Taotlus doktorantuurikoha eraldamiseks

1. Õppekava: Haridusteadus 80338

2. Projekti pealkiri eesti keeles: Õpetaja kompetentside tegevuspõhine hindamine e-portfoolio ning õpialüütilika toel

3. Projekti pealkiri inglise keeles: Performance-based assessment of teacher competences with the support of e-portfolio and learning analytics

4. CERCS teaduseriala: S272 Öpetajakoolitus (Teacher education)

Juhendajad:

<table>
<thead>
<tr>
<th>First name</th>
<th>Surname</th>
<th>Affiliation</th>
<th>Position</th>
<th>Participation at International conferences during last 2 years (with oral presentation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ali</td>
<td>Leijen</td>
<td>University of Tartu, Institute of Education</td>
<td>Senior research fellow of educational sciences</td>
<td>2014 (4 conferences, AERA; ISATT; Dialogical Self, WCES)</td>
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<td></td>
<td>2013 (4 conferences, AERA; EARLI; ISATT; ICEEPSY)</td>
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<tr>
<td>Marieke</td>
<td>Van der Schaaf</td>
<td>University of Utrecht, Faculty of Social Sciences</td>
<td>Associate professor</td>
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</tbody>
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Uurimisgrupp, kus doktoritööd tehakse (teised doktorandid ja juhendajaga teema uurimisel tihedalt koostööd tegevad kaastöötajad):

<table>
<thead>
<tr>
<th>First name</th>
<th>Surname</th>
<th>Affiliation</th>
<th>Position</th>
<th>PhD student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Äli</td>
<td>Leijen</td>
<td>SHHI</td>
<td>Senior research fellow of educational sciences</td>
<td>No</td>
</tr>
<tr>
<td>Marieke</td>
<td>Van der Schaaf</td>
<td>University of Utrecht</td>
<td>Associate professor</td>
<td>No</td>
</tr>
<tr>
<td>Katrin</td>
<td>Saks</td>
<td>SHHI</td>
<td>Doctoral student</td>
<td>Yes</td>
</tr>
<tr>
<td>Tiina</td>
<td>Anspal</td>
<td>SHHI</td>
<td>Doctoral student</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Raili Allas SHHI Doctoral student Yes

Liina Malva SHHI Master student of educational sciences No

Maarit Saks SHHI Research assistant of educational research projects No

Edgar Krull SHHI Professor No

Bert Slof University of Utrecht Assistant professor No

Jan Van Tartwijk University of Utrecht Professor No

**Tööks vajalike olemasolevate vahendite (aparatuur, finantsid) kirjeldus** (Funds and resources):

The research group has all necessary equipment and finances to support this doctoral research project.

The current doctoral research project will be conducted in the research-intensive context of the international research and developmental project entitled Workplace-based e-Assessment Technology for Competency-based Higher Multi-professional Education (WATCHME) funded by European Commission 7th Framework Program, see www.project-watchme.eu. The project duration is March 2014 – February 2017; the budget of the project is 2.5 million EUR, the budget of the research team in Tartu University is 242 136 EUR. Co-supervisor, Marieke Van der Schaaf is the leader of the project. Main supervisor, Äli Leijen is the leader of the project work package focusing on implementation and evaluation and the coordinator of the research team in Tartu University.

**Doktoritöö innovaatilisus ja tähtsus antud teadussuuna arengule** (Scientific and practical relevance of the Doctor study)

This study aims to define performance-based competence requirements for student teachers and to explore how these competences could be assessed and how the student teachers’ progress could be supported by means of personalised feedback utilising e-portfolio and learning analytics (LA) applications.

The quality of education highly depends on what teachers do (the teaching tasks they perform) and on their competences to adequately fulfil these tasks (Van der Schaaf & Stokking, 2011). The attempts of defining knowledge and skills necessary for teaching profession date almost a hundred years ago when researchers started to compile lists of teaching skills on the basis of teacher inquiries what makes up a good teaching. This resulted in producing long and varying lists of attributes of good teaching that had little use for
practice of teacher education (see also Good, 1996). Since the 1960s more specific models for
describing teacher education approaches or defining attributes of good teaching appeared,
from the 1980s knowledge demands of teaching moved to the forefront (see e.g. Grossman,
Hammerness & McDonald, 2009; Cochran-Smith, 2014), and from the 2000s the clinical
practice of teacher education has gained considerable attention (see e.g. Korthagen et al.,
2001; Grossman et al., 2009). To overcome the previous theory–practice divide in teacher
education programs (see Korthagen, 2001; Korthagen, Loughran, & Russell, 2006) a common
aim today, is to increase the practical relevance and meaningfulness of the initial teacher
education, so that student teachers would be better prepared for a real life work situation. In
line with this, school internship has moved to the central position of teacher education in
many countries, including Estonia that forms the context for the current study.

The current study utilises three innovative concepts that could help making school internship
and teacher education in general more meaningful and beneficial for prospective teachers.
Firstly, the concept of core practice (Ball & Forzani, 2009; Grossman, et al., 2009;
Windschitl et al., 2012; Zeichner, 2012) that directs teacher educators to identify and organise
initial teacher education around the most crucial professional activities a teacher has to carry
out. Core practices are activities that occur with high frequency in teaching practices and
student teachers can actually begin to master, allow student teachers to learn more about
pupils and about the integrity and complexity of teaching. Secondly, the entrusted
professional activity (EPA) concept (Ten Cate, 2005, 2013; Ten Cate & Scheele, 2007), that
originates from medical education, also emphasises identification of crucial professional
activities in practice, but also points out that these activities need to be practiced under
supervision until the student is entrusted to carry them out independently. Thirdly, the idea of
evaluation rubrics, i.e. descriptions of parts or aspects of work with associated performance
level descriptions which might be used for supporting student teachers assessment and
feedback (Dekker-Groen, Van der Schaaf & Stokking, 2012).

Recent studies have shown that in many sectors portfolios are used to help assessing
workplace-based learning and to support employability and lifelong learning (Van der Schaaf,
Stokking & Verloop, 2008; Bok et al., 2012). Moreover, LA applications, which can be
defined the measurement, collection, analysis and reporting of data about learners and their
contexts, for the purpose of understanding and optimising learning and the utilising of
environments in which it occurs (Solar, 2013), have great potential for improving work-place
learning, including learning during school internship in teacher education. Most importantly,
the possibility to improve the quality of feedback has been pointed out in several studies
(Ericsson et al., 2006; Hattie, 2009). The current PhD study is going to further explore how
these potential benefits, especially related to enhancing feedback on learning, can improve
student teachers’ development of profession related competences.

Doktoritöö plaan (Plan of the doctoral study)

By utilising the innovative concepts outlined above the first aim of this PhD study is to design
and evaluate rubrics and assessment instruments regarding performance-based competence
requirements for student teachers. The rubrics and assessment instruments would focus on
monitoring the mastering of realistic complex tasks of teachers’ work during school practice in the context of initial teacher education.

1. RQ: What are performance-based competence requirements for the student teachers?

2. RQ: How to assess the development of performance-based competencies of student teachers during school internship?

In order to answer these questions a literature review will be carried out regarding (inter)national teacher standards to develop rubrics and to analyse instruments that describe and assess teacher competences. A Delphi method will be used to validate the developed rubrics and selection of instruments with experienced teachers and teacher educators (Dalkey & Helmer, 1963; Okoli & Pawlowski, 2003; Linstone & Turoff, 2002; Skulmoski, Hartman & Krahn, 2007). Next the rubrics and assessment instruments will be further developed and evaluated among student teachers based on a descriptive study including the psychometric quality (validity and reliability) of the rubrics and instruments as well as users’ perceptions.

Moreover, in order to support the implementation of the assessment rubric and instruments described above, an electronic portfolio (EPASS, www.epass.eu), developed in the context of the WATCHME project that contains novel Learning Analytics (LA) applications aimed to increase the quality of personalised feedback, will be used in the current project. Development of the LA applications is not the scope of the current PhD project; all LA applications will be developed in the context of the WATCHME project. The second aim of the current study is to find out to what extend the assessment rubric and assessment instruments delivered via LA enriched e-portfolio allows supporting student teachers’ performance-based competences during school internship.

3. RQ: What is the impact of feedback, based on LA enriched e-portfolios, on the development of student teachers’ performance-based competences during school internship?

A quasi-experimental design will be employed to compare student teachers’ learning activities and outcomes between the experimental and control conditions. First experimental group of the student teachers (N = 30) will use e-portfolio with LA applications, the second experimental group (N = 30) will use the e-portfolio without the LA applications and the control group (N= 30) will carry out the same learning activities as the experimental groups without e-portfolio and LA applications. Pre- and post-test design will be employed to investigate the possible differences between the groups regarding the development of student teachers’ performance-based competences.

Time schedule

2015/2016 Finalising a conceptual model of performance-based assessment and developing assessment instruments for measuring the competences. Pilot-testing the assessment instruments. Writing the 1st article that introduces the model and assessment instruments.
2016/2017 Preparing the pilot testing of e-portfolio in Estonian context. Pilot testing the performance-based competency assessment model delivered via e-portfolio. Writing the 2nd article that summarises the results of the pilot study.

2017/2018 Preparing the main testing of the performance-based competency assessment model delivered via e-portfolio. Writing the 3rd article that introduces the main testing and the results of the study.

2018/2019 Wring the 4th article focusing on in-depth analysis of the reliability and validity of the personalised feedback and assessment and factors contributing the latter two. Finishing the doctoral dissertation.

In each year the PhD student will participate at an international conference with an oral presentation.

Eestikeelne kokkuvõte

Pealkiri: Õpetaja kompetentside tegevuspõhine hindamine e-portfoolio ning õpianalüütika toel

Juhendajad: Äli Leijen, Marieke van der Schaaf


Abstract in English

Title: Performance-based assessment of teacher competences with the support of e-portfolio and learning analytics

Supervisors: Äli Leijen, Marieke van der Schaaf

Annotation:

The aim of this PhD study is to design and evaluate an assessment procedure and instruments measuring performance-based teacher competences of student teachers. To design the assessment procedure and instruments, this study utilises several innovative concepts i) core
practice (Ball & Forzani, 2009; Grossman, et al., 2009; Windschitl et al., 2012; Zeichner, 2012) ii) entrusted professional activity (EPA) (Ten Cate, 2005, 2013; Ten Cate & Scheele, 2007), and iii) evaluation rubrics (Dekker-Groen, Van der Schaaf & Stokking, 2012). Moreover, since recent studies have highlighted the benefits of e-portfolios (Van der Schaaf, Stokking & Verloop, 2008; Bok et al., 2012) and Learning Analytics (LA) applications (Solar, 2013) in advancing the assessment of workplace-based learning, we will explore how the teacher competences could be assessed and how the student teachers’ progress could be supported by means of personalised feedback utilising e-portfolio and LA applications.