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## Woord vooraf

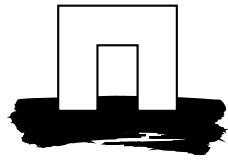
Dit is mijn laatste Woord vooraf in het ECS Bulletin.

Per 1 januari 2017 ga ik met emeritaat. Mijn afscheidsrede, de conferentie 'Competence Theory, Research and Practice', en mijn afscheid van de leerstoelgroep zijn inmiddels geweest. Ik kijk er met zeer veel voldoening op terug.

Ik zou met gemak dit hele ECS Bulletin kunnen vullen met 18 jaar historie van de leerstoelgroepen Agrarische Onderwijskunde, Onderwijskunde en Educatie- en competentiestudies. Er is in die jaren veel gebeurd. Anekdoten genoeg. Laat ik enkele diepte- en hoogtepunten aanstippen en de rest overlaten aan de geschiedschrijvers.

In oktober 1998 werd ik opvolger van Dr. Wout van den Bor, die waarnemend hoogleraar was voor Prof. dr. Jaap van Bergeijk, die gezondheidsproblemen had. In november 1998 kreeg de leerstoelgroep te horen dat zij zou worden opgeheven. Dat was onverwacht en onvoorstelbaar; iedereen die dit hoorde was ontzet. Het resultaat was dat er een grote leegloop ontstond. Op het dieptepunt van de leerstoelgroep Agrarische Onderwijskunde waren er nog ongeveer zes medewerkers over van de ruim dertig waarmee ik begon. Het jaar 1999 heb ik daarom wel eens aangeduid als het rampjaar van Agrarische Onderwijskunde. In 2000 werd de opheffing echter uitgesteld en kreeg de leerstoelgroep een nieuw perspectief als leerstoelgroep Onderwijskunde. Vanaf 2001 groeide de staf weer en in 2002 werd het taakveld van de groep geactualiseerd en opnieuw vastgesteld. In 2003 werd de positie van de leerstoelgroep geconsolideerd met de opname in het daarop volgende leerstoelenplan. Toen is gekozen voor de naam Educatie- en competentiestudies, omdat veel van het werk van de groep een voortzetting was van mijn laatste Twentse werk, dat zich richtte op (naar het gelijknamige boek) competentieontwikkeling in organisaties. Vanaf 2004 ontstond een nieuwe spirit in de groep die vanaf 2005 sterk groeide. In 2006 kreeg de groep 100% onderzoeksfinanciering. Het onderwijsaanbod van de groep groeide ook snel, waardoor het onderwijsbudget in 2007 op de vierde plaats stond van het gehele Departement Maatschappijwetenschappen. In die jaren is gekozen voor een beleid om ook te publiceren in de internationale tijdschriften met peer review. Toen begon ook het aantal PhD kandidaten toe te nemen. In 2008 scoorde de groep haar eerste A-publicatie en groeide het onderwijsbudget zo ver dat het het grootste werd van het Departement. In 2009 werd de Educatieve Minor geaccrediteerd en kon de groep weer

beginnen met een lerarenopleiding. Weliswaar op tweedegraads niveau en voor een beperkt aantal BSc-opleidingen, maar het voelde toch als een reparatie van de opheffing van de lerarenopleiding in Wageningen in de jaren tachtig van de vorige eeuw. In hetzelfde jaar haalde de leerstoelgroep vier vieren ('very good') in de internationale peer review van onderzoek. In 2010 werd Arjen Wals benoemd tot buitengewoon hoogleraar. In 2011 trad de groep Research Methodologie toe tot ECS, maar doordat van de groep werd geëist dat ze grotendeels ECS-onderzoek moest doen, leidde dit uiteindelijk tot het inzicht dat de groep beter geïntegreerd zou zijn binnen Biometris. Dit is in 2016 geëffectueerd. RME is voor een jaar gedetacheerd bij deze organisatie. Een hoogtepunt in 2012 was dat de Onderwijs Research Dagen in Wageningen plaatsvonden. Veel collega's uit de onderwijskunde hebben toen kennis kunnen maken met de campus van Wageningen University & Research, die inmiddels al weer sterk is uitgebreid. In hetzelfde jaar werd ik voorzitter van de Tenure Track Benoemingsadviescommissie Maatschappijwetenschappen en lid van het bestuur van het Onderwijsinstituut. In 2013 was de cum laude promotie van Omid Noroozi een hoogtepunt. In 2014 heb ik me sterk gericht op de landbouwvoorlichting en het landbouwonderwijs in de Verenigde Staten. In het jaar daarop heb ik diverse land grant universiteiten bezocht. Dit gaf een goed beeld van het domein agricultural education and extension en vormde een voorbereiding op de organisatie van de internationale conferentie op dit gebied in samenwerking met de Association of International Agricultural and Extension Education en de European Seminar of Extension and Education. In het jaar 2014 publiceerde Arjen Wals zijn artikel in Science. Het jaar 2015 was een topjaar voor ECS, vanwege de organisatie van de internationale agricultural education and extension conferentie en twee kleinere conferenties op het gebied van het academische vaardighedenonderwijs en massive open online courses. Maar de klap op de vuurpijl was de maximum score voor de peer review van het onderzoek: drie keer een één ('excellent'). Dit jaar – 2016 – staat duidelijk in het teken van de voorbereiding van mijn opvolging, waarover u in dit bulletin meer kunt lezen. Ik heb er alle vertrouwen in dat de Benoemingsadviescommissie een goede opvolger zal vinden. De groep staat naar mijn mening als een huis, en met Harm Biemans als interim-manager en Alfons Oude Lansink als sparring partner, het ECS Beheersteam, het ECS Coördinatie-team, en de teams voor onderwijs en onderzoek is er een goede infrastructuur om de periode zonder hoogleraar te overbruggen. Ik hoop overigens dat die periode zo kort mogelijk duurt. De groep zal nieuwe wegen inslaan en nieuwe successen boeken.



Graag bedank ik alle (oud-)collega's voor hun bijdragen aan de ontwikkeling van de leerstoelgroep, en wens ik de groep het allerbeste voor de toekomst.

U als lezer zult in de komende jaren geen Woorden vooraf van het ECS Bulletin meer lezen. Ik weet ook niet of de groep doorgaat met het uitgeven van dit medium. In de tijd van digitale communicatie, sociale media en duurzaamheid, is een papieren 'Bulletin' misschien ook een anachronisme; maar dat laat ik graag aan anderen over om te beoordelen.

Het ga u goed.

Martin Mulder ◀

### Opvolging Martin Mulder

#### Stand van zaken opvolging Martin Mulder

Harm Biemans

Zoals eerder aangekondigd in het ECS Bulletin zal Prof. dr. Martin Mulder per 1 januari 2017 officieel terugtreden als hoogleraar en hoofd van de leerstoelgroep Educatie- en competentiestudies. Eind november j.l. is er een benoemingsadviescommissie (BAC) ingesteld onder voorzitterschap van Prof. dr. Gert Spaargaren, die als taak heeft de Rector te adviseren met betrekking tot de benoeming van een opvolger. Zoals eerder aangegeven, zullen totdat er daadwerkelijk een opvolger van Martin is aangesteld, zijn taken waargenomen worden door Harm Biemans. De verwachting is dat de werving, selectie en aanstelling van een nieuwe hoogleraar ongeveer een jaar in beslag zullen nemen. Voordat er een BAC ingericht kon worden, is er in 2016 een commissie ingesteld onder leiding van dezelfde voorzitter (commissie Spaargaren) die de Rector diende te adviseren naar aanleiding van het ongeveer gelijktijdig expireren van de leerstoelen Educatie- en competentiestudies (Martin Mulder) en Management Studies (MST - Onno Omta). De vraag aan de commissie was aanbevelingen te doen voor wat betreft afstemming en inbedding van beide leerstoelgroepen en indien aan de orde een aanscherping te doen van de leeropdrachten van beide groepen. Hiermee diende een basis gelegd te worden voor wanneer de zittende hoogleraren met emeritaat gaan en er een opvolg(st)er voor hen geworven wordt. In september heeft de commissie Spaargaren haar advies uitgebracht. Na bespreking met de commissie en de Directie SSG heeft de Rector m.b.t. de leerstoelgroep de volgende beslissingen genomen:

- De naam van de leerstoel ECS wordt gewijzigd: de commissie heeft als nieuwe naam Education Sciences (EDU) voorgesteld. Als alternatief hiervoor heeft de leerstoelgroep de naam Education & Learning Sciences (ELS) geopperd omdat deze naam volgens de groep de lading van het onderzoek beter dekt;
- Er wordt een nieuwe leeropdracht met profielschets voor de leerstoelhouder opgesteld. De commissie heeft een concept hiervoor geformuleerd waarin een belangrijke plaats is ingeruimd voor onderzoek naar en begeleiding van onderwijsinnovaties aan Wageningen University binnen de bredere context van onderzoek naar hoger onderwijs. Het voortouw voor onderzoek naar academische onderwijsver-

nieuwing waarin living labs een belangrijke onderzoeksstrategie en onderzoeksobject vormen, wordt neergelegd bij de leerstoelgroep EDU/ELS. Het nader vormgeven van deze living labs zal hoog op de agenda van de nieuwe hoogleraar komen. De leerstoelgroep heeft de concept-leeropdracht verder aangescherpt waarbij ook het leren in en voor beroepen nadrukkelijk is meegenomen. Deze tekst zal als vertrekdocument voor de BAC dienen. De leeropdracht is een duiding van het betreffende wetenschapsgebied en speelt een belangrijke rol in de werving, selectie en visieontwikkeling van kandidaten in de benoemingsprocedure;

- Met betrekking tot de inbedding van de leerstoelgroep in een sectie binnen het Departement Maatschappijwetenschappen heeft de commissie verschillende scenario's onderzocht. Volgens de commissie is er geen duidelijke voorkeur voor één daarvan. De nieuwe hoogleraar speelt in de keuze voor toetreding tot een bepaalde sectie een belangrijke rol samen met de directie SSG. Vooralsnog zal de leerstoelgroep tot de sectie Business Sciences blijven behoren.

De leerstoelgroep kijkt uit naar een nieuwe toekomst, voortbouwend op de basis die door Martin is gelegd. ◀

### Research

#### Arjen Wals' guest-professorship at Gothenburg University

Arjen Wals

Since 2014 I have been appointed as a guest professor at the Department of Pedagogical, Curricular and Professional Studies of the University of Gothenburg (GU). The guest professorship, supported by Carl Bennet A.B., focuses on understanding, designing and supporting learning processes that can help citizens understand complex and ambiguous sustainability issues. One of my tasks is to help develop and strengthen a group of academics around the theme of Education for Sustainable Development (ESD). Presently there are about 10 staff members and 2 PhDs that focus on this theme, many of them have their own specialisations (e.g. Mathematics Education, Language Education, Biology Education, Ethics and Religious Studies, etc.) but overall there is a strong recognition that our current education system needs to be re-oriented to address some of the key challenges of our time. The Department where I work (part-time, mostly in the Fall) is one of the biggest teacher education departments in Sweden and is growing rapidly as Sweden has an aging population of teachers and a growing population, in part as a result of an increased influx of migrants. My

*Inaugural ceremony in Sweden by Vice-Chancellor Pam Fredman (Arjen standing next to the Swedish flag)*



department is one of four that combined make up the School of Education (about 350 staff members in total). The ESD-group that has been formed during the past few years tackles a number of questions, including; How can citizens, young and old, in their different roles become meaningfully engaged in sustainable development issues? How can the quality of their interactions with and within the social, physical and virtual realities of which they are part be improved? What capacities and literacies are needed to help address these issues and how can they best be developed? We explore these questions from a range of (inter)disciplinary vantage points (e.g. economics, global studies, ethics, sociology) in formal (e.g. school-based) and less formal contexts (e.g. community-based) as well as in blended or hybrid contexts (e.g. science centres, community-engaged higher education). Many of the ideas I bring in come from the work I have been doing within ECS over the last decade or so, but I am also learning some new things myself. For one I am coordinating an on-line Masters Course on ESD (GU-ESD100) which is to become the lead course in an entire Masters programme which university hopes to start in the Fall of 2017. I am also co-teaching an inter-faculty PhD-course on sustainability-science. Last year I also joint the steering committee of the GU Centre for Sea & Society. The Centre for Sea & Society has been created to initiate, stimulate and develop the transdisciplinary research and education in marine and maritime studies, and to create a distinctive entrance to the University's marine and maritime activities and increase their visibility. In the near future I will help both Gothenburg and Chalmers University with their efforts to link-up better with the UN's Sustainable Development Goals (SDGs). In doing so I will work through GMV which is a centre that is shared by the two universities designed to make the university more responsive to local and regional sustainability challenges. INSERT

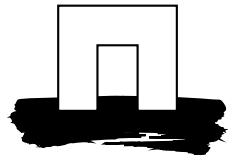
## PhD research

### Towards competence-based technical-vocational education and training in Ethiopia

Getachew Solomon

In the human development effort, different countries are underscoring the role of technical-vocational education and training (TVET) in providing relevant knowledge and skills to improve productivity, increase access to employment opportunities and raise the standard of living. It is in recognition of this that, in all Ethiopian educational development endeavors, TVET has been considered to play a key role to tackle the country's socio-economic underdevelopment through knowledgeable and skillful manpower. Since its introduction in 1941, TVET has been guided by different policies and strategies adopted by successive governments which came to power at different times. This thesis investigates how TVET has reached the current stage of its development in Ethiopia and the challenges encountered in implementing a competence-based system aimed at improving present and future TVET practices. Within this broad aim, the thesis looks into the historical pathways TVET in Ethiopia has passed through time, teachers' involvement in competence-based TVET policy and curriculum development and implementation, the extent to which TVET programs are competence-based

('competitiveness') and TVET teachers' training and professional development. The research findings showed that TVET development in Ethiopia lacked consistent and stable policy direction, which was greatly influenced by government ideology. Competence-based TVET was implemented under severe challenges, which include lack of adequately prepared teachers and resources, frequent curricula changes, lack of employers cooperation, discontent of teachers and administrators, etc. The competence-based approach was implemented without extensive deliberations and understanding by TVET teachers in which teachers participation was minimal. Positive correlation between TVET teachers' participation in educational reform and perception towards TVET system was observed. Though teachers, students and graduates observed competence-based education and training (CBET) principles in the Ethiopian TVET system, competence-based TVET is not performing well with regard to the practical dimensions of CBET (mainly the "how" aspect) in accordance with the principles of competence-based education. In a positively perceived work environment, 'competitiveness' of a TVET programs and employed TVET graduates' workplace performance was observed. The TVET teacher training programs lack alignment (coherence) with competence-based TVET curriculum in terms of curriculum design and practices. The delivery is predominantly teacher-centered: more lecture oriented with less opportunity for students self and group reflection; student assessment was norm-referenced, not individual competence assessment. Though teachers believe that teacher professional development (TPD) enhances their professional growth, the practices were not in line with their belief; personal initiative of TVET teachers to undertake TPD activities was minimal; no systematic professional development plan exists in TVET colleges; and TPD followed more traditional approaches in which TVET teachers' engagement in research has almost been ignored. Inconsistency in educational policymaking (unstable policy direction) hampered a consensus-based, national education system including, structuring of TVET starting from the scratch. TVET is implemented without a strong foundation – administratively and manpower and materials/facilities (lack well-crafted implementation strategy), and more a product of political than of collective decisions. From the study it appears that lacking proper alignment with employment capacity of the economy is a systemic problem of the TVET system. Enforcement of TVET strategy on TVET teachers and administrators without understanding the new competence-based education affected teachers' perception towards competence-based approach. TVET teachers felt that they are regarded as implementers of a decision rather than having a stake in the issue, affecting their actions and training outcome. Although competence-based education and training (CBET) is practiced in TVET, the instruction and practical components lack alignment with CBET principles (no strong learning environments). Because TVET teacher training programs are not aligned with TVET curriculum and teachers professional needs, it is difficult to say that TVET teachers are well prepared in terms of CBET requirement. In TVET teacher training programs, competence development focused instructional practices are not well fostered in practice. TVET teachers TPD activities are more conventional, not aligned with CBET and teachers' needs. Though CBET should be verified further; the positive relationship between 'competitiveness' of a TVET program and graduates' job performance found in this thesis supports the assertion that CBET bridges the gap between classroom learning and labor market reality. TVET teachers' participation in new educational reforms such as competence-based TVET affects teachers' perception towards the new competence-based TVET reform, which



in turn, influences their school-based practices. In this thesis, a number of recommendations are forwarded to improve the implementation of competence-based TVET which have policy implications for future development of TVET and practical interventions to be taken to improve the implementation of competence-based TVET in its different dimensions. ◀

**Learning and Corporate Social Responsibility  
A study on the role of the learning organization,  
individual competencies, goal orientation and the  
learning climate in the CSR adaptation process**

*Eghe Rice Osagie*

People and other organisms depend on natural resources such as fresh water, land, clean air, wood, and food for critical life requirements and wellbeing. It is well documented that today's Western way of living and the spread of capitalism is having a detrimental impact on societies and the natural environment. As one of the greatest users of natural and human resources, many companies have started doing their part in the journey toward Earth's sustainability and are actively working on translating the idea of sustainable development (SD) into reality. Companies often address SD through their corporate social responsibility (CSR) programs. CSR refers to as a company's continuing commitment to integrate ecological, social, and economic interests in company's operations and in its interactions with stakeholders. This commitment is usually done on a voluntary basis (Dahlsrud, 2008).

This PhD thesis aims to provide a better understanding of how the CSR adaptation process in private companies can be supported, which is of particular importance and interest since the economic interests (i.e., business case logic) of private companies often clash with CSR objectives. Consequently, adapting to CSR principles can be quite challenging for these companies. Many scholars have attempted to identify factors that can facilitate the CSR adaptation process. However, though any large-scale organizational change requires employees to learn new ways of doing their jobs, the role of learning or human resource development in CSR adaptation has remained largely unexplored in the CSR literature. This PhD thesis contributes to this line of research by answering the following research question: Which internal resources related to learning at the organizational and individual level contribute to the CSR adaptation process in private companies?

With respect to the organizational level, we found that certain learning organization characteristics can support the CSR adaptation process. We found that stimulating group learning, leadership that encourages learning, and connecting to the local communities are LO characteristics that can directly influence CSR adaptation in a positive way. With respect to the individual level, we found that CSR managers, those managing the CSR adaptation process, need specific individual competencies in order to do their jobs effectively. We identified eight distinct individual competencies (e.g., Balancing personal ethical values and business objectives). We also found that CSR managers have different job roles in the CSR adaptation process. We identified six of these roles (e.g., strategizing role) and showed that the business case logic influences the relative perceived importance of specific individual competencies within each job role.

To conclude, the key message of this thesis, and the answer to the research question is two-fold. *First*, because CSR ma-

nagers are the ones who actually manage the CSR adaptation process they can play a crucial role in the CSR adaptation process if they possess the right individual competencies. In order to develop these individual competencies, CSR managers should take ownership of their learning process and seek opportunities to learn with and from others. *Second*, leadership and connecting with external parties are of particular importance to the CSR adaptation process. With respect to connecting with external parties: on the organizational level, having good relations with external parties improves CSR adaptation, because such relationships stimulate learning processes within the company. Furthermore, on the individual level, relationships with external parties promote the development of the individual competencies of the CSR managers responsible for the adaptation process. With respect to leadership: on the organizational level, leadership for learning, referring to active support and stimulation of learning, indirectly affects CSR adaptation; it enhances employees' learning behavior and therefore improve employees' cognitive readiness and support for the changes needed to integrate CSR within the company. Furthermore, on the individual level, leadership competencies are essential for driving the changes needed in the CSR adaptation process.

This thesis contributes to the literature on the CSR adaptation process in several ways. *First*, this thesis addresses the issue of the CSR adaptation process from a learning or human resource development perspective and as such complements previous research employing the (human resource) management perspective on CSR. *Second*, it addresses learning from both the organizational and individual level, thereby providing valuable insights into if and how specific internal resources related to learning can contribute at different levels to the CSR adaptation process in private companies. *Third*, little is known about how factors on an individual level can support companies in their adaptation to CSR principles and their social performance at large (Aquino & Glavas, 2012). This doctoral thesis is one of the first providing insights into this matter and demonstrates that learning-related influences on the individual level may be of value to the adaptation process. More specifically, this thesis adds to the literature by (1) identifying the job roles and individual competencies CSR managers need to effectively do their jobs within private companies; previous studies on CSR-related competencies often studied this topic from an educational point of view, thereby not fully addressing the complexity of the business context in which CSR managers operate; (2) by exploring how CSR managers can develop their competencies, which up till now remained unexplored in the CSR literature; and (3) by showing how certain organizational characteristics (i.e., learning climate) and personal characteristics (i.e., learning goal orientation) affect the development of CSR managers' competencies.

There are several implications to be derived from our research with respect to learning (activities) for the benefit of CSR. For one, developing LO characteristics may help companies create favorable conditions for integrating CSR principles. By facilitating learning, companies provide employees with the opportunity to develop their "receptiveness to change". As such, we suggest that companies experiment with employing LO characteristics to advance the integration of CSR principles. In particular, we suggest that company's management show leadership for learning by endorsing learning behavior among their employees as this LO characteristic in particular seems to promote the integration of CSR principles. The management can stimulate such behavior by providing employees with con-

tinuous opportunities to learn (e.g., provide formal trainings and professional development opportunities), learn in groups (e.g., stimulate team work), and learn with and from external parties (e.g., stimulate stakeholder involvement). Furthermore, it is important for companies to set up and structure a learning system within the company that enables customized learning, meaning a learning system that provides learning opportunities that fit's the job and needs of individual workers. Companies can enable customized learning among CSR managers by, for example, providing them with flexible working hours and fixed budgets and hours that they can use for professional development. Such a learning system promotes meaningful learning and self-directed learning behavior among employees (Baars-van Moorsel, 2003), which, according to our research, can stimulate the development of CSR-related competencies.

#### Literature

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### Learning and teaching in the Regional Learning Environment: Enabling students and teachers to cross boundaries in multi-stakeholder practices

Carla Oonk

#### Introduction

Today's world is full of complex issues that society cannot tackle without integrative and collaborative approaches (Scholz & Steiner, 2015). Finding solutions for these problems requires cross-boundary collaboration between multiple stakeholders who represent various practices, disciplines and perspectives. The majority of higher education graduates worldwide, at least those from life science programmes, will be involved in these multi-stakeholder collaborative practices in their future professions. As a consequence, higher education should facilitate effective learning environments in which students will optimally be prepared to work and learn with multiple stakeholders, that is, to cross boundaries between practices. The Dutch authentic Regional Learning Environment (RLE) is an example of a multi-stakeholder learning environment. The RLE is expected to effectively prepare future higher education professionals to face current societal problems. However, the effectiveness of the RLE, including its typical cross-boundary design characteristics, for student learning has not yet been investigated. The main purpose of this PhD project was to find evidence for student learning in the multi-stakeholder Regional Learning Environment related to its typical learning environment characteristics. Four studies have been carried out; the first empirical three studies with a focus on student learning in the RLE, the fourth descriptive study with a focus on teacher requirements for working in such an out-of-school oriented, multi-stakeholder learning setting.

#### The Regional Learning Environment

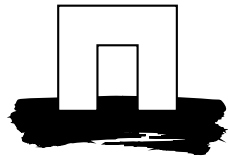
The general aim of the Regional Learning Environment (RLE) is to facilitate the collaborative creation of new knowledge towards sustainable regional development. The RLE was introduced in The Netherlands in 2005 as a long-term learning and working community in which students, teachers, researchers, policy makers, members of NGO's, entrepreneurs and/or citizens, i.e. multiple stakeholders, co-operatively work on complex issues of regional development while mutually learning (Foorhuis et al., 2012). The RLE has been established so far in 13 Dutch, mostly rural, regions that are characterized by their high landscape and biodiversity values, recreational pressure and economic and demographic decline. Educational institutions, on both vocational and academic level, are always one of the partners in the RLE. A unique feature of the RLE is that student learning is embedded in a real multi-stakeholder, knowledge co-creating process aiming at stimulating both student learning, as well as 'regional learning'. Examples of recent RLE results are distribution chains for regional organic food, landscape and educational garden designs, a communication and activity plan catalysing the re-establishment of community centres and various tools for innovative participative approaches.

From an educational perspective, the RLE is an authentic, multi-stakeholder learning environment (Herrington & Oliver, 2000). Students work in student groups on real, transdisciplinary problems from the region, commissioned by an external client. Knowledge is collaboratively constructed between students, teachers and, preferably, multiple regional stakeholders. Working in the RLE results in a realistic authentic product that has value for the external client(s) and contributes to regional development, ideally to transformation. Assessment criteria and procedures vary between RLEs. Teachers facilitate students' and other parties learning processes, and are also learning partners in the RLE. The RLE preferably has three additional design characteristics that are expected to explicitly stimulate students to work and learn across boundaries between different disciplines and perspectives, that is:

1. students work in multidisciplinary student groups;
2. students collaborate intensively with multiple stakeholders; and
3. students are intensively coached on working and learning across boundaries.

#### Boundary crossing in the Regional Learning Environment

Little is known about the learning processes that occur when students work across practices, and about the effects of typical learning environment characteristics that address working across practices. Boundary crossing theory provides insights and tools for getting a grip on working and learning across practices, disciplines and/or perspectives (Akkerman & Bakker, 2011). Boundaries between these practices tend to be perceived as barriers, but often appear to provide challenging learning and knowledge creating opportunities. Boundary crossing then is understood as working across the boundaries of different practices, and learning from that. Boundary crossing competence reflects a persons' ability to do so, and to contribute to effective outcomes of collaboration across practices (Walker & Nocon, 2007). Last, boundary crossing theory distinguishes four learning mechanisms that can leverage learning processes that occur when crossing boundaries, i.e. identification, coordination, reflection and transformation. The RLE is hypothesized to be a learning environment in which higher education students



are challenged to develop their boundary crossing capabilities by adopting these four learning mechanisms.

### Results of the four studies

The four studies in this PhD project show that the RLE develops students' domain specific expertise and various generic competencies. The learning environment characteristics of working in multi-disciplinary student groups, working highly intensive with stakeholders, and a high coaching intensity strengthen competence development. Explicit workshop-based support of students' boundary crossing working and learning stimulates the amount of student-stakeholder collaborative activities that students undertake, and activates students' boundary crossing learning. Teachers fulfil new out-of-school oriented roles and tasks in the RLE and should master new boundary crossing competencies. The resulting RLE teacher profile is used to start a debate on how to make existing higher education teacher profiles more out-of-school proof.

### Implications and further studies

Theoretically, the findings of this PhD project inform the future evidence-based design and pedagogy of the RLE and other authentic learning environments in higher education, like studios or service-learning (Jacoby, 2014; Long, 2012). Moreover, the findings contribute to boundary crossing theory by operationalising this theoretical concept into an analytical framework that captures boundary crossing learning. More practically, the results offer guidelines for the design of 'boundary crossing' authentic learning environments and workshop-based support of student-stakeholder collaboration within. The RLE teacher profile can be used in practice for the division of roles and tasks within a teacher team working in out-of-school learning settings, and for teacher professionalization.

Next steps in research would focus on how to make learning objectives of the RLE more stakeholder-proof, how to balance between prescribing learning objectives and leaving room for learning surprises, and how to assess RLE learning? Furthermore questions remain on how to improve teacher and stakeholder support of student learning in the RLE, and, related to the ultimate aim of the RLE, what is the regional transformative impact that participants co-create?

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### Opportunity identification competence.

### Explaining individual and exploring team opportunity identification by employees

Yvette Baggen

Opportunities and their identification are of significant importance for competitiveness in today's complex and turbulent business environment because they serve as a key influencing factor for new value-creation. Opportunity identification (OI) is interesting not only from the perspective of new business start-ups, but also from the perspective of employees in existing organisations. Each entrepreneurial process starts with an imagined, rudimentary idea in the mind of an individual. The further exploration and development of such opportunities by employees can lead to the realisation of all kinds of corporate entrepreneurship outcomes, such as innovation, strategic renewal, and internal or external venturing.

This dissertation reports on the capability of employees to identify opportunities, referred to as opportunity identification competence (OIC). The importance of OI by employees is widely recognised in practice, and scholars have contributed significantly to understanding what opportunities are, how opportunities come into being, and how OIC can be measured. Nevertheless, substantial research challenges still need to be addressed. More specifically, based on both entrepreneurship literature and literature on organisational learning and entrepreneurship education, three overarching research issues have been identified:

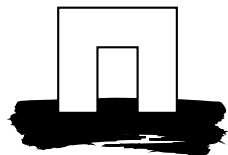
1. The OI process has not been fully mapped out, including the role of individuals and teams.
2. Defining and explaining OIC is problematic because scholars tend not to agree whether opportunities are discovered in the economic environment (i.e., objective view) or created by individuals (i.e., subjective view).
3. Existing measurements of OIC have been criticised, because most of them include self-perceptions or the recall of earlier identified opportunities.

The main goal of this thesis was to contribute to the literature by addressing these three overarching research issues. Accordingly, the central research question was: *What characterises opportunity identification by employees on the individual and team level?*

In the dissertation, OIC is both conceptually mapped and empirically explored. A performance instrument to measure OIC is developed and tested in higher education. As well, 12 businesses, including 234 employees in 51 teams, participated in this research project. Most companies were in the category known as small and medium-sized enterprise (SME). The participating companies have in common that they felt an urgent need for entrepreneurship as a driver of competitiveness. Furthermore, they aimed to commit and stimulate their employees to contribute to the entrepreneurial process, without having formal mechanisms or structures for doing so.

### Main conclusions

In light of the central research question of this dissertation, *What characterises opportunity identification by employees on the individual and team level?*, the results suggest that OI deserves attention in existing businesses, both as a meaningful process leading towards new value-creation and as a relevant capability



of employees. OIC is a multi-phased phenomenon consisting of two main competencies, namely business idea generation and business idea evaluation. In business idea generation, individuals generate all kinds of (business) ideas that may have the potential to become a real opportunity. In business idea evaluation, those ideas are selected that actually have potential success. Employees can have one of the competencies (business idea generation or business idea evaluation) to a greater extent, or both of them. Organisations need employees that are able to generate business ideas and employees that are able to evaluate the potential success of business ideas. The results of this thesis suggest that, just like independent entrepreneurs, employees mainly acquire such competencies by a process of learning by doing; this means that employees should become involved in entrepreneurial activities on the shop floor. Creating teams can be a solution, bringing together the competencies needed for the successful identification of opportunities. Moreover, the results suggest that the commitment of teams in the early stages of the entrepreneurial process is highly relevant, because the team cognitive framework for identifying opportunities seems more effective than the individual cognitive framework.

Taken together, at the defining, initial stage of the entrepreneurial process opportunities are identified by individuals or, preferably, by teams – in a process by which business ideas are generated and evaluated for their potential success. When studying opportunities and their identification, scholars should take into account the differences in OIC between SMEs, employees, and even within OIC itself (i.e., between business idea generation and business idea evaluation). In practice as well, these differences should be considered in the selection and management of employees, in assessing OIC and in composing teams, because teams need both business idea generators and business idea evaluators. ◀

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## Education

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### Virtual reality om te leren presenteren: een exploratieve studie

Stan van Ginkel

Eerdere studies op het terrein van presentatieonderzoek (Van Ginkel, Gulikers, Biemans, & Mulder, 2015a, 2015b, 2016) laten zien dat feedback een belangrijke rol speelt bij het ontwikkelen van de competentie mondeling presenteren in het hoger onderwijs. Niet alleen is de kwaliteit van de geleverde feedback van belang (Van Ginkel et al., 2016), ook maakt het uit welke actor de feedback verstrekt (Van Ginkel et al., 2015b). Zo bleek recentelijk uit een experiment dat eerstejaarsstudenten die, direct na hun presentatie, feedback ontvingen van de docent een sterkere ontwikkeling in hun presentatievaardigheden doormaakten dan studenten die feedback kregen van hun medestudenten, tutoren of door middel van zelfreflectie. Naast face-to-face feedback bestaat er inmiddels ook de mogelijkheid om feedback te ontvangen op basis van een presentatieoefening in een virtuele omgeving. Toepassingen voor virtual reality werden decennia geleden al gebruikt bij het opleiden van piloten (Hawkins, 1995), maar tegenwoordig wordt de technologie steeds toegankelijker (Bos, 2016). Bij de start van het

studiejaar 2016-2017 aan de Wageningen University, konden studenten, met behulp van een speciale bril, koptelefoon en een krachtige computer, een presentatie uitvoeren in virtual reality tijdens een reguliere cursus mondeling presenteren. Na de oefening kregen studenten feedback op hun stemgebruik, oogcontact, houding en gebaren. Tijdens de presentatie van vijf minuten werden deze aspecten door de software geanalyseerd, aangeleverd in een rapport en vervolgens toegelicht door een expert. Deze exercitie maakte deel uit van een onderzoek naar de invloed van een virtual reality-opdracht, waarin oefening en feedback centraal staan, op de ontwikkeling van de competentie mondeling presenteren. Naast de ontwikkeling in presentatievaardigheden werden de studenten ook getest op hun vooruitgang in kennis over presenteren en hun houding ten aanzien van deze competentie (zoals uitdaging, motivatie en relevantie). Aan het einde van de cursus evalueerden de studenten hun ervaringen met het presenteren in een virtuele omgeving én het ontvangen van feedback na afloop van hun oefenopdracht. In totaal participeerden 36 eerstejaarsstudenten, zes student-assistenten en vier ECS-trainers binnen deze exploratieve studie. Bovendien werkte ECS, voor de opzet en uitvoering van het onderzoek, samen met de partners NCOI en Ordina. Wilt u meer weten over de uitkomsten van dit onderzoek, dan verwijst ik u graag naar het artikel van Bos.

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