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Lack of Qualified Teachers: A Global Challenge for Future Knowledge Development

Mona Holmqvist

Abstract

A major challenge for teacher education in the twenty-first century is to provide society with qualified teachers to teach and prepare the next generation of citizens. The situation in, for example, Sweden and South Africa faces huge issues concerning an increased lack of teachers in the future, as well as difficulties with teacher attrition. Examples from the USA show that up to 50% of new teachers quit working as teachers within 5 years. The difficulties with knowledge transfer to new generations, are a global threat. In this chapter, the deficiency of examined teachers is addressed in Section 1. This is followed by an overview of two key aspects of teachers' professional development, namely bridging the gap between practice and theory to enhance teaching quality as well as the importance of practice-based professional development to maintain teachers to work as teacher in a long-term perspective. The results of a case study of students' views on theories are presented, showing a strong experienced dichotomy between theory and practice, and difficulties to see how theories could be used to better understand classroom situations. Finally, a proposal of how to bridge the gap between theory and practice with designed modules is presented.

Keywords: teacher education, teacher attrition, practice-based professional development, teacher program modules, teacher preservice training

1. Introduction

UNESCO Institute of Statistic states that: "In the next 14 years, countries must recruit 68.8 million teachers to provide every child with primary and secondary education: 24.4 million primary school teachers and 44.4 million secondary school teachers" [1]. Sweden and South Africa share a common societal challenge with many of other countries in the world, the risk of lack of qualified teachers to support societal knowledge development. In Sweden, in total, more than 45,000 teachers will end their employment within the next decade. Approximately 33% of the teachers who teach grades 10–12 will retire during the same time. More than half of all special educational needs (SEN) teachers in Sweden will retire within 10 years, and there will be an expected shortage of 60,000 teachers by 2019. In South Africa, there is a need of 20,000–30,000 new qualified teachers each year, and in 2011, only a third were produced. With efforts of the two national departments of education between 2009 and 2012, initial teacher education increased from 35,937

to 94,237, an increase of 160%. But there is still a significant shortage of foundation phase teachers and also a significant teacher shortage in key subjects [2].

Both Sweden and South Africa have declared the right to quality education for all without limitation, which is hard to achieve if they cannot provide schools with qualified teachers. Findings from the OECD Teaching and Learning International Survey (TALIS 2013) examine teachers' and school leaders' expressed experiences of learning environments in their schools [3]. The results show that "more than a third of teachers work in schools with significant staffing shortages of qualified teachers" (p. 19). When teachers do not have the necessary formal qualification for their tasks, feedback from school leaders and colleagues is of importance to ensure the quality of teaching. Despite the knowledge of the importance of feedback, the result from TALIS 2013 points out that 46–51% of the teachers report never having received feedback on their teaching from their school leader or other members of the school management. Finland and Sweden are two of the countries with the lowest report of feedback as more than 70% of the teachers in both countries report never having received any feedback. The teachers in the Nordic countries also differ significantly from other participating countries, as they report almost no opportunities to participate in mentoring activities. As the results point out that self-efficacy correlates with taking part in professional development on a regular basis (e.g., once a week) [3], it seems as the Nordic countries show shortcomings in professional development based on feedback, which is found to be an important aspect to decrease teacher attrition. Swedish teachers also reported having the lowest amount of job satisfaction. The importance of enhancing the amount of new teachers, as well as encouraging the active teachers to maintain working as teachers, has been recognized in several countries. Mashau et al. [4] report from a South African perspective the efforts to enhance professional development: "The DoE (2011) further states that at the same time, the department works to support the professional development of all teachers. As opportunities to observe and be observed are central to effective professional development, the government makes it clear that there is no '3-hour limit' on the amount of time a teacher can be observed."

Teachers, who have the opportunity to get constructive feedback in a "feed-forward" way, develop their professional skills as well as increase self-efficacy. However, what kind of support they get is crucial for if and what become possible to develop. In Sweden, preservice training of teachers has become an academic education at university level. This strengthens the teachers' scientific ground, but what theoretical approaches are offered teachers? One problem is the waste amount of descriptive and interpretative research presented in the general educational sciences courses [5], which are mandatory for all teacher students in Sweden. Instead of providing teachers with research results made possible to use to predict and understand how to facilitate the students' learning, they study research on teachers' and students' acting or discussions in the classroom. This is of course also important for teachers to study, but necessarily not at the expense of research on how to teach and learn in the classroom. The large proportion of ground research presented in the teacher programs, in relation to the lack of research results of applied research to improve teaching and learning, results in leaving the teachers' development to themselves. They have to base their teaching on own experience and gradually understand how to design lessons and analyze the students' learning outcomes by trial and error. The circumstance with a lack of applied educational research results, in combination with the extensive research results based on descriptive and interpretative research results, might be one of the reasons for a gap between theory and practice. It might also be the reason for the diverse consults entering the school scene to guide teachers, often without real evidence for the methods introduced

supposed to solve the schools' problems. As the teachers do not share the researchers' viewpoint of the importance of the theories provided during the program, they turn to other "experts" outside school and academia to find support.

2. The gap between theory and practice

The challenge of scientific-based teaching has to be elaborated further, to deepen the understanding of the difficulties. As mentioned above, the results from a national Swedish review of teacher education show that a completely dominant genre of research, which is a part of teacher education, is interpretative research, especially research from a sociocultural perspective [5]. The research that prospective teachers face therefore mainly focus on describing and interpreting the specific and does not aim to point to general patterns or results of classroom learning. The theoretical discussions become abstract, and the preservice students have difficulties transforming the approaches to their professional work as teachers. They feel the results are of little or no meaning for their classroom activities. Although the education is aiming to enhance teachers' competences to teach in a classroom, the research provided during their education is basic research, instead of applied research results saying something about the classroom teaching. The results do not provide the students with knowledge of how to predict or act in the classroom. The main research studied are instead observations of teachers' or students' behavior in the classroom, often not guiding or taking a stance for teachers or teaching recommendations. In fact, the opposite is desirable to avoid being understood as normative.

The gap between theory and practice might be explained as a gap between the perspectives of research provided in relation to the goals of the vocational education for teachers. In a study on the "theory-practice divide" in teacher education, the results show that what the research teacher educators' find relevant to introduce for teacher students is rather determined by their own research interests than the students' needs [6]. What is relevant to educational theories, included in the program, is determined by the teacher educators. More than so, if the teacher educator is perceived to have an authority regarding "real classrooms," the associated theories are accepted. On the other hand, if the teacher educator does not have a legitimate power base, the associated theories are dismissed. So, it is not only how the theory is valued, the real experiences of classroom work affect the students' reliability on what the teacher educator presents.

The importance of real classroom experience can be integrated in the teacher program to enhance the preservice teachers' confidence in the teacher educator and the course moments in the program. It can also be used to make teacher educators without classroom experience, or old experiences, able to understand what theoretical approaches might be important introducing for the students. Further on, it can be used to apply the theoretical assumptions on, showing the students in what way theoretical perspectives can be as glasses put on to see situations from new perspectives and analyze classroom activities based on theoretical assumptions.

3. Preservice teachers' views on theory input

When teachers or other professionals are asked where they have learnt most skills needed in their profession, 70% report they have learned such skills outside the formal education [7]. The teachers' professional training at schools during their education

is highly valued by the students [8] and by that an important part where preservice teachers develop professional skills in a formative way. The supervising in-service teachers have a great impact on how the students develop their skills, as they are mentors during the entire education. In mentoring discussions, emotional support and task assistance seem to be considered as most important feedback by the students [9].

Theoretical reflections on classroom practice during preservice teacher training are rarely studied. Results on students' learning from "guided reflection" during classroom practice found that the students gain of shared reflections of full lessons observations, if the reflection is related to theoretical notions [10]. Furthermore, studies have shown that preservice teachers value practice over theory when they enter the school contexts [11]. Findings also show how developing classroom management skills not always are trained to a desirable extent during teacher education [12]. The preservice teachers are to a great extent taking courses and discussing research at a very abstract level, difficult for them to base their work as teachers on. The gap between theory and practice might be a gap between the research approaches provided, as the majority of research offered seem to be far from teachers' daily work in classrooms.

One way to bridge the gap is to use action research to develop preservice teachers and teachers' theoretical understanding of their own practice [13]. Differences in focus of teaching, based on theoretical assumptions of what is the aim of education, have an impact of what affordances the teacher educators offer their students. In relation to the context at the school, where the students have their internship, those differences might also affect the teacher students' views of what is valuable knowledge for them. A longitudinal study, following preservice teachers' development into in-service teachers, shows how different cultural contexts (teachers from mainland China in Hong Kong) experience different focus when teaching [14]. While mainland teachers have a strong focus on teaching and learning, Hong Kong teachers focused more on reducing social problems in the classroom than knowledge development. Implicit differences of the aim of education affect the teachers' actions in the classroom and by that also what possibilities they give their pupils. To discern different approaches of what teaching and learning can be, requires a variation of theories presented and in what way they can be used as glasses to capture and explain patterns of classroom management. One difficulty is the lack of continuous in-service training for teachers at school, which results in limited possibilities to discuss the theoretical assumptions with supervising teachers at school.

In the Swedish teacher education, the internship period is examined by teacher educators from the university. One of the national goals is to analyze classroom situations based on theoretical assumptions, as teaching should be based both on scientific and empirical grounds. I was involved in a project, resulting in a case study at one teacher education program in one of the largest institutions for preservice training, on the examination of the students' vocational course. At the university, this is an oral examination at the school where the students have her/his internship. The unit of analysis was the meeting between the student, the supervising teacher at school, and the teacher educator from the university, a postlesson discussion about the student's teaching that the teacher educator has observed. Five such conversations were recorded, and the teaching situations have taken place in compulsory schools (student aged 13–16 years old).

4. A study of teacher students' views of theory

To create a scientific understanding of teacher students' views about theoretical studies during their education, a case study has been conducted. As the students' views

are in focus, variation theory [15] has been used to capture what aspects the students' have discerned, and what aspects they have not yet discerned. Aspects of importance to understand teacher students' views about theoretical studies during their in-campus training are captured during the analysis of verbatim-transcribed video-recorded data.

The aim of the case study [16] was to understand in what way performance-based oral assessment [17] of internship in teacher education contributes to teacher students' theoretical-based understanding of classroom instruction. Internship for preservice teachers is a key part of teacher education in Sweden, in total 20 weeks, which the students often value as the most important part of the 4–5 years of training. Performance-based assessments are performed at the end of each vocational training period, managed by the teacher educators.

4.1 The design and results of the case study

In this study, triologue oral examinations, with teacher trainers from university, the mentoring teachers at the school, and the student are analyzed. The case study is based on a mixed-methodology approach [18]. The complete data collected consist of open-ended questionnaire answered by 33 teacher trainers from one faculty, questionnaire with closed questions answered by 27 teacher trainers from, and 5 recorded performance-based oral assessments, with preservice teachers, teacher trainers from the university, and the mentoring teachers at school. After completion of the course, the student should be able to reflect on his teacher role and professional development with relevant links to the theoretical studies. The questionnaire with close-ended questions was compiled and analyzed quantitatively, while the other questionnaire was analyzed qualitatively. The interviews were transcribed verbatim and analyzed qualitatively as well as quantitatively.

The result of the quantitative analysis of the interviews shows how the talktime was distributed among the participants: 41% students, 37% teacher trainers at university, and 22% supervising in-service teachers at school. The durations of the oral assessment had a range between 22.63 and 47.3 minutes. The teacher student was the one who chaired the meeting, as a result of a framework that regulates how the meeting shall be implemented. By that, the students took a leading role in the discussions. The supervising school teacher was in all cases the person who had least talktime at the meetings. The qualitative analysis of the oral assessment shows a prominent trait regarding challenges connecting theory and practice. Students explain how difficult they find it to relate what they study at the university with what they do at their school placement. The dichotomy between theory and practice is expressed:

Excerpt 1: (S – student, ST – supervising teacher, TE – Teacher educator)

S: Should I write “balances between theory and practice”

ST: We'll work on it (laughter)

S: “Working on it”

TE: You have a very good connection to the theories and then get it together with ...

ST: Maybe dare to release the theories too (laughter)

S: Mm

The student's difficulties to see how the classroom activities can be understood from a theoretical perspective are also described:

Excerpt 2:

TE: But it should be visualized in practice and the big problem usually is that in practice you have practice and on the other hand you have the theory and you do not get these two parts together.

ST: *That's right*

TE: *It is often actually at the expense of the theory, but here it might have slipped over*

S: *Yes, I've become more careful when I'm here because I've always got the theory that sits and giggles*

TE: *But just being here and now, at the moment*

S: *Yes, exactly. But it is true that I have chosen a practical profession, more or less, so that the theory is where I can reflect on my practical occupation, but that's not what will guide me...*

The view of theory as something “that should not guide you” is far from what is stipulated in the course syllabus. Basing what happens in the classroom on theoretical assumptions, trying to predict and analyze what happened in the classroom, is far beyond this student's standpoint. Instead, the theoretical frameworks seem to hinder the student, and if the theories mainly are based on a methodological approach with observations and interpretations, theory can become an obstacle. It is impossible to “freeze” in a teaching situation, to take a step out of it, and to analyze it while it is ongoing. You have to be here and now, acting and responding to the students. This is yet another argument for using more practice-based theoretical frameworks, to guide the teachers' work with the students and provide with knowledge of different scenarios and their possible solutions.

Excerpt 3:

S: *I was actually thinking yesterday when I was planning the lesson, and then I sat thinking what I could relate to my theoretical studies ... what I'm using here. Then I wrote 'the next developmental zone' and 'student response', then it stopped. I only "I do not know what can relate to" and I wrote to a friend who had helped me with planning and just said "what more?" Because it's really hard to see. Then I know that I've gone through a thousand concepts at least, but I can not ... so I ... but that's what I'm doing now but I can not express it.*

The difficulties for students to understand how theoretical studies can contribute to their classroom activities were confirmed by the results from the open-ended questionnaire, where the teacher trainers at university describe the difficulties for students to reflect upon their teaching from a theoretical perspective. Finally, the result of the close-ended questionnaire shows that teacher trainers estimate that the mentoring teachers at school do not have sufficient knowledge of theoretical perspectives of relevance for their occupational training (2.0 out of 5.0), while they estimate the students' knowledge higher (3.18 out of 5) and their own knowledge highest (4.18 out of 5). As the supervising in-service teacher has a prominent role as models for the students, a model for knowledge exchange between university teachers and supervising teachers at school, offering them more opportunities to develop their theoretical knowledge, might enhance the theoretical understanding, as well as the use of classroom recordings used in the campus courses. Making it possible for the teacher students' supervisors at school makes it possible to create “communities of practice” [19] where they together can share what the students are offered at their in-campus training.

5. Modules merging theory and practice

Based on the findings above, preservice teacher education provided to enhance the students' qualifications as teachers has to face the challenge of bridging the gap between theory and practice, as well as provide students with theoretical tools and

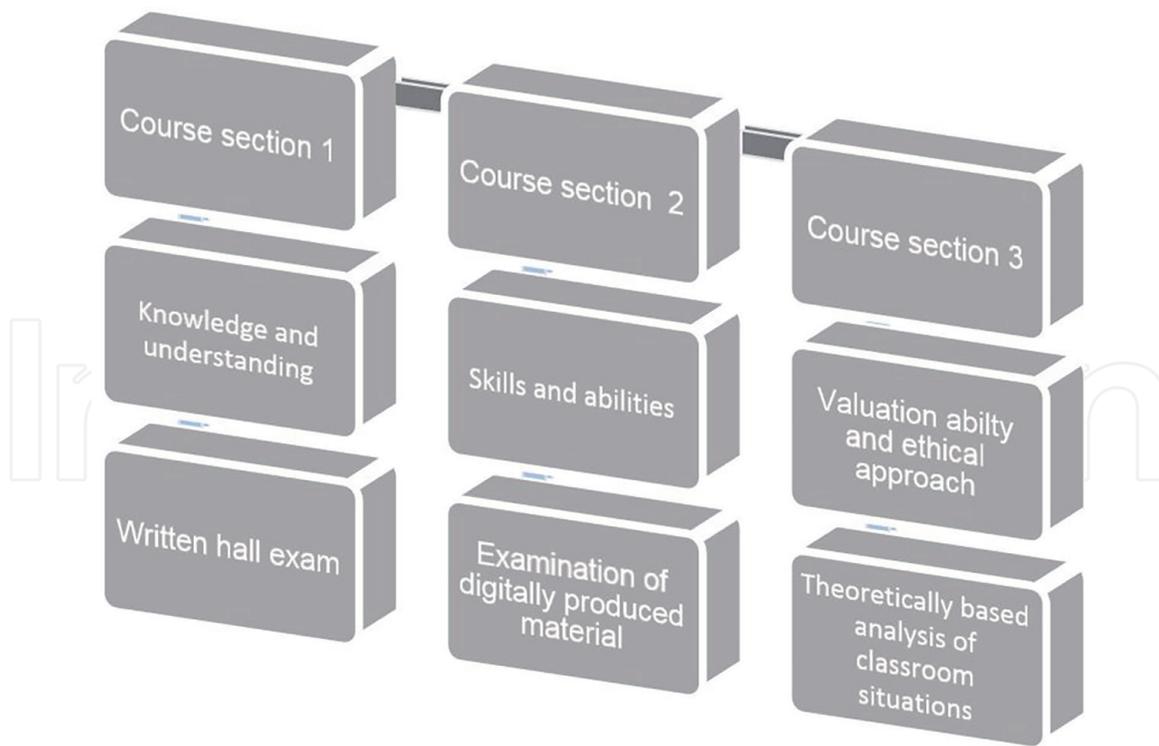


Figure 1.
Structure of a full-time 6-week module in general educational sciences (9 ETCS).

results of importance for their assignment as educators in classrooms. To bridge the gap, it might not only be of interest to give in-service training to supervising school teachers but also reflect on what the campus-based courses for future teachers are offering.

The results of the case study has, together with other research findings, based the foundation for designing modules in the teacher training program aiming to enhance preservice teachers' understanding of how theoretical assumptions can be used to predict, analyze, and revise teaching situations. The modules are based on blended learning [20], as the students are provided by a web resource where they can find lectures from all authors of the course literature, as well as other learning resources, such as study material produced by the Swedish National Agency for Education or other trustworthy sources. Finally, video-recorded classroom situations are used in the final examination of the course to help students to understand how theoretical frameworks can be used as tools for teachers.

The outline of the module is presented in **Figure 1**, showing how one 6-week course (6 ETCS including 3 weeks for each course section) is designed. During the course-weeks, the focus on student performance develops, from students' development of knowledge and understanding, development of skills and abilities, and finally focusing their evaluation ability and approach.

During the course, the students have access to several different learning resources. First of all, the Learning Platform (Canvas) provides the students with course-specific texts, lectures, and learning researches. Besides that, a group of general capabilities are running like a track in all courses (e.g., academic literacy, new arrivals, library support). In all course sections, different form of work is introduced, such as the following:

- Individual reading of literature
- Student workshop for joint reading of literature or problem solving (student lead)

- Prerecorded lectures at web platform (the authors of the literature, teacher educators, pod)
- Prerecorded panel discussions (course leader, teacher, and student)
- Teacher-led seminars to further develop students' learning
- Student seminars

Below, examples of the design are presented to give a view of how the parts of the module strive to enhance both theoretical and professional development preservice teachers by merging theory and practice during the course moments.

5.1 Section 1

During the first 2 weeks of the module, the students' knowledge and understanding, mainly of core concepts and frameworks used, is focused to create a shared knowledge base for further studies. One session of the students' own seminars could be designed as follows:

Wednesday xx/x

08.15-12.00 Student seminar

Study the Teachers' Movie (28 minutes) about leadership in the classroom and discuss how the theoretical assumptions highlighted in the course literature are expressed in the discussion of why leadership in the classroom is necessary: <http://urskola.se/Produkter/196528-Larlabbet-student-Ledarskap-i-klassrummet>. Compare your own examples of situations, and in what way you would act differently today if you had the knowledge that you are expected to develop within the course.

After this brief practice-based task, the students are supposed to watch the lecture of the author of the first course book. Whenever the students want to watch, the prerecorded lecture is uploaded to the web platform and can be watched several times, also together with supervising teachers at school. After this part, the students meet the teacher educators to deepen the discussions of the course book, in relation to the authors' lecture and the other learning resources.

1315-16 Post lecture-seminar

At this seminar, which is a teacher lead, you are going to discuss how knowledge about leadership, communication and conflicts in school has been developed in relation to the course objective, identify and describe various key concepts and perspectives in pedagogical leadership, social relations and conflict management. In what way has the course literature contributed to a theoretical understanding of the theoretical perspectives that can be tools to better understand and predict what is happening in the classroom? What situations do you feel you have more preparedness to handle in future school situations?

During a week, the students in total have at least four seminars including pre- and postseminars adjacent to the video-recorded lectures. Each period of 2 weeks ends with a smaller examination, in which during the first section, the students are supposed to show their conceptual knowledge of the content in focus. This is important to create a joint understanding of the theoretical approaches presented and forms the basis for the continued work.

5.2 Section 2

The second section of the module aims to develop the students' skills and abilities. The design of the work is similar to the previous section; however, during these 2 weeks, the students are expected to show their skills in relation to the theoretical approaches in focus. During the seminars, the students are expected to be more active than in the first part. They have to show examples of how to put the theoretical knowledge to abilities.

Tuesday xx/x

10.15-12.00 Pre-seminar

Before this seminar you should have read the report "Learning from the best: an ESO report on Swedish school in an international research perspective" by Åman (2011), as well as prepare 3-5 questions based on the literature in order to get a deeper understanding of the content. What are the similarities and differences between today's school in Sweden and other countries? Does the report give you good prospects for meeting the learning objective: "Analyze the school's activities in a national and international perspective"? The seminar is led by teacher educators.

1300-1530 Sweden's school in an international perspective

This lecture is linked to the report "Learning from the best: an ESO report on Swedish school in an international research perspective" by Åman (2011).

The lectures are followed up by postseminars where teacher educators, related to the goals in the syllabus, deepen the discussions to enhance the students' knowledge development.

13.15-16 Post-seminar

At this seminar, which is led by a teacher educators, how scientific and evidence based knowledge has been developed on the basis of relevant governing documents is discussed. At this seminar you will discuss in particular whether you have developed your knowledge in relation to the objective "Analyze the relationship between research and empirical based knowledge for the profession".

The section ends with an examination, designed to show the students' skills by doing a smaller school development project to be analyzed from a theoretical perspective.

5.3 Section 3

In the final section of the course, the students' abilities to value and ethical approach in relation to their professional development as teachers. By that, this third step finalizes the students' understanding of the theme of the module, for example, classroom leadership and management. Based on their conceptual knowledge of the field, they have shown proof of their skills in relation to their profession. In this last step, they are supposed to value their knowledge and skills to examine them in an ethical perspective, which is practiced in different kind of activities.

Monday xx/x

10.15-12.00 Student seminar

Before this seminar, you have to study the module on the learning platform about writing a short information text based on proven experience and scientific basis for informing parents about the school's value base (included in the academic literacy

module). To develop your skills, you will practice your ability to value and ethical review, which will be tested in exam three. You will also have access to classroom movies to analyze regarding the school's value base.

The examination of the students' evaluation and ethical review abilities are made close to their professional role as becoming teacher. The examination is based on the theoretical frameworks studied in the course and through course literature.

Examination 3

Analysis of classroom situations based on human rights and child convention by a video-recorded classroom situation. The analysis should be based on the conceptions and theoretical perspectives studied in the course. Evaluate and make an ethical review of the situation analyzed. Max 2 pages, excluding references, should be uploaded on the learning platform within a time limit of 4 hours after the lesson has been released on the learning platform.

5.4 Final remarks

The design of general educational courses in the teacher program is always a challenge. There are more topics of interest for teachers than could possibly be included in the training, so how to choose what is most important? The risk is that always these courses tend to be fragmented, with several small parts different to connect to each other. Making the content both coherent within a theme and connecting the theoretical parts with the preservice teachers' professional role in the future is another challenge. This is a humble try to overcome these challenges, and by that provide teacher students with knowledge they can understand both on a theoretical and practice-based level.

6. Conclusion

The challenge to provide society with qualified teachers is global, and the interest to begin teacher education studies is low in many countries. In, for example, Sweden, teacher education has become a university program. This guarantees the scientific quality of the courses given, which hopefully gives the students a basic scientific knowledge of teaching and learning. But has it provided teachers with better skills about teaching and learning in the classroom? There is of course no easy answer to give, but it highly depends on the interest and quality of teacher educators. When teacher education was a professional education, it was provided by teacher education colleges instead of universities. The lecturers had a strong relation to schools and experience as being teachers by themselves. This can of course be problematic for the development and critical stance, which enables changes of how school should be working. On the other hand, there is also a risk of quality decrease if the theoretical approaches provided for preservice teachers are descriptive and interpretative, leaving the teachers without any answers of how to act in the classroom. In combination with teacher educators at universities, without own experience of teaching outside university who determine what is of importance for teachers to learn, the gap between theory and practice can easily be insurmountable. Then it does not help how qualified the teacher educators are regarding scientific knowledge or how qualified they are to teach at university level. The importance to provide teacher students with applied research results and to give them scientifically substantiated results guiding them to enhance teaching and learning in schools is crucial for the quality of teacher education. Changes are

needed to attract young adults wanting to become teachers. In countries where teacher education is situated at universities, the teacher students might lack the opportunity to meet teacher educators who have a background as teachers before being researchers. Then they do not meet role models they can identify with before they are on internship and meet teachers. The expression that schools are “the real world” and university is “a fictive world” is in not difficult to understand from teacher students’ perspective.

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