Teacher education in at the crossroads - Educational ecosystems for equity and quality of learning

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unspecified

acceptedVersion

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Teacher Education in at the Crossroads—Educational Ecosystems for Equity and Quality of Learning

The article is forthcoming (2020) in a book *Envisioning the Teaching and Learning of Teachers for Excellence and Equity in Education*, pp. 5-23. (Springer)

Abstract

The chapter will draw a comprehensive picture of the foundations necessary for equity and quality of learning for all learners. Teachers and teacher education play a key role in ensuring inclusiveness and high-quality learning outcomes but their work happens in a bigger picture of educational systems. The chapter introduces the concept of educational ecosystem and highlights the importance of interconnectedness and information sharing between different parts of the system. The solutions can be sustainable only if the complex issues have been discussed and various involved partners seek joint solutions to education-related problems. The Finnish case, as an example of the actions which strengthen the interaction between teacher education and the whole educational system is introduced. At the end of the chapter, reflections on teacher education in the educational ecosystem will be summarized.

Keywords: Teacher, teacher education, educational ecosystem, interconnectedness, educational system

Introduction

The field of education is facing enormous pressures. Changes in societies, knowledge, and work are a reality in Europe, as well as across the globe. The Council of the European Union (2014, p. 22) has noted:

> In a fast changing world, the role of teachers—and the expectations placed upon them—are evolving too, as they face the challenges of new skills requirements, rapid technological developments and increasing social and cultural diversity, and the need to cater for more individualized teaching and special learning needs.

Teachers and teacher education (TE) play a key role in ensuring high-quality learning outcomes. However, the responsibility is not only for narrow learning objectives but also for much wider societal issues which promote democracy, equity, and human rights locally and globally. As Cochrane-Smith et al. (2018) propose that teachers and teacher educators also need to challenge the structures and processes which reproduce inequity and sustain multi-layered collaboration with diverse communities.

Teachers and TE have high responsibilities, but the work happens in a bigger picture of educational systems and is part of the changes which happen in local and global contexts. TE and teachers operate in a very complex and moving picture. As Hargreaves (1994) described in the 1990s, that picture is like a moving mosaic. Often, it is difficult to even clearly define the changes and how the picture challenges teachers' work, as well as TE. In a complex world, many different parts are

interconnected and interdependent, but it may also happen that some parts of the system are isolated or contradictory to other parts of educational ecosystems. The Finnish case, as an example of the actions which strengthen the interaction between TE and the whole educational system, will be introduced. At the end of the chapter, reflections on TE in the educational ecosystem will be summarized.

Global challenges in education

There has been a massive expansion in schooling globally over the last few decades, and it is impressive by previous standards (World Bank Group, 2018). However, while access to education has increased, millions of students still do not have access, or they drop out in the very early stages. The United Nations Educational, Scientific and Cultural Organization (UNESCO) (2018) states that, according to data from the UNESCO Institute for Statistics (UIS), about 263 million children, adolescents, and youth worldwide—one in every five—are out school, a figure that has changed little over the past five years. However, an even more serious issue is that the quality of education has not improved. In many cases, it has declined. Globally, we now have an increasing recognition of a *learning crisis*—a term coined by UNESCO in its Global Monitoring Report in 2014.

In the changing picture of education, many challenges in education problems focus on two serious issues: (1) equity and access to education and (2) the quality of education. Even though children may have access to primary education, they do not have the opportunity to continue after their primary years (normally 5–6 years of education) to the secondary levels, or children drop out of school even in the initial stages. The reasons are often political decisions, system-wide deficiencies in the educational structures, family poverty, or attitudinal factors, such as parents who do not recognize the value of schooling or do not believe that females need an education. From an equity point of view, access to education is not enough, though it is a necessary and basic condition. The quality of the education has become an urgent challenge. We have data which show that, in many countries, half of the children do not achieve minimum standards in math or reading, which means that they cannot read or count after two years of schooling; this has grave consequences for the future of learning (World Bank Group, 2018, p. 8). Questions of equity and quality of learning relate to each other and are burning issues, particularly in low-income countries, but they are also present in many mid- and some high-income countries, causing growing gaps between social classes and dividing societies. Both issues are linked to the entire educational eco-system.

Recently, the ecosystem concept has emerged (Niemi, 2016a) and is used in many disciplines and discourses. The ecosystem concept has its roots in biology, where typical ecosystems are forests, ponds, and grasslands, and all the plants and animals which live in an area together maintain a complex relationship between themselves and their environment. The most important feature of an ecosystem is the interconnectedness of its constituents. Species closely interact with one another to survive. They are interdependent, and information flows throughout the system, both of which are basic conditions for survival. While warmth, water, and energy sources all contribute to the ecosystem, the system does not function well without interconnectedness.

The concept has recently been expanded to include more human contexts, especially social structures (Niemi, 2016a). The systems of human actors or companies and organizations can also be described as ecosystems. The term *innovation ecosystem* refers to a dynamic, interactive network which fosters innovation. In practice, the term can refer to local hubs, global networks, or

technology platforms (Moore, 2006). A high level of interconnectedness and the interdependence and flow of information are the most important features of the ecosystem concept. Mars, Bronstein, and Lusch (2012) analyzed the value of this concept, noting that the metaphor inherent in it provided a fresh lens through which to view a dramatically altered world. However, they also offered some caveats. There are some central misguided assumptions: that biological ecosystems are both communal (supported by individual commitment to the greater good) and stable. Biological ecosystems emerge, function, and collapse organically, without the aid or intervention of purposefully designed strategies and structures. However, human organizations can design and plan systems and networks. Human actors may create conditions which can potentially have an impact beyond the local setting. This is an important foundation and postulate: TE is part of the structures which can be modified by human beings and developed by human decisions.

Niemi (2016a) noted that an educational ecosystem has complex connections and processes which interact with different levels of society and different social structures. We can refer to a *macro-level ecosystem* which consists of all the structures of an entire educational system from childhood to adult education, national curriculum, and educational evaluation systems, as well as life-long learning strategies for ensuring competences throughout the course of life. TE is part of this entirety. However, on its own, TE cannot change the whole education system. It must establish connections with other sectors of the educational system and other societal stakeholders.

Educational ecosystems also have *meso- or mid-level* units which consist of structures and social practices, such leadership and the roles and responsibilities at the institutional and community levels. These include universities and other higher education institutions, as well as schools. These units are also ecosystems, even though they are smaller-case forums, they still need interconnectedness and sharing within and partners outside of the unit. In discussions about successful organizations, it seems that a commitment to common goals and a shared culture are critical for success. TE impacts how teachers and principals create a collaborative and sharing culture.

In education, we can also observe *micro-level* ecosystems, where individuals, such as students in the classroom and teachers as representatives of their profession, are influenced by characteristics, such as prior knowledge, skills, motivation, and attitudes, which represent the learner's cultural background, as well as interactions with other people and artefacts (Säljö, 2010, 2012; Vygotsky, 1978). This micro level happens in the students' and teachers' own learning environments.

An educational ecosystem consists of a large number of subsystems which should be interconnected

Other sectors in society, e.g.,
- Health
- Families
- Housing
- Business
- Employment

Educational macro-level system

Institutions Schools

Learners

Complex connections and processes which interact with different sectors of society and different social structures
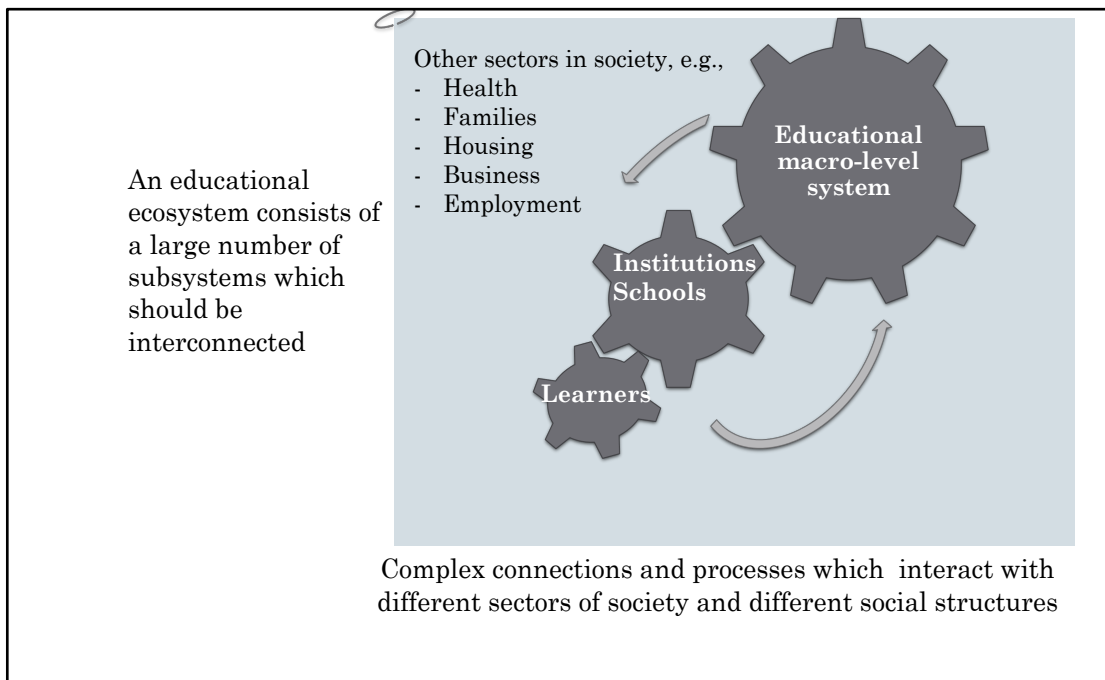
Figure 1. The educational ecosystem

Thus, an educational ecosystem consists of many interconnected parts, both horizontally and vertically (Figure 1). We can learn from earlier studies (e.g., Walpole, 2016) that the health of an ecosystem is based on interconnectedness and information flow; the system functions well when its different parts work together. However, in educational ecosystems, that is not always true. Many sociologists, notably Habermas (1987), have described how systems in a modern society can be separated from each other and can become colonized through hierarchy and lack of communication. As in society, so it is in education: the subsystems can become separated into segmented territories with their own aims, social practices, and power structures, and, eventually, collaboration among the parts vanishes.

An educational ecosystem is not a stable system. In complex and moving systems, as in education, many of the components undergo their own change processes, and this information needs to be analyzed, updated, and shared when working toward common goals. Interaction and communication and the flow of information are basic conditions necessary for maintaining commitment from partners. When reflecting on TE's role in education systems and its responsibility for equity and quality of learning, we must note (Niemi et al., 2014) that an educational ecosystem has multilevel complex connections and processes which interact with various levels of society and various social structures.

Teachers and TE at a macro level of educational ecosystems

Professional status and attractiveness

TE is part of national policies in education. The length, structure, and content vary enormously globally (Darling-Hammond & Lieberman, 2012). Worldwide, e.g., in the USA, many providers of TE indicate that it is difficult to even define what TE is and who the teacher educators are (Cochrane-Smith, 2018). Also, trends to de-professionalize TE attest to the fact that TE, as well as schools, are

under intense scrutiny (e.g., Milner, 2013). By summarizing many international reports (e.g., European Union, 2013; UNESCO, 2015; World Bank Group, 2018), we can determine the major macro-level challenges which threaten the equity and quality of learning and are connected directly or indirectly with TE:

1) Lack of teachers and low attractiveness of the teaching profession,
2) Low quality of pre-service TE,
3) Deficiencies in teachers' career-long development, and
4) Poor teacher working conditions.

All of these issues are dependent on each other and related to all levels of the ecosystem. However, they all are dependent on the macro-level decisions. Many countries (Darling-Hammond 2010; European Union, 2013; OECD, 2014; UNESCO, 2015) face the situation where teaching is not perceived as an attractive profession, and TE is not a desired academic path. TE institutes do not have motivated, high-quality candidates, and the dropout rates can be high. The EU launched a broad survey of teachers and student teachers from thirty-four member countries on the factors which make teachers work attractive. The study consisted of the qualitative data from interviews of national educational experts. The report concludes (European Union, 2013, p. 10):

> In most European countries, the teaching profession has lost much of its capacity to attract the best candidates. Among the main reasons: decline of the prestige of the teaching profession, deterioration of working conditions and relatively low salaries compared with other intellectual professions. But in some countries (Ireland, Finland, Scotland) the teaching profession is still very much appreciated by the best students.

Attractiveness is generated from many sources, and the processes are self-reinforcing. In many countries (European Union, 2013, p. 10), the growing shortage of teachers is addressed by longer working hours for teachers, higher pupil-teacher ratios, and an increase in the retirement age. Keen competition among schools, regions, and even countries aggravates supply and demand imbalances with respect to qualified teachers. Attractiveness is not solely a European problem. It is a burning issue in most African countries, as well as in the USA. The World Bank Group (2018) reminds us that many governments do not publish detailed data about the shortage of qualified teachers in their countries or information on their strategies for tackling the problem. One serious issue in low-income countries is the teachers' absence from school (World Bank Group, 2018, p. 11). The teachers cannot live on their salary.

UNESCO (2015, pp. 10–15) mentions several aspects needed to make the teaching profession attractive. One is to predict the number of teachers needed. Knowing how many teachers are needed in a system is crucial to advancing the system's success. Predicting the number of teachers is based on the estimated demand for schooling, the school-age population, gross enrolment rate, and the average pupil-teacher ratio. A shortage, as well as an oversupply, of teachers, are both damaging to the teaching profession. A shortage will lead to the use of unqualified teachers, and an oversupply leads to unemployment, which again lowers the value of the profession and its ability to attract desirable teachers.

Teachers' work has been reflected from the viewpoint of the criteria of professions since the 1970s (Howsam, 1976). Professional status is based on certain criteria, and respected professionals, such as medical doctors and judges, must meet these specific criteria.

Commonly, the following criteria are at the core of a profession (e.g., Professional Standards Councils of the Australian Capital Territory, 2105):

1) Important tasks without which the society cannot survive (e.g., a medical doctor, judge),
2) Long academic or corresponding education and high educational standards for achieving skills and competences needed for the demanding task,
3) Professional code and ethics, and
4) Professional autonomy and responsibility.

Symeonidis (2015) introduces findings from the survey which indicate that teacher status is related to aspects of quality education and, more specifically, to socio-cultural and economic contexts, job security, salary, working conditions, teachers' professional development, representation of the teaching profession, professional autonomy, social dialogue, and involvement in decision-making. We can conclude that teachers' professional status cannot be defined just by a political decision; however, political decisions can create conditions for teaching being perceived as a valuable profession. The status requires that all professional elements are real and available, and that there are policy-level decisions which allow these criteria to be met. Teachers' autonomy is dependent on macro-level conditions: to what degree teachers have actual opportunities to influence their own profession and working conditions in schools. Many teachers are tied into the national or local bureaucracy. However, if there are unqualified and low competence teachers, it is impossible to allow them to be independent. TE is between two opposing forces: how to prepare for the demands of teachers to be autonomous while they simultaneously work in schools which are strictly regulated.

In many countries, teaching does not fulfil professional criteria. Teachers may have a very little education or no training; often, in cases such as these, work is regulated by high-stakes testing which narrows the curriculum and limits professional autonomy. We also have evidence that, in theory, teachers have autonomy; in practice, they are forced to accept reforms without contributing to them in the preparatory phases (e.g., Harford, 2014; LeTendre, 2018; Smith, 2014)

Quality of TE

TE institutions and teacher educators are working in contexts which are highly dependent on other macro-level decisions. In countries where TE is wanted and teachers are satisfied with their professions (e.g., Singapore, Hong Kong, Finland, and Ireland), there are strong investments in TE and ambitious aims for the entire educational system, and there is systematic follow-up on how TE serves prospective teachers and how teachers are supported in career long development. The relationship is not one directional. TE institutions and teacher educators also actively respond to future needs by internalizing the idea of how the teaching profession has long-range influences on society and people's lives.

How TE prepares teachers to coach a new generation for the future's demands is a common theme globally, not only in Europe (Gu, 2018; Lee & Tan, 2018; Low, 2018). A new book about teachers' role in different countries (Niemi et al., 2018) evidences that curricula are in the process of reforming toward 21st-century skills almost everywhere. Lee and Tan (2018), in their analysis of required future skills, summarized these as creativity, innovation, critical thinking, problem-solving capability, communication skills, collaboration, information and digital literacy, conflict resolution, and social and inter-cultural skills. These skills are often labeled as 21st-century skills or

competencies, core competencies, or transversal or generic skills and competencies. These types of curriculum reforms push teachers into a new position. They are expected to teach academic content; at the same time, they are responsible for broader, more complex, and often multidisciplinary objectives. This is an enormous new task for TE. Teaching is a changing process. In the European TE context, teachers' broader competences are seen as key elements in the Education and Training 2020 strategy (European Union, 2013, p. 18):

> **Work with others**: They work in a profession which should be based on the values of social inclusion and nurturing the potential of every learner. They need to have knowledge of human growth and development and demonstrate self-confidence when engaging with others. They need to be able to work with learners as individuals and support them to develop into fully participating and active members of society. They should also be able to work in ways which increase the collective intelligence of learners and cooperate and collaborate with colleagues to enhance their own learning and teaching.

> **Work with knowledge, technology and information**:
> They need to be able to work with a variety of types of knowledge. Their education and professional development should equip them to access, analyse, validate, reflect on and transmit knowledge, making effective use of technology where this is appropriate. Their pedagogic skills should allow them to build and manage learning environments and retain the intellectual freedom to make choices over the delivery of education. Their confidence in the use of ICT should allow them to integrate it effectively into learning and teaching. They should be able to guide and support learners in the networks in which information can be found and built. They should have a good understanding of subject knowledge and view learning as a lifelong journey. Their practical and theoretical skills should always allow them to learn from their own experiences and match a wide range of teaching and learning strategies to the needs of learners.

> **Work with and in society:**
> They contribute to preparing learners to be globally responsible in their role as EU citizens. Teachers should be able to promote mobility and cooperation in Europe and encourage intercultural respect and understanding. They should have an understanding of the balance between respecting and being aware of the diversity of learners' cultures and identifying common values. They also need to understand the factors that create social cohesion and exclusion in society and be aware of the ethical dimensions of the knowledge society. They should be able to work effectively with the local community and with partners and stakeholders in education—parents, teachers, education institutions, and representative groups. Their experience and expertise should also enable them to
> contribute to systems of quality assurance.

The teachers' role has expanded dramatically, and today their work entails much more than transmitting knowledge; thus, it requires new forms of TE. Schools have become more complex, and the heterogeneity of students is increasing. TE providers must meet many new challenges coming from macro-level demands and contexts, but must also meet demands coming from within their own institutions.

Connections within schools and cooperation in TE institutions––The mid-level of the ecosystem

The macro system creates structures, but TE is also linked with the mid-level of the educational system, the TE institutions and local schools in which educational services are provided. These mid-level parts of the educational ecosystem have common themes which challenge TE:

1) How TE recognizes schools' needs has been a critical discussion for decades. The debate is often around pedagogical content knowledge, as well as effective teaching practice (e.g., Darling-Hammond, 2010). Interaction beyond the TE institutes is becoming even more critical because of changes in societies and unequal conditions in schools for different learners (e.g., Robinson, 2017). There is an increasing need to add interactions among TE providers, local schools, and other stakeholders to make teachers more prepared to meet the needs of different learners.
2) Cooperation among teacher educators can be weak in the TE structures of universities and colleges and may lead to a situation where all components of TE are taught separately and without real coordination.
3) The continuum of teachers' professional development requires more cooperation among the providers of the initial TE, induction, and in-service training (e.g., Bahr & Mello, 2016; Conway, et al., 2009)

These challenges are related to teachers' professional development. During TE time, this means that student teachers have program supervision throughout the TE program to support their development as professionals. This requires more opportunities to learn collegial dialog, based on working together with colleagues and sharing experiences. This kind of collegian model should also be in schools where teachers are working after graduation.

The idea of schools, as well as TE institutes, as learning communities has become a crucial theme. The idea is not a new one, presented in the 1990s as Senge's *learning organization* in his *The Fifth Discipline* (Senge et al., 1994). However, with a new understanding of learning as a co-creation process, studies of collaborative knowledge creation and evidence of a collaborative culture for teacher's professional development have made learning communities a goal and imperative for future teachers and TE. Many school and institutional level conditions should be reconsidered because there may exist structures which prevent collaboration (OECD, 2014). We have evidence that educators often find it difficult to regularly dedicate the necessary time to professional development activities. Finding time for professional development may be particularly challenging for traditionally low-performing schools in which teachers, principals, and district officials spend more of their working time on student guidance and may feel burdened by increased reporting and testing requirements. Furthermore, a lack of qualified substitute teachers, as well as the costs associated with providing substitute teachers, may discourage teachers from participating in professional development activities which are scheduled during the school day (European Commission, 2010). At the mid-level of the educational ecosystem, school leadership is essential Department heads in TE institutions, principals, and local authorities have a great responsibility to ensure that teachers can learn and work in real learning communities.

TE has a double role: to prepare teachers for a collaborative culture in pre-service time and to strengthen this type of working culture in schools. In both cases, either in pre-service or in different modes of in-service time, teachers need to experience what it is to be in a learning community.

TE for the micro-level system

TE also has connections to the micro-level of education systems. This level consists of what happens in the students' learning and, even more widely, in their lives. Teachers need the knowledge and understanding of how to make a school more inclusive and offer learning opportunities to different learners. This micro-level is highly dependent on macro- and mid-level structures and cultures. In this sense, TE alone cannot change the situation. However, at the individual level, teachers have a high impact. Research-based evidence exists which indicates that teachers really matter.

There is substantial evidence (UNICEF, 2009, 2013) that some groups are more at risk of low performance than others. Even if socio-economic status is a stronger predictor of educational success, the students' personal factors also have an impact on the likelihood of low educational achievement and the risk of dropping out. Failure is often not the fault of the child or the parents. The system and the school itself can be held accountable because of an irrelevant curriculum, a language which learners do not understand, absent teachers, or unaffordable formal and informal school fees. Sharing the responsibility for failure—understanding that children are more often *pushed ou*t by the system rather than *dropping out* of their own accord—has significant implications for how a ministry responds to, programs for, and financially supports excluded groups and learners.

The OECD has reported (2012, p. 19–23) that student dropout does not happen overnight. Dropping out is usually the result of a lengthy process of student disengagement (Lyche, 2010). When combining the findings of several studies, six key predictors can be identified. These predictors are a combination of macro- and mid-level factors, and students' opportunities to be engaged and achieve good learning outcomes are rooted in many of these factors. These predictors can be summarized (OECD, 2012, p. 19–23):

1) Educational performance is the highest predictor for dropout.

2) Students' behavior matters for success in school. Students who are engaged, both in academic and social matters, and who value schooling, tend to stay in school.

3) Students from families with little education, negative attitudes toward schooling, the inability to support their children, or poverty-stricken single parents have a higher likelihood of dropping out.

4) School structures, resources, and practices are important. These include the way learning is delivered, extra-curricular activities, discipline, relations with peers and teachers, and pedagogic practices, all of which have a strong impact on students' learning, motivation, and sense of belonging.

5) Educational system-level policies, including early tracking, grade repetition, the lack of sufficient apprenticeship places, or school violence, affect dropout rates.

 6) Labor market conditions have an impact on dropout rates.

UNICEF has recommended child-friendly schools (CFSs). This model advocates for and promotes quality education for every child. The model can be viewed as a holistic instrument for developing a comprehensive range of interventions to achieve quality education. The CFS framework promotes child-seeking, child-centered, gender-sensitive, inclusive, community-involved, environmentally friendly, protective, and healthy approaches to schooling and out-of-school education worldwide (UNICEF, 2009, 2013). This approach sets high standards for TE and requires the cooperation and information sharing which are basic elements of ecosystems.

The case of Finland

A unifying value basis

Finland has received much international attention as being, for several years, one of the best performing education countries in the world. It is considered an example of a high-performing education system which successfully combines high quality with wide-spread equity and social cohesion through reasonable public financing (Niemi, Toom, & Kallioniemi, 2016; Sahlberg, 2011). Many studies have sought the reasons for this and concluded that there is no single factor behind the good learning outcomes. In many analyses, high quality teachers have been seen as one of the main reasons, and this is linked with high quality TE, school working conditions, and the society's respect for the teaching profession. Teaching as a profession is very desirable in Finland, and the entrance criteria for university TE programs demanding (Sahlberg, 2012). In the next analysis, the Finnish TE will be considered from the viewpoint of the educational ecosystem and the interconnections of TE with different levels of the systems. Finally, the future trends will be introduced.

The ecosystem means connections between different levels. Finnish TE is provided by autonomous universities. However, TE policy is part of a national evaluation policy based on a strong value basis, and it unifies different levels. The central principle is *equity and education as a basic right for all* (Laukkanen, 2007*)*. Equity in education means the clear objective of offering all citizens equal opportunities to receive education, regardless of age, domicile, financial situation, gender, or mother tongue. A large reform of Finland's education system started in the late 1960s. The entire system changed to be one common comprehensive school for all children, providing nine years of basic education totally free of charge. The system put a strong emphasis on inclusiveness, special needs support, and students' holistic well-being. The main principles of equity and life-long learning have been implemented now for over 40 years, and, during that time, there have been many sub-reforms, but equity and life-long learning remain the predominant guidelines.

Teachers are responsible for the quality of different students' learning, but they are also responsible for much more than simply providing teaching content. Students must be ready to continue studying at the next educational level and to learn new skills, and schools must support their personal growth (Niemi & Isopahkala-Bouret, 2012). In basic education (grades 1–9), there is no streaming or tracking, and teaching occurs in mixed-ability groups.

Teachers must consider different learners and identify what type of special support students need. An inclusion policy and special needs education have extremely important roles in promoting the

rights of all students to learn. The basic principle is that all students with learning difficulties must be given help and support to overcome their learning difficulties. The Finnish educational system has developed a structure which allows continuing one's education, even in the case of failure, and there is a high level of education for the entire population. Life-long learning is integrated into all levels of the system, from early education to adult education.

Enhancement-led evaluation policy

In Finland, the systems for evaluation and support have been integrated (Kumpulainen & Lankinen, 2016). Globally, controversy exists over what is the best way to use assessment as a tool to achieve high learning outcomes. Some countries have chosen standardized testing, which stresses competition among schools and focuses on measurable performances. The Finnish choice has been enhancement-led evaluation at all levels of education. The National Board of Education outlined already late 1980's that the focus is placed on the overall effectiveness of the service provider. Instead of the quality of specific products, attention is now paid to the entire organization's capacity to produce services of high quality. The interest in this is not a separate or temporary phenomenon, but is a part of the larger macro-level trends.

Local education providers (municipalities) are responsible for the quality of educational services and assessment methods. Teachers also implement enhancement-led evaluation in student learning. This means that formative evaluation methods are used to decide how to support various learners. No high-stakes testing exists.

Decentralized curriculum policy

Finland's national curriculum system provides values for the entire educational system and defines learning objectives for each educational level. Local education authorities and schools are granted wide autonomy in organizing education and implementing the core curriculum. Teachers have freedom in how they conduct their teaching duties and support student learning. At the same time, they are expected to take responsibility for students' learning outcomes as well as students' holistic well-being. They must be able to recognize learning difficulties and identify special support needs as early as possible, which requires a high degree of pedagogical competence and the acceptance of a broad professional role. The curriculum processes are interactive and participatory, inviting the teachers' union, principals, parents' association, companies, teacher educators, and other experts to contribute to a new national core curriculum (Halinen & Holoppa, 2013; Vahtivuori et al., 2014).

Over the past several decades, research studies (e.g., Vitikka, Krokfors, & Hurmerinta, 2016) have indicated that local curriculum processes have inspired and empowered teachers and principals to develop the local curriculum and to increase the overall quality of education. Education authorities and national-level education policymakers trust professional teachers who, together with principals, headmasters, and parents, know how to provide the best education for children and adolescents in a specific district.

These values exist throughout the educational system, and teachers are expected to adopt them. TE programs are five-year programs (BA: three years and MA: 2 years) which are based on the ideology that teachers are high-level professionals, and this aim is supported by clinical practice and a strong research orientation in the studies. The structure of TE offers several options to become a

teacher in terms of scheduling, majors and minors, specialization, and choosing professional career paths.

Research and practice-oriented TE

The studies provide the cultural, psychological, and pedagogical features of teaching and instruction (Niemi, 2016b). Content knowledge is approximately half of the program and has many connections with pedagogical content knowledge. Almost one-fifth of the program is dedicated to research studies to develop a proper understanding of knowledge creation and the critical mind to process different information sources. Research studies are also part of professional development, and they aim to provide tools to observe, analyze, and conclude, based on evidence involving issues in the human sciences. A primary student teacher also conducts an extensive master's thesis as an authentic research in educational sciences. Secondary teachers major in their own subject matter but also complete a BA level thesis in education.

Teachers' pedagogical studies include supervised teaching practice. The aim of guided practical studies is to support student teachers in their efforts to acquire professional skills in researching, developing, and evaluating teaching and learning processes. In addition, student teachers should be able to reflect critically on their own practices and social skills in teaching and learning situations. The main principle is that practice should start as early as possible and support student teachers' growth toward expertise. University level teacher training schools (so-called *normal schools*) play a crucial role in Finnish TE. The teachers have a dual role: on one hand, they teach pupils, and, on the other, they supervise and mentor student teachers. Many of the normal school teachers are active in research and school development.

Even though the general picture shows a well-functioning ecosystem, evaluations and research projects have revealed several areas where reform and improvements are needed in TE (Husu & Toom, 2016):

> Teacher's work is knowledge intensive expert work, and demanding interactive work in changing contexts. The current challenges in a teacher's work include e.g., increasing diversity of pupils/students and families, changing working contexts due to the availability and usage of knowledge and digitalisation, and learning-focused emphasis in instruction. For this demanding work, a teacher needs versatile pedagogical skills and content knowledge, especially capabilities related to learning and instruction, interaction, well-being and school development. Teacher competence is the major factor influencing on student learning. The most important task of TE is to support learning to teach throughout the career. Finnish academic TE provides solid basis for a teacher's work, although in-service TE requires significant developments.

Finland, as are other countries, is in the middle of determining how to provide teachers with competencies which they can use to guide students in classrooms now and into the future. As a part of education-related key projects in the current Finnish government program, a *Finnish Teacher Education Forum* was established by the Ministry of Education in February 2016 to foster the renewal of TE (Ministry of Education and Culture, 2016). The aims of the *Teacher Education Forum* are to prepare a development program for teachers' pre-, induction, and in-service education (life-long professional development).

The *Forum* is based on collaborating and sharing. It consists of nearly 100 teacher educators from various higher education institutes and disciplines, teachers, principals, and stakeholders, including experts from municipalities and from teacher and student unions. The *Forum* has organized several meetings, both with the whole *Forum* and with smaller thematic groups. It has analyzed the research outcomes related to TE, benchmarked strategies, and policy documents in other countries and organizations, and organized a national web-based brainstorming platform related to the renewal of TE. It published the reform program, *Development Program for Teachers Pre- and In-service Education* (life-long professional development) in early October 2016. The *Forum* also has launched and financed almost 50 research and development projects in which teachers, teacher educators, principals, companies, and local municipal authorities can be contributors for developing TE for the future.

The *Forum* program (Ministry of Education and Culture, 2016) has introduced six main actions for the development of TE for 2017–2019:

1. Holistic view of TE
To identify what is common in teachers' pedagogical competence throughout the educational system from kindergarten to vocational training, more closely connect pre- and in-service education, and develop a well-functioning induction phase.

2. Selection and anticipation
To forecast demands of teachers and balance the number of teachers needed and educated in all areas and levels of the educational system.

3. Supporting the development of competences needed in generating novel ideas and innovations
To renew TE programs and their teaching and learning culture toward 21st-century competences and strengthen leadership, networks, and development operations for and together with local school sites.

4. Collaboration culture and networks
To promote and strengthen cooperation among all TE actors in universities: subject departments, department of TE, and teacher training schools; and further, to ensure cooperation among the different TE programs: kindergarten, primary, secondary, and vocational TE.

5. Supportive leadership
To promote schools as learning communities with high-quality pedagogical leadership: goal orientation and interaction, strategic planning, and quality culture.

6. Research-based TE
To enhance TE programs and teaching practices and to ensure that they are based on research and that student teachers learn to: (a) employ research skills and research orientation, (b) assess their practices, and (c) reflect on professional tasks and development independently and collaboratively.

These aims are very much in line with the earlier TE objectives of several decades ago. However, in changing contexts, the TE programs must be updated from a perspective of future needs and ensure that teachers have competences needed in schools and society today and in the coming years. In

addition to TE pre-service revisions, teachers' in-service training is also undergoing a cultural change (Niemi, 2015). In previous years, Finnish in-service training was based on training days and short courses. These types of courses are still being offered to teachers, but the trend is toward a more holistic and integrated approach. The new trend is to see teachers as developers in the whole school community. Teachers encounter a research-based orientation in pre-service TE, and this should be used as a resource. This would make teachers capable of designing school-based projects and their own professional development as it relates to school development. Collaboration within the school community, as well as with external partners, especially parents, is part of teachers' professional development, and they need support for this, especially in the beginning of their careers. Teachers' work is becoming more and more complicated, and working with multi-professional cooperation is important, especially when students need special education.

Finnish TE has grown in the political and historical context in which equity and life-long learning have been leading educational principles, and teachers' high-standard professional roles are seen as the main factors in achieving these goals. These have been continuously upheld in a national educational agenda. It has not been intended to establish a status quo; rather, it has been, more or less, a continuous process in which enhancement-led quality assurance, decentralization of the educational system, and TE programs are mutually interactive.

Toward educational eco-systems for equity and quality of learning

TE cannot solve the huge challenges of equity and quality of learning outcomes alone or without interconnectedness with other actors in the educational ecosystem. It should be proactive to lead prospective teachers, as well as in-service teachers, to grow as to the role which is leading toward the future. But, without broader connections to schools and macro-level partners, TE cannot change the world. In the ecosystem, interconnectedness and information flow are the key factors.

Linda Darling-Hammond (2010, p. 279–324) proposed four policy principles for quality and equality in school reforms:

1) **Meaningful learning goals** means rethinking what is relevant for students and what they need in the future. High-stakes testing narrows curriculum to low-order rote skills and memorizing pieces of information (2010, p. 281) . Assessment and evaluation policies have a clear connection to students' learning and teachers' work (p. 301):

> If education is actually to improve and the system is to be accountable to students, accountability should be focused in ensuring the competence of teachers and leaders, the quality of instruction, and the adequacy of resources, as well as the system to trigger improvements.

2) **Equitable and adequate resources** are partly linked with the challenge of how to obtain qualified teachers and keep them in the schools. Salary policy is one of actions and also all those arrangements that are needed for providing induction, mentoring, extensive professional development for all teachers. The ultimate goal is that resources would cost-effectively promote all children's learning: "Our society must finally renounce its obstinate

commitment to inequity and embrace full and ambitious opportunities to learn for all of our children" (2010, p. 309).

3) **Strong professional practice** with increased recognition that expert teachers are perhaps the most important resource for improving student learning and the most inequitably distributed—it is imperative that the USA develop policies for recruiting, preparing, and retaining strong teachers, especially in high-need schools (2010, p. 313). This requires the reinvention of teacher preparation and professional development so that teachers can meet the demands of 21st-century learning and develop sophisticated skills. Local policies need to create a continuum of professional learning for teachers.

4) **Schools organized for student and teacher learning** means that leaders need the vision, capacity, and policy support to create more productive schools. Schools have to be places that support good teaching, and the work that students and teachers are asked to do needs to be work worth doing (2010, p. 324).

TE plays a crucial role in how equity and the quality of learning can be connected. Many macro-level decisions steer teaching and TE, particularly in the curriculum and evaluation systems. We can also refer to other actors at a macro level. On its own, education cannot create the future. There must be connections with other sectors, including health care, housing, business, and employment. An educational ecosystem is not a stable system. For an educational ecosystem to be sustainable, its participants must intentionally share joint aims and act to ensure interconnectedness, interdependence, and open and transparent mutual communication among all partners. In complex and changing systems, many of the components undergo their own change processes; thus, this information needs to be analyzed, updated, and shared when working toward common goals. Interaction and communication with the flow of information are basic conditions for maintaining commitment from partners. When referring to partnerships in education, we must acknowledge that collaborators must set an intentional aim to ensure that the ecosystem works to realize joint goals and objectives. The solutions can be sustainable only if the complex issues have been discussed and various involved partners seek joint solutions to education-related problems.

In educational institutions, commitment to principles which promote equity and high-quality learning are key factors for providing *inclusive and life-long learning opportunities for all learners.* Eco-systems also cross borders. Connections between formal and informal learning environments are becoming resources for institutions and individuals, and technological tools and digital learning environments are more and more crucial for equitable and quality learning. TE is at the crossroads as to how it will lead in the future and how the whole educational ecosystem will function interactively for joint purposes to ensure high quality learning opportunities for all learners.

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