STAATSCOURANT
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Besluit van het bestuur van NWO domein Sociale en Geesteswetenschappen tot wijziging van de Call for consortium partners Praktijkgericht onderzoek naar het hoger onderwijs 2019–2020

Het SGW-domeinbestuur,

gehoord de Programmacommissie hoger onderwijs,

gelet op artikel 6, vierde lid, van de Wet op de Nederlandse Organisatie voor Wetenschappelijk Onderzoek en artikel 2.1.2, eerste lid, van de NWO Subsidieregeling 2017;

gelet op artikel 6.3, eerste en tweede lid, van het Bestuursreglement NWO 2017, alsmede artikel 3.1, eerste en derde lid, en artikel 4.2, eerste lid, van het Domeinreglement Sociale en Geesteswetenschappen 2017;

overwegende dat in de Call for consortium partners Praktijkgericht onderzoek naar het hoger onderwijs 2019–2020, in de Staatscourant gepubliceerd op 1 maart 2019, nr. 11593, de essays van de projectleiders nog niet bekend op 1 maart 2019 bekend waren;

BESLUIT:

Artikel 1

De Call for consortium partners Praktijkgericht onderzoek naar het hoger onderwijs 2019–2020 te wijzigen als volgt:

a. In Hoofdstuk 2 (‘Doel’) wordt de volgende tekst:

> “Het budget wordt verdeeld over drie projecten, waarin onderzoek wordt gedaan naar drie thema’s die relevant zijn voor het gehele hoger onderwijsveld in Nederland:
> 1. Professionele ontwikkeling van docenten
> 2. Internationaal en intercultureel onderwijs
> 3. Flexibel onderwijs
>
> De thema’s worden nader uitgewerkt door de projectleiders die in de eerste fase van de subsidieronde zijn geselecteerd. Na bekendmaking van de projectleiders zal een geüpdatete versie van deze call for consortium partners gepubliceerd worden, waarin de essays van de projectleiders zijn opgenomen.”

gewijzigd in:

b. In Hoofdstuk 6 (‘Bijlage(n)’) worden als bijlagen de essays van de projectleiders toegevoegd, te weten:

6.1 Professioneel leren en ontwikkelen van docenten in het hoger onderwijs: wat werkt en hoe en waarom werkt het? – Prof. dr. J.D.H.M. Vermunt
6.2 Toegankelijk hoger onderwijs voor, door en na de poort – een integraal perspectief op de toegankelijkheid van het hoger onderwijs in Nederland – Dr. L. Elffers
6.3 Flexibel Hoger Onderwijs: werkplekleren voor een leven lang professionele competentieontwikkeling – Prof. dr. A.F.M. Nieuwenhuis en Dr. C.R.M.G. Fluit

Artikel 2

Dit besluit treedt in werking met ingang van de dag na bekendmaking in de Staatscourant, en werkt terug tot en met 1 maart 2019.

Artikel 3

Dit besluit wordt aangehaald als: Wijzigingsbesluit Call for consortium partners Praktijkgericht onderzoek naar het hoger onderwijs 2019–2020, 17 oktober 2019

Den Haag, 17 oktober 2019

namens het SGW-domeinbestuur,
D.J. den Boer
Domeindirecteur Sociale en Geesteswetenschappen

BIJLAGE 6.1 'PROFESSIONEEL LEREN EN ONTWIKKELEN VAN DOCENTEN IN HET HOGER ONDERWIJS: WAT WERKT EN HOE EN WAAROM WERKT HET?' – PROF. DR. JAN VERMUNT

6.1.1 Inleiding & samenvatting

Het hoger onderwijs in Nederland is begonnen aan fascinerende innovaties in onderwijs en leren. Learning analytics, gepersonaliseerde leertrajecten, flipped classrooms, competentiegericht leren, authentiek leren, samenwerkend leren in interdisciplinaire projecten, challenge-based learning, technologie-ondersteund leren, zijn maar een paar voorbeelden van nieuwe onderwijs- en leervormen die op vele plaatsen in het hoger onderwijs worden geïntroduceerd. Deze innovaties vereisen andere rollen en expertises dan vele docenten gewend zijn. De introductie van dergelijke vernieuwingen gaat helaas maar zelden gepaard met initiatieven om docenten te helpen zich de vaardigheden, kennis, visies en identiteit eigen te maken die nodig zijn om op een nieuwe manier onderwijs te kunnen geven.
Het onderzoek naar professioneel leren en ontwikkelen van docenten in het hoger onderwijs staat nog in de kinderschoenen. In de praktijk wordt een brede variëteit aan docentprofessionalisering gebruikt, zoals workshops, colleges, onderzoek door docenten, leren door reflectie, peer coaching, scholarship of teaching, lesson study, leergemeenschappen, teamleren, en netwerkleren. De keuze voor een bepaalde professionaliseringsaanpak wordt vaak meer gebaseerd op geloof en gewoonte dan op onderzoek. Een solide kennisbasis geworteld in onderzoek over òf, hoe en waarom verschillende aanpakken werken in verschillende contexten ontbreekt. Bovendien staat onderzoek naar de professionele ontwikkeling van docenten meestal los van onderzoek naar het leren en onderwijzen van studenten. Deze kloof beperkt de invloed van onderzoek op wat er in de praktijk van alledag gebeurt.
In deze Call worden consortiumpartners uitgenodigd die werken aan onderwijsinnovaties die nieuwe rollen en expertises van docenten vragen en/of aan docentprofessionaliseringsinitiatieven die hier op gericht zijn. Samen zetten we een onderzoeksprogramma op over òf, hoe en waarom verschillende benaderingen van professioneel leren en ontwikkelen van docenten werken voor verschillende innovaties, contexten en populaties. Ook gaan we op zoek naar samenhangen tussen de kwaliteit van het leren en ontwikkelen van docenten en de kwaliteit van het leren van studenten.

6.1.2 Essay

Teacher professional learning and development in higher education: What works and how and why does it work?

Prof. Dr. Jan Vermunt

Introduction

The quality of student learning has gained more and more attention in the public debate about the quality of Higher Education (HE) over the last decades. Increasingly, teaching practices in which students passively absorb knowledge provided by teachers and textbooks are considered inadequate to meet the challenges of 21st century education. Looking at the contemporary espoused aims of higher education institutions around the world, many are remarkably universal (see Martin, 2016; Vermunt et al., 2018). Universities aim to educate people who are able to think independently and critically, to think deeply about problems in and around their discipline, and to keep on learning and developing throughout their professional lives.
They also aim to enable graduates to be able to work independently and collaboratively, to be engaged with society, to contribute to understanding and solving complex problems, to be able to communicate with people from other disciplines and with practitioners, and to be open to multiple perspectives. Traditional teaching-learning models that emphasize the transmission of knowledge from teachers to learners are increasingly considered inadequate to meet those aims.

Innovations in higher education teaching and learning

Research on student learning in higher education has underlined the importance of deep approaches to learning, self-regulation, intrinsic motivation and constructive conceptions of learning for attaining high-quality learning outcomes congruent with the aims outlined above (e.g. Biggs, 1996; Entwistle, 2018; Vermunt & Donche, 2017). Already in the 1960s medical educators at McMaster University in Canada experimented with a radical new approach to teaching and learning in medicine, problem-based learning (PBL, see for an overview Barrows, 1996). Students were disappointed with the vast amounts of medical knowledge they had to learn and reproduce at exams, and saw little relevance of all this knowledge for the work they envisioned to do as a medical doctor in the future. Problem-based learning, with its emphasis on working on real-life problems as a the start of learning processes, small-group discussions and tutoring, self-directed learning and problem-solving, early placements in professional practice, skills labs for medical and communication skills, and authentic assessments was

developed as an alternative to traditional didactic medical education. From the very start the introduction has been supported by research on a broad variety of aspects characteristic for problem-based learning, ranging from the effects of adding a question mark to progress test items, the need for content knowledge of tutors, to assessment of professional competence (see for example Dochy et al., 2003; Van der Vleuten, 1996). The PBL model has spread around the world and many universities have adopted it in especially medical and health education, but also in other disciplines.
Problem-based learning may have been one of the first innovative teaching-learning models used at scale in our era, but it has not stayed the only one. Project-based learning, assignment-based teaching, competency-based learning, work-based learning and challenge-based learning are some other major models of higher education teaching and learning that have been adopted by Higher Education institutions to foster more active, self-regulated, collaborative, meaning-oriented and application-oriented student learning (Vermunt, 2007). Moreover, many other innovations in higher education are being introduced that do not necessarily come down to a comprehensive teaching-learning model, but that refer to smaller features of teaching and learning. Learning analytics, personalized learning trajectories, flipped classrooms, authentic learning, partnerships with companies, collaborative learning in interdisciplinary projects, technology enhanced learning, preparing for lifelong learning, massive open online courses (MOOCs), are just a few examples of new approaches to teaching and learning that are being introduced at many places in higher education. Higher education is at the dawn of exiting innovations in teaching and learning, many of which are aimed at improving the quality and experience of student learning.
These innovations require quite different teacher roles and skills than many lecturers in HE are familiar with. In traditional teaching for example, lecturers have primarily to be able to explain the subject matter well, to regulate the learning of their students and to motivate students to learn. In assignment-based teaching, core teaching skills involve designing good assignments, giving educative feedback, and monitoring and coaching students during their independent work. In PBL, the lecturer fulfils roles like tutor, skills trainer and assessor, problem designer and block coordinator. Project-based learning assumes that a lecturer can supervise and guide project groups, coach the collaboration within groups and deal with individualistic and free-riding behaviour of students. In competency-based teaching, lecturers have to act as study career advisors, competency assessors, and professional growth consultants, while work-based learning calls for teacher roles like mentor, portfolio advisor, authentic test designer and being able to clarify students' concerns. In challenge-based learning teachers are expected to be able to coach students in clarifying their learning needs, defining realistic boundaries for their challenges, monitoring their learning, solution, design and collaboration processes, and evaluating the outcomes of their work.
The growing importance of learning analytics in designing personalized learning pathways means that lecturers should be able to collect and interpret learning analytic data and be able to use them to help students design personalized learning experiences. In all student-oriented forms of teaching, lecturers should be able to fulfil roles like diagnostician, challenger, model, activator, monitor, reflector and evaluator of students' learning processes. Moreover, they should be able to flexibly alternate these roles when scaffolding their support to strengthen students' skills in self-regulated learning.
In addition, lecturers may be asked to, for example, lead educational innovations, or act as educational developers, practitioner researchers or consultants on e-learning.
Just as first-year students may find it difficult to adjust to the self-regulation required in project-based courses, so university staff may find it equally difficult to adopt the very different roles that educational innovations demand from them (Ramsden, 2003). The transitions are not simply about learning new skills, but about fundamentally changing a mindset that previously involved regulating the study programme and controlling student activities, to one which accepts an increasing level of student autonomy and collaborative learning (Entwistle, 2018). To call this change 'demanding' is to understate what is being expected; any such change will take considerable time to accomplish, but such changes are essential if we are to help students to become self-regulated and self-motivated learners by the time they leave higher education.

Teachers' professional learning and development

What lecturers should learn in a professional development programme is therefore dependent on the type of teaching-learning methods we educate them for. Educating lecturers for competency-based teaching is different from educating them for assignment-based teaching, although in both types of teaching lecturers should, for example, be able to build up good interpersonal relationships with students (Den Brok et al., 2004). When experienced lecturers are being faced with a change in the pedagogy of their institute, they are expected to change their way of teaching accordingly. They have to learn and develop on all components of the model of teaching that Shulman and Shulman (2004) presented: they have to develop a new view on teaching and student learning, be motivated to learn about new ways of teaching, understand the concepts and principles on which innovations are based, develop skills to translate the new way of teaching into practice, reflect on their experiments with the new pedagogy in order to learn, and form part of a community of teachers who are all learning new things.

Research on teacher learning and professional development (PD) has mainly been conducted in primary and secondary education. Borko et al. (2010), for example, reviewed the literature on contemporary approaches to teacher PD and derived a number of essential characteristics of effective PD: (1) the content is situated in practice and addresses problems of practice; (2) the content is focused on students' learning; (3) preferred instructional practices are modelled; (4) PD fosters active teacher learning and teacher inquiry; (5) professional learning communities and collaborative learning environments are used; (6) PD settings are appropriate to goals, and are often school based; and (7) opportunities or models are ongoing and sustainable. Similar features are mentioned by several other authors (e.g. Darling-Hammond & Richardson, 2009; Postholm, 2012; Van Veen et al., 2012). Desimone (2009) proposes a conceptual framework for studying the effects of PD on teachers and students. In the framework, core features of PD (such as content focus, active learning, coherence, duration and collective participation) lead to increased teacher knowledge and skills, and change in teachers' attitudes and beliefs. These changes in teachers lead to changes in their teaching practices, which in turn lead to improved student learning. This all takes place in a context including teacher and student characteristics, curriculum, school leadership, and policy environment.
Although we may expect similar characteristics for effective PD in higher education, there are also large differences between teaching in different education sectors. For example, teachers in higher education and primary/secondary education have a quite different history of prior pedagogical training, experience different degrees of autonomy in their choice of content, goals and teaching methods, and may have quite different professional identities. Moreover, marked differences exist between lecturers in research universities and lecturers in universities of applied sciences in the spread of their work over research, teaching and administrative responsibilities, and in achievement requirements for career progression. Therefore, we cannot just extrapolate the findings and models of effective PD from primary and secondary to higher education.
Until recently, lecturers in higher education did not need much pedagogical training to qualify for the job. Research achievements were considered more important for success in applications for university lectureships than teaching excellence. Fortunately, this situation is changing rapidly. In The Netherlands, Basic and Senior Teaching Qualifications (BKO and SKO) are now mandatory to make career progress at many higher education institutes. In the United Kingdom, gaining a Postgraduate Teaching Certificate is a requirement for tenure at many universities after an initial three year probation period (Chalmers & Gardiner, 2015).

Approaches to teacher professional development in higher education

A variety of approaches to teacher professional development is being used in higher education, for example teacher research, workshops, traditional courses, learning-through-reflection, peer coaching, scholarship of teaching, lesson study, learning communities, network-based learning, and team learning. The choices for adopting a professional development approach are more often based on beliefs about what works than on research evidence. A solid knowledge base grounded in research evidence on if, how and why these approaches work in different contexts is lacking. Moreover, research on teaching and teacher learning is often disconnected from research on student learning and instruction. This gap limits the impact of research on what goes on in daily practice.
In contrast to the situation in primary and secondary education, research on teacher learning and professional development in higher education is far less developed. Some evidence has however emerged. For example, Knight et al. (2006) studied the professional learning of teachers at the UK Open University with a large-scale research design. Among other things, part-time tutors were asked how they had learned to teach in higher education. The two most mentioned ways of learning were 'Simply doing the job of teaching in higher education' and 'The experience of having been taught in higher education'. However, the most preferred additional ways of professional learning they indicated were 'Workshops and conferences', 'Guidance from a mentor' and 'Conversations with departmental colleagues'. Clearly, actual and preferred ways of learning to teach in higher education were not aligned. The authors derive several implications from their study for improving teacher professional development, among which the formation of learning departments and teams, developing a climate within which PD can flourish on a day-to-day basis, encouraging reflection that brings together experience, context, research and theory, a focus on ongoing development instead of "one-shot" courses, and reconsidering ways in which their impact on student learning might be robustly demonstrated.
De Rijdt et al. (2013) reviewed research on influencing variables and moderators of transfer of learning to the workplace within the area of staff development in higher education. The focus of their review was on the influence of professional development initiatives on changes in teaching behavior or practices. Their conceptual framework consists of three groups of influencing variables: learner characteristics, intervention design and work environment. They emphasize that there is no single recipe for successful transfer of learning, and that one must consider what works for whom and under what conditions. Further research on transfer of staff development should in their view carefully describe trainee characteristics, intervention characteristics and context characteristics such as work environment. Steinert et al. (2016) reviewed 111 studies on faculty development initiatives designed to

enhance teaching effectiveness in medical education. A wide range of instructional methods was used in the various studies, including small-group discussions, interactive exercises, experiential learning, structured opportunities for reflection, didactic lectures, role-plays and simulations, films, and videotaped reviews of performance. The duration of interventions ranged from 30 minutes to four years. Although the overall satisfaction of participants with the faculty development programmes was high, the authors conclude that future research should move beyond individual teaching effectiveness, develop programmes that extend over time, promote workplace learning, foster community development, and secure institutional support. Moreover, they emphasize to embed studies in a theoretical framework, conduct more qualitative and mixed-method studies, and assess behavioural and organizational change.
The importance of teacher agency for achieving impact is stressed by many authors (e.g. Dochy & Segers, 2018; Grunefeld et al., 2015; Pyhältö et al., 2015). For example, Grunefeld et al. (2015) studied the design and effects of an academic development programme on leadership for educational change. Participants of the programme were senior academics involved in leadership roles of teaching and learning in their departments. Both the participants and their head of departments agreed on the positive impact of the programme. Critical features of the programme contributing to its effects were, according to the authors, giving the participants a say on the content of the programme (e.g. topics and speakers), addressing their practice, a study tour abroad with the whole group, and opportunities for discussions with colleagues.
Various studies stress the importance of professional identity development as an outcome of staff development in higher education (e.g. McLean & Price, 2019; Nevgi & Löfström, 2015, Van Lankveld et al., 2016). Nevgi and Löfström (2015), for example, studied teacher professional identity development in the context of a comprehensive university teacher development programme during a five to six year period. They found four different teacher identity types developing among the participants, characterised by an identity as: a renewing and reflective university teacher and researcher; a pedagogically skilful subject expert teacher; an educational developer reflecting on how to improve university teaching; and an educational developer focusing on research on university teaching with no reflection on teaching.
According to the authors these teacher identities had developed as a consequence of participation in the extensive programme and in the light of career prospects. Postareff and Nevgi (2015) studied the development of university teachers' pedagogical expertise during a pedagogical development course of five months. They content analysed reflection diaries of the participants and could identify different developmental pathways. Some teachers resisted changing their understanding about teaching and learning, while others described strong changes in their conceptions of teaching and learning and in their teacher identity. Van Lankveld et al. (2016) found that informal teacher communities enhanced the professional development of medical teachers, and also validated and strengthened their identity as teachers.
Postareff et al. (2007) found that university teachers' pedagogical training had an impact on their reported approaches to teaching. Especially teachers with a training duration of 30 ECTS or more scored higher on a conceptual change / student-focused approach to teaching and lower on an information transmission / teacher-focused approach to teaching than teachers with a shorter amount of pedagogical training. Moreover, pedagogical training had a positive effect on teachers' self-efficacy beliefs. The teachers mentioned only positive effects of pedagogical training on their teaching. Similar results were reported by Rienties et al. (2013) in a study on the effects of online professional development on higher education teachers' beliefs and intentions towards learning facilitation and technology. They found that technological pedagogical knowledge skills had increased substantially through the programme and that the academics believed less in knowledge transmission over time. Training retention was influenced by disciplines and institutional cultures, time investment and beliefs about employability.

Research focus and questions

Two reviews on the impact of professional and instructional development on higher education teachers' teaching have been published recently (e.g. Saroyan & Trigwell, 2015; Stes et al., 2012). These reviews were focused on professional development initiatives to prepare teachers for a variety of teaching formats. Many of the studies reviewed were focused on preparing new teachers for more of less traditional university teaching roles (e.g. lecturing, workshops, supervisions). Moreover, the majority of reviewed studies were conducted at American colleges. In contrast, the research here proposed will focus on preparing in-service teachers in all phases of their professional career for innovative teaching formats and objectives that are currently being introduced on a large scale at research universities and universities of applied sciences in The Netherlands.
In line with the aforementioned problems in higher education practice and the gaps identified in the research literature above, the focus of this research programme will be on higher education teachers' learning and professional development in the context of educational innovations. More specifically, the research will be guided by the following research questions:

(1) What expertise do higher education teachers need to be able to learn, work and innovate in contemporary higher education?
(2) How do higher education teachers learn and develop professionally in the context of educational innovations, and how is this professional development influenced by personal and contextual factors?
(3) How can higher education teachers be supported in their learning and professional development in the context of educational innovation?
(4) What are the effects of different pedagogical approaches to teacher professional development on teachers' expertise, identity, motivation, and teaching practices, on student learning and on the educational organization?

All four research questions contribute uniquely to knowledge development about higher education teachers' learning and professional development in the context of educational innovations. We need answers to the first question to be able to know the desired content of professional development initiatives, and to align the professional development and research to the contexts of the consortium partners. Question 2 asks about how HE teachers currently cope with and respond to innovations, how they learn new expertise spontaneously, and how their ownership and agency influences their response to innovations. The third question asks about the effects of existing support on if, how and why teachers develop innovative ways of teaching. An important outcome of this question will be the identification of 'good practices'.

The most promising pedagogical approaches to teacher professional development will be implemented and tested on a larger scale, seeking an answer to question 4.

Important personal factors to include in research question 2 are teachers' professional identity, both teaching and research experience, professional agency, ownership of the innovation (e.g. self-initiated or imposed innovation), beliefs about good teaching and student learning, conceptions of learning and professional development, and motivation for teaching and learning. Although context may refer to many aspects, the most obvious contextual variables to focus on with regard to research question 2 are research university vs university of applied sciences, discipline (subject area), pedagogy of the professional development initiative, and type of innovation. Other contextual factors of interest may be the size of the organization, diversity in staff and student body, institutional climate (e.g., openness to innovation, learning-orientedness) and workplace conditions. 'Educational organization' in research question 4 is mainly meant here as the meso level as indicated by Saroyan and Trigwell (2015), i.e. the departmental and institutional level. This refers to the variables and processes beyond the primary teaching and learning processes, e.g. communities of teachers, directors of teaching and learning, learning culture in a department, attitudes to educational innovation, collective beliefs about good teaching, and departmental priorities for research and/or teaching.

Research design and methodologies

Recent reviews on impact of professional development on higher education teachers have derived suggestions for future research designs and methodologies. For example, Stes et al. (2010) suggest to: (a) pay more attention to measuring actual changes in teaching performance instead of drawing only on self-reported changes; (b) include effects at both student level and institutional level; (c) use research designs including a pre-test, a quasi-experimental set-up and/or a mixed-method approach; (d) study long-term effects of instructional development as well; and (e) use the same research instruments in different studies to enhance comparability of studies. Saroyan and Trigwell (2015) suggest to: (a) look better at research on student learning and workplace learning as an inspiration for research methodologies on teaching and teacher learning; (b) conduct more research on the impact of teacher learning on student learning, and longitudinal studies may be necessary here; (c) pay more attention to how impact of professional development on teachers comes about, and why some teachers gain a lot and others just a little; and (d) try to capture the impact of professional development on meso and macro levels. These recommendations will constitute the scientific input in the development of the research design and methodologies for this programme.

The focus of the research programme, teachers' professional development in the context of educational innovations, means that cases will be chosen for study in which teachers work in innovative education initiatives implying new teaching roles for them. The phase the initiatives are in will vary from the initial phase, in which enthusiastic initiators of the innovation are trying out novel teaching and learning approaches with their students, to the upscaling phase, where other teachers (often not the initiators) are expected to acquire the needed expertise for the novel teaching roles. During the research period the focus of the research will shift from an initial in-depth study of a variety of (good) practices to at scale studies of the most promising practices. We envision that both qualitative, quantitative and mixed-methods research approaches methodologies will be needed.

The choice for the innovations to focus on in this research will be made in close collaboration with the consortium partners. The innovations may be small scale or large scale, or in between. We will ensure to choose different innovations that vary in what they ask from teachers. In this choice we will try to achieve a broad representation of educational innovations that are currently being implemented in both research universities as well as universities of applied sciences in The Netherlands.

The research will be demarcated in close collaboration with the consortium partners. The research questions define the direction of travel, the research literature suggests adequate research designs and methodologies, the consortium partners define what educational innovations to focus on, the practitioners share their experiential knowledge. The research team as a whole will design a feasible and demarcated research programme within these boundaries.

Connection to and relevance for educational practice

The outcomes of the research are expected to be directly relevant for the practice of the professional development of teachers in higher education. All research phases will be jointly designed and conducted by the consortium members consisting of researchers, teacher-researchers and other higher education professionals (e.g. directors, policy staff, students, tutors) from a variety of institutes, including research universities and universities of applied sciences. This pertains to, for example, the choice for specific research questions, research methods, approaches to professional learning and development, sites where the research will be conducted, incorporation of existing innovation projects into the research, engagement of teachers, managers and students in the projects, methods of data collection, interpretation of the findings, conclusions to be drawn, and impact activities to spread the findings within and among higher education institutes. The whole research programme will be a joint enterprise in which professionals from different disciplines work together in a multi-disciplinary learning and working community.

The practitioners (HE teachers) will have a rich experiential knowledge of teaching in (experimental) innovative formats. They will provide knowledge of student bodies, teaching contexts, practical opportunities and constraints, experiences with small-scale experiments, how they learned to change their teaching, etc. The researchers know the scientific literature on educational innovations, teachers' learning and professional development, research designs, methods and data analytical procedures, and provide this knowledge to the team. The teacher-researchers are experts in initiating and evaluating educational innovations and staff development. They will have leadership positions in educational innovation in their institution, and will provide input about how to initiate, maintain and evaluate educational innovations and staff development. The leadership of the research programme will provide direction and be responsible for creating an atmosphere and kind of dialogue in which the members build on each other's ideas.

Practical outcomes of the research will be capacity building among higher education professionals, validated approaches to teacher professional development, materials used and to be used in professional development initiatives, and knowledge about what works for whom in what circumstances. A variety of impact activities will be used, including networking among HE professionals, work conferences, social media, and websites. Although the focus of the research will be on the relevance for higher education practice, the results will also be disseminated through scientific channels like conferences and journals.

Teachers are the crucial agents in the success or failure of educational innovations. Through this research programme we will know better what various educational innovations ask from teachers in terms of needed expertise. This may have practical implications for recruitment of new staff, training for new and in-service staff, or even the choice for adoption or abandonment of particular innovations. We will also know more about effects of various teacher professional development features on teachers' expertise. This may have practical implications for Human Resources departments when designing or purchasing professional development programmes.

In my view, the divide between fundamental and practice-oriented research is artificial and unproductive. The best research questions are relevant for both practice and theory development, and outlets should be chosen that serve both audiences. We need to know both what works and be able to explain if, how and why things work as they work. Practice-oriented research means that the research questions emerge from concerns of practice, the research is being done in practice and the outcomes of the research are relevant for solving problems of practice. It does not mean we do not need theory or that we do not need to contribute to advancement of theory. We need theory to be able to interpret research findings, to be able to explain the underlying mechanisms of the practical phenomena we observe, and to build systematically a body of knowledge that may also be relevant for practitioners at other places and times.

The research connects directly to the theme of the Call, professional development of teachers in higher education. As discussed above, the many innovations that are initiated nowadays to improve the practice of higher education teaching and learning make the professional development of teachers an utmost necessity. The success of educational innovation is highly dependent on the capacity of teachers to fulfil the requested roles with high quality. The focus of the research programme and the research questions connect directly to concerns in the practice of higher education. Moreover, they permit more specific research questions emerging at specific institutes to be incorporated into the research design. In this way, consortium partners have the opportunity to actively contribute to the focus and direction of the research.

Consortium partners

We are looking for consortium partners who are involved in educational innovation and/or teacher professional development initiatives at their institutes. We equally welcome partners from research universities as well as universities of applied sciences, with no restrictions regarding disciplines. This type of programme, in which research and development are closely intertwined, can only be conducted by a multi-disciplinary team in which researchers, teacher-researchers and practitioners closely collaborate. Of course, all members of such a team should be fascinated by teachers' and students' learning, highly motivated to contribute to the project, be interested in both research and improvement of practice, respect each other's expertise, be eager to learn from one another, and love to work and innovate together. Leading a learning community of this kind can only be participatory by nature. Being able to inspire, facilitate, coach and point towards exiting ways forward are essential for the leadership of such an endeavour to be successful. Key to engagement of all people involved is furthermore the support of the departmental and university leadership, which is crucial to ensure from the very start and onward.

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BIJLAGE 6.2 'TOEGANKELIJK HOGER ONDERWIJS VOOR, DOOR EN NA DE POORT – EEN INTEGRAAL PERSPECTIEF OP DE TOEGANKELIJKHEID VAN HET HOGER ONDERWIJS IN NEDERLAND' – DR. LOUISE ELFFERS

6.2.1 Inleiding & samenvatting

Toegankelijk hoger onderwijs voor, door en na de poort
Een integraal perspectief op de toegankelijkheid van het hoger onderwijs in Nederland
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Aanleiding

De afgelopen decennia onderging Nederland een proces van onderwijsexpansie: steeds meer mensen volgen een studie in het hoger onderwijs. Het Nederlandse onderwijsstelsel kent verschillende directe en indirecte routes naar het hbo en wo, waarmee het hoger onderwijs op papier zeer toegankelijk is. Wanneer we naar de in- en uitstroom kijken, blijkt het hoger onderwijs in de praktijk minder toegankelijk voor bepaalde studentgroepen, zoals studenten met lageropgeleide ouders, studenten met een migratie-achtergrond en zogeheten stapelaars: studenten die via het mbo het hbo bereiken, of via het hbo naar de universiteit gaan.

Doel en scope van het onderzoeksprogramma

In het programma wordt onderzocht welke factoren de kansen van studenten bepalen om succesvol in te stromen en te studeren in het hbo en wo. Daarbij wordt een integraal perspectief op schoolloopbanen gehanteerd. We kijken niet alleen naar de in- en uitstroom in het hoger onderwijs zelf, maar brengen ook in kaart welke kansen en belemmeringen zich al eerder voordoen op weg naar het hoger onderwijs. Zeker in een vroegselecterend en sterk gedifferentieerd onderwijsstelsel als het Nederlandse, zijn ontwikkelingen vroeg in de schoolloopbaan van invloed op kansen en keuzes op latere leeftijd. Om die reden worden onderwijssectoren die voorbereiden op het hoger onderwijs (vo, mbo en waar mogelijk ook po) betrokken in het onderzoek. De 'kansenstructuur' voor, door en na de poort van het hoger onderwijs wordt in kaart gebracht, wat betekent dat kansen en belemmeringen in verschillende fases van de schoolloopbaan en op verschillende niveaus (primair proces, onderwijsinstelling, stelsel) in samenhang worden onderzocht. Een belangrijke vraag is vervolgens hoe individuen hun schoolloopbaan vormgeven in reactie op die kansenstructuur. Onderzoek naar de keuzes en strategieën van verschillende studentgroepen informeert ons over de prikkels, belemmeringen en keuzemogelijkheden die studenten in en op weg naar het hoger onderwijs tegenkomen. De interactie tussen 'structuur' en 'individu' vormt dan ook een rode draad in het programma. Het programma wil scherp in beeld krijgen welke obstakels voor welke studenten een belemmering vormen voor de toegankelijkheid van het hoger onderwijs, om deze te kunnen verbeteren.

Opzet van het onderzoeksprogramma

Het onderzoeksprogramma legt verbinding tussen de fases voor, door en na de poort van het hbo en wo. Om die reden zijn onderzoekers uit verschillende onderwijssectoren (wo, hbo, mbo, vo en po) uitdrukkelijk uitgenodigd om te participeren in het programma. Deelprojecten vanuit verschillende methodologische perspectieven en met een verschillende duur en omvang worden verwelkomd. Elk deelproject draagt op zijn eigen manier bij aan de ontwikkeling van een overkoepelende routekaart, die de mogelijkheden en beperkingen in beeld brengt die studenten in en op weg naar het hoger onderwijs op hun pad kunnen tegenkomen.

6.2.2 Essay

Accessible pathways to and through higher education
An integral perspective on the accessibility of higher education in the Netherlands
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The goal of securing equal access to and through higher education

Like many nations across the globe, the Netherlands is undergoing a process of educational expansion. A growing number of students enroll in higher education, hoping to improve their chances in an increasingly competitive labor market. In the so-called schooled society (Baker, 2014), where educational credentials signal societal status and have come to function as a proxy for an individual's merits, a persistent upward drive in education leads students to opt for higher education whenever within reach (Elffers, 2018a). In the Netherlands, with its tracked system of secondary education, this upward drive does not only result in a growing proportion of secondary students preferring secondary education tracks (havo or vwo) that directly feed into higher education, and a growing student

population in higher education in general (Min. OCW, 2013; 2014). The upward drive is also illustrated by the large numbers of students making an indirect transfer to higher education in case they weren't initially placed in secondary tracks that directly feed into higher education (Onderwijs in Cijfers, 2019). Those students may follow a route from pre-vocational education (vmbo), either via transfer to general secondary education (havo) or senior vocational education (mbo) to universities of applied sciences (hbo). Equally, students may 'stack up' diplomas by transferring from havo to either vwo or hbo, after which they can enter a research university (wo). Indirect routes to higher education are more often pursued by students who are traditionally underrepresented in higher education, such as students with lower educated parents and students with a migrant background. As those students are disproportionally more often placed in the vmbo-track in secondary education than other students (Inspectie van het Onderwijs, 2019), they more often need to resort to indirect routes if they wish to access higher education. The figure below depicts the direct and indirect routes that lead to higher education in the Netherlands.

The availability of various direct and indirect routes in the Dutch educational system appears to warrant broad access to higher education for students from various educational and social backgrounds. Yet, when looking at enrollment and graduation rates in both hbo and wo, higher education appears to be less accessible for certain student groups, particularly for so-called first generation students (students with parents who did not attend higher education themselves), for students with a migrant background, and for students who follow an indirect route to higher education. These statistics indicate that providing formal access to higher education is not sufficient to secure the accessibility of higher education. The high dropout rates among some student groups shortly after their entrance to higher education invoked the term 'fake accessibility' (Bormans et al., 2015), to describe how the entrance to higher education turns out to be a revolving door for some students, leading them out almost directly after their transfer to higher education.

Securing the accessibility of higher education is high on the agendas of both national policy makers and higher education institutions in the Netherlands (Min. OCW 2019; Vereniging Hogescholen, 2018; VSNU, 2019). There is general support for the idea that all students should have equal access to education that suits their learning potential and aspirations ('merits'), without being hindered by "unfair" obstacles that "unnecessarily" limit their opportunities to study successfully (Onderwijsraad, 1997; 2011). Translating this general meritocratic norm into daily practice however, can be much more complex than the apparent consensus suggests. For instance, the mere question to what extent students in the Netherlands have equal access to and through higher education, is a topic of debate (e.g. Wekker et al., 2016; De Voogd, 2019). To what extent do lower enrollment or graduation rates among certain student groups imply that 'unfair' or 'unnecessary' obstacles are in place, and to what extent do differences in enrollment and graduation rates point to meritocratic obstacles, that are generally deemed 'fair' or 'necessary'? Unclarity about the nature – and hence the meritocratic caliber – of the formal and non-formal obstacles that define students' opportunities to get to and through higher education successfully, has given rise to the idea that a trade-off exists between accessibility, quality and efficiency of higher education (Bormans et al., 2015). This trade-off suggests that a strengthening of the accessibility of higher education requires a weakening of the meritocratic standards for enrollment and graduation – an inference that has been criticized by others (see: Glastra & Middelkoop, 2018).

The debate illustrates that a general goal of securing 'equal access' to higher education does not provide sufficient guidance for educational policy and practice. To enhance the development of policies and practices that strengthen the accessibility of higher education, better answers are needed to the question which formal and non-formal obstacles determine students' chances of successful enrollment and studying in Dutch higher education. This question calls for further research into the mechanisms underlying unequal access of hbo and wo in the Netherlands, which is the particular mission to be taken up in this research program. Based on this exploration, educational institutions and policy makers could calibrate the legitimacy of obstacles according to meritocratic norms. As defining the legitimacy of obstacles is a normative endeavor, research cannot decide what obstacles are legitimate or not. However, based on a heuristic to assess identified obstacles according to meritocratic norms (see: Elffers, 2018b), educational professionals can consider whether to maintain, eliminate or alleviate certain obstacles in their quest to strengthen the accessibility of higher education in the Netherlands.

Studying the accessibility of pathways to and through higher education

The goal of this research program is to further disentangle mechanisms underlying unequal access to and through higher education in the Netherlands. Accessibility is defined according to the twofold definition by the Onderwijsraad (1997): accessibility of higher education (in Dutch: toelaatbaarheid)) and accessibility in higher education (in Dutch: begaanbaarheid). Accessibility of higher education pertains to the pathways that lead to higher education, as well as to the enrollment process and actual transition to higher education. Accessibility in higher education involves the pathways towards graduation that students follow once enrolled in higher education. Each stage in the trajectory to and through higher education may confront (particular groups of) students with particular obstacles that

affect their chances of successful enrollment and studying in higher education. Such obstacles may relate to micro processes – such as classrooms interactions or curricular content -, to meso processes – such as institutional policies or school climate -, and to macro processes – such as structural and financial features of the educational system. Each obstacle on each process level can affect a student's likelihood of successful enrollment and studying in higher education, and may require research on how and to whom the obstacle functions as a constraint.
However, it is also important to account for the interference and accumulation of obstacles at various stages of students' educational careers in defining their chances of successful enrollment and studying in higher education. Therefore, this program adopts an approach of educational pathways inspired by life course theory (Elder, Kirkpatrick Johnson & Crosnoe, 2003), in which individual processes and events are not viewed as isolated affairs, but as parts of a sequence in which early processes or events have an impact on future processes and events. Especially in a tracked system like the Dutch educational system, processes occurring early in students' school careers impact their options and decisions later on (Elffers, 2018a). Yet, in the discourse about the accessibility of higher education, this interconnectedness is often overlooked, inhibiting the development of more integral approaches to strengthen the accessibility of higher education. This problem is illustrated by two examples.

Limited enrollment of minority students in wo
For years, (research) universities (wo) have been struggling to attract a more diverse student population in terms of cultural and ethnic diversity. Maintaining that a vwo diploma is a meritocratic requirement needed to guarantee the quality of academic education, universities point to their dependency on the diversity of the vwo population. Indeed, an important reason for the lack of diversity in universities is to be found much earlier, at the transition from primary to secondary education, and in the subsequent tracking that takes place in secondary education. Minority students are disproportionately underrepresented in the vwo track. Instead of focusing on the encouragement of minority students that are already in the vwo track to aim for university, a more integral approach would include the encouragement and support of talented minority students in primary and secondary education, which could be a collaborative effort of universities, primary and secondary schools.

Quality over diversity in hbo
In their quest to increase the quality of their education and graduates, teacher education programs in hbo decided to administer additional knowledge tests to select applicants. This selection resulted in strong decreases of mbo students applying for these programs, including a dramatic decrease of applicants with a migrant background. "Quality is more important than diversity" was the tenor in response to this decrease (e.g. Truijens, 2016), suggesting that meritocratic norms should prevail over accessibility in higher education. Exploratory analyses of hbo preparation in mbo point to a limited opportunity to learn the knowledge and skills required for hbo (Elffers 2016, Nationale Denktank, 2016, Klein, 2018). A more integral approach in which educational practices in and before hbo are studied in concordance, could help to define which actions should be undertaken by and in higher education itself to maximize accessibility, and what needs to be done in secondary or mbo education as a prerequisite to be able to maintain quality standards in higher education.

In both examples, higher education institutions appear to struggle with combining and disentangling quality norms and accessibility goals, especially in case the focus is limited to the part of the educational pathway that is directly under their control. A life course perspective would require looking across institutional borders, and urges higher education to work together with pre-university education to optimally prepare students for higher education. Research can support this endeavor by drawing a cross-sectional 'road map' of the pathways to and through higher education. Such a map can identify obstacles at various stages that affect students' opportunities in higher education. The framework that Pallas (2003) developed to apply the life course perspective on educational trajectories may be helpful in this respect, and will be outlined briefly below.

The interplay between educational structure and student agency

Above, the term 'educational pathway' has been used mostly from the perspective of the educational infrastructure, which may or may not support students in their attempt to access and succeed in higher education. Indeed, the opportunity structure that education offers shapes individual educational careers (Kerckhoff, 1993; Pallas, 2003). But that does not mean that the structure as such should be an isolated object of research. On the contrary, the response to the opportunity structure by individuals in term of the strategies and choices they make, is of key importance to understanding why some students are more likely to study successfully in higher education than others. The paths that students from various social and educational backgrounds follow illuminate the constraints, incentives and choice opportunities they are confronted with. According to life course theory, pathways are well-traveled sequences of transitions that shape certain structures (Pallas, 2003). The notion that structures shape individual agency, while individuals perpetuate certain structures through their agency at the same time, is well-known in the sociology of education (Shilling, 1992). Considering the interaction between individual agency and social structures is necessary to understand how and why individuals traverse the educational infrastructure like they do, and what options and constraints shape their trajectories in particular.
The educational infrastructure, especially when comprising forms of selection and sorting of students,

structures educational pathways in ways that can facilitate or impede future educational success. To understand how these pathways shape individual students' trajectories, Pallas (2003) distinguishes eight features of educational pathways:

- *Scope*: the extent to which a particular path in the education system shapes a student's entire educational experience
- *Selectivity*: the extent to which a path consists of students who are homogeneous on one or more characteristics
- *Specificity*: the extent to which a path dictates access to desirable future options
- *Mobility*: the extent to which movement on or off a path is fluid or rare
- *Curricular differentiation*: the extent to which a path exposes a student to a different quality, quantity, and pace of instruction than other students
- *Electivity*: the extent to which a student's own choice or preference determines his or her path
- *Stigma*: the extent to which a path confers a devalued social identity on a student
- *Institutionalization*: the extent to which there is a widespread and shared public understanding about the meaning of a path

Applying these features to the Dutch education system could help to map the opportunity structure and its constraints. For instance, the direct and indirect routes leading to higher education in the Netherlands score differently on most features. Further exploration of these differences and their implications for the accessibility of higher education can inform us about the opportunity structure that shapes students' likelihood of getting to, enrolling in and studying in higher education successfully. For each stage, particular chances and constraints can be identified which, as part of a sequence of events, may or may not result in cumulative (dis)advantages that shape students' pathways to and through higher education.

Formal and non-formal obstacles

Characteristics of the opportunity structure are not always overt. Different individuals experience different constraints or incentives, which may or may not align with the formal obstacles that have been put in place. While the educational infrastructure provides a set of formal options, how students weigh these options and why, can vary between students, and has been found to differ between socio-economic groups (Jackson, 2013). This is illustrated by two recent cases.

Selfselection in response to selective assessments
The introduction of a knowledge assessment as a selective tool for the teacher education program in hbo resulted in a dramatic decrease of applicants with a migrant background. This decrease was not because these students failed the test, they simply chose not to apply for the program after the test was introduced. Negative selfselection of minority students has been found in the case of selection for wo programs as well (Van den Broek et al., 2018).

Self selection in response to financial barriers
Since 2015, the governmental system of student grants for higher education has been transformed into a loan system. Student have to pay back their grants, according to a low interest, long term, income based scheme. The loan can be supplemented with an additional income based grant, which is a gift as long as students graduate within 10 years. While the system was presented as a 'social' system, with regulations to alleviate the financial burden of attending higher education for lower income families, students from lower income families were deterred by the new system. Fearing debts, less students from low income families chose to enroll in higher education.

Both cases illustrate that mapping formal obstacles, such as general enrollment or financial criteria, is not enough to understand why, how and to whom such obstacles may hinder pathways to and through higher education. While formal obstacles are deliberately and explicitly put in place by higher education institutions or through educational policy at the national level, non-formal obstacles may define students' likelihood of surpassing such formal obstacles. Figure 2 provides three examples of non-formal obstacles that can impede students' chances to surpass a formal obstacle on the pathway to higher education (in Dutch: voor de poort), during enrollment in higher education (in Dutch: door de poort), and during their study in higher education (in Dutch: na de poort). The examples illustrate how the surpassing of seemingly meritocratic obstacles can still depend on non-formal obstacles relating to students' socio-economic background or to their social and cultural capital (see further: Elffers, 2018b).
The relationship between formal and non-formal obstacles implies that defining whether a formal obstacle is considered legitimate according to meritocratic norms is not sufficient to secure equal access in higher education – a conclusion echoing Rawls' rejection of 'formal equality of opportunity' as a suitable standard to assess opportunity structures (Rawls, 2001). In fact, it is exactly the interplay between formal and non-formal obstacles that needs to be addressed to better understand how the accessibility of higher education could be improved. While formal obstacles may not discriminate in terms of students' social background, cultural identity, gender, religion or physical ability, and thus appear to be purely meritocratic constraints, non-formal obstacles can explain why such constraints

can nonetheless form unsurpassable obstacles to the accessibility of higher education for students who by all meritocratic standards would qualify for higher education.

Outlines of a research program

In this essay, an integral approach is presented to researching the accessibility of higher education. Inspired by life course theory, the program aims to study the interconnectedness of processes and events in educational pathways, acknowledging that earlier processes in students' school careers can affect their likelihood of successful enrollment and studying in higher education. Such processes and events can pertain to the micro, meso and macro level in education. The framework developed by Pallas (2003) can help to explore how these can impact students' pathway to and through higher education separately as well as jointly. Key goal of the program is to gain further insight into the interplay between the opportunity structure as provided by the education system and the individual choices and strategies of students from various social and educational backgrounds, by studying how and to whom formal and non-formal obstacles form a constraint to the accessibility of higher education. The overall research questions guiding the program are:

1. Which formal and non-formal obstacles determine students' chances of successful enrollment and studying in Dutch higher education?
2. How and to whom do these obstacles form a constraint to the accessibility of higher education?

The research questions are formulated in an open manner, as the specific obstacles (and student groups) that will be studied will be decided upon in the sandpit sessions with (potential) consortium partners. To enhance this exploration, the consortium can draw on recent explorations of the accessibility of higher education (Van den Broek et al, 2018; Elffers, 2018b). Yet, researchers and practitioners from a wide range of educational domains – including secondary education, mbo, hbo and wo – are encouraged to also contribute from their own experiences and expertise, to define (potential) obstacles that require further investigation. The program will benefit from a combination of multiple perspectives from various educational domains. Similarly, multiple methodological perspectives are welcomed, as – for instance – both quantitative techniques to map student trajectories as well as qualitative methodologies to gain more in-depth insights into students' experiences with and responses to particular obstacles, would both contribute greatly to our understanding of the accessibility of pathways to and through higher education.
The program aims to comprise at least one project for each stage described in figure 2 (voor de poort, door de poort, na de poort). Researchers and practitioners from each of the three domains are therefore encouraged to join the consortium. Connection between the projects will be realized through regular meetings in which the projects will be discussed, and through collaborative work on the proposed road map, as the final product of the program. Not only does such collaboration align with the integral approach as outlined in this essay, it can also advance much-needed cross-sectoral collaborations in educational research and practice, which both are known for their sectoral segmentation (Elffers, 2016). The same holds for collaboration between researchers and professionals concerned with either hbo or wo. Researchers and professionals in hbo and wo often operate quite separately, and each sector may indeed deal with specific issues that require targeted research. The consortium will have to decide in which cases separate projects are required for hbo and wo, and in which cases mechanisms can be studied jointly. For each project, the specific themes, research questions, methodologies and products will be specified in collaborative exploration with the consortium. Projects can differ in scale and duration, with explicit room to conduct small-scale studies next to larger, longitudinal projects. The program leader will monitor the integral approach in each project and in the overall program.
The program aims to inform and help develop educational policies and practices to secure the accessibility of higher education. By highlighting formal and non-formal obstacles that impact the accessibility of higher education, a road map of the direct and indirect pathways to and through higher education could support educational professionals in deciding how they can strengthen the accessibility of higher education in the Netherlands.

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BIJLAGE 6.3 'FLEXIBEL HOGER ONDERWIJS: WERKPLEKLEREN VOOR EEN LEVEN LANG PROFESSIONELE COMPETENTIE-ONTWIKKELING' – PROF. DR. LOEK NIEUWENHUIS & PROF. DR. LIA FLUIT

6.3.1 Inleiding & samenvatting

Het hoger onderwijs richt zich in toenemende mate op het ontwikkelen van competenties in het kader van life long professionele ontwikkeling. Bachelor- en masteropleidingen worden gezien als een start voor professionele leertrajecten die leiden tot bekwaam en deskundig professioneel handelen (Palonen e.a., 2014). Vanwege de snel veranderende eisen van de arbeidsmarkt en innovatie binnen professionele domeinen (zie Susskind & Susskind, 2015), zijn flexibele leertrajecten nodig in mono- en interdisciplinaire contexten.
Studenten en startende professionals in diverse vakgebieden maken zich vaardigheden en competenties eigen en ontwikkelen zich tot vaardige en autonoom handelende professionals. (zie Lehtinen, e.a., 2014). In zorgopleidingen wordt dit proces vaak gemodelleerd door geleidelijke toewijzing van professionele activiteiten (EPA's; zie Ten Cate et al., 2015). Het realiseren van dergelijke trajecten kan alleen als universiteiten en hogescholen en de professie zelf hierbij samen werken en gezamenlijk flexibele leer-werkomgevingen ontwikkelen waarin werkplek leren, blended learning en professionele leerlaboratoria worden afgewisseld met formeel onderwijs en vormen van praktijksimulatie.
Meer inzicht is nodig om flexibele curricula te ontwerpen die zijn gebaseerd op EPA's of vergelijkbare vormen van kritische professionele activiteiten. We stellen een vergelijkend onderzoeksprogramma voor over de ontwikkeling en implementatie van leertrajecten in verschillende professies die gebaseerd zijn op werkplekleren: wat kunnen we leren van verschillende trajecten voor professies als ingenieurs, medische en gezondheidsdeskundigen en educatieve professionals? En hoe kunnen dergelijke trajecten duurzaam worden ontwikkeld voor toekomstige behoeften van de arbeidsmarkt? De centrale onderzoeksvraag die we stellen is: "Hoe kan de ontwikkeling van flexibele expertise tijdens het leren op de werkplek gestimuleerd worden?"

Onderzoeksopzet

In dit project werken we vanuit een realist evaluation benadering: leerdeskundigen in het hoger onderwijs bouwen hun onderwijsprogramma's op theoretische veronderstellingen, die min of meer expliciet zijn. In het essay wordt een voorlopige programmatheorie gepresenteerd, gebaseerd op de innovatieve benaderingen voor educatieve programma's van HAN-UAS en het Radboud Universitair Medisch Centrum (Hoeve et al, 2019; Sagasser et al, 2017). De realist aanname is dat programmatheorieën in bepaalde contexten leiden tot verschillende mechanismen en uitkomsten. De realist benadering probeert uit te leggen in welk opzicht, voor wie, in welke context en waarom een programma werkt.
Het project is ontworpen met een interactieve aanpak in het achterhoofd: tijdens de onderzoeksfasen willen we samen met de consortiumpartners de gemeenschappelijke kenmerken van onze theoretische veronderstellingen onderzoeken. De eerste fase van het project is niet alleen bedoeld voor het beoordelen van de wetenschappelijke literatuur over flexibele expertise-ontwikkeling, maar ook voor het bouwen van een gemeenschappelijk theoretisch fundament voor het partnerschap. Belangrijke theoretische bouwstenen hierbij zijn onder meer 'constructieve transfer', 'case-based redeneren', 'het werken met slecht gestructureerde problemen' en 'toe te vertrouwen professionele activiteiten'. We willen de theorieën die in gebruik zijn samen met de consortiumpartners onderzoeken om zo een gemeenschappelijke programmatheorie te ontwikkelen. Consortiumpartners worden uitgedaagd om de veronderstellingen die ten grondslag liggen aan hun innovatieve interventies met het oog op het vergroten van flexibele expertise bij hun studenten, expliciet te maken. Dit zal leiden tot een gemeenschappelijke programmatheorie als basis voor het specificeren van vragen, ontwerp en output.

De programmaleiders en het consortium

Consortiumpartners vanuit verschillende professionele domeinen (zoals artsen, ingenieurs, leraren, verpleegkundigen, politieagenten, advocaten, therapeuten) worden uitgedaagd om educatieve modellen uit hun onderwijspraktijk te delen en om deel te nemen aan een ontwerpgericht onderzoeksprogramma om deze educatieve modellen te vergelijken, te verbeteren en te evalueren. Door bachelor- en masterprogramma's van verschillende opleidingen van zowel universiteiten als hogescholen bij elkaar te brengen kunnen we intensief gebruik maken van elkaars ervaringen en expertise en van elkaar leren. Het delen van onze onderwijskundige kennis en ervaringen is essentieel om flexibel hoger onderwijs te ontwikkelen voor een steeds complexer wordende arbeidsmarkt.
Dat betekent dat de consortium partners:

- Bereid zijn tot multidisciplinaire samenwerking
- In staat zijn om te interveniëren in lopende onderwijsprogramma's
- Relevante en te onderzoeken domeinen kunnen inbrengen
- Een HBO dan wel WO opleiding aanbieden

- Werken in domeinen waarbinnen veel verandering plaatsvindt en sprake is van snelle kennistoename
- Sterk verschillen in de professionele domeinen om zo ook context heel expliciet mee te nemen in het onderzoek

De twee programmaleiders professor Nieuwenhuis en dr. Fluit hebben beiden een sterke focus op werkplekleren. Zij werken in verschillende PhD-trajecten van medewerkers van universiteit en UAS samen. Uitwisseling van onderzoeksresultaten en papers vindt plaats tijdens lokale onderzoeksbijeenkomsten. Het Radboud Universitair Medisch Centrum Nijmegen en HAN hebben een samenwerkingsovereenkomst getekend om samen te werken aan interprofessioneel leren en opleiden in de zorg.

6.3.2 Essay

Educating professionals for an uncertain future

Prof. dr. Loek Nieuwenhuis & Prof. dr. Lia Fluit

Regular universities and universities of applied sciences (UAS's) are increasingly challenged to educate professionals for an uncertain future. Due to technological changes, up-speeding information technology and global socio-economic developments, the future of professions is unpredictably complex and dynamic (Susskind & Susskind, 2015). Educating professionals like doctors, engineers, teachers, nurses, police officers, lawyers and therapists is increasingly a matter of lifelong development. Bachelor and master education can be seen as the kick-off for lifelong learning trajectories, in which professionals have to develop from a novice status towards an expert status and have to adapt to unforeseen developments by learning and innovating. Flexible expertise is increasingly important (Feltovich, Spiro en Coulson, 1997).
Innovation and development of the professions is not a matter of fate: professionals themselves play a major role in the renewal of their profession. Health care is an example of such a process: professionals deliver high level services (i.c. patient care), they innovate health care for example through developing new technologies and doing research, and these professionals educate the next generations of professionals. Innovation and lifelong learning become essential parts of the professional habitus (cf. Carnegie Program Educating the Professions, e.g. Sheppard et al., 2009; Benner et al, 2010).
These developments challenge universities to deliver adaptive bachelor and master courses in order to generate flexible expertise and lifelong learning skills and also to let students getting acquainted with innovative professional practices. Work-based learning[1] (WBL) becomes a common feature of adaptive educational programs, eliciting new forms of professional development and matching assessment processes. Open curricula stimulate a focus on self-regulated learning processes next to the acquisition of professional knowledge and skills.

Expertise development between cognition and social context

Professional expertise is a complex concept. Expertise is often defined by its outcome: if the product or service delivered is of high quality, the producer is a craftsman or an expert. Feltovich, Prietula and Ericsson (2006) synthesize several characteristics of expertise:
- Expertise is limited qua scope (domain specific) and high performance does not automatically transfer to other domains;
- Content and knowledge are basic for expertise
- Expertise refers to larger and more integrated cognitive units
- Expertise implies functional, abstract representations of knowledge and information
- Expertise is based on automated routines
- Expertise implies selective entrance to relevant information
- Expertise implies reflection
- Expertise is adaptation (of attention, of working memory of entrance to long term memory)
- Experience alone is not sufficient for expertise development.

Expertise and craftsmanship can thus be seen as a concentrated 'state-of mind', on top of a high quality knowledge base resulting in cognitive and physical high quality operational repertoire. Expertise is developed during a long lasting process (rule of thumb: 10.000 hours) of deliberate practice supervised by masters and other experts (cf. Ericsson 2006).
In many professional fields students and novice professionals develop skills and competences leading to deepened professional skills and autonomous professional behavior (cf. Lehtinen, e.a., 2014). In the

[1] We use work-based learning as an umbrella term for related terms as internships, work-integrated learning, professional learning labs and so on. In all such initiatives professional practice is steering learning activities of student professionals; university teachers have to adapt their teaching practices in order to enhance professional development of their students.

domain of health education this process is modeled through gradual entrustment of professional activities (EPA's; cf. Ten Cate, e.a., 2015). Entrustment is an interactive, social process: other professionals or external bodies allow the novice to execute professional tasks through informal evaluation or formal qualification. The interaction between 'mentor' and 'mentee' turns out to be a crucial process in the professional development of students (Kroeze, 2014).
Sustaining such trajectories requires joint pedagogical interventions of both universities and professional spheres and flexible educational delivery, in which work-based learning, blended learning and professional learning labs alternate with university-based training and simulation courses.

Developing adaptivity

Lehtinen, Hakkarainen and Palonen (2014) built a learning theory for the professions in times of rapid change. Central in their argument is a new perspective on transfer of knowledge. Traditional higher education is mainly relying on an application model of transfer: knowledge and skills learnt in education are meant to be widely applicable in a diversity of professional situations. This application model stands on the assumption that tasks are rather stable and that transfer "reproduces existing relations between fixed tasks". In times of rapid change, fixed tasks are becoming rare, and the professional should be prepared for future learning activities. Lehtinen et al. suggest replacing the application model of transfer with a construction model, in which the professional produces and constructs relations of similarity: the professional interpretation of new situations and phenomena as starting point for deliberate practice of new skills and applicable knowledge. A knowledge- creating metaphor of learning inspires new models for professional education to deal with rapid changing situations. Jonassen, Strobel and Lee (2006) argue in the same vein that the traditional view on transfer does not prepare technical students for everyday problem solving; they stress the need for preparation for future learning in working situations. "In modern engineering contexts the need for continuous lifelong learning has never been greater". Professional education programs should support learning to solve complex and ill- structured workplace problems in order to prepare students for future learning and work.
Hatano and Inagaki (1986) discern routine expertise en adaptive expertise as poles of one dimension. Routine expertise is the execution of high quality procedures in order to act efficiently and accurately. Adaptive expertise is the power to develop new solutions for professional problems or even the power to develop new problem solving methods. Hatano and Inagaki suggest three factors enhancing the development of adaptivity: 1) a random context that forces professionals to adapt their skills, based on careful observation and interaction; 2) a safe environment where rewards are not depending on performances; 3) a working context which values quality more than efficiency. According to Feltovich, Spiro and Coulson (1997) adaptivity is trainable by developing a growth mindset instead of a fixed mindset. Schwartz, Lindgren and Lewis (2009) suggest to let students experience innovative trajectories before they learn formalised protocols and routines. Authors like Mercier en Higgins (2013) and Verschaffel et al. (2009) state that adaptive expertise can be enhanced by creating a learning context in which students are challenged to interact with concepts and materials and to test their misconceptions in a safe environment.

Organising learning for students and professionals in the workplace

Traditionally, higher education is mainly relying on the application model of transfer. But as new knowledge and insights are growing exponentially and professions are changing rapidly, this approach will not be sufficient for preparing students for their future work. Future professionals should be able to adapt to new knowledge and insights and contribute to new knowledge creation. This adaptive expertise can be stimulated in several ways as mentioned in the former section. It asks for flexible learning trajectories, individualized learning paths, and a constant adaptation to what is happening in the professional working environment.
A substantial part of the professional training takes place in the working environment where novice students are supervised by expert professionals. From our research in health education we know that these professionals predominantly have a focus on developing routine expertise (through an application model for transfer) and fixed mindsets (Duitsman, 2019). Insight in how to develop educational programs where adaptive expertise is a fundamental element of the curriculum, is needed. In these curricula the (informal) learning in the workplace and the formal learning in school are closely intertwined. Educational developers are looking for (evidence-based) ways to stimulate adaptive expertise development. Work-based programs should combine the more traditional novice-expert model with more open and ill-structured workplace problems in order to enhance adaptive skills and expertise development (cf. case-based reasoning in engineering contexts). For this, Tynjälä (2008) promotes the connective model of workplace learning. The connective model, makes a reflexive connection between formal and informal learning, and vertical and horizontal learning. Through working collaboratively students develop poly-contextual and connective skills which enables boundary crossing by students, that is the ability to work in changing and new contexts. This implies that learning in work environments must be seen as a holistic process, in which theory and

practice are not separated from each other. Furthermore, students solve real life problems in authentic working life contexts. There should be a deep integration of theoretical, practical and self-regulative knowledge in order to create expertise.
Glazer & Hannafin (2006) propose for teacher training a collaborative apprenticeship model featuring reciprocal interactions as an approach to promote professional development, encouraging peer-teachers to serve as modelers and coaches of strategies and ideas aimed at improving instruction. Students contribute new ideas to their learning environment and become future mentors in order to sustain skills and strategies across a community of professionals. This means that the role of the expert needs to be redefined. He/she is expert and lifelong learner and can also learn from the novice or the student. However, a paradox is emerging, because experts are also assessors of the student professionals. The traditional hierarchic relation will be challenged, as in many working environments mutual learning, speak up, upward feedback and more open relationships are not self-evident. Psychological safety for both professionals and students is a basic requirement. Psychological safety is identified as a critical factor in understanding phenomena as voice, teamwork and team learning. Edmondson (2014) concludes in her review study that a climate of psychological safety can mitigate the interpersonal risks inherent in learning in hierarchies. People are more likely to offer ideas, admit mistakes, ask for help, or provide feedback. Individuals who experience greater psychological safety are more likely to speak up at work. Upward communication can be vital force in helping organizations learn and succeed.
The introduction of EPA's in medical education can be seen as a way to shape this expertise developmental process, which is also relevant for other professional domains. However, at this moment knowledge how to create and implement this kind of curricula and understanding what works why and under what conditions is scarce. This leads us to the following broad research question: How can we stimulate the development of adaptive expertise during workplace learning? We will focus on the learning o (future) professionals in the workplace, asking what mechanisms occur that lead to adaptive expertise development, and what contexts shape the operation of these mechanisms and the outcomes they produce.
The collaboration in the consortium should lead to sharing educational expertise and experiences, to new insights and educational formats and contribute to further theoretical foundation. By this the research question will be focused and specified. We strive to have a broad consortium with educational researchers from different professional fields (including ourselves). Our consortium partners should be at a position where they can organize pilot studies in existing curricula.

Towards an applied research proposal

We have chosen for a combination of design-based research (DBR) and comparative research. Characteristic for DBR is the systematic study of designing, developing and evaluating educational interventions as solutions for complex problems in educational practice. This also aims at advancing knowledge about the characteristics of these interventions and the processes of designing and developing them. Educators and educationalists have an active role in the design, implementation and redesign of the interventions, in order to formulate robust design principles that can be applied in other environments. Within this DBR we take a realist approach, as we are not looking for 'golden standard' or 'the best way' to implement an educational intervention. Rather we want to unpack mechanisms of how complex programs work or why they fail in particular contexts and settings.
We structured our research program into 3 phases:
Phase 1 is a realist inspired review of literature, resulting in a program theory in use of the consortium partners for effective professional education for an uncertain future. How can a traditional reproductive novice-expert model be combined with a knowledge-creating model, in which students (and teachers and professionals) are confronted with ill-structured workplace problems? Which educational tools help students to work and learn in a constructive transfer model (such as the case-based reasoning model) and how does this inflict the entrustment processes which are crucial for the admittance to professional practice? The theories-in-use of the consortium partners are point of departure for this exercise.
In phase 2 the program theory is used by consortium partners to perform a realist inspired case study in their own context resulting in evidence-informed assessment of the underlying educational models. The design of the case studies will be developed collaboratively. Working with a design-based approach, in which specific building blocks will be elaborated towards improvement options for the partners' programs: testing of these options in small-scaled try-outs will give the opportunity to deepening the insights in feasibility and evidence of the theoretical assumptions. Being it unrealistic to develop and implement complete innovative educational programs, the comparative approach and the small-scaled pilots will deliver evidence for the program theory.
During phase 3 (realist evaluation) we focus on a synthesis of our findings of consortium partners, resulting in theoretical and practical implications of the projects' results. Conclusions and recommendations for the educational practice at the UR's and UAS's and for the lifelong development programs in various professional domains will be formulated.
For these 3 phases we plan 3 years, during which a post-doc researcher and partner researchers will

collaborate. An accompanying PhD study will be established to enhance scientific output, next to the practice-oriented outputs of the realist approach. A 4th year will be used for the PhD to write and finish her/his thesis and to wrap up results for educational practice.

The output of the project

Based on the outlines in our essay, we expect to deliver to following outcomes of the project:
- theoretical and practical insights in how to create adaptive learning interventions
- recommendations for the educational practice at the UR's and UAS's for developing flexible expertise in various professional domains.
- Four scientific articles leading to a PhD
- A multidisciplinary research network on adaptive learning – An international symposium after three years.

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