' learning, and a change

in student teachers' attitudes regarding the role of the teachers and schools and their obligations toward the students and society (Hatlevik, 2018a; see Chapter 9 on multilingualism). Furthermore, transformative learning activities can promote student teachers' development of professional identity as a teacher (see Chapters 13 and 14). However, to successfully engage student teachers in a transformational learning process, student teachers' mastering of basic teaching skills is an important prerequisite, and key factors to consider are practical experiences, student-active learning methods, and perceived relevance (Hatlevik, 2018a).

To strengthen the relevance of TE for practice and foster the mastering of basic teaching skills, researchers have advocated for a turn toward practice (Darling-Hammond et al., 2017; Forzani, 2014). Grossman et al. (2009a) compared the opportunities to enact professional practice in TE with other professions, such as clergy and clinical psychology, outlining a framework of representation, decomposition, and approximation of practice as pedagogies for practice in professional programs. Thus, high-quality practical training both on campus and in schools is characterized by giving student teachers the opportunity to *observe good role models in professional practice* (Grossman et al., 2009b), and the opportunity to *try out learning activities that are central to the actual professional practice in the classroom, so-called core practices* (Darling-Hammond & Bransford, 2005; Kennedy, 2016). In addition, *work tasks should be decomposed into individual skills, and there should be a progression in the complexity of practical training* (Billett & Choy, 2013; Grossman et al., 2009a, 2009b). This means that student teachers are allowed to practice and test individual skills, preferably on campus, before they are to carry out more complex tasks in authentic settings in school. The concept of *core practices* was introduced by the Core Practice Consortium "as a way to support teachers and teacher educators to integrate work on developing skills with work on developing the knowledge and judgment required to put those skills to use when working with students" (Grossman 2018, p. 4). Core practices are identifiable components that teachers enact to support learning, and Grossman et al. (2009b) have described core practices as those practices that occur with a high frequency in teaching; that student teachers can enact in classrooms across different curricula or instructional approaches; that student teachers can begin to master; that allow student teachers to learn more about students and about teaching; that preserve the integrity and complexity of teaching; and that are research based and have the potential to improve student achievement. Different researchers and educational programs have developed their own sets of core practices, and the various lists vary in size and content specificity (see Grossman, 2018, for more detailed descriptions and lists of core practices).

As part of the Coherence and Assignment Study in Teacher Education (CATE)[1], Jenset (2017) has, in her PhD thesis, reviewed the literature on the enactment approach to practice-based TE. She accounts for eight dimensions that are used in the CATE study to analyze instructional practices in TE that

provide opportunities to learn that are grounded in practice in coursework (on-campus teaching) in TE: 1) plan for teaching and teacher role; 2) practice and rehearse teaching and teacher role(s); 3) analyze pupils' learning; 4) include teaching materials, artifacts, and resources; 5) talk about field placement; 6) take the pupils' perspective; 7) see models of teaching; and 8) see connections to national or state curriculum (Canrinus et al., 2019; Hammerness et al., 2020; Jenset et al., 2018). Providing opportunities to enact teaching with an emphasis on core practices is an example of this turn toward practice that has had a major impact on the TE programs at UiO over the past decade (see Chapters 4 and 15).

In TE, like other professional education programs, there is the intention that teaching on campus and practical experience and training in schools should be complementary, together promoting the development of adequate professional competence (Smeby, 2008). However, campus teaching and practical training in schools account for different approaches to professional knowledge. Both are essential, and together, they help qualify student teachers for professional practice in schools (Sullivan, 2005).

On-campus teaching

Characteristics of quality in on-campus teaching in TE include both the general features of good teaching in higher education and profession-specific characteristics. Previous research (Pascarella & Terenzini, 2005; Pintrich, 2003; Ramsden, 2003) has highlighted a range of universal characteristics of good teaching in higher education. In summary, good teaching requires *communicating clear goals for what should be learned, how well it should be learned, and justifications for why it should be learned*. The teaching should *emphasize the students' understanding of the content and focus on the key concepts and central parts of the syllabus*. It should *facilitate student-active forms of learning and collaboration between students, and a safe learning environment* so that students dare to be active. Furthermore, good teaching is characterized by the fact that the *teacher educators themselves are engaged in the academic content they teach, use a variety of teaching methods, adapt teaching according to the students' level of competence and already acquired knowledge, and give valuable feedback on the students' contribution to learning assignments* (Hatlevik, 2018b). Moreover, *teacher educators should research their own practice* with the aim of increasing the quality of their teaching (see the previous section, "Continuing education of teacher educators"). It is worth noting that the above-mentioned features of good teaching in higher education are consistent with what is known as good teaching, which promotes students' learning in schools (Hattie, 2011).

In addition, perceived relevance is a key element in a user perspective on quality, which Vestøl (2015) underlines as of particular interest to TE. A user perspective refers to student teachers', students', parents', and school owners' perceptions of the relevance of education, which means that *practice-relevant content knowledge, learning activities, and forms of assessment* are key

characteristics of quality in TE. A user perspective corresponds to the importance of perceiving meaningfulness (see the previous section "Program coherence and integration") to achieve a sense of coherence. However, previous research has shown that student teachers may find it difficult to see the relevance and connection between some parts of the theoretical knowledge taught on campus and what they learn in practical training in schools (Canrinus et al., 2017; Grossman et al., 2008; Hatlevik & Smeby, 2015). Making the relevance of theoretical knowledge appear visible to the student teachers can be seen as a key challenge for TE. When it comes to the teaching of theoretical knowledge on campus, Kvernbekk (2001) emphasizes that whether a theory is relevant to practice is not, in theory, an inherent characteristic. Relevance is something created by using and explaining how theories can be used as a justification for and reflection on professional practice. For the TE institution, this shows that good knowledge of student teachers' learning in schools and cooperation with the practice arena is a prominent issue for all actors who contribute to the design and implementation of teaching on campus.

Moreover, to promote the student teachers' engagement and learning during the practical training in school, student teachers need to be *supported on campus in advance, during and after the practical training periods.* Billett and Choy (2013) point to four important preparation activities. First, in line with the emphasis on core practices, it is a prerequisite that student teachers possess certain basic skills required in the execution of work tasks. This should be developed and trained in advance of the practical training periods. Second, student teachers need to know what is required of them to get the most learning out of practical training—that is, what it means to be an agent in their own learning. Third, it is important to clarify the expectations and responsibilities of the various parties. Information must be provided to student teachers about what is expected of them, what they can and should not do, and how they should interact with others. Fourth, student teachers should be informed that they may face unpleasant experiences, as well as situations where they will feel that they are unable to master the situations or tasks that occur. Billett and Choy (2013) also point out that, after the practical training in schools, it is important that students on campus receive help to process and share what they have learned and that they are helped to link what they have learned in practice with what they learn on campus. Akkerman and Bakker (2011) underline that all learning involves transcending boundaries, and in line with this perspective, it becomes crucial to define how teacher educators on campus and in schools collaborate.

Practical training and mentoring in schools

Student teachers' practical training and experiences in schools are fundamental to their competence development in TE (Cochran-Smith & Zeichner, 2009; Orland-Barak & Wang, 2021) and promote moving from a layman's everyday understanding to developing a professional understanding of teaching (Burns

et al., 2016; Dunst et al., 2019). Practical experiences can provide student teachers with a more realistic picture of what being a teacher involves, change the focus from themselves to teaching methods and students' learning, strengthen their ability to act and change teaching patterns, provide the opportunity to reflect on their own teacher identity, contribute to stress reduction, increase confidence, and increase awareness of their own professional development (Sørensen & Bjørndal, 2021). Mentoring is essential for student teachers' learning (Orland-Barak & Wang, 2021), and mentors can act as brokers by asking critical questions, providing constructive feedback, and contributing to the development of authentic tasks that link theoretical knowledge to practice, point out connections between curriculum theory and the curriculum that is practiced, and place lesson planning within a larger curriculum context (Burns et al., 2016).

Quality in practical training in schools requires *opportunities to observe good role models, enact core practices in authentic situations, and progress in complexity* (Grossman et al., 2009a; Munthe et al. 2020). In addition, *feeling accepted and included by the teaching staff in the school and being part of a learning community of fellow student teachers can influence their learning outcome* (Sørensen & Bjørndal, 2021). Creating learning communities where students can support and challenge each other, discuss, and reflect together on practice and give each other constructive feedback requires structures that can promote the experience of community and good relations between the students (Burns et al., 2016). Moreover, the mentor's mentoring competence and ability to create a *safe learning situation* is crucial for the student teachers' competence development and a valuable experience of the practical training periods (Zeichner, 2002). Student teachers may perceive theoretical perspectives as irrelevant unless the mentor also actively relates to theoretical knowledge (Sørensen & Bjørndal, 2021), which implies that mentors have a particularly significant role when it comes to promoting the students' perceptions of connections between theory and practice (Burns et al., 2016). Thus, student teachers need mentors who provide *constructive feedback on student teachers' teaching practices, promote critical reflection, be good role models, provide challenge and support, help students manage emotions and stress, promote the experience of connections between theory and practice, develop students' understanding of lesson planning, and place planning within a larger curriculum context.* This review reveals that quality in practical training and mentoring in schools contains many common characteristics with quality in on-campus teaching and that what happens on campus affects learning in schools and vice versa. Thus, Table 2.1 summarizes these features together.

Summary

In the literature, there are many viewpoints about what constitutes quality in TE (Brooks, 2021; Russell & Martin, 2016), and the term quality is

vague and fuzzy, hence needing to be operationalized and connected to something concrete (Wittek & Kvernbekk, 2011). In line with a transformative perspective, the characteristics of quality in TE are descriptions that develop gradually as society, school, and teachers' tasks change and new research is available. Thus, conceptions of quality in TE are contextual and reflect current understandings about what high-quality teaching and learning in TE looks like (Brooks, 2021). This chapter has identified program and process quality features in professional TE programs that serve as a basis for the design of and transformation of our professional, integrated, research-based, and practice-oriented TE programs and various innovations aimed at enhancing the quality of educational provision at UiO and UiT. These features are based on previous research and are summarized in Table 2.1.

In conclusion, professional TE aims at enabling students to transform knowledge and foster transformative agency (Vestøl & Lund, 2017). The transformation of knowledge can be expressed in the student teachers' ability to integrate research-based and practical knowledge (Fosse, 2016, 2023; Vestøl, 2015). Transformative agency is linked to meaning making and emerges as a capacity in humans when they seek to alter the circumstances they face by assessing alternatives, overcoming potentially conflicting motives, or making decisions with the help of innovations or available mediating tools or cultural resources such as research-based knowledge and participation in research on one's own professional practice (Vestøl & Lund, 2017). Transformative agency is especially relevant for teachers when they are facing concrete challenges by seeking to transform the situation and create new conditions (Lund & Vestøl, 2020). Thus, the professional teacher has the capacity to integrate and transform knowledge from various sources and apply, adopt, and transform this knowledge in professional practice. Central to this capacity lies practical knowledge and a research literacy way of thinking. Moreover, transformative agency is an especially important characteristic of teacher educators when designing and transforming TE programs. Therefore, it is imperative that the list of quality features in Table 2.1 must not become instrumental goals in themselves.

The intention of this chapter has been to provide a framework that gives an overview of various features of quality in TE that may also inspire teacher educators at other institutions when designing, analyzing, developing, and transforming TE programs. In analyzing quality in a specific program, these quality features need to be further operationalized into specific indicators that can be described and/or measured. The framework is comprehensive, and when planning changes in a program, it is recommended to concentrate on a few points at a time. Despite drawing on international literature, this framework has been prepared in a specific context and should be subject to critical reflection and transformation as new knowledge emerges and new challenges in society and schools arise.

Table 2.1 Quality features of professional teacher education programs

1. Coherence and integration
1.1 Coherence between learning on campus and during practice periods in schools (program–fieldwork coherence)
1.2 Shared visions of good teaching among the teaching staff on campus and practice supervisors in the school (conceptual coherence)
1.3 Organization of the various components of education build on each other and that can reinforce each other (structural coherence)
1.4 Learning content, learning activities, and forms of assessment that the students perceive as comprehensible, manageable, and meaningful (students' sense of coherence)
1.5 Ongoing principled reflection/discussion about visions aimed at preparing teachers for the current context (coherence as process)
2. Quality work
2.1 Multiple open processes that include coordination and communication between different actors (representatives of partner schools, teacher educators with various professional backgrounds, administrative staff, and student teachers) involved in the education
2.2 The actors involved renegotiate and balance different points of view
2.3 The intention could be to find good solutions to specific problems, innovations, or maintenance of programs
2.4 Encompasses both formal and informal processes
2.5 Can span multiple organizational levels and arenas
3. Transformative partnerships with schools
3.1 Strong and engaged leadership, coordination, sufficient resources, and predictable funding
3.2 Symmetry and equality
3.3 Continuous dialogue on how the collaboration should be formulated and implemented
3.4 Exchange of services that are meaningful and useful for both schools' and TE institution's primary social mission
3.5 Mutual and realistic expectations, a common goal, shared understanding, and vision
3.6 Concrete collaborative projects
3.7 The partnership is viewed as a dynamic and continuous process
3.8 The appearance of a third space where teacher educators on campus and in schools, together with student teachers, collaborate and construct knowledge about teaching
4. Professional knowledge base
4.1 Content knowledge (subject knowledge)
4.2 Pedagogical knowledge
4.3 Subject didactics (pedagogical content knowledge)
4.4 Professional digital competence
4.5 Contextual knowledge
4.6 Practical knowledge (wisdom of practice)
4.7 Research literacy

(*Continued*)

Table 2.1 (Continued)

5. Continuing education of teacher educators
5.1 Induction programs for newly appointed teacher educators on campus and carefully selected mentors in schools
5.2 Culture for collegial collaboration and peer learning
5.3 Routines for evaluating and researching one's own teaching and mentoring practice
5.4 Routines for follow-up of the mentors from the school's management and from the TE institution
5.5 Guidelines for practical training and mentoring in schools, and tools that can support mentoring
6. Student teachers' agency and engagement
6.1 Social and academic involvement and integration with fellow students and teacher educators
6.2 Self-regulation (planning, monitoring, controlling, and regulating and reflecting on one's own learning progression)
6.3 Being proactive and making the most of the learning opportunities provided
7. Learning opportunities on campus and in schools
7.1 Teaching and learning activities that promote a safe learning environment and student activity, engagement, transformative learning, transformative agency, and teacher identity and professional competence development
7.2 Teacher educators who are engaged, adapt the teaching according to the student teachers' prior knowledge, vary learning methods, emphasize central learning content and the student teachers' understanding, and provide valuable feedback on their work
7.3 Learning goals and program requirements are practice relevant, justified, and communicated clearly
7.4 Good role models for professional practice
7.5 Opportunities to enact core practices
7.6 Increasing complexity and progression in student teachers' learning
7.7 Teaching on campus facilitating student teachers to learn to use theoretical and research-based knowledge as a basis for professional practice and for reflection on their own practice, hence preparing them for what to expect and how to behave in practice periods in schools
7.8 Mentoring in schools that provides focused feedback on student teachers' teaching practices, promotes critical reflection on their practice experience and links these to theoretical and research-based knowledge, provides challenge and support, helps student teachers manage emotions and stress, develops students' understanding of teaching planning, and places planning within a larger curriculum context
7.9 Facilitating learning communities among student teachers on campus and in practice and teaching staff in schools that are welcoming and inclusive toward them

Note

1 https://www.uv.uio.no/ils/english/research/projects/cate/

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