Competence development and labour market benefits of internationally mobile students

Citation for published version (APA):

Corten, H. (2014). *Competence development and labour market benefits of internationally mobile students*. [Doctoral Thesis, Maastricht University]. BOXPress. <https://doi.org/10.26481/dis.20140523hc>

Document status and date:

Published: 01/01/2014

DOI:

[10.26481/dis.20140523hc](https://doi.org/10.26481/dis.20140523hc)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.

Competence development
and
labour market benefits
of
internationally mobile students

Hans Corten

Competence development and labour market benefits
of internationally mobile students

Cover photograph: CAHVilentum, Dronten

Cover design: Proefschriftmaken.nl

Published by: Uitgeverij BOXPress, 's-Hertogenosch

ISBN: 978-90-8891-826-1

NUR: 840

© Hans Corten 2014

All rights reserved. This publication may be reproduced provided that the source is acknowledged.

Competence development and labour market benefits of internationally mobile students

DISSERTATION

to obtain the degree of Doctor at
Maastricht University,
on the authority of the Rector Magnificus, Prof. dr. L.L.G. Soete
in accordance with the decision of the Board of Deans,
to be defended in public
on Friday 23rd May 2014, at 14.00 hours

by

Johannes Jozef Frans Marie Corten

Supervisor:

Prof. dr. R.K.W. van der Velden

Co-supervisor:

Dr. F.P.C.M. de Jong

Assessment committee:

Prof. dr. W. Gijssels (chairman)

Prof. dr. J. van Merriënboer

Prof. dr. J.W.M. de Wit

Dedicated to ABCT

Contents

Chapter 1 Introduction	9
1.1 Introduction	10
1.2 Studying abroad is becoming increasingly popular	11
1.3 International student mobility has benefits on the labour market	16
1.4 International mobility implies adapting to another educational culture	20
1.5 Measuring the academic development of internationally mobile students in another educational culture	25
1.6 A specific instrument has been developed to measure the competence development of internationally mobile students	25
1.7 The research needs to take into account issues of selectivity and causality.	27
1.8 Research questions	28
1.9 Research design	29
1.10 Structure of the thesis	30
 Chapter 2 Concept of competence and competence levels	 31
2.1 Introduction	32
2.2 Why competence based education?	32
2.3 The concept of competence	34
2.4 Definition of competence	39
2.5 Competence levels	42
2.6 Conclusions	44
 Chapter 3 Development of an instrument to measure competence level of university students	 45
3.1 Introduction	46
3.2 Measuring competence level	46
3.3 Step 1: Selection of competencies	50
3.4 Step 2: Description of the items and response options of the questionnaire	51
3.5 Step 3: Validation by students in a cognitive lab	53
3.6 Step 4a: Validation by experts	57
3.7 Step 4b: Validation by experts (additional items)	61
3.8 Step 5: Metric validation	64
 Chapter 4 Competence development of university students	 73
4.1 Introduction	74
4.2 Characteristics of students influencing mobility and competence development	74
4.3 Methods used	79
4.4 Results	86
4.5 Conclusion	104

Chapter 5 Labour market benefits of having studied abroad	107
5.1 Introduction	108
5.2 Characteristics of graduates affecting labour market benefits	108
5.3 Methods used.	113
5.4 Results	117
5.5 Financial returns of studying abroad	140
5.6 Conclusions	146
Chapter 6 Discussion and conclusions	149
6.1 Introduction	150
6.2 Summary of main findings	150
6.3 Discussion	154
6.4 Main conclusions	160
6.5 Policy implications	160
6.6 Directions for future research	162
References	165
Summary	183
Samenvatting	187
About the author	191
Acknowledgements	193
Annexes	195

Chapter 1

Introduction

1.1 Introduction

This doctoral thesis reports a study on how internationally mobile students develop a number of academic competencies when they move from a knowledge oriented curriculum into a competence based curriculum and how these competencies affect the labour market outcomes at the start of their professional career.

An increasing number of students are studying abroad. Worldwide 4.3 million students studied abroad in 2011 of which 56,000 students came to the Netherlands (OECD, 2013a; UNESCO Institute for Statistics, 2012). Parties like the European Union, governments and the host universities are, for their own reasons, interested in this international student mobility and they all attach importance to the development of intercultural competence of the internationally mobile students. The European Union expects that internationally mobile students who develop intercultural competence get an understanding of other countries which will, on one hand, contribute to the integration of Europe and on the other hand stimulate international mobility after graduation. Governments expect that a higher level of intercultural competence contributes to the international competitiveness of their economies. For universities internationalisation and the development of intercultural competence is one of the objectives to prepare the students for the labour market. Therefore it is not surprising that ample research is done on the development of intercultural competence of students during their sojourn abroad (Deardorff, 2006, 2011; Engle & Engle, 2004; Vande Berg, Connor-Linton, & Paige, 2009).

And what is in for the students themselves? A number of studies showed that there are labour market benefits attached to having studied abroad, like a shorter job searching time and a higher salary (Allen & Velden van der, 2011; Bracht et al., 2006; Ingraham & Peterson, 2004; King & Ruiz-Gelices, 2003; Messer & Wolter, 2007; Parey & Waldinger, 2011; Teichler, 2007). The students themselves benefit also from the development of intercultural competence later in life, like more global engagement activities and more social entrepreneurship (Paige, Fry, Stallman, Josić, & Jae-Eun, 2009).

Although many studies have been done on the development of intercultural competence while studying abroad, other academic competencies have been studied less. In addition we may ask ourselves how students develop these other academic competencies when they move into a different educational culture? The effect of a different educational culture on students has been the subject of previous studies on international student mobility (Biemans & van Mil, 2008; Gu, Schweisfurth, & Day, 2010; Joy & Kolb, 2009). But we do not know how this different educational culture affects the competence development of the internationally mobile students when they move from a knowledge based educational system into a competence based educational system.

This doctoral thesis tries to fill this gap and we measure the development of a number of academic competencies of internationally mobile students who move from a knowledge based education into a competence based education compared to the competence development of students in reference groups. For measuring the competence development of students we have developed and validated a specific instrument that can be used in a large scale repeated measurement design to measure a number of academic competencies specifically linked to competence based education. At the same time the study included the measurement of a number of other variables that might

affect international mobility and competence development, thus allowing statistical control for the impact of these variables.

Where we do not know the effect of moving into a different educational culture on the development of academic competencies, we also do not know how these academic competencies affect the labour market outcomes after graduation. The second contribution of this doctoral thesis is that we measure the competence levels and labour market outcomes of formerly internationally mobile students who studied into a competence based educational programme with reference groups of formerly non-mobile students. We study the impact of study abroad and the impact of competence levels on the labour market outcomes while controlling for a number of other variables that might influence these variables.

The current chapter is organised as follows. Section 1.2 gives an outline of international student mobility. Section 1.3 describes possible benefits of international student mobility when these students enter the labour market and the possible theoretical explanations of these benefits. Section 1.4 goes into the intercultural aspects of international student mobility and more specifically into differences in educational culture and the consequences for competence development. Section 1.5 and 1.6 underpin the need of having a specific instrument to measure the competence development of internationally mobile students and section 1.7 underpins the need to include control variables in the research. The research questions of this thesis are presented in section 1.8, the research design in section 1.9 and finally, section 1.10 gives an overview of this thesis.

1.2 Studying abroad is becoming increasingly popular

An increasing number of students go abroad for their studies. Worldwide the number of students studying abroad increased from 1.7 million in 1995 to nearly 4.3 million in 2011 and it is anticipated that there will be 7.2 million in 2025. More than 50% of the students studying abroad are from Asia (mainly from China, India and Korea), while the United States, United Kingdom, Australia, Germany, France and Canada receive more than 50% of all foreign students worldwide (OECD, 2013a).

Not all of these internationally mobile students can be considered as one group. OECD¹ and EU² distinguish between ‘credit mobile students’ and ‘diploma mobile students’ (OECD, 2010; Richters, Roodenburg, & Becker, 2012). Credit mobile students go abroad within the context of their study to follow part of the programme at a university in another country. The students follow courses, from several weeks up to one year, at a university abroad. Their home university recognizes the courses completed at the university abroad and the students can use the credit points of the successfully completed courses abroad for the programme at their home university. Diploma mobile students go abroad to study a whole programme outside their home country with the aim to obtain a diploma. These diploma mobile students go abroad as they cannot pursue a university programme in their home country because such a programme does not exist (e.g. students from Iceland, Cyprus or Malta going abroad for veterinary medicine) or they could not enrol because

1 OECD: Organization for Economic Co-operation and Development

2 EU: European Union

of a numerous clauses (e.g. Dutch students going to Belgium to study medicine). There is also a group of diploma mobile students going abroad because of the lower costs of studying abroad (e.g. students from the UK going to the Netherlands). Students may also go abroad outside their study programme but for study related activities like language courses, internships, summer courses and international brief study visits without recognition of credits or for non-study related work, travel or holidays.

Measuring and comparing the number of internationally mobile students is in the interest of policy makers who want to evaluate the implementation of their policies of stimulating international student mobility. But who to count? Not every student studying abroad is an internationally mobile student. How to consider the Kenyan student who was born and grew up in the Netherlands and now studies at a Dutch university? Or the Dutch student who was born and grew up in Canada and studies at the same Dutch university? If we want to measure and compare international student mobility it is necessary to have a clear definition of an internationally mobile student. Therefore the UNESCO, OECD and EU have developed criteria to define international student mobility. The criteria to consider students to be internationally mobile are:

- They obtained the entry qualification to their current level of study in another country.
- They are not permanent residents of the host country in which they pursue their studies.
- They are not citizens (do not have the nationality) of the host country.

For UNESCO³ students should meet the first two criteria (UNESCO Institute for Statistics, 2012) while for the EU and the OECD students should meet all three criteria before they are included in the internationally mobile students statistics (OECD, 2010; Richters et al., 2012). This thesis follows the definition of the EU and OECD.

Policy makers at (1) European level, (2) country level and (3) university level, developed policies to stimulate international student mobility because they recognised the political, economic and educational value of international student mobility.

First, at the *European level*, the European Commission considers international mobility of students essential to the further integration of Europe and for the economic development of the European Union (European Union, 2007, 2012a, 2012b). Concerning the integration of Europe, the European Commission stated repeatedly (like in the ‘Lisbon agenda 2000’, in ‘Europe 2020’ and in ‘Youth on the Move’) that they expect that students, who meet their peers from other European countries, develop a mutual appreciation. It is assumed that students will also develop an understanding for other European countries in general which will contribute to the integration and unity of Europe. The European Commission wants to develop the European Union into the “*most competitive and dynamic knowledge based economy in the world*” (European Union Parliament, 2000). International student mobility plays an important role in achieving this. The European Commission expects that students, who were internationally mobile during their studies, will be internationally mobile once they have entered the labour market. International mobility of workers in the labour market implies that there is a greater chance of obtaining a job, thus reducing unemployment rates in the European Union, and that there is a better match between jobs

3 UNESCO: United Nations Educational, Scientific and Cultural Organization

and higher educated professionals. The lower unemployment rates and the better skills match will result in higher economic growth rates in the European Union.

To stimulate international student mobility, the European Union has several programmes of which the Erasmus programme is the most important for university students. The Erasmus programme for higher education started in 1987 (European Union, 1987) under the Socrates programme and has been running since 2007 under the Lifelong Learning Programme (2007-2013). Student mobility was very low before the introduction of the Erasmus programme (Eurostudent, 2009). Since 1987 more than 2.2 million students have participated in the Erasmus programme. Internationally credit mobile students may receive a contribution to (partially) cover the costs of studying abroad.⁴ The educational costs of international student credit mobility within Europe are borne by the host institute. The European Commission intends to further broaden the opportunities for young people to develop themselves through a learning period abroad. In July 2009 the European Commission published the Green Paper “Promoting the learning mobility of young people” in which the European member states are invited to come forward with proposals how international learning can be promoted in Europe (European Union, 2009a).

No European funds are available to support students for diploma mobility but the number of diploma mobile students in Europe increased between 1999 and 2009 from 500,000 to 860,000 (Eurostat, 2012). This increase of international diploma mobility is the result of national policies, like the policies of the Dutch government.

A major contribution to the increase of international student mobility in Europa is the establishment of the European Higher Education Area. The idea started in 1998 when rectors of European universities and ministers of Education gathered in Paris to celebrate the 750th anniversary of the Sorbonne. The ministers of education of four countries committed themselves by signing the ‘Sorbonne Declaration’ to encourage a common frame of reference aimed at international comparable degrees and recognition of academic credits gained at other universities and facilitating student mobility and employability. The next year, the European Higher Education Area was designed by ministers of higher education of Europe in the Bologna Declaration (1999). After several more declarations Prague, 2001; Berlin, 2003; Bergen, 2005; London, 2007 and Leuven, 2009), the education ministers of 46 countries officially affirmed on 12 March 2010, in the Budapest-Vienna Declaration, that the European Higher Education Area had been achieved. The European Higher Education Area also involves the European Commission, UNESCO, Council of Europe, higher education institutes, students, staff and quality assurance agencies, which emphasizes the importance of international student mobility. International mobility is the essence of the Bologna process. In 2009, the education ministers agreed in Leuven that in 2020 over 20% of all students graduating in the European Higher Education Area should have gained study experience abroad (European Higher Education Area (EHEA), 2011).

Second, at *country level*, the Dutch Ministry of Education states that cooperation between Dutch and foreign institutions of higher education and international mobility of students is an essential contribution to the international competitiveness of the Netherlands (Ministry of Education, 2006, 2012). The Dutch Government strengthens the reputation of the Netherlands as a knowledge

4 The Erasmus contribution depends on the member state and is between € 200 - € 600 per month to cover additional travel and lodging expenses.

country through the Technical Scientific Attachés and Agricultural Attachés at the Dutch Embassies and there are ten Netherlands Education Support Offices (Neso) in selected target countries (Breimer, Boom, & Broesterhuizen, 2009).

From the country level point of view, e.g. the Netherlands, there are two sides to international student mobility. On one side the outbound student mobility, i.e. the mobility of Dutch students to other countries, and on the other side the inbound student mobility, i.e. students coming from other countries to study in the Netherlands. The outbound student mobility is important to prepare Dutch students for the global market. The global market is the playing field for the Dutch economy and students have to develop international competencies to be successful at this global market. The Dutch government promotes outbound student mobility by supporting students financially for placements and internships (Ministry of Education, 2008a), by allowing Dutch Universities to develop joint degree programmes with partner universities abroad and by allowing Dutch students to use the Dutch government student grants to study abroad (Ministry of Education, 2009a, 2009b). The importance of inbound diploma student mobility starts with the presence of the students in the Netherlands and continues after graduation. The presence of talented international students contributes to improve the level of education in the Netherlands and international students directly contribute to the Dutch economy. Students who return to their home country after graduation will serve as 'ambassadors' for the Netherlands. Once they are back home, they may translate their enthusiasm for the Netherlands into cooperation with Dutch businesses. But after graduation the international students may also decide to stay in the Netherlands and enter into the Dutch labour market. As such they will contribute to solve the shortages of high-educated workers on the labour market and contribute to economic development. The immigration law allows international students from outside the European Union after completing a university degree to apply for a one year visa to stay in the Netherlands to find a job. Recently the Dutch Government in co-operation with the universities, labour unions, employers, student organisations and other parties decided to actively invite international students to start a career in the Netherlands (Ministry of Education, 2013; Sociaal-Economische Raad, 2013).

Since 2009 international students in the Netherlands from outside the European Union pay a tuition fee that covers all educational costs, but the educational costs of international student diploma mobility within Europe are borne by the host country. In 2011 the Dutch parliament asked the State Secretary of Education whether in the Netherlands these costs of international student mobility outweigh the benefits. The State Secretary replied that in the Netherlands the net annual costs of international student diploma mobility are approximately € 100 million, because the inbound mobility is higher than the outbound mobility. If, after graduation, the inbound diploma students settle in the Netherlands (and thus supplement shortages on the Dutch labour market) there will be state revenues as well. With the estimated current 19% of the international European students that settle permanently in the Netherlands, the net revenues for the Dutch State will be approximately € 740 million per year. Other assumed benefits (like increased level of education at universities, international exposure of Dutch students, peer effects and potentially more business relations, once these graduates are employed in their home country) are not calculated (CPB, 2012; Ministry of Education, 2012). The economic value of international students is also known in other countries, like in the UK. The UK introduced full-cost tuition fees for foreign diploma mobile students in 1979. The British Council expects that by 2020 the estimated 870,000 international students could contribute £ 13 billion to the economy per year (British Council,

2004). It would appear that the internationalisation of higher education in the UK has been led by economic interest rather than intercultural strategies (Terri, 2009).

Between 1998 and 2011, the inbound diploma mobility in the Netherlands increased by an average of 10% per year from 13,500 to 52,000. Although the total number of students enrolled in higher education increased as well, the percentage of international diploma students in the Netherlands increased from 3.0% in 1998 to 7.9% in 2011 (see annex, table A.1.1 for data from 1998 till 2011). This percentage of international students is around the European average (8.1%) and compared with other European countries the Netherlands is in eleventh place. In the 2010-2011 academic year, about 37,500 of the 59,000 international diploma students in the Netherlands came from EU and EFTA⁵ countries. In 2010-2011 about 22,500 credit mobile students came to the Netherlands (Richters et al., 2012).

Third, at *university level*, Dutch universities loyally implement the government policy to stimulate inbound student diploma mobility and see the benefits for their own institution as well. Internationally mobile students coming to the Netherlands can choose between scientific education at the Research Universities and higher professional education at the Universities of Applied Sciences, both offering educational programmes at ISCED⁶ level 6 and 7. The Research Universities focus on research oriented education through academic disciplines and the generation of new knowledge through research. There are 14 government funded universities with 240,000 students (2010-2011) that are entitled to award officially recognized degrees and a number of approved institutions that receive no government funding but may award officially recognized degrees. In general, after a 3 year bachelor programme students partake in a 1 or 2 year master programme. The Universities of Applied Sciences provide theoretical and practical education for occupations for which a higher professional qualification is required and do practice based applied research. Graduates find employment in various professional fields in trade and industry, social services, health care, the public sector and research. There are 39 government-funded Universities of Applied Sciences with 417,000 students (2010-2011). Most students leave the University of Applied Sciences after a 4 year bachelor programme and start their professional career. In addition to the government-funded Universities of Applied Sciences, there are about 60 legal entities providing higher professional education (CBS, 2012; Eurydice, 2009). The inbound diploma mobility is equally divided between the two types of universities, but the percentage of international students at the Universities of Applied Sciences is lower because the total number of students is higher compared to the Research Universities (respectively 6.7 and 10.1% international students in 2010-2011) (Richters et al., 2012) (see annex, table A.1.2 for student numbers between 1998 and 2010).

At university level the presence of talented international students exposes Dutch students to an international learning environment, increases the quality of the education, generates additional income (the universities receive a fixed amount of money per student⁷) and helps the universities

5 EFTA: European Free Trade Association: Liechtenstein, Norway, Iceland, Switzerland

6 ISCED: International Standard Classification of Education (UNESCO, 2011). A classification structure for organizing information on education and training; ISCED 6 leading to bachelor degree; ISCED 7 leading to master degree (till 2011 these levels were both classified as ISCED level 5A).

7 The government subsidy per student depends on the national budget for higher education as adopted by parliament, and the number of students.

to maintain a diverse range of subjects. To pursue international mobility amongst Dutch students and to attract more international students universities have organised the international student mobility in several ways. First, student credit mobility might be organised by exchange arrangements between institutions. The students participating are often called ‘exchange’ students and do not pay tuition fee at the host institute. The credits earned abroad might be used for the study programme at home. Students who choose the university abroad themselves, the so-called ‘free movers’, may pay a tuition fee abroad and are less sure of using their credits earned abroad within the study programme at home. Second, Dutch institutes of higher education have signed a Memorandum of Understanding with universities in other countries so that students can use their credits in both universities, leading to a double degree. A double degree program awards two individual qualifications at equivalent levels upon completion of the collaborative program requirements established by the two partner institutions (Knight, 2011). Third, offering a joint degree. A joint degree is a study programme which has been developed jointly by two or more Higher Education Institutes from two or more countries and students receive a jointly conferred degree or a national degree from the individual institutions (NVAO, 2013).

So, there are good arguments for international student mobility on European, national and university level but what are the arguments for the students themselves? What is in for them? Why do an increasing number of students opt to obtain a study experience abroad for a period of their study time? What happens once they return to their own country after their study abroad? More specifically, what happens when students with an international study experience enter the labour market? In the next section we explore what is known about the effects of having studied abroad on graduates’ future careers and what might be in for students in relation to their career.

1.3 International student mobility has benefits on the labour market

The indications that a study abroad benefits the students after graduation can be found in the results of studies amongst graduates. Studies amongst graduates are suitable instruments to measure the effect of international mobility during the study as these studies gather information about the whole study period of graduates and subsequently can link the international student mobility with job outcomes. There are four large scale European studies amongst graduates on the transition from higher education into to labour market: the ERASMUS study, the CHEERS study, the REFLEX study and the HEGESCO study. Where the ERASMUS study focuses on international student mobility and less on the transition from education to labour market, the other three studies focus on the relationship between higher education and employment and international student mobility is only one of the variables.

The longitudinal ERASMUS study was undertaken by the Centre for research on Higher Education of the University of Kassel to study the impact of student mobility from 1989 to 1994.⁸ The students were surveyed again 3 and 5 years later to study the impact of their study abroad on the start of their professional career. About three-quarters of the graduates perceived their international experience as helpful in obtaining their first job. Half of the graduates with an international experience answered that the international experience was relevant for their job

8 There is some doubt whether the sample studied was representative for all ERASMUS students (Teichler & Jahr, 2001).

tasks. The survey did not indicate an impact on the further career and hardly any advantage was seen with regards to the income level. Examining whether the students use what they learned abroad, half of them indicated that they made use of their foreign language proficiency and about one-third indicated that they used their knowledge of the host country (Teichler & Jahr, 2001).

The CHEERS study (Careers after Higher Education, a European Research Study) surveyed about 37,000 graduates from 11 European countries and Japan in 1998 (Schomburg & Teichler, 2006). The students who were internationally mobile during their studies rated their competencies at the time of graduation higher than their non-mobile peers but the results of the CHEERS study did not indicate a relationship between competence levels and international experience. Only 13% of the graduates perceived that international experience was an important recruitment criterion, compared to 74% that indicated that personality was an important recruitment criterion and 68% mentioned the field of study to be important. Students with an experience abroad sought more often employment abroad compared to their non-mobile peers (26% versus 9%) and had more often employment abroad (17% versus 4%) (Allen & Velden van der, 2007; Teichler, 2007).

The REFLEX project (the Flexible professional in the knowledge society) (Allen & Velden van der, 2011), collected data from about 40,000 graduates in 15 European countries and Japan in 2005 and 2006 to study the relationship between higher education and professional career. The study found that internationally credit mobile students had 10% higher income compared with non-mobile students (Teichler, 2007). Based on data from the REFLEX project, Allen and Van der Velden (2011) found that graduates from Germany, the Czech Republic and Italy with work experience abroad during their studies earn more per hour than a reference group. For Dutch graduates they found no significant correlation between international work experience during their studies and earnings in their present job (Allen, Coenen, & Velden van der, 2007). Although the study analysed the effects of working abroad and not the effect of international credit or diploma mobility, an international experience during the study seems to be beneficial.

The HEGESCO project (Higher Education as a Generator of Strategic Competences) used the REFLEX methodology in 2008 to collect data from 9,000 graduates in 5 European countries that were not included in the REFLEX project. The HEGESCO results, combined with REFLEX results, show that graduates from the NCSM (New and Candidate Member States) and northern European REFLEX countries who spent time abroad for study or work have a significant shorter job search duration compared to their peers who did not go abroad. The hourly wage is significantly higher for graduates from these countries who spent time abroad for study or work. Graduates with international experience earn almost 9% higher wages in NCSM countries and 3% higher wages in the northern European REFLEX countries compared to graduates without international experience. For job satisfaction a weak positive effect has been found for graduates with international experience from the NCMS only (Allen, Coenen, & Humburg, 2011c). In the HEGESCO study, no effects were seen for the time spent abroad during higher education on the development of five competencies⁹ (Allen, Coenen, & Humburg, 2011b). The HEGESCO study does not differentiate between study abroad and work abroad during the study, but indicates at least that an international experience during the study has benefits after graduation.

9 Ability to use computers and internet; ability to use time efficiently; ability to work productively with others; ability to perform well under pressure; mastery of one's own field or discipline.

Also some small scale studies show benefits of an international experience during the study on the job career (Delaney, 2004; Teichler, 2008). A survey of Swiss university graduates shows that student exchange programs are associated with higher starting salaries and a higher possibility of starting a postgraduate degree, but could not prove a causal relation (Messer & Wolter, 2007). A few studies that compare internationally credit mobile students and non-mobile students find that internationally credit mobile students have more international oriented jobs than non-mobile students (Bracht et al., 2006; Delaney, 2004; King & Ruiz-Gelices, 2003; Parey & Waldinger, 2011; Teichler, 2007; Teichler & Janson, 2007). Oosterbeek and Webbink (2006) compared post graduate students who studied abroad with post graduate students who did not study abroad. They found that studying abroad increases wages by 3 to 10% but could not find evidence of a causal effect (Oosterbeek & Webbink, 2006).

The studies mentioned so far concerned credit mobile students or post-graduate mobility and did not include diploma mobile students. Some studies investigated the labour market effects of diploma mobile students who spent several years abroad for a full degree programme. For instance, Norwegian studies showed that immediately after graduation, ethnic Norwegians with a diploma from abroad are more frequently unemployed and overqualified than those with a diploma from a Norwegian HEI¹⁰. The differences are not dramatic and later in their career the internationally mobile students will obtain higher wages and are more likely to have an international oriented job (Støren & Wiers-Jenssen, 2010; Wiers-Jenssen, 2008, 2011). In a Malaysian study job satisfaction and income were not significantly different between local graduates and international diploma mobile graduates (Ball & Chik, 2001).

From the above it is reasonable to assume that for students, studying abroad has benefits after graduation, like shorter job search and a higher salary. How can these benefits be explained? There are two relevant theories that can be used to explain how an investment in an international study will materialize on the labour market: the human capital theory and the signalling theory.

The *human capital theory* (Becker, 1963) considers education as an investment in human productivity. Human productivity is a result of human capacities like knowledge, skills and abilities. Students develop these capacities in education. More years of education or a higher level of education directly relates to more capacities, so to higher productivity and thus to higher income. This higher income (the returns to education) has to be balanced against the costs (costs of study and the opportunity costs with respect to the income foregone during study). The human capital theory does not distinguish between international and national education, but Friedberg makes a distinction between general human capital and country-specific human capital. General human capital is useful everywhere, but country-specific human capital will be more applicable in the host country where the student moves to (Friedberg, 2000). This country-specific human capital of the host country might be in demand in the student's home country for internationalised jobs. The human capital theory is an interesting explanation for the job benefits as a result of international mobility, if the students learn something abroad that they will not learn at home and if this learning results in a higher income and occupational status after graduation. To use the human capital theory to explain labour market benefits it is necessary to know what students learn

10 HEI: Higher Education Institute

when they are internationally mobile and relate this learning to the labour market outcomes. We will return to this later in this section.

The *signalling theory* (Spence, 1973) explains that investments in education do not increase the productivity but that having a degree in itself increases the job chances when entering the labour market. Employers consider diplomas or degrees as an indication of capabilities and use them to select employees. In the same way employers consider international student mobility as screening devices for college graduates (Hilmer, 2002). In this view an international experience and especially a double degree will be a signal for unobservable productivity and thus enhance the chances on the labour market, in particular for jobs with an international orientation. So even if internationally mobile students have no specific learning experiences while being abroad, the signalling theory might explain why these students have a shorter job search period or a higher income, simply because studying abroad signals other productive capacities to future employers.

A major problem in most studies on the effects of a study abroad is that both may be caused by a third, unobserved variable. We can think of certain personality traits that cause students to become internationally mobile and at the same time cause these students to get a job sooner and to get better job conditions (Ballatore, 2011). It is also possible that the student's competitive advantage on the labour market is not linked to the experience abroad but correlated to the social characteristics of these students (Messer & Wolter, 2007).

How can we unravel what makes that internationally mobile students benefit on the labour market? Is it because students have learned something abroad that gives them advantages in their job (i.e. the human capital theory)? Is it the international experience per se that brings the benefits (i.e. the signalling theory)? Or does a causal relation not exist and are other factors causing the labour market advantages?

The empirical studies mentioned in the previous paragraph suggest that there are positive labour market effects of international mobility. Although positive correlations are described, it is the question what causalities characterize the relations between studying abroad and labour market effects. Some scholars argue that without an experimental design a causal relation between studying abroad and labour market outcomes may not be proved in any case (Norris & Gillespie, 2009; Wiers-Jenssen, 2011). Although one can think of a quasi-experimental design (e.g. the use of waiting lists) we could not find examples of studies that used such a design. A possible alternative is a pre-test/post-test design which measures changes in skills, personality traits and beliefs of students studying abroad and relates these to international mobility (McLeod & Wainwright, 2009).

A few studies have used this pre-test/post-test design with a research group and a reference group to measure the impact of studying abroad on personal development (Ingraham & Peterson, 2004; Stronkhorst, 2005). Stronkhorst (2005) measured the development of international and intercultural competencies in two groups (internship, exchange) of internationally mobile students, using a self-assessment instrument. He found a clear positive effect for 35% of the internship students and 45% of the exchange students and no effect or a reverse effect for the other students. He concluded that 3-4 months abroad is too short to achieve much progress in competencies for many of the students (Stronkhorst, 2005). Ingraham et al. (2004) measured academic development of internationally mobile students using a self-assessment instrument. They found no effect of

studying abroad for the factors ‘Intercultural Awareness’, ‘Language Learning’ and ‘Professional Development’, and a reverse effect for ‘Personal Growth’ and ‘Academic Performance’.

Some researchers created retrospectively a pre-test/post-test design with a reference group. King and Ruiz-Gelices (2003) studied the effects of a year study abroad. They found that graduates with a year abroad experience have better job profiles, higher incomes and less experience of unemployment. They collected data from a research group after spending a year abroad, collected data from a reference group of non-mobile students and used another group of students who were about to depart on a year abroad to collect pre-experience data. Although it is not a perfect pre-test/post-test design with a control group (on which the authors make a self-critical note) it is a creative way of retrospectively collected data on international mobility (King & Ruiz-Gelices, 2003). Carlson and Widaman (1988) measured intercultural development of a group of internationally mobile students. The experimental group and reference group indicated retrospectively their positions on intercultural attitude and indicated their present position (Carlson & Widaman, 1988).

Other studies use a regression design with reference groups of students who did not go abroad to check whether personal traits and beliefs found in the internationally mobile students are due to their study abroad period. Examples are the aforementioned REFLEX study and the CHEERS study.

Finally, there are some more descriptive studies like Gmelch (1997), Dwyer (2004) and Nunam (2006). Gmelch (1997) describes the personal development of students when they travel abroad. This descriptive study indicates that students became more confident, self-reliant and adaptable (Gmelch, 1997). Dwyer completed a major study on the long term impact of studying abroad in which almost 4,000 former internationally mobile student from the previous 50 years (1950-2000) were surveyed. The study shows that studying abroad has a significant impact on intercultural and personal development and career choices that can be sustained over a period of 50 years (Dwyer, 2004). Nunan (2006) found that a period of study in another country has brought benefits to the majority of Australian past students. The respondents have attributed much of their personal and social development and enhanced employability and skills for careers, to the experience of studying abroad

In this doctoral thesis we used a quasi-experimental design in order to get more insight in the relation between competence development, studying abroad and labour market effects. However, before continuing with our design, we want to address the issue of educational culture and international mobility. More specifically we address the fact that international student mobility usually implies that students are confronted with a different educational environment. Although this has been subject to research before, especially when it comes to intercultural competence, one aspect has received less attention and that is moving from a knowledge based education into a competence based education.

1.4 International mobility implies adapting to another educational culture

Internationally mobile students move into a different culture. We can distinguish objective culture and subjective culture. Objective culture is culture like arts, architecture, literature and history,

and the subjective culture are the norms and values of people underlying people's interactions in a particular context (Bennett, 2009). The educational culture is part of the subjective culture. The students will have to adapt themselves to this new educational culture. If the internationally mobile students do not adapt to the educational culture, this will restrict an optimal academic development and thus the potential labour market effects.

The internationally mobile students move into educational cultures that are framed by the specific culture of the environment of the universities. Hofstede (1991) uses the country names as the surrogates to represent culture. He identified power distance, uncertainty avoidance, individualism-collectivism, masculinity-femininity and long-short term orientation as the aspects to differentiate the cultures of over 50 countries (Hofstede, 1991). A basic theory of international student mobility is that intercultural contacts increase the intercultural sensitivity to this 'subjective culture' and thus international mobility contributes to global citizenship. Bennet describes the development of intercultural sensitiveness as "*more complex perceptual discriminations of cultural differences*" (Bennett, 2009)(pS4) and Deardorff uses the term intercultural competence as "*effective and appropriate behavior and communication in intercultural situations*" (Deardorff, 2011) (p66).

Bennet created the developmental model of intercultural sensitivity (DMIS) to explain how people respond to cultural differences. Bennett describes six stages of the recognition and acceptance of cultural differences: from three ethnocentric stages (denial, defence and minimization) to three ethnorelative stages (acceptance, adaptation and integration) (Bennett, 1986, 1993). Based on the DMIS model, Hammer et al. developed the Intercultural Development Inventory (IDI) instrument (Hammer, Bennett, & Wiseman, 2003). A number of researchers used the IDI instrument to measure the development of intercultural sensitivity for students who participated in sojourns from several weeks to one year. Results from this research show that the development of cultural sensitivity is higher when the sojourn abroad is longer (Engle & Engle, 2004; Vande Berg et al., 2009; Wu & Hammond, 2011). The internationally mobile students will show a process of integration over time, but they will not always go from one stage to the next stage in sequence. They may skip stages or regress to a lower level as a result of less pleasant intercultural experiences (Engle & Engle, 2004; Jackson, 2009). One short experience abroad is not likely to make students experts about the host culture and may not produce a gain in intercultural sensitivity but they may be sensitised and develop their intercultural sensitivity further when they return home. (Medina-López-Portillo, 2004).

Adapting to another culture is not an automatism, but if successful, the internationally mobile students may also go through a personal development that might have long lasting effects. Researchers found that students abroad develop a stronger personality compared to their peers who stayed at home (Angulo, 2008) or develop increased self-efficacy (Milstein, 2005). Results from the study 'Beyond immediate impact: study abroad for global engagement (SAGE)' showed that respondents perceive a study abroad as a strong influence to participate in global engagement activities like civic activities, and socially oriented businesses (Paige et al., 2009). The study 'Youth for Understanding' (YFU) showed that former participants of international exchange programmes are more likely involved in international peace and cooperation efforts (Bachner & Zeuschel, 2009). Other research found long term effects on hobbies and interests (Mistretta 2008).

The studies found significant relationships between international student mobility and intercultural and personal change, but Bennet (2009) states that “*The claim that study abroad contributes to intercultural learning and particularly the claim that certain conditions are more or less influential, begs for a more experimental methodology*” (Bennett, 2009) (pS6). According to Gmelch (1997) one can ask whether the personal development is due to their study abroad or spending time abroad. If spending time abroad in itself results in learning or personal development through international exposure, it is extracurricular learning and could possibly be achieved in other ways as well, like working abroad for some time (Gmelch, 1997). Nevertheless, there is a wide range of research into the development of intercultural sensitivity and the other aspects of personal development of internationally mobile students. But adapting to the culture of the host nation is non-committal for internationally mobile students, as students who do not adapt will be able to survive in the host country in their own way.

This non-commitment does not exist for adapting to the educational culture of the host institute. Adapting to the educational culture is necessary for academic development and reaching the ‘adaptation’ stage of Bennett’s scale seems to be the minimum. Although seemingly more important than adapting to the culture of the host country in general, little is known about the adaptation of internationally mobile students to the educational culture of their host institute, although educational cultures differ between countries as well.

The differences in educational cultures between European countries are evident from the results of the REFLEX and HEGESCO projects. The REFLEX study shows that in general the education in European Institutes of higher education is theoretical knowledge based. But professional bachelor programmes at the Universities of Applied Sciences in the Netherlands, Finland, Germany and Austria, and bachelor programmes in France and Italy, emphasize practical knowledge besides theories and paradigms. The teaching methods in most European countries are lecturer-centred with the lecturers being the most important source of information for the students. Compared to other countries, Dutch higher education at the Universities of Applied Sciences is student centred, broad, practical, profession oriented and hardly prestigious (Allen & Velden van der, 2011). Also the HEGESCO study shows that there is quite some variation in teaching methodology across countries. Study programmes in the Netherlands, Finland, Norway and Hungary are more vocationally oriented than in other countries. In the Netherlands more than 60% of the graduates report that at the university group assignments were important as a teaching method, while this was about 30% for graduates from Spain. About 60% of the Dutch graduates participated in work placements during their studies, where less than 10% from Lithuania did so. Active participation of students in research is highest in UK and Turkey with percentages of 30%, compared to less than 10% in the Czech Republic. About 19% of the graduates from Spain indicate that an oral presentation was strongly emphasized in assessment at the university, while for the Netherlands this was 47% and for Italy 55% (Allen, Coenen, & Humburg, 2011a).

These differences in educational culture are described in some other studies as well. Students from Singapore in off-shore education of Australian universities encountered a shock as an effect of a different mode of delivery (Chapman 2006). Group discussions, cooperative teaching and learning strategies could be an unexpected learning shock for international students in the UK who “*never used to believe in group study*” (Schweisfurth & Gu, 2009)(p469). Confucian education emphasizes memorization and root learning in contrast to Western education in which students are encouraged to ask questions, challenge ideas of others and express own ideas (Wu &

Hammond, 2011). Cross-cultural adaptation has the potential for being a positive experience and being a negative experience. It may trigger a developmental process or psychological disturbance (L. E. Anderson, 1994). The emotional adjustments are rarely shocking or catastrophic and it is better to avoid the use of the word 'shock' and recognise that intense emotions are commonly part of transitions and new learning (Abarbanel, 2009).

Apart from a different background in educational culture, students from different countries have a different learning style (Strang, 2010). Students from high uncertainty avoidance cultures might be more cautious and systematic in their approach compared to students from low uncertainty avoidance cultures, who are more trial-and-error seekers. Culture has a significant effect in deciding a person's preference for abstract conceptualization versus concrete experience. Altogether culture and variables related to education (level of education, area of specialization) have the largest impact on learning style (Joy & Kolb, 2009; Yamazaki, 2005). For example, there are significant differences between Australian and Chinese marketing students for three of the four Solomon-Felder Learning Styles, with the Chinese students being more Reflective, Sensing and Global and the Australian students being more Active, Intuitive and Sequential and both groups being Visually oriented (Heffernan, Morrison, Basu, & Sweeney, 2012). The learning styles of Chinese students also differ from those of Dutch students (Biemans & van Mil, 2008). On the other hand, students can be aware of the context of their new learning and are able to combine the learning concepts they brought with them with the new one, instead of substituting the one for the other (Wang & Byram, 2011).

The host institutes recognize that internationally mobile students come from different educational cultural backgrounds and that internationally mobile students may have different learning styles. To assist the students to adapt to the new educational culture the host institutes may have a counselling system in place to recognize and solve psychological problems at an early stage. Also additional language support for non-native speakers helps the transition into a new culture.

Little is known about how teaching staff in practice respond to the presence of internationally mobile students. The diversity of cultures in an international classroom may give different behaviour in the class-room. For example, Chinese students in New Zealand were uncomfortable with asking and answering questions and giving their opinion because of their Chinese values of respect for authority, maintenance of harmony with others and concern for loss of face (Holmes, 2005). Lecturers can respond to the international diversity of their students by changing their teaching methods or spending more time on activities such as providing extra reading materials and scheduling extra classes (Barron, Gourlay, & Gannon-Leary, 2010). However this is not common practice. A positive example comes from an Australian institute of higher education where the majority (66%) of academic staff changed their teaching to the needs of the international students (Sawir, 2011). The opposite example comes from Denmark, where lecturers who are aware of the fact that educational experiences of internationally mobile students deviate from those of the local students, do not accept the consequences to adapt their teaching. The lecturers consider the skills required in Danish higher education as superior and are disappointed when international students do not conform to what the lecturers consider to be a good student (Tange & Jensen, 2012). Teekens (2003) describes an ideal profile of the lecturer in

the international classroom, with attention for the language of instruction and factors related to cultural differences (Teekens, 2003)

Although the differences in educational cultural background may be recognized by the host institutions and by the lecturers, adapting to the new educational culture is primarily an effort for the students themselves. If they do not succeed to adapt themselves, they may perform below their potential level and even discontinue their studies at the host institute. There is no research data available that may give an indication about the level of drop-outs in the context of international student mobility. However, dropping-out from higher education in general is well-documented and there is also some data available about dropping-out from higher education that may be a result of a change in educational culture when students go from secondary school to university.

The average non-completion rate in institutes of higher education in the OECD countries is 31% and in the Netherlands 29% (OECD, 2010). In a Belgium study the main reason (90%) to discontinue studying in the first year of the university programme, is failure to pass exams, while a minority (10%) discontinues because of a wrongly chosen educational programme, financial reasons or emotional instability (Lacante et al., 2001). Data from France shows that most students (69%) who leave higher education without a degree passed their first year and that dropout is not a one-dimensional phenomenon (Gury, 2011). Data from the University of Leiden, the Netherlands, shows that the main reasons to discontinue a study in the first year are: a wrong choice of study programme, little structured programme and lack of motivation (Elsen, 1998). In the Dutch Universities of Applied Sciences the average drop-out rate is 8% of the total number of students, of which 40% in the first year or just after the first year. Of this 8% students dropping-out, 15% indicate that the way the education is given and organized is the decisive reason to discontinue studying. Other and more important reasons are personal reasons (22%), lack of motivation (16%) and wrong programme chosen (15%) (Wartenbergh & Broek van den, 2008). Analysis of the situation in The Hague University of Applied Sciences, the Netherlands, shows that students who drop out in the first year are significantly less academically integrated than students who continue their study after the first year. The learning environment fails to challenge and inspire the students and fails to address the most important question during the first year: Did I make the right choice? (Zijlstra, 2011).

These statistics make clear that dropping-out as a result of not-adapting to the new educational culture is rare for native students and there is no reason to assume that this is different for internationally mobile students. This supports the conclusion of Gu et al. that most international students manage to change, adapt, develop and achieve, although his data does not allow statistical conclusions (Gu et al., 2010). But it is not sure whether internationally mobile students adapt themselves to the new educational culture at the host institute in such a way that this results in an academic development that is comparable to the academic development of native students. This gap will be filled in this thesis by measuring the academic development of internationally mobile student.

1.5 Measuring the academic development of internationally mobile students in another educational culture

This study measures the academic development of internationally mobile students when they transfer within Europe from a knowledge-oriented education at their home university into a competence based education at a Dutch University of Applied Sciences. The knowledge-oriented education is theoretical knowledge based and lecturer centred, offered in a discipline based curriculum. The competence based education is competence oriented and student centred in a task based curriculum.

Knowledge-oriented education focuses on the acquisition of theoretical knowledge. The learning activities of students are intended to translate information into knowledge and this knowledge is tested in written exams where students show their ability to repeat the information given in lectures and textbooks. Practical skills are not integrated with knowledge and are trained in separate skills labs. In a final assignment, resulting in a thesis, students integrate practice and knowledge for the first time in their academic career. The teaching is lecturer centred, knowledge based and usually discipline oriented but rarely interdisciplinary knowledge based. Assignments and group work may be given during the courses to develop theoretical knowledge. The curriculum is organized in discipline based courses and interdisciplinary courses are rarely offered.

Competence based education focuses on the development of competencies. At regular intervals students show their competencies in the accomplishment of real professional tasks in practice. The curriculum is professional task based. Courses are interdisciplinary and practice oriented, integrating the development of skills, attitude and conceptual knowledge. Student centred teaching methods with a variety of activating learning methods are used to develop knowledge, skills and attitudes that are shown in adequately accomplishing a professional task. In addition to this written exams are used to test the application of theoretical knowledge in practice (Cremers, Eggink, & Hoetink, 2005).

To measure the academic development of internationally mobile students at a Dutch university of Applied Sciences we need a valid instrument that is sensitive to measure the competence development of students in one year.

1.6 A specific instrument has been developed to measure the competence development of internationally mobile students

A specific instrument has been developed to measure competence development because such an instrument was not available at the start of this research.

Some earlier studies used an instrument to measure competence development of internationally mobile students. However, the study of Stronkorst (2005), mentioned in section 1.2, concerned the measurement of foreign language competence for English with the IELTS test (International English Language Testing System) which is more a knowledge test than a competence test. Also universities sometimes evaluate their international programmes by asking the international students to indicate their experiences in a questionnaire (McLeod & Wainwright, 2009) but do

not measure the competence development as a result of an international programme. Thus, what students actually learn remains opaque and also students find it difficult to explain what they have learned (Forsey, Broomhall, & Davis, 2012).

Obviously, in competence based education instruments are in use to measure competence level. Measuring competence level in formal educational programmes is done by observing the student when executing a professional task and the assessment of performance (Hager, 2004; Mulder, 2001). As this is time consuming and expensive, the measuring of the competence level is frequently done by assessing an individual portfolio of the students containing products of completed professional tasks with observations of supervisors or customers (Biemans et al., 2009). To further reduce costs, direct assessment of performance and indirect assessment of portfolios may be replaced with checklists of atomized tasks. In the course of time, every time when the student completes an atomized task the lecturer will tick this task on the list, and when all tasks are ticked, the student is considered to be competent at the given level (Klink van der, 2003).

In the research reported in this thesis, where the competence level of large groups of people in different countries are assessed, the assessment of competencies by means of observation when executing a professional task or assessing an individual portfolio, would not only be too labour intensive but also logistically not feasible in countries where competence based education and competence assessment is not known. Checklists of atomized tasks are very specific and discipline oriented and cannot be used in the research of this thesis to measure the competence level of students in different programmes in different countries.

The most obvious way to obtain the required information from large groups of people is a self-assessment questionnaire. There are conflicting views on the benefits and risks of positive biases in self-evaluation of competence but self-evaluation bias is relatively stable (Bouffard, Vezeau, Roy, & Lengelé, 2011). Allen & Van der Velden, discussing a number of problems surrounding the use of self-assessment instruments in skills surveys, conclude that a self-assessment instrument for competence can only give an approximation for the performance of individual dealing with a complex demand in various settings (Allen & Velden van der, 2003).

Self-assessment questionnaires for competence assessment are widely used on the labour market for HRM¹¹ and HRD¹² purposes. These questionnaires test the performance of employees at their own job level (Le Deist & Winterton, 2005). A similar type of questionnaire has been developed to test the competence development of participants in short-term training (Khaled, Gulikers, Oonk, Biemans, & Lans, 2011). Also this questionnaire measures a competence development that is independent of the level of the respondents. In both types of instruments, the instrument for HRM purposes and the instrument for competence development as a result of short-term training, all respondents answer the same questions and can obtain the same high scores irrespective of their job level or academic level. But the very reason to assess students in formal education is to assess whether or not students have reached a predefined academic level, as obtaining a degree depends on the proven academic level of the students. Therefore the two mentioned types of instruments are not suitable for measuring the competence development of internationally mobile students in formal education.

11 HRM: Human Resource Management

12 HRD: Human Resource Development

For this research a simple, cost-effective and reliable self-assessment type of instrument has been developed to measure the competence development of students. The instrument is used to measure the competence development of internationally mobile students in a one year programme of competence based education in the Netherlands and is used to analyse how these competencies affect the professional career.

1.7 The research needs to take into account issues of selectivity and causality.

It is not possible to look at competence development of internationally mobile students and their subsequent job careers after graduation without considering variables that may influence the international mobility or influence labour market success. Therefore we do not only measure the competence development but also educational, social and personal characteristics of the internationally mobile students that may influence the international mobility or labour market success. We measure competence levels and the same characteristics in the reference groups as well.

If mobile students differ from non-mobile students in certain background characteristics, these differences may lead to a difference in participating in international mobility. Few researchers have explored the factors that might influence the students' decision to study abroad. A higher parental education positively affects the decision to study abroad for woman, but not for men (C. R. González, Mesanza, & Mariel, 2011; Salisbury, Paulsen, & Pascarella, 2010). Mother's educational level is a significant variable predicting higher international mobility (Messer & Wolter, 2007). Students who are 'open to experience' have a significantly greater chance to study abroad compared to students who score less on this personality trait (Salisbury et al., 2010). There is a positive correlation between past experiences abroad and the decision to study abroad (Findlay, Stam, King, & Ruiz-Gelices, 2005; King & Ruiz-Gelices, 2003). Students from privileged classes more often decide to study abroad (Lörz & Krawietz, 2011). On the other hand there is a negative correlation of international student mobility with age (Messer & Wolter, 2007). Research about some other variables that may influence the students' decision to become internationally mobile give ambiguous results. One result indicates that women are studying abroad at a higher rate than men (Salisbury et al., 2010) while another study reports that there is no gender-related difference predicting which students are likely to opt for an exchange programme (Messer & Wolter, 2007). Some studies indicate that students with higher marks more often opt for a study abroad (C. R. González et al., 2011; Lörz & Krawietz, 2011) while other studies indicate that mobile students have slightly lower grades (Wiers-Jenssen, 2011).

Also in measuring the impact of competence development of international student mobility on professional career we must take into account other factors that affect the professional career. When estimating the effect of competence development on the job career, these other factors must be used as control variables.

Students with a study related work experience during higher education have a shorter job search duration compared to those who had no such experience (Schomburg & Teichler,

2006). Study related work experience also has a positive wage effect and may give a higher job satisfaction. Participation in voluntary organizations shortens the job search duration as well (Allen & Velden van der, 2011). Personal characteristics have an effect on job search duration (Messer & Wolter, 2007). Having a father with higher education shortens the job search period and also has a positive wage effect. The effect of gender on job search duration is less clear, as females have a longer job search period in some countries, while there is no difference between the sexes in other countries. Several studies report that females earn significantly lower wages. The relation between job search duration and study behaviour and between job search duration and study results (grades) is also less clear (Allen et al., 2011c). Time spent abroad during higher education has a significant shortening effect on the length of job search (Teichler & Janson, 2007), although other studies report that a diploma obtained abroad might be a disadvantage in finding a job (Brooks & Waters, 2009; Støren & Wiers-Jenssen, 2010). Individuals with high grades more often find a job that requires university education (Klaauw van der, Vuuren van, & Berkhout, 2004).

There are country specific effects on job careers. In one country there might be a strong positive effect from a certain factor, while in another country there is only a weak effect or no effect at all (Teichler, 2002). When considering wages, there are wage differences between European countries. There are also labour market differences between the member states of the European Union that influence entrance into the labour market (Saar, Unt, & Kogan, 2008; Velden van der & Wolbers, 2003). Finally, when comparing different cohorts of students, fluctuations in the economy will also have an impact on graduate's employability

Because the studies that are reported in this thesis measure the competence development as well as a number of control variables, it will be possible to make a statement whether competence development of internationally mobile students has an effect on their professional career. The pre-test and post-test measurements in the research groups and reference groups are other conditions that are fulfilled to allow conclusions about a possible causal relationship, although these will always be preliminary as we do not follow a strict experimental design.

1.8 Research questions

This thesis studies the question: what do international students learn at a Dutch University of Applied Sciences that they do not learn at their home university and how does this affect their later professional career? The following research questions will be addressed in this thesis:

1. *What is the competence development of international students in the final year of a competence based bachelor programme at a University of Applied Sciences?*
2. *How is the competence development of internationally mobile students in a competence based bachelor programme at a University of Applied Sciences compared to the competence development of their peers who stay at the home university in a knowledge based curriculum?*

3. *What are the benefits on the labour market of having studied in a competence based bachelor programme at a University of Applied Sciences?*
4. *How do graduates use the competencies that they have developed in a competence based bachelor programme in their professional work?*

1.9 Research design

Groups of internationally mobile students and graduates of the CAH-Villem University of Applied Sciences in Dronen¹³ serve as case-studies to answer the research questions.

Figure 1.1 Research design

We determine the competence development for students who are internationally mobile from knowledge based education in Latvia, Hungary, Poland and France into competence based education at a University of Applied Sciences in the Netherlands. These students start their studies in the Netherlands in September and return to their home country in July next year where they will continue their studies. During the year these students complete the final year of the bachelor programme at the University of Applied Sciences and receive a bachelor diploma when they pass all the exams and have earned 60 ECTS¹⁴ credits.¹⁵ The students have little time to adapt to the new educational method as the first assessments are done within 14 weeks after the start of the programme. We determine the competence development of this group of students by measuring the competence level of the students at the start of the programme and at the end of the programme (pre-test/post-test). At the same time the competence development of their peers who stayed at their home university in the respective four countries and who had no change in educational

¹³ Till June 2012: CAH University of Applied Sciences

¹⁴ ECTS: European Credit Transfer and Accumulation System is a system of comparing the study attainment within Higher Education in Europe. One academic year corresponds with 60 ECTS credits.

¹⁵ The French students officially complete the programme a few months later with 90 ECTS credits as they follow a French "Agricadre" (Bac+4) programme parallel to the Dutch programme.

method will be determined, to allow a conclusion on a possible relationship between competence development and the study abroad.

We determine the labour market effects of international student mobility by measuring competence levels and job variables for graduates who completed their studies at a University of Applied Sciences in the Netherlands and their peers who did not go abroad.

1.10 Structure of the thesis

The structure of this thesis is as follows. Chapter 2 provides the theoretical framework on the concept of competence. Chapter 3 describes the development and validation of the instrument to measure competence development. Chapter 4 reports on the first study that was conducted to answer the research questions 1 and 2. The first study measures the competence development of international students at a University of Applied Sciences in the Netherlands as well as the competence development of peer students in Latvia, Hungary, Poland and France who did not go abroad. Chapter 5 reports the second study among graduates on the relationship between having studied in a competence based educational programme at a Dutch University of Applied Sciences and the labour market benefits, compared with their peers who studied abroad elsewhere or who did not study abroad. The results of this study answer the research questions 3 and 4. Chapter 6 gives a general discussion and the conclusions of this thesis.

Chapter 2

Concept of competence and competence levels

2.1 Introduction

This chapter provides the theoretical basis for an operational definition of the concept of competence. We need a definition of the concept of competence to develop an instrument for measuring the competence development of internationally mobile students who come to a Dutch University of Applied Sciences in a competence based educational system. Competence based education did not appear out of the blue, but is the result of a process of bridging the gap between the requirements of the world of work and education. This relationship between education and the world of work is the basis of defining the concept of competence and measuring the competence development of the students. We will therefore first describe the relationship and the co-operation between the Universities of Applied Sciences and the world of work and how this resulted into competence based education (section 2.2). Section 2.3 presents different learning theories and related concepts of competence. Section 2.4 gives the definition of competence that will be used as the basis to develop an instrument to measure competence development of students. Section 2.5 elaborates on competence levels and explains how competence levels will be used in the measurement instrument. Finally, section 2.6 gives the conclusions of this chapter on which the development of the measurement instrument is based.

2.2 Why competence based education?

Competence based education is rooted in the relationship between the world of work and education. Traditionally Universities of Applied Sciences¹⁶ have close links with the world of work (Bemmel van, 2006). The Universities of Applied Sciences originate from the (higher) professional education that was initiated by the private sector in the Netherlands in the 19th century to provide (high) skilled professionals for the labour market. Educational institutes automatically picked up the needs on the labour market and translated them into the curriculum. To date the translation of labour market needs into the curriculum is common practice at the Universities of Applied Sciences (Kooij, 2008). The relationship between Universities of Applied Sciences and labour market exists at national level, at institutional level and at lecturer level (Bemmel van, 2006). Therefore it is not surprising that in the past century the changes in the world of work had consequences for the higher professional education at the Universities of Applied Sciences.

In the first half of the 20th century the labour market, the professional occupations and the professional tasks hardly changed. It was possible for people to go to school when young and acquire enough knowledge and skills that would last for being successful in their work for the rest of their life. Consequently, curriculum changes at the Universities of Applied Sciences were rare (Strijker, 2008).

16 The Universities of Applied Sciences have their roots in the 19th century. Since 1919 this type of education fell under the Vocational Education Act, and was recognized in 1963 as Higher Education within the Secondary Education Act. With the Higher Vocational Education Act of 1986 they became a separate educational sector and “Institutes of Higher Education” (Bemmel van, 2006). Since 2008 the official name is “University of Applied Sciences” (Ministry of Education, 2008b) which is used in this thesis, also for her predecessors.

Around 1950 technical innovations resulted in rapid changes in professional tasks within the occupations in business and industry and consequently in changes in the demand on the labour market. The Universities of Applied Sciences responded to these changes and introduced new subjects and new topics into the curriculum (Kooij, 2008; Manders, Dijkhuizen, & Swierstra, 1984).

Due to the digital revolution of the 1980's professional occupations and professional tasks change even more quickly and skills and knowledge learned at school or university are now rapidly out-dated (Borghans & Weel ter, 2000; Hasan, 1994; Johnson, Levine, Smith, & Stone, 2010). Employers demand that workers continuously learn and use the latest technologies. Consequently, the Universities of Applied Sciences introduced new student centred didactical methods to prepare students for a life-long-learning (Klink van der, Boon, & Schlusmans, 2007).

The shift from an industrial society with fixed objects, machines and materials to a knowledge society (Onderwijsraad, 2003) with changing ideas, concepts and insights, requires a high degree of flexibility in work (Allen & Velden van der 2012). Since the 1990's professions have become more complex and boundaries between professions have faded away (Le Deist, 2009; Markowitsch & Plaimauer, 2009). At the same time, people started changing jobs frequently and 'life-time' employment has become less common (Humburg & Velden van der 2012). These developments imply that the traditional technical knowledge and skills learned at the Universities of Applied Sciences, are not enough to deal with the increasing complexity of professional jobs (Klink van der et al., 2007) and inadequate for graduates to remain valuable and attractive professionals for the different employers. In the world of work the lifelong learning of workers is no longer focussed on the workers' learning of new knowledge and skills only, but above all on developing overarching 'competencies' (Markowitsch & Plaimauer, 2009; Salganik, 2001).

The Universities of Applied Sciences bridged the gap between education and the world of work again and introduced 'competence based education', an educational approach to deliver graduates who are prepared for multiple tasks and roles, are flexible on the labour market and are prepared for a lifelong personal development (Biemans, Nieuwenhuis, Poell, Mulder, & Wesselink, 2004; Merriënboer van, Klink van der, & Hendriks, 2002).

The development from a knowledge based curriculum towards a competence based curriculum is a process in which educational institutes develop new learning outcomes (competencies), organise the curriculum into new educational units (task based) and change their teaching approach from subject centred into student centred. Some educational institutes have been using teaching methods (like problem based, self-directed, participatory and project-based learning) that can be considered as precursors of competence based education and have created a seedbed for developing a competence based education from that starting point. It is not clear at what stage of this process of transformation the educational institutes may claim that they provide competence-based education (Biemans et al., 2004). Van der Klink and Boon (2003) describe four different situations in which educational programmes call their programmes competence based: (1) "window dressing", (2) programmes with innovations in teaching methods, (3) strengthened relationship with the professional field (like teacher training, curriculum design together with representatives from the labour market) (4) programmes whereby new teaching methods are integrated with the needs of the labour market. Therefore the term competence-based education needs clarification. Wesselink et al. (2010) offer a more detailed and validated framework for

evaluating a curriculum for the degree of being competence based. They present a framework with 8 principles:

- (1) The competencies that are the basis for the study programme are defined.
- (2) Professional core problems are the organising unit for (re)designing the curriculum (learning and assessment).
- (3) Competence development of students is assessed before, during and after the learning process.
- (4) Learning activities take place in various authentic situations.
- (5) In learning and assessment processes, knowledge, skills and attitudes are integrated.
- (6) Self-responsibility and (self-)reflection of students are stimulated.
- (7) Teachers, both in school and in practice, balance their roles as coaches and experts.
- (8) A basis is established for a lifelong learning attitude among students.

Every principle can be scored in four stages from (1) not competence-based through (2) starting to be competence-based and (3) partially competence-based to (4) completely competence-based. The framework indicates well that curriculum development is an on-going process. The complete framework is presented in table A.2.1 in the annex (Wesselink, Biemans, Mulder, & Elsen van den, 2007).

The Universities of Applied Sciences introduced the competence based education voluntarily. Also the Dutch Government sees the need for competence based education as a link between educational programmes and the world of work, and therefore competence based education is heavily weighted in accreditation procedures. Accreditation is a prerequisite for government funding, and as such competence based education at the Universities of Applied Sciences is not completely voluntarily. Now there is an important issue that should not be overlooked. The introduction of competence based education went along with the introduction of a large number of definitions of competencies. When measuring competence development, it must be clear what is called 'competence', otherwise it is not clear what is being measured. Therefore, the next section gives an operational definition of the concept of competence that we use to measure competence development in this study.

2.3 The concept of competence

There is not one overarching concept of competence.^{17, 18} A number of scholars, like Le Deist et al. (2005), Merriënboer et al. (2002), Mulder et al. (2007) provide an overview of different ways the term competence is used. The number of definitions is probably countless (Markowsch & Plaimauer, 2009). Several authors say that the users have to make clear why they are using a specific definition of competence and what problem they are addressing in what context (Eraut, 1998; Mulder, Weigel, & Collins, 2007; Stoof, Martens, Merriënboer van, & Bastiaens, 2002).

17 There is a discussion whether there is a difference between the terms competence and competency (Brockmann, Clarke, & Winch, 2009; Eraut, 1998; Klink van der & Boon, 2003; Le Deist & Winterton, 2005; Merriënboer van et al., 2002; Mulder, 2007). This thesis uses the term 'competence' and the plural 'competencies'. The term competency and competences is only used when it is in the title of references.

18 Competencies can be present in persons and in organisations (Mulder, 2001; Weinert, 2001). Competencies in this study are personal competencies.

This thesis studies the question what students learn at a Dutch University of Applied Sciences and how this affects the start of their professional career. Therefore we need a workable definition of competence that does justice to the learnability of competencies and does justice to the relationship between education and the world of work. As the term competence was first used in the world of work and education responded with competence based programmes to prepare the students for their professional work, we first discuss the main concepts of competence used in the world of work and then the main concepts of competence used in education.

In the world of work concepts of competence are used in different contexts with different objectives like for personnel selection, for job performance and for promotion (Merriënboer van et al., 2002). Competence is always related to success in work. Success in work applies to two situations. The first situation in which a person is competent or not competent and the second situation where being competent means “done more than adequately, but not excellent” (Eraut, 1998). Asking people what they consider to be successful will therefore generate a lot of diffuse answers (Biemans et al., 2009; Mulder, 2007). What is considered as being successful also differs from one occupation, environment (Mulder, 2001) and personal belief to another (Biemans et al., 2009), between types of industries (Paulson, 2001) and there are also differences between countries (Brockmann et al., 2009; Weigel, Mulder, & Collins, 2007).

In the world of work there are three dominant approaches which began relatively independently from each other, first in the USA, then in the UK and more recently on the continent of Europe (Le Deist & Winterton, 2005).

In the USA competence was introduced as characteristics of persons that are associated with successful job performance (McClelland, 1998; White, 1959) and to explain the difference between superior and average performers (Spencer & Spencer, 1993). Competencies in the USA are used in different contexts for HRM and HRD purposes like personnel selection, evaluation of job performance and promotion decisions (Merriënboer van et al., 2002). Although the performance approach remains dominant, nowadays the term competence is used in a much broader way, including knowledge, skills and attitudes (Gangani, McLean, & Braden, 2006).

In the UK the term competence is connected to the ability to perform according to occupational standards. The occupational standards are broken down into narrow sets of tasks, each with performance criteria for assessing job performance. In the English definition responsibility is not part of competence but considered as a managerial aspect of being supervised or supervising others (Brockmann et al., 2009; Merriënboer van et al., 2002). The vocational qualifications (the National Vocational Qualifications, NVQ) emphasize the ability to perform according to certain occupational standards. In the nineties more dimensions of competence were introduced (cognitive competence, functional competence, personal competence, ethical competence and meta-competence (Cheetham & Chivers, 1996, 1998).

The French concept of competence originates from a need to assess and pay individuals on their performance rather than on their qualifications and competence-based pay was introduced in industry. The French concept of competence includes knowledge (*compétences théoriques*), skills (*compétences pratiques*) and behavior (*compétences sociales et comportementales*) (Le Deist, 2009). In Germany the term competence refers to accomplish complete professional tasks with the intrinsic element of taking responsibility for the work (occupational capability). The German term competence is a more holistic approach with the overarching *Handlungskompetenz* and

includes knowledge (*Sachkomtenz*), skills (*Fachkompetenz*), social aspects (*Sozialkompetenz*), personality (*Personalkompetenz*), procedural knowledge (*Methodenkompetenz*) and learning abilities (*Lernkompetenz*) (Brockmann et al., 2009; Le Deist & Winterton, 2005).

Summarizing, we can conclude that the term competence as used in the world of work is a somewhat global concept, but in one way or another always used to describe success in work. In the countries mentioned here, the concept of competence has become a multidimensional concept and includes aspects of knowledge, skills, attitude and personality.

Education responded to the needs of the world of work. As competencies became important in the world of work, education started to describe the concept of competence as well. It will not be surprising that also in education many concepts are used, with differences between countries, differences between educational institutes within a country, or between teachers within an educational institute. The many attempts in educational research to define and select competencies for educational programmes resulted in a variety of concepts of competence (European Union, 2009b; Markowitsch & Plaimauer, 2009; Weinert, 2001). We want to use a concept of competence that does justice to the learnability of competence and therefore the educational concept of competence must be based on an accepted learning theory. There are three main learning theories to conceptualize competence: the behaviourist, the cognitive and the social constructive learning theory (Ertmer & Newby, 1993; Mulder et al., 2007). All of these learning theories lead to a particular concept of competence.

In the **behaviourist learning theory**, learning is the change of observable behaviour as a proper response on a stimulus (Ertmer & Newby, 1993). This learning theory stems from the beginning of the 20th century and is based on the connection between a stimulus and a response. The connection between a stimulus and a response is a reflex that becomes stronger through exercising (conditioning). In the classical conditioning theory, developed by Pavlov and Watson, learning is based on the association of a stimulus that normally not causes a particular response with a stimulus that does cause this response. Therefore teachers will associate positive events with learning. Opposite the theory of classical conditioning is the theory of operant conditioning, developed by Skinner and Thorndike. According to the theory of operant conditioning behaviour is controlled by its consequences, i.e. behaviour that is followed by positive outcomes is strengthened and behaviour that is followed by negative outcomes is suppressed. Teachers will use reinforcement and punishment to increase or decrease the likelihood that a behaviour will be repeated (De Klerk, 1979).

The behaviourist learning theory considers the learner as a black box that only requires conditioning and eliminates references to the mental (Hager, 2004). Education that is based on the behaviourist learning theory promotes the association of stimuli with responses within the learners. Educational institutes will design the curriculum in such a way that learning occurs in small steps and the 'drill and practice' method mediates a change in behaviour of the learning person. In line with this is the behaviourist management approach of Taylor in the 1920's. He defined lists with atomised tasks based on a thorough job analysis. He subsequently described minutely specified behaviours associated with the completion of each small task, resulting in an efficient production process.

The *behaviourist conceptualisation* of competencies is based on the approach by Taylor. Detailed competencies belong to a certain professional field, are job and task specific and not transferable from one task to another. This concept of competence was developed in the United States in the 1970s as an HRM and HRD device (Gangani et al., 2006). In education, a competence based curriculum according to this concept shows a strong relationship between professional task and competence (Biemans et al., 2004). The curriculum often goes along with modularisation and assessment of observable behaviour of atomized tasks using long checklists (Hager, 2004; Wesselink, 2010).

The behaviourist concept of competence has some disadvantages. This concept of competence denies the comprehensive aspect of professional tasks in the present labour market (Markowitsch, Luomi-Messerer, Becker, & Spöttl, 2008). There is no guarantee that someone who is able to complete atomised tasks can accomplish a complete professional task in practice (Lans, Bergevoet, Mulder, & Woerkom van, 2005). Therefore, an educational programme following this concept does not result in satisfactory competence development for the learner to be successful on the labour market. The behaviourist concept of competence does also not recognise the transferability of capabilities from accomplishing one task to accomplishing another task (Brockmann et al., 2009). This makes it impossible to appreciate competencies when somebody gets other tasks or another job.

In competence based education following the behaviourist concept of competence every task is a task on its own and assessed separately and will therefore not prepare students for a changing world of work (Merriënboer van et al., 2002).

In the **cognitive learning theory**, learning is the successful processing of information and permanent storage in the memory in such a way that this information can be retrieved when necessary. The cognitive learning theory emerged in the 1950's and important contributors are Piaget, Ausubel, Bruner and Cagné (De Klerk, 1979). The cognitive learning theory is a response to the behaviourist theory (Ertmer & Newby, 1993). The contributors to the cognitive learning theory argued that operant conditioning simplifies how people (and other organisms) interact with their environment and believed that you cannot dismiss cognitive processes, as they believed the operant approach seems to do. Besides behaviours, the cognitive learning theory recognizes cognitive abilities, cognitive emotions, cognitive strategies and cognitive skills. These include all of an individual's mental resources required to master a task and to acquire declarative and procedural knowledge. Contrary to the 'black box' of the behaviourism, the cognitive learning theory considers man as a processor of information. Receiving, storing, remembering and retrieving information are the result of processing the information successfully. Educational programmes following the cognitive learning theory are based on the student's existing knowledge for the storage of new information (meaningful learning, learning by doing). These programmes use methods like expository teaching (De Klerk, 1979). Educational programmes following the cognitive learning theory will assess the students on retrieving information previously stored in the memory.

The *cognitive conceptualisation* of competence considers competencies as cognitive abilities and the disadvantage of the cognitive concept of competence is that social aspects are not included (Mulder et al., 2007; Weinert, 2001).

In the **social-constructive learning theory**, learning is a subjective and collective holistic process of constructing knowledge. Knowledge is constructed only from information which is meaningful within the social context knowledge and retained in the memory.

The social-constructive learning theory is a reaction in the 1990's to the cognitive learning theory although it can also be considered as a branch of cognitivism (Ertmer & Newby, 1993). It is based on the theory of Vygotsky in the 1920's that learning is not a process that is isolated from the social and cultural environment. Where the cognitivist learning theory considers knowledge as stored information describing one universal reality with meaning that is independent of us, the constructivist learning theory believes that knowledge is the result of individual constructions of reality, mediated by cultural determined symbols (like language) and that there is not one objective meaning. In the constructive learning theory each experience and each piece of information contributes to the continual creation of rules to explain the observations made (Duffy & Jonasson, 1992). In Vygotsky's social-constructive learning theory the meaningfulness of information not only depends on what the learner himself thinks is meaningful, but also what value others attach to the information while also motivation and general values influence the construction of the reality. Thus, the knowledge about the real world practice is not an objective fact but a by subjects, who are part of a social community, constructed artefact. Knowledge is holistic, rather than atomistic or cognitive. Therefore the social-constructive learning theory is also known as the holistic learning theory and offers good opportunities for a holistic educational approach. Key words for educational institutes are: co-operative learning and constructive learning in a meaningful environment.

The *social-constructive or holistic conceptualisation of competence* describes the qualities that might be expected from a competent person in a specific context in practice (Brockmann et al., 2009; Le Deist & Winterton, 2005). Competence is the capability to successfully perform in work and society, based on a combination of interrelated knowledge, skills, attitudes, motivation, emotions, values and ethics (Cheetham & Chivers, 1996; Le Deist & Winterton, 2005). Knowledge and skills appear in all definitions, while the other aspects are often mentioned in overlapping ways. The proportion of these other aspects may differ per competence. Sometimes these aspects are described as being constituents of competencies, and sometimes competencies describe the use of these abilities and capabilities.

In educational programmes the holistic concept of competence allows a limited set of core competencies and also allows knowledge components (Mulder et al., 2007). Curriculum development is not based on disciplines but on the professional practice. In learning and assessment the integration of knowledge, skills, attitudes and other personal attributes must be realised (Merriënboer van et al., 2002).

The holistic concept of competence avoids disintegration of capabilities and offers good opportunities to describe the qualities that might be expected from a competent person in practise. As such the holistic concept of competence also offers better opportunities for aligning educational provision (Le Deist & Winterton, 2005).

Although often used in educational programmes, the **generic conceptualization** of competence is not based on a learning theory, but on a more pragmatic approach. It is an independent development as a response to the behaviourist concept of competence to overcome the need of detailed lists of behaviours (Mulder, 2001). The generic concept of competence originates from the HRM goal to

distinguish between average and excellent performance. The generic concept of competence is used in the Tuning Project to develop a common methodology within the European Framework of Qualifications in the context of the Bologna Process (J. González & Wagenaar, 2005).

The *generic concept of competence* defines competencies broadly and combines personal qualities (like critical thinking and problem solving) with personality traits (like extraversion), but norms and values are usually not included in this concept. The fact that professional tasks are situated in a certain context is not part of the generic concept of competence (Velde, 1999) and therefore generic competencies do not discriminate between jobs and are as such transferable from one task to another and from one job to another (Eraut, 2003).

The generic concept of competence has some disadvantages. Because the generic concept of competence is not based on a learning theory there are doubts about the learnability of these competencies and there might be lack of evidence that generic competencies exist (Velde, 1999). The lack of a relationship between the generic concept of competence with concrete professional situations makes it difficult to assess students in professional situations and to develop a curriculum that prepares students to become professionals.

However, one aspect of the generic concept of competence is an interesting one from an educational point of view. The concept recognizes the complexity of professional tasks and uses constellations of (broadly defined) competencies that are needed to successfully complete a full professional task in all facets (Rychen & Salganik, 2003).

In conclusion, considering the concept of competence from different perspectives, the world of work and the world of education meet each other in the holistic approach to competence. Therefore the holistic concept of competence is useful to study the competence development of students and to study the relationship between education and the labour market for graduates of a University of Applied Sciences.

2.4 Definition of competence

The definition of competence that will be used in this thesis is in accordance with the holistic concept and is in line with the definitions and characteristics of competencies given by others (Biemans et al., 2004; Brockmann et al., 2009; Eraut, 1998; European Union, 2006; Hoobroeckx & Haak, 2002; Klink van der & Boon, 2003; Klink van der et al., 2007; Le Deist & Winterton, 2005; Man, Lau, & Chan, 2002; Merriënboer van et al., 2002; Mulder, 2007; Mulder, Gulikers, Biemans, & Wesselink, 2009) and reads:

Competence is the personal capability to mobilize and use required knowledge, skills, motivation and values to accomplish a task in a specific context.

This definition implies that:

- (1) Competence is a separate capability and not the sum of a number of underlying constituents.
- (2) Knowledge, skills, motivation and values are independent attributes of people.
- (3) A competence is related to a task.

The definition of competence includes:

- (1) Task analysis: the identification and assessment of the professional task and the context, that is the awareness what knowledge, skills, motivation and values are necessary to successfully accomplish this professional task in this context.
- (2) Self-knowledge: awareness about the available knowledge and skills within the person.
- (3) Situated sensitivity: awareness how to modify, adapt the knowledge, skills etc. for this specific professional task.

In different situations the capability ‘competence’ will give other results of accomplishing a task.

A competence is the capability to direct the process of task recognition, task assessment, mobilization and adaptation to the specific situation of personal attributes (knowledge, skills, motivation and values). During the execution of the professional task, the competence remains “active” and continues directing the process of accomplishing the professional task until the desired result is achieved.

A full professional task is complex and consists of a number of interrelated elements. Every element requires a process of mobilizing and adapting specific knowledge, skills, motivation and values. So, every element will require a separate competence to direct this process. To successfully complete the full professional task, consisting of a number of elements, several competencies are needed. Rychen & Salganik call this “constellations of competencies” (Rychen & Salganik, 2003).

The number of competencies that are needed to accomplish a professional task depends on the level of detail needed to distinguish competencies. A detailed description of a competence, like in the behaviourist tradition, relates a competence to one specific professional task in a specific professional situation and will result in long lists of competencies that a professional needs to master. A broad description of competence, like in the holistic (and generic) tradition, relates a competence to a general element of professional tasks in varying conditions. Professional tasks will have a number of broadly described competencies in common and a limited number of competencies is adequate to accomplish all professional tasks as a professional.

Example:

Detailed: To write an advisory report for a farmer to improve the nutrition of the young stock.

Broad: To communicate.

There are two reasons to prefer broadly defined competencies in formal education preparing students for the labour market. The first reason is that students only need to develop a limited number of competencies that allows competence assessment at regular intervals in increasingly complex professional tasks which gives insight in the competence development of the student. The second reason is that broadly defined competencies are transferable from one professional task and context to another and remain powerful in the future when tasks and contexts change on the labour market.

Figure 2.1 presents the concept of competence that we use in our study. The assignment to accomplish a (grey coloured) professional task initiates the competencies A, B and C to become

active. The competencies will recognize the elements within the professional task. Every competence will take care of an element and will direct the mobilization of what is needed in terms of knowledge, skills, motivation and values. In figure 2.1 the competence A mobilizes a selection of the grey coloured knowledge, skills, motivation and values. The result will be that an element (part of the professional task) is accomplished. In this example three competencies (A, B, C) are needed to accomplish the full professional task successfully. Every competence is the 'conductor' who selects and mobilizes the required knowledge, skills, motivation and values, to accomplish elements of the professional task. When all competencies have fulfilled their role, the professional task is accomplished successfully.

Figure 2.1 Competence as capability to mobilize and use knowledge, skills, motivation and values.

There is a balance between various competencies to accomplish the professional task. The contribution of each of the competencies will be more or less important depending on the type of professional task, the context and the phase of executing this task. Individual professionals will use personal routes to reach a successful performance level and will have preferences for the use of certain competencies depending on their knowledge, skills, motivation and values.

For this thesis it is important to have established that competence development is a result of learning activities, which means that competence can be acquired and further developed (Grollmann, 2008; Hager, 2004; Korthagen & Lagerwerf, 2008; Man et al., 2002).

Competence learning is the process of regularly exposing the learner to a professional task that requires mobilizing and using personal attributes like knowledge, skills, motivation and values to accomplish this task. This presumes that somebody has developed these personal attributes. Of these personal attributes knowledge and skills can be developed easiest while motivation and values are the most difficult to change or develop in educational programmes (Maurer, Wrenn, Pierce, Tross, & Collins, 2003).

Knowing that competence is learnable and can be developed implies that a person can become competent to accomplish professional tasks by formal learning and also through informal learning (experience as a professional throughout a lifetime). This implies that a person can become more competent in accomplishing professional tasks than he was before which means that competence levels exist. The next section describes how competence levels can be described.

2.5 Competence levels

The competence level of a person cannot be observed directly but is expressed when the person accomplishes a professional task in a specific situation. That implies that describing the competence level of a person equals describing the level of accomplishing a professional task. Two aspects determine the level of accomplishing a professional task: the complexity level of the professional task and the expertise level of the person. The complexity level of the task describes the absolute competence level while expertise is always a relative dimension (Markowitsch, et al., 2008). Figure 2 illustrates the competence levels. In this figure three horizontal lines represent three task complexity levels. On every complexity level we can distinguish expertise levels as a result of variation in the quality of the process and/or product. The oblique lines represent the expertise levels (novice to expert).

Figure 2.2 Competence level is a combination of complexity level of the task and the expertise level of the person.

Someone who accomplishes a more complex task (i.e. higher level task) is more competent than someone who can only accomplish a less complex task. So, if the complexity of the professional task is described, the competence level of the person successfully accomplishing this task is described as well. Describing the complexity level of a professional task requires a set of objective criteria of complexity. We use the 4Cyourway language to describe the complexity of a task (De Jong & De Jong, 2008). Somebody who is competent at a certain complexity level, i.e. accomplishes a task successfully can become more competent by learning to accomplish a more complex task.

The expertise level is the variation that exists in accomplishing a task at a certain complexity level and describes why some people perform better at a given complexity level than others. Two aspects determine this variation in performance: the process and the result. The process is the total of all mental and physical activities when accomplishing a task. Someone who easily completes a task at a given level of complexity is more competent than someone who finds this task difficult (Dreyfus & Dreyfus, 1980). Assessing the process of accomplishing a professional task requires observation of the professional while accomplishing the task and/or a self-assessment of the experienced easiness or experienced difficulty when executing a task at a certain level of complexity. The result of accomplishing a task can be of a superior quality at the one end to just satisfactory quality at the other end. Somebody who delivers a result of superior quality is more competent than somebody who delivers a just satisfactory result on the same professional task. Assessing the quality of the result of accomplishing a professional task requires quality descriptions of the result. In education it is well known that some students perform just satisfactory at the level of the predefined performance descriptors and others perform at an excellent level. The variation is in line with students' motivation and unique learning history (experience) (Hager, 2004).

The Dreyfus model describes expertise levels (novice, beginner, competent, proficient and expert) within a certain level of task complexity. Although the Dreyfus model is rather confusing as it uses the term competent as one of the five stages of competence development, it is used fairly widely to provide a means of assessing and supporting progress in the development of skills or competencies, and to provide a definition of 'acceptable level' for the assessment of competence or capability (Lester, 2005).

The Dreyfus model describes competence growth as the result of experience and contextualised knowledge (Markowitsch et al., 2008). Experience enables professionals to execute a professional task more efficiently compared to beginners. Contextualised knowledge makes the task easier to accomplish for insiders than for outsiders (Rauner, 2007). More experience and more situated knowledge enable professionals to obtain greater satisfaction with their clients compared to beginners and professionals without this experience and situated knowledge. In other words, as workers frame their work, the attributes used in performing that work are internally related to their experiences of the specific work situation (Benner, 1982; Eraut, 1998; Sandberg, 2000). A better product can also be the result of higher motivation (Sandberg, 2000).

Somebody who is an expert in accomplishing a task at a less complex level is not necessarily a novice at a more complex level. Before accomplishing a task at a higher level of complexity, it might be necessary that the person concerned develops other personal attributes like knowledge and skills, as well. In figure 2.2 this is expressed by small gaps between the expertise level of a complexity level and the novice level of the next complexity level. A similar situation applies to a task in a new context. To complete the same task in a new context the person has to acquire contextualized knowledge, although the competence (the capability to mobilize personal attributes like knowledge and skills to accomplish the task) is already present at this complexity level. Of course, it is also possible that somebody has enough other personal attributes like knowledge and skills, to be competent at a higher complexity level, as a novice or at a higher expertise level.

2.6 Conclusions

The concept of competence is closely linked to accomplishing professional tasks. Therefore an instrument to measure competence development of students has to measure whether students have accomplished professional tasks.

To assure that competencies can be developed, the definition of competence is based on an accepted learning theory. The holistic learning theory is used to arrive at a holistic definition of competence. The basic assumption of the holistic definition is that knowledge, skills, motivation and values are integrated to accomplish a professional task. The holistic aspect of this definition of competence implies that the instrument has to measure knowledge, skills, motivation and values in an integrated way in relation to accomplishing a professional task.

Competencies in the holistic definition are transferable between professional tasks. For the instrument this implies that it should measure whether students have used the competencies in accomplishing different professional tasks.

Noticing that professional tasks are always clusters of identifiable elements, led to the idea of constellations of competencies that are necessary to accomplish a full professional task. These ‘constellations’ vary with the task and the context in which the task is executed (Murray, Clermont van, & Binkley, 2005; Rychen & Salganik, 2003). This means that the instrument measures the use of competencies in the accomplishment of identifiable elements of tasks (or sub-task), provided that these elements (or sub-task), are part of realistic professional tasks.

Competence levels can be described in two ways: a complexity level and an expertise level. The instrument will measure the complexity level of competence by measuring whether students have accomplished a professional task at a pre-set level. We describe the expertise level of competence as the process of executing the professional tasks and the quality of the result. The instrument measures the expertise level by measuring how the students experienced the easiness or difficulty when accomplishing this professional task.

Chapter 3 describes the development and validation of the instrument based on the above mentioned conclusions.

Chapter 3

Development of an instrument to measure competence level of university students

3.1 Introduction

To measure the competence development of internationally mobile students at a University of Applied Sciences we need an instrument that is sensitive enough to measure the competence growth of students in a one year period. The instrument must also be applicable to measure the competence level of recent graduates.

The instrument should not only be valid and reliable but also be applicable in a large scale research. For this reason a simple, cost-effective and reliable self-assessment instrument has been developed to measure the competence level of students at the start and at the end of the last year of their bachelor programme as well as the competence level after graduation.

Section 3.2 underpins the procedure of developing the instrument. The instrument was developed in five steps. Step 1 the selection of competencies (section 3.3). Step 2 describing the items and response options (section 3.4). Step 3 validation by students (sections 3.5). Step 4 validation by experts (section 3.6 and 3.7). Step 5 the selection of items on the power to discriminate competence levels and the reliability of the instrument that is used in the research of this study (section 3.8).

3.2 Measuring competence level

Verifying competence development requires measuring of competence levels

Measuring competence development of students requires a first measurement of the competence level at the start of the time period of expected competence development and the second measurement at the end of this period. In this study the instrument should measure the competence level of international students at the beginning and at the end of the last year of a bachelor programme.

As mentioned in Chapter 2, competence levels cannot be measured directly because competencies cannot be directly observed but are expressed in the performance of a person when accomplishing a professional task in a specific situation (Hager, 2004; Mulder, 2001; Mulder et al., 2007).

The holistic definition of competence implies that the instrument will measure competence as a holistic capability to accomplish a professional task. Therefore an instrument to measure competence development of students has to measure whether students have accomplished professional tasks and will not measure the development of underlying constituents like knowledge, skills, motivation and values separately.¹⁹

19 It is possible to measure knowledge and skills independently, while the more hidden aspects (motivation and values) are also linked up with observable behaviour (Maurer et al., 2003) although there is discussion whether motivation and values can be observed objectively (Le Deist, 2009).

Measuring competence levels requires describing competence levels

In education, measuring the competence level of students at regular intervals gives evidence for competence development of the students assessed and ultimately whether or not they are entitled to receive a degree. Measuring competence levels implies describing competence levels. Chapter 2 explains that competence levels are described in two ways: the complexity level and the expertise level. The complexity level of competence is the complexity of the professional task that is accomplished and is also the minimum standard of the required result of accomplishing this task. The expertise level of competence is the process of executing the professional task and related to the quality of the result.

To describe complexity levels in agricultural education in the Netherlands the educational institutes developed an overarching system of competence language to describe complexity levels from the diploma level of pre-vocational secondary education (in Dutch: VMBO), through secondary vocational education (in Dutch: MBO) and bachelor degree at the University of Applied Sciences to master degree at the Research University (De Jong & De Jong, 2008). This reference system is called '4Cyourway' and uses 11 indicators to describe the complexity levels. At all complexity levels a description of every indicator is available. The '4Cyourway' uses scales that are comparable to the scales of the Occupational Information Network (O'NET) of the US Department of Labour/Employment and Training Administration. O'NET uses 7 levels with descriptions of tasks that are relevant for each level. To describe one task at a certain complexity level, '4Cyourway' combines several indicators. Combining several indicators to describe one complexity level is in line with the arguments of Hager (2004) who concludes that "the real world practice is holistic in that it often involves simultaneously a range of performance descriptors". The '4Cyourway' reference language is holistic, in the way that several aspects of the professional task can be described simultaneously.

The complexity level for a bachelor degree at Universities of Applied Sciences is determined by the requirements of industry and society for starting professionals and determined by the international standards in the European Higher Education Area, known as Dublin descriptors (Joint Quality Initiative informal group, 2004). From the level of bachelor degree a number of lower level tasks are constructed to assess the development of students during their studies. The bachelor and master levels described by the '4Cyourway' indicators are equivalent to the bachelor and master levels described by the Dublin descriptors.

To describe the expertise level of accomplishing a professional task we need a description of the quality of the process and a description of the result of accomplishing a task. There are no known standards for describing the expertise levels as they are very task specific.

Assessing the process is done by an expert who assesses the procedures followed to arrive at the result. The expert observes the execution of a professional task and uses the ORCER procedure (Observation, Recording, Classification, Evaluation and Reporting). The ORCER procedure is a subjective way to assess the quality of the process. Information about the process part of the task execution can also be collected by asking the person who executed a professional task about the perceived difficulty of executing the task as an indication of how experienced the respondent is.

The result of accomplishing a task is assessed in two ways. Firstly the result is based on standards that describe the expected level of the task (competent or not competent at a complexity level). These standards are comparable with the standards describing the complexity level and the 4Cyourway language can be used for this purpose as well. Next to this an expert assesses what is considered being a good result and what is considered as a satisfactory result. The expert will motivate the decision made. In education so called ‘rubrics’ may be used. Rubrics are task specific categories of what experts consider to be ‘satisfactory’, ‘good’ and ‘excellent’ and often also include a category ‘not competent’ (this last category overlaps with the description of the expected level of the task). Rubrics are the result of consultations between experts who reach consensus about the description of a category. As such, this inter-subjectivity becomes a more collective consensus.

Method of measuring competence levels in education

To measure the competence level of students in formal education the students demonstrate their competence level by accomplishing, at the required level of complexity, an authentic professional task that includes one or more critical job situations and dilemmas (Biemans et al., 2004; Biemans et al., 2009; Merriënboer van et al., 2002; Mulder et al., 2009).

The expertise level of competence is assessed by an expert (lecturer or an external supervisor) who observes the process of accomplishing the task or interviews the student afterwards about the perceived difficulty of accomplishing the task. The expert also assesses the quality of the result and underpins his decision. In education we usually give marks ranging from fail to excellent, to indicate how well the student accomplished a task.

Measuring competence levels of large groups of people in different countries

In the study reported in this thesis, where we assess the competence level of large groups of people in different countries, the assessment of competencies by means of observation when executing an authentic professional task, by means of simulations in a skills lab or by assessing an individual portfolio, would not only be too labour intensive and expensive but also logistically not feasible in countries where competence based education and competence assessment are unknown.

The most obvious way to obtain the required information from large groups of students is a self-assessment instrument that can be used to determine the competence level of the respondents. At the start of this study there was no such instrument available. Checklists of atomized tasks as used in education are programme specific and discipline oriented and could not be used in our study where we measured the competence level of students in different programmes in different countries. The questionnaires used in the world of work are not measuring complexity level (see section 1.6) and could therefore not be used for measuring competence development. However, the questionnaires used in the world of work assess a potential expertise level (*like: I can... do*) and after some rephrasing (*like: I have done..*) the format is of use to measure proven expertise level.

As no self-assessment instrument was available at the start of this study it was necessary to develop a new instrument to assess the competence levels of groups of international students.

Operationalization of competencies

For a self-assessment instrument the competencies were operationalized in two ways. The instrument had to measure the complexity level of competence by measuring whether students accomplished a professional task at a pre-set level and the instrument had to measure the expertise level of competence by measuring how the students accomplished this professional task.

With the instrument we measured the competence level of international students at the start and at the end of the last year of the bachelor programme and of their peers who stayed at the home university. We also used the instrument to measure competence levels of graduates on the labour market. Graduates who were internationally mobile or graduates who stayed home, may have obtained a master degree before entering the labour market. Therefore, the instrument had to distinguish three complexity levels: (1) the entrance level (E) of the final year of the bachelor programme, (2) the exit level of the final year of the bachelor programme (the bachelor level B) and (3) the master level (M). When we know the entrance level (E) and the exit level (B) of the final year of the bachelor programme, we can calculate the competence development in this year of study. When we know the competence level of graduates, we can calculate the competence development after bachelor graduation.

To indicate the complexity level of the task, we described the complexity level of the task with the 11 level indicators of the 4Cyourway reference language. We described a task in such a way that one level indicator is used for every task description. In this way there are a number of tasks describing one competence level. The respondents indicate whether or not they accomplished this task. This implied that the instrument measures whether students used the competencies in accomplishing different professional tasks. This is in line with the definition of competence that competencies are transferable between professional tasks. To describe the three levels, we used the descriptions of the indicators of the 4Cyourway reference system. Table 3.1 gives the general descriptions of the 11 indicators of the 4Cyourway reference system.

Table 3.1 *General description of 11 indicators of competence level of the 4Cyourway reference system*

Level indicator	General Description
1. Roles	The (simulated) function or position on the labour market
2. Responsibility	Responsible for own activities and activities of others; Make own decisions without permission of others
3. Independence	Risk taking; obligations to others;
4. Public	People involved in your activities (colleagues, customer, target groups, stakeholders)
5. Time span	Time period covered in the activities, analysis, planning
6. Work	Single tasks or multiple tasks; number of sort of tasks
7. Procedures	Standard; fixed; unknown; new; innovative
8. Knowledge + insight	Cognitive skills level
9. Ambiguity	Uncertainty; obscurity; dilemma; conflict
10. Change	Position in change process (none; initiate; coordinate)
11. Scope	How far reaching the activities are

4Cyourway has operationalized the indicators into level descriptions. Table A.3.1 in the annex gives the specific description for all 11 indicators at the three levels (Entry level, Bachelor level and Master level).

An example of operationalizing indicator number 4: Public	
The Entry level:	new target group within the own sector
The Bachelor level:	unfamiliar or expert target group; domestic or abroad
The Master level:	widely different public; unknown but expert target groups; laymen; domestic and abroad

As indicated before, the expertise level is the process of task execution and the quality of the result. An expert assessment of the process or product was not feasible as competence assessment of professional tasks were unknown in the students' home countries where the study was conducted. The only possibility to collect information about the expertise level of the task was asking the perceived difficulty of accomplishing a task.

3.3 Step 1: Selection of competencies

The University of Applied Sciences where we conducted our study, uses 10 competencies²⁰ to assess the students (for an overview see table 3.2). If the instrument included all 10 competencies it would have been too time consuming for the participants to complete the questionnaire. There was also no need to measure the levels of all competencies. The instrument had to measure the effect of one year competence based education in such a way that it measures competence development of students in that particular academic year. When the instrument includes those competencies where the highest effect is expected, the instrument would measure the clearest effect in terms of competence development. If we measure no competence development for these selected competencies, then it is reasonable to assume that we would not measure competence development for the other competencies as well.

The seven coordinators of the international courses and the team manager of the International Education Department ranked the competencies according to what extent they think international students develop these competencies in one year at the University of Applied Sciences. The competence that international students develop most got 1 point, the next 2 points etcetera until the competence that students develop least received 10 points. All ratings of competencies were averaged and ranked 1-10, with the competence with the lowest mean rate 1 and with the highest mean rate 10. The results are shown in table 3.2.

20 The "Great Eight Competencies" ('Leading and Deciding', 'Supporting and Cooperating', 'Interacting and Presenting', 'Analyzing and Interpreting', 'Creating and Conceptualizing', 'Organizing and Executing', 'Adopting and Coping', 'Enterprising and Performing' (Bartram, 2005) plus two additional competencies ('To appreciate the global perspective' and 'To endorse sustainable behaviour').

Table 3.2 *Ranking and mean rating of the competencies used at the University of Applied Sciences on the expected competence development of international students*

	Mean rate	Standard deviation
1. To cooperate	2.1	1.7
2. To organise	3.0	1.9
3. To present	3.5	2.2
4. To appreciate the global perspective	4.8	2.8
5. To self-direct	5.3	2.3
6. To show leadership capabilities	6.1	3.3
7. To enterprise	6.8	2.1
8. To innovate	6.9	2.2
9. To research	7.1	1.7
10. To endorse sustainable behaviour	9.0	1.3

There was one distinguishable group of three competencies with mean rates between 2.1 and 3.5 (to cooperate, to present and to organise), a second group of two competencies (to self-direct, to appreciate the global perspective) with mean rates from 4.8 to 5.3 and five competencies with mean rates above 6.0.

The first three competencies (to cooperate, to present and to organise) offered the best chance to measure competence development of international students. These three competencies are included in the instrument. We decided to also include the competence ‘to self-direct’ in the instrument as this receives much attention in the competence based learning method in the form of personal development planning. Although rated higher than ‘to self-direct’ the competence ‘to appreciate the global perspective’ is not included in the instrument with the argument that international mobile students will develop this competence anyway and probably mostly outside the educational programme.

3.4 Step 2: Description of the items and response options of the questionnaire

The items of the questionnaire instrument are descriptions of professional tasks or professional sub-tasks. Each item is a description of a professional (sub)task at one level that requires one specific competence to accomplish. Each item has one indicator to describe the level of the professional (sub)task. For the four selected competencies the instrument had to measure three competence levels (the entrance level E of the final year of the bachelor programme; the bachelor level B and the master level M) with 11 indicators. This meant developing at least $3 \cdot 4 \cdot 11 = 132$ items.

Description of the items

The description of the items was done in cooperation with a specialist in competence based learning and with two experienced senior lecturers who were actively involved in designing assessments for the University of Applied Sciences. A senior lecturer in languages reviewed the linguistic aspects of the items.

In the first place the description of the items was derived from competence assessments at the University of Applied Sciences. If these professional task descriptions were very context specific for the study programme, the formulation was adapted in a way that it was applicable to all students that completed the questionnaire (local students, international students and their peers at home) as well as graduates. As the professional task descriptions of the exams usually included more than one level indicator, the task descriptions are simplified with one level indicator. Wherever this did not result in one item for every indicator, for every competence at every level, new items were developed using the 4Cyourway framework.

An example of an existing assessment (Entry level)

'The student presents orally and in writing an advisory report about the investments in a riding school to entrepreneurs.'

We converted this item into a more general context that we used in questionnaire (competence: to present; indicator: public)

'I gave an oral presentation for stakeholders, some of whom I did not know before'.

Every professional (sub)task was formulated in the past simple tense, like 'I made/ did/ organised' so that the respondents had to verify whether they actually accomplished this task.

A total of 151 items with descriptions of (sub)tasks were developed. Table 3.3 gives the number of items per competence and per competence level. For some level indicators it was possible to describe more than one professional (sub)task and therefore there were more items than the minimum of 132.

Table 3.3 *Number of items per competence and per competence level.*

	Entry level*	Bachelor level	Master level	Total number
To organise	14	14	11	39
To present	13	12	11	36
To cooperate	11	11	13	36
To self-direct	13	13	15	44
Total number	51	50	50	151

* Entry level final year bachelor programme

These 151 items were validated by students (section 3.5) and experts (section 3.6). The valid items were sustained and the non-valid items were removed. To ensure that the items covered all indicators at three competence levels for four competencies, the development procedure was repeated to fill the gaps. Experts validated these new items as well (section 3.7).

Response options

The instrument measures the competence level of the respondent by (1) measuring the complexity level of accomplished professional tasks and by (2) measuring the expertise level of accomplishing this task. For measuring the complexity level the respondent indicated whether or not a professional task was accomplished successfully. The answer categories were therefore ‘Yes’ (accomplished) and ‘No’ (not accomplished). In this study we operationalized the expertise level by asking the experienced easiness on a five point Likert scale from easy (1) to difficult (5). Table 3.4 gives an example of the questionnaire.

Table 3.4 *Example of task descriptions and response options*

			Yes			Yes	
			With difficulty			Easily	
1	I developed and organised an idea into a new business activity M	No	1	2	3	4	5
2	For some months I worked in a long-term project with people who had been working in the project for a longer period	No	1	2	3	4	5
3	I made a planning for a group assignment and co-ordinated the implementation. E	No	1	2	3	4	5
...							
151	I made a planning for the next 5 to 10 years B	No	1	2	3	4	5

Item 1: competence ‘to organise’, higher than bachelor level. Item 2: competence ‘to co-operate’, bachelor level; Item 3: competence ‘to organise’, entrance level of final year of bachelor programme; Item 151: competence ‘to organise’, bachelor level

3.5 Step 3: Validation by students in a cognitive lab

As part of the validation strategy we evaluated the questionnaire in a cognitive lab. A cognitive lab is a cognitive interview of potential respondents to identify potential problems in understanding and interpreting the items. Johnson et al. describe the three steps of a cognitive lab (Johnstone, Bottsford-Miller, & Thompson, 2006). First the participant *thinks aloud* about the question and tells what thoughts came up while answering the questions. Doing this, the interviewer gets an insight into how the participant arrives at the answer. Secondly, the participant reformulates the question in his own wording. This method of *paraphrasing* helps the interviewer to understand whether the interpretation of the question matches with the intended one. The third step, if not done already when ‘thinking aloud’, is *probing* the participant about the answer given. In our case, the participant told what example of professional (sub)task was in mind and explained why choosing a specific answer and scale and what was difficult in answering the question.

The focus of the cognitive lab was on the comprehension of the items and to get insight into how the respondent made decisions to answer the question and used the answer scale.

Method

Participants

Nine students (around 22 years of age; 2 male, 7 female) participated in the cognitive lab. The students from various majors were studying a full-time competence based programme. The interviews were held in April 2010. All students were about to graduate (defending their bachelor thesis in June 2010). The participants received an incentive of €25 and, when applicable, compensation of transport costs.

Procedure

The cognitive lab followed the procedure as described by Johnstone et al. (2006). Every interview lasted as long as necessary to answer all questions, but not longer than three hours. If the participant could not complete the questionnaire, the remaining questions were completed in writing only.

The participants were informed that the aim of the interview was to test the questionnaire. All participants received the questionnaire with the items in a randomized sequence as was done afterwards in the data collection. The questionnaire was administered in a standardised manner. In other words, first the participant decided whether or not the task described by the item was accomplished, and in case of a positive answer ('Yes'), the participant rated the degree of easiness (1-5).

One interviewer interviewed all nine participants. The interview was recorded and the interviewer made notes to guide the interview. The interviewer positioned in such a way that the participant could not see him. The interviewer noted when the participant faltered, when silences occurred and judged if the participant understood the item. After every 15 items, the interviewer could ask clarifications from the participant to know the reasons for faltering or being silent or could ask for more information on the decision process in answering an item.

Measures

The transcripts of the recordings were organized per item, and complemented with the observations of the interviewer.

Research design

If more than three of the participants misunderstood or misinterpreted a single word, this word was substituted with one of the words suggested by the participants. If the whole item was unclear, the item was removed from the questionnaire. If the intended level of complexity did not match with the experiences of at least 80% of the participants, the item was assigned to another competence level.

Results

Four participants followed the full procedure as described. Another four participants did not complete the questionnaire: two participants arrived at the interview together and each of them did half of the cognitive lab, one participant started with the questionnaire but could complete only 84 questions in 3 hours and the fourth participant made the questionnaire backwards and completed the last 79 items. These four participants made the remaining items silently. The ninth participant made the questionnaire silently to check the time that future respondents would need to fill the questionnaire and thereafter the cognitive lab procedure followed.

The *thinking aloud* process made clear that the participants did not understand 19 of the 151 items (13%). During the *thinking aloud* process it became evident that the participants mixed tasks done in private life and professional life, or linked the task as described in the item completely to a non-professional situation. The participants also tended to answer that they did the task as described, although they were not sure whether they did the task completely as described or only part of the task. The participants doubted the answer when they completed a task in another setting as described in the item (like for another public, a presentation but not in a foreign language).

Examples of the *thinking aloud* process

Item: *I took measures to obey regulations.*

- In private life I do when driving a car, but at the University or internship?
- Everybody has to obey regulations, so I'll indicate 3
- I don't know. There are too many regulations.
- Regulations means police, so...
- I had an assignment in which I wrote something about the manure regulations

Item: *I figured out how we could organize our activities better.*

- Not at work, I'm too Junior to do that. But at home: Yes! For a few months we are living together and cleaning the house is going better all the time
- What is it about? University? Work? I always think about how to do something better, not only for myself, but also for others. That is not always easy as it depends on the situation.
- I am often thinking how to do things better, but implementing is difficult.

As a result of the *paraphrasing* we identified problems with comprehension of items or problems with arriving at an answer. The participants suggested changes in the description of 45 tasks with regard to the sequence of the sentence or suggested the substitution of a single word.

An item described a task at a certain level of complexity. There were 5 items describing a task at bachelor level of which 7 or more of the participants (that is more than 75%) indicated that they did not accomplish this task during their academic career. There were 10 items describing a task at master level of which 7 or more of the participants indicated that they already had

accomplished this task during their academic career. For these items we changed the complexity level.

Table 3.5 summarizes the overall results.

Table 3.5 *Results of cognitive lab*

Competence	Complexity level	Number of items developed	Number of items removed	Number of items rephrased	Number of items changed complexity level
To organise	Entry	14	5	1	0
	Bachelor	14	7	1	2
	Master	11	0	3	2
To present	Entry	13	2	4	0
	Bachelor	12	0	4	1
	Master	11	1	4	2
To co-operate	Entry	11	0	5	0
	Bachelor	11	0	3	0
	Master	13	2	3	3
To self-direct	Entry	13	1	7	0
	Bachelor	13	0	5	2
	Master	15	1	5	3
Total number of items		151	19	45	15

The participants expressed that they found it difficult to indicate on the 5 point scale from ‘difficult’ to ‘easy’ how proficient they were in executing a certain task. Often they did a task several times and one time they found it easy and the other time they found it difficult to do and thus filled in the average feeling of these experiences. In the rating ‘difficult’ to ‘easy’, most participants weighed the result of the task, in terms of mark received, as well. When they received a high mark they tended to rate the task as ‘easy’ compared to a lower marked task that they rated as being ‘difficult’. Also the time spent on a task was taken into account (little time: ‘easy’ ; much time: ‘difficult’). If a task was completed as a group assignment the participants found it difficult to rate their proficiency as they tried to imagine how proficient they would be if they had to do the task on their own.

Conclusions

As a result of the cognitive lab 19 of the 151 items that were not clear to the participants were removed from the questionnaire (see table 3.5). To improve the quality of the description of a task, 45 of the 151 items were rephrased and sustained. After the cognitive lab the complexity level was adapted for 15 items, but these 15 items were not removed. Of these 15 items the complexity level of 5 items was increased from bachelor level to master level, the complexity level of 9 items was decreased from master level to bachelor level and the complexity level of 1 item was decreased from bachelor level to entry level final year. Finally, after the cognitive lab 72 of the 151 items were not changed.

The cognitive lab also gave cause for improving the instruction for the participants in the rest of the research. Future participants were instructed to limit themselves to experiences within the university or experiences outside the university which were in line with their educational programme. The respondents were also instructed that they must be sure that the full task was completed in all details before answering ‘Yes’ (task done). Finally they were instructed to tick the rate of difficulty the last time they accomplished this task.

3.6 Step 4a: Validation by experts

The second part of the validation strategy was an expert assessment of the items.

Each item was a description of a professional (sub)task and developed with the idea that accomplishing this task required one specific competence at one specific complexity level. That implied that in every item there was a match between the task described and the competence needed to accomplish this task (the item-competence match) and a match between the task described and the competence level needed to accomplish this task (the item-level match).

The expert assessment was the validation of the item-competence match (content validation) and a first validation of the item-level match (metric validation).

Method

Participants

Ten experts participated in the expert assessment. The experts were senior lecturers who had several years of experience in coaching students in their competence development and were experienced assessors of competencies. These ten experts were not involved in the item development. The experts were facilitated to participate in the validation process and received a small incentive.

Procedure

In April 2010, the experts came together in a class room and were informed about the aim of the questionnaire and the aim of the validation. The experts received a hard copy of the questionnaire with randomized items. Table 3.6 shows the design of the questionnaire.

Table 3.6 *Example of items of the questionnaire for the first expert validation*

		CO-OPERATE	PRESENT	ORGANISE	SELF DIRECT	Lower	3 rd year	Bachelor	Master	Higher
1	I regularly exchanged knowledge and experiences with professionals from other companies and whenever I found it necessary I co-operated with them.	C	P	O	S	-	3	B	M	+
2	I decided what I was going to learn and discussed this with my mentor.	C	P	O	S	-	3	B	M	+
--										
151	Together with people, with opposite interests, I came to results that were acceptable to all.	C	P	O	S	-	3	B	M	+

Item 1: competence 'to co-operate', higher than bachelor level; Item 2: competence 'to self-direct', entrance level of final year of bachelor programme; Item 151 : competence 'to co-operate', bachelor level

The expert assessment was done on the same 151 items that were used in the cognitive lab. For every item the experts indicated (ticked where appropriate) which competence dominated the accomplishment of the task that the item described. The experts could choose from the four competencies that were selected for the instrument (section 3.1) and were instructed to choose one competence only. The experts also indicated the level of competence at which they would assess students when using this item as a criterion. As the items were designed at three levels (Entrance level final year, Bachelor level and Master level) the experts could choose between these three levels and a 'lower' level and a 'higher' level.

The experts could take as much time as they needed to complete the questionnaire and were not allowed to consult each other. At the end of the session all questionnaires were collected.

Measures

The total number of answers for each response class of the items was calculated.

Research design

There was an item-competence match if at least 8 of the 10 experts (80%) assigned the same competence to an item. If there were less than 8 out of 10 experts in agreement (i.e. less than 80% agreement), the item did not describe a task for which clearly one competence is needed to accomplish this task and the item was removed from the questionnaire.

There was an item-level match if at least 8 of the 10 experts (80%) indicated the same competence level that is required to complete the task. If there was less than 80% agreement, the intended level as designed was sustained.

Results

Item-competence match

For 122 of the 151 items (81%) at least 8 of the 10 experts (80%) were in agreement about the item-competence match. For 119 items of the 122 items the experts made the same item-competence match as designed, and the experts matched 3 of the 122 items with another competence than designed (table 3.7). The experts did not agree on the item-competence match of the other 29 items (19% of 151 items).

Table 3.7 *Number of items per level of complexity for which at least 80% of the experts in the first expert validation agree on the item-competence match*

Competence	Intended Level	Number of items developed	Number of items where $\geq 80\%$ of the lecturers indicated the same competence	Number of items where $\geq 80\%$ of the lecturers indicated another competence
To organise	Entry	14	10	
	Bachelor	14	11	
	Master	11	10	
To present	Entry	13	11	
	Bachelor	12	12	1 ^a
	Master	11	6	
To co-operate	Entry	11	7	
	Bachelor	11	9	1 ^b
	Master	13	10	
To self-direct	Entry	13	11	1 ^c
	Bachelor	13	13	
	Master	15	9	
Total number of items		151	119	3
Percentage of total			79%	2%

(a) Agreement that one item assesses the competence 'to co-operate' instead of 'to present'

(b) Agreement that one item assesses the competence 'to organise' instead of 'to co-operate'

(c) Agreement that one item assesses the competence 'to co-operate' instead of 'to self-direct'

There was no clear relationship between the competencies and the percentage of items for which the designed item-competence match is confirmed by the experts. For the competence 'to organise' 79% of the designed item-competence match is confirmed, while for the competencies, 'to present', 'to co-operate' and to 'self-direct' this was 81%, 74% and 80% respectively (percentages excluding the 3 items with another task-competence match than designed).

There was also no clear relationship between the complexity levels and the percentage of items for which the designed item-competence match is confirmed by the experts. For 78% of the items designed at the entrance level of the final year of the bachelor course (E-level) the experts confirmed the item-competence match, while for the bachelor level (B-level) this was 90% and for master level (M-level) it was 70%.

Item-level match

The results of the expert validation show that it was not possible to describe the complexity level of a task, using only one indicator from the 4Cyourway language, in such a way that experts reached a high level of agreement on the complexity level.

For more than 90% of the 151 items there was no 80% agreement amongst the experts on the complexity level that an item described. For 13 of the 151 items (9%) at least 80% of the lecturers were in agreement of the item-level match. For 5 of these 13 items the item-level match was equal to the designed item-level match, and for 8 items it was different. There was not one item where all experts agreed on the item-level match. For 36 of the 151 items (24%) the experts indicated two different competence levels, for 74 items (49%) three different competence levels and for the other 41 items (27%) the experts indicated four or five different competence levels that the item described

For 24 items with an item-competence match at least 80% of the lecturers were in agreement that the item described a lower competence level than designed. For 2 items with an item-competence match at least 80% of the lecturers were in agreement that the item described a higher competence level than designed.

Conclusions

The experts confirmed for 119 of the 151 items (79%) the item-competence match. The data show that this percentage is about the same for all four competencies and for all three levels of competence. These results show that it is possible to describe professional (sub)tasks in such a way that for accomplishing this task mainly one specific competence is needed.

Based on the expert validation 29 of the 151 items were removed from the questionnaire as there was no match between the description of the task and a specific competence. Of these 29 items, 4 items were also removed from the questionnaire as a result of the cognitive lab (table 3.8).

Table 3.8 *Number of items that was removed as a result of cognitive lab and expert assessment*

Removal as a result of:	Number of items removed
Cognitive lab	15
Expert assessment	25
Cognitive lab +Expert assessment	4
Total	44

Experts could not agree on the item-level match. Therefore we decided to examine the complexity level of the items empirically in the metric validation among students (step 5). However, the expert validation of the complexity level of the task as described in the item was useful to adjust the designed complexity level for 26 items. For 24 items the expected level was decreased and for 2 items the expected complexity level of the task as described in the item was increased from the designed level because. For all other items the expected complexity level was not changed. Table 3.9 gives the number of items for which the complexity level of the tasks was adjusted.

Table 3.9 *Number of items for which the complexity level of the tasks was adjusted as a result of cognitive lab and expert assessment*

Item-level match adjusted as a result of:	Nr of items		
	Level lower	Level higher	Total
Cognitive lab only	5	5	10
Expert assessment only	19	2	21
Cognitive lab + Expert assessment	5	0	5
Total	29	7	36

3.7 Step 4b: Validation by experts (additional items)

After the validation by students in the cognitive lab and the validation by experts, 44 items were removed from the questionnaire and 107 validated items were sustained. Based on the cognitive lab and the validation by experts the item-level match was corrected for 36 of the 107 items that were sustained. To ensure that the test questionnaire contains descriptions of tasks for 4 competencies at three levels of complexity with one task description for each of the 11 indicators, 80 (44+36) new items had to be developed. However, 9 of the 36 items with a new item-level match could replace items that were removed from the questionnaire and 6 of the 36 items with a new item-level match replaced items with an adjusted item-level match. Therefore 65 new items were developed (44 + 36-9-5).

An expert assessment was conducted to validate the item-competence match for the newly developed items.

Method

Item development

The item development was done in the same way as in the first expert validation (section 3.3; step 2).

Participants

Ten experts participated in the second validation of which nine experts were involved in the first validation as well. One expert was abroad during this part of the research and was replaced by another expert with the same qualifications.

Sampling procedure

Because of the holidays (May 2010) the second questionnaire was given to the experts individually and they could complete it at home. The items of the questionnaire were randomized and all lecturers received the same questionnaire in hard copy. At the end of the holidays they returned the questionnaire. The lecturers did not consult each other during the holidays.

In the second questionnaire the lecturers indicated for 65 newly developed items the best item-competence match. They could choose from the four competencies that were selected for the

instrument (section 3.1) and were instructed to choose one competence only. Compared with the first expert validation there were no columns with expertise levels. Table 3.10 shows the design of the questionnaire.

Table 3.10 *Questionnaire for the second expert validation*

		CO-OPERATE	PRESENT	ORGANISE	SELF DIRECT
1	For some months I worked in a long-term project with people who had been working on the project for a longer period.	C	P	O	S
2	For a report I wrote a chapter for which I was the only one to have the required expertise.	C	P	O	S
--					
65	I have made a planning for the next 5 to 10 years.	C	P	O	S

Measures

The total number of answers for each response class of the items is calculated.

Research design

There was an item-competence match if at least 8 of the 10 experts (80%) assigned the same competence to an item. If there were less than 8 out of 10 experts in agreement (i.e. less than 80% agreement), the item did not describe a task for which clearly one competence is needed to accomplish this task and the item was removed from the questionnaire.

Results

Item-competence match

For 42 of the 65 items (63%) at least 8 of the 10 experts (80%) were in agreement about the item-competence match. For 41 items of the 42 items the experts made the same item-competence match as designed, and the experts matched 1 of the 42 items with another competence than designed. The experts did not agree on the item-competence match of the other 23 of the 65 items (37%) (table 3.11)

Table 3.11 *Number of items per level of complexity for which at least 80% of the experts in the second expert validation agreed on the item-competence match*

Competence	Intended Level (*)	Number of items developed	Number of items where $\geq 80\%$ of the lecturers indicated the same competence	Number of items where $\geq 80\%$ of the lecturers indicated another competence
To organise	E	6	1	
	B	8	3	
	M	7	4	
To present	E	4	3	
	B	5	5	
	M	7	5	
To co-operate	E	5	4	
	B	7	7	
	M	6	3	
To self-direct	E	2	2	
	B	1	1	
	M	7	3	1 ^a
Total		65	41	1
Percentage of tota		100%	63%	2%

* E= Entrance level last year bachelor programme; B=bachelor level; M=Master level

^a Agreement that one items assesses the competence 'to organise' instead of 'to self-direct'

There was a clear relationship between the competencies and the percentage of items for which the designed item-competence match was confirmed by the experts. For the competence 'to organise' only 38% of the designed item-competence match was confirmed, while for the competencies, 'to present', 'to co-operate' and to 'self-direct' this was 81%, 78% and 60% respectively (percentages excluding the item that described a task for which another competence was required than initially intended).

There was no clear relationship between the complexity levels and the percentage of items for which the designed item-competence match was confirmed by the experts. For 65% of the items designed at the entrance level of the final year of the bachelor course (E-level) the experts confirmed the item-competence match, while for the bachelor level (B-level) this was 76% and for the master level (M-level) it was 59%.

Conclusions

The experts matched the items that were designed to describe tasks for the competence 'to organise' less frequently with this competence than they did for the other three competencies. The rate of agreement between experts did not depend on the designed level of complexity of the tasks.

Based on the second expert validation 23 of the 65 items were removed from the questionnaire as there was no item-competence match. The other 42 items were used in the

metric validation together with the 107 validated items from the cognitive lab and the first expert validation, making a total of 149 items. Table 3.12 shows an overview of the number of selected items per indicator and per complexity level.

Table 3.12 *Number of content valid items per indicator and complexity level of the professional task.*

Level of complexity*	To organise			To present			To co-operate			To self-direct			Total number
	E	B	M	E	B	M	E	B	M	E	B	M	
Indicator													
1. Role	1	1	1	1	3	1	1	1	2	1	1	0	14
2. Responsibility	1	2	1	1	2	1	1	2	0	2	1	0	14
3. Independence	1	0	1	0	1	0	1	1	1	1	2	1	10
4. Public	0	1	2	2	1	1	1	4	1	1	1	1	16
5. Time limit	1	1	1	1	1	1	1	1	0	1	1	1	11
6. Work	1	2	1	1	1	1	1	1	1	1	2	2	15
7. Procedures	1	0	2	3	1	1	2	1	2	1	1	2	17
8. Knowledge and insight	0	0	1	1	2	1	1	1	1	1	2	2	13
9. Insecurity	1	2	1	1	2	1	1	3	1	2	2	2	19
10. Change	0	1	2	1	1	1	0	1	1	1	1	1	11
11. Scope	0	0	1	1	2	1	1	2	1	0	0	0	9
Total number of items	7	10	14	13	17	10	11	18	11	12	14	12	149

* E= Entrance level last year bachelor programme; B=bachelor level; M=Master level

3.8 Step 5: Metric validation

After the content validation which determined the item-competence match, the metric validation was meant to select items on discriminatory power. The discriminatory power is the power to discriminate between the competence levels of students entering the last year of a bachelor programme (E-level) and the competence levels of students at bachelor level (B-level) and the competence levels of graduates who might have obtained a master degree (M-level). With the 4Cyourway language the items were designed at these three levels, and a refinement was made based on the results of the content validation in the cognitive lab and the expert validation. There were four groups of items with descriptions of professional (sub)tasks and each group of items measured one of the following competencies: to organise, to present, to co-operate or to self-direct. To focus the student's attention and to improve the accuracy of the answer half of the questionnaires had items in which the key words for complexity were underlined. To reduce the consequences of possible loss of power of concentration, half of the questionnaires had a reversed sequence of the questions.

Method

Participants

Third and fourth year students participated in the metric validation. The competence level of the third year students at the end of their academic year represents the competence level at the entrance of the final year of the four-year bachelor programme (Entry level). The competence level of the fourth year students just before graduation represents the bachelor competence level (Bachelor level). The sample consisted of 120 Entry-level students and 108 Bachelor-level students. The response from the data collection was 60 (50%) Entry-level students and 49 (45%) Bachelor-level students. One questionnaire (Entry-level student) was half completed and rejected. Of the 108 students that completed the questionnaire 75% were males and 25% females which is representative for the University of Applied Sciences, and the students represented all study programmes.

Procedure

Students who participated in the cognitive lab were excluded from the metric validation. Students who attended classes in the last month before the end of the academic year completed the questionnaire in class (52 Entry-level students and 36 Bachelor-level students). The other students received the questionnaire in hard copy by mail at their home address, including a stamped addressed envelope. After one month the response on the mailed questionnaires was 8 out of 68 (12%) for the Entry-level students and 13 out of 72 (18%) for the Bachelor-level students.

The participants received the questionnaire in hard copy with randomized items ($n=149$). Four versions of the questionnaire, with the same items, were distributed randomly.

- Version 1 standard version (see example in table 3.13)
- Version 2 with the items in reverse sequence compared to version 1
- Version 3 as version 1 but with underlined indicators of complexity (see example in table 3.13)
- Version 4 as version 2 but with underlined indicators of complexity

Table 3.13 *Examples of Questionnaire for the metric validation*

QUESTIONNAIRE VERSION 1		Yes difficult			Yes easy		
1	I made a planning for a group assignment and co-ordinated the implementation.	No	1	2	3	4	5
2	I formulated clear deadlines for a team or an organisation.	No	1	2	3	4	5
...							
149	I organised a change process in response to social developments.	No	1	2	3	4	5

QUESTIONNAIRE VERSION 3		Yes difficult			Yes easy		
1	I <u>made a planning</u> for a group assignment and <u>co-ordinated</u> the implementation.	No	1	2	3	4	5
2	I <u>formulated clear deadlines</u> for a team or an organisation.	No	1	2	3	4	5
...							
149	I organised a change process <u>in response to</u> social developments.	No	1	2	3	4	5

The instructions were given on a separate page. The respondents could indicate whether or not a task was accomplished (yes or no). If the answer was 'yes', the respondent indicated on a 5 point scale how difficult it was to complete the task successfully. The scale had two anchors 1=difficult and 5=easy.

Measures

Statistics

We used the Pearson Chi-square test to compare the two groups of participants (Entrance-level students and Bachelor-level students) on the frequencies of completing a task. We used the one sided Independent T-test to compare the two groups of participants on the experienced rate of difficulty when executing a task.

Selection of items for the final questionnaire

The final questionnaire had to measure the competence level of Entry-level students and Bachelor-level students but also had to measure the competence level of graduates who might have a Master degree. The metric validation however was done with Entry-level and Bachelor-level students. To meet the requirements for the further research of this study, two types of items were selected for the final questionnaire:

- Items discriminating between E-level and B-level. Three selection criteria were used to select discriminating items:
 - There is a significant association between the year of study and whether or not the students completed a task as described in the item.

- The absolute percentage of Bachelor-level students that accomplished the task is at least 15 per cent points higher than Entrance-level students.
- Bachelor-level students find the task significantly easier than Entrance-level students.
- Items that described a task at master level. Tasks at master level are tasks that are accomplished by less than one third of the Bachelor students.

The Cronbachs α was used to test if the competence scales with the selected items are reliable.

Results

The results of all items are given in the annex, tables A.3.2 – A.3.5.

Questionnaires with and without underlining

Fifty three students completed a standard questionnaire (30 Entrance-level student and 23 Bachelor-level students) and 55 students completed a questionnaire with underlined indicators of complexity (29 Entrance-level student and 26 Bachelor-level students).

For 12 of the 149 items (8%) in questionnaires answered by Entry level students there was a significant association between the type of questionnaire (standard versus underlined) and whether or not they did the task (Chi square test; $p < .05$). This is hardly more than could be expected on the basis of coincidence. For 9 of these 12 items significantly more students who completed the non-underlined questionnaire answered that they accomplished this task compared to the students who completed the underlined questionnaire. For 3 of these 12 items significantly more students who completed the underlined questionnaire answered that they accomplished this task compared to the students who completed the non-underlined questionnaire.

Bachelor level students answered for only 5 of the 149 items (3%) significantly more often in the non-underlined questionnaires that they accomplished the task as described in the item, compared to students who completed the underlined questionnaire. Again this number could have been expected on the basis of coincidence alone.

Overall there were 17 items out of 298 ($2 \cdot 149$) (6%) where an answer was significantly different in the questionnaire with underlining the indicator of complexity compared to the questionnaire with no underlining. As we could expect 5% difference on the basis of coincidence, we conclude that underlining the indicator of complexity did not influence the answer given by the students. Therefore from now on both questionnaires are considered to be the same.

Sequence of items

Fifty seven students completed a questionnaire with items in standard sequence (30 Entrance-level student and 27 Bachelor-level students) and 51 students completed a questionnaire with items in a reversed sequence (29 Entrance-level student and 22 Bachelor-level students).

For 8 of the 149 items (5%) in questionnaires answered by Entry level students there is a significant association between the type of questionnaire and whether or not they did the task (Chi square test; $p < .05$). This is what could be expected on the basis of coincidence.

For 10 of the 149 items (7%) in questionnaires answered by Bachelor level students there is a significant association between the type of questionnaire and whether or not they did the task (Chi square test; $p < .05$). For 7 of these 10 items significantly more students who completed the questionnaire with the standard sequenced items answered that they accomplished this task compared to the students who completed the questionnaire with the reverse sequence. For 3 of these 10 items significantly more students who completed the questionnaire with the reverse sequence answered that they accomplished this task compared to the students who completed the questionnaire with the standard sequenced items.

Overall there were 18 items out of 298 (2×149) (6%) where an answer is significantly different in the questionnaire with the standard sequenced items compared to the questionnaire with the reverse sequence. As we could expect 5% difference on the basis of coincidence alone we can conclude that the sequence of items does not have an important influence on the answer given by the students. Therefore from now on both questionnaires are considered to be the same.

Discriminating items based on completing the task

For 58 of the 149 items there was a significant association ($p < .05$) between the group of participants (Entry-level students and Bachelor-level students) and whether or not students accomplished the task as described in the item (see tables A.3.2 – A.3.5 in the annex).

Of these 58 items, the answers of 47 items showed that between the Entry-level group and the Bachelor-level group there was more than 15 per cent points difference in the percentages of respondents that answered they accomplished the task and 11 items for which the difference was less than 12 per cent points. We calculated the internal consistency for the 47 items with at least 15 per cent point difference between the two groups of students. The results are shown in table 3.14. All scales show a good reliability with Cronbach's α ranging from .72 to .85

Table 3.14 *Results of the Cronbach's α test on discriminating items per competence*

Competence	Number of items selected with at least 15 per cent point difference	Cronbach's α .
To organise	17	.85
To present	11	.75
To co-operate	9	.73
To self-direct	10	.72

We checked whether or not there was a difference in the experienced difficulty of accomplishing the task described in the item. For 17 of the 149 items (11%) there was a significant difference in experienced difficulty when accomplishing the task. Of these 17 items, three items describe tasks that Entry-level students find significantly easier, and 14 items describe tasks that Bachelor-level students find significantly ($p < .05$) easier. Table A.3.6 gives more details. For the 47 selected items there are 5 items describing tasks that Bachelor-level students find significantly ($p < .05$) easier than Entry-level students and 42 with no significant difference in experienced difficulty between the two groups. For the 47 selected items we also calculated the average experienced easiness per

competence for Entry-level students and for Bachelor-level students. The results are shown in table 3.15.

Table 3.15 *Mean total score per competence for Entry level students (E) and Bachelor level students (B) on experience difficulty of executing the tasks described*

Competence	Level	Mean score on experienced difficulty	Sd
To organise (n=17)	E	3,2	0,6
	B	3,2	0,6
To present (n=11)	E	3,2	0,6
	B	3,3	0,7
To co-operate (n=9)	E	3,2	0,6
	B	3,3	0,6
To self-direct (n=10)	E	3,4	0,7
	B	3,6	0,7

The results show that in general there is no significant difference in experienced difficulty for accomplishing a task between Entry level students and Bachelor level students. One reason might be that the experienced difficulty depends on what task the respondent has in mind. Entry level students will consider a task from their own experiences at the university thus far, and so do the bachelor level students who have gained one more year of experience at the university. The broad descriptions of the tasks, done on purpose, allow this room for interpretation. Another reason might be that students compare themselves with their peers which, at the average, results in an average answer (average around 3 on a 1-5 scale). We will further discuss this issue in chapter 6.

Items with low percentage of positive answers ('Master level items')

There are 9 items for which in both groups the percentage of respondents that answered that they accomplished the task, was below 33%. These are most likely items above Bachelor-level (table 3.16). Most of these items were originally also designed at master level.

Table 3.16 *Items for which less than 33% of the respondents answered that they completed the task described in the item*

Competence	Designed level of complexity	% completed task	
		<u>Entry-level</u>	<u>Bachelor-level</u>
To organise	4	7	12
	4	15	27
To present	3	24	27
	4	24	29
To co-operate	3	17	25
	4	20	29
To self-direct	4	22	33
	4	27	31
	4	12	25

When these 9 items are included in the final questionnaire, the reliability for each competence scale hardly changes. The Cronbach's α of the scales now range from .70 for the scale 'to self-direct' to .85 for the scale 'to organise' (table 3.17).

Table 3.17 *Results of the Cronbach's α test on selected items per competence*

Competence	Number of items selected	Cronbach's α .
To organise	19	.85
To present	14	.77
To co-operate	11	.75
To self-direct	12	.70

Rescaled score per competence

To compare the development of the competencies with each other a comparable numeric value per competence is needed. This is done by rescaling the score per competence. The rescaled score per competence is $(10 \times \text{sum score}) / (\text{number of items in the scale})$. Table 3.18 shows for E-level students and B-level students the mean rescaled (1-10) scores per competence with their standard deviations. An independent one sided t-test confirmed that the totals per competence were significant different between the two groups.

Table 3.18 Mean total score per competence (on a 0-10 scale) per group of respondents with standard deviation and significance of difference in t- test of selected items

Competence	Level ^a	Mean	SD	T test (df=106)	Shapiro-Wilk Test of Normality
To organise (n=19)	E	4,10	2,40	-4,894**	0,968
	B	6,14	1,82		0,972
To present (n=14)	E	4,96	2,34	-4,585**	0,967
	B	6,78	1,62		0,953*
To co-operate (n=11)	E	4,01	2,46	-4,902**	0,955*
	B	6,14	1,97		0,937**
To self-direct (n=12)	E	5,46	2,63	-4,194**	0,966
	B	7,35	1,90		0,928**

^a E=Entry level; B=Bachelor level

* p <.05 ** p <.01

Figure 3.1 shows the plots for the four scales separately for Entry level students and for Bachelor level students.

Figure 3.1 Normality plots for the mean total scores per competence per group of respondents

All distributions follow a near normal pattern, with clear distinction between the two groups of students but also considerable overlap. In other words, for these competencies some Entry level students perform better than the bottom-half of the Bachelor level students.

Conclusions

There are 47 items describing a professional task that fourth year students accomplished significantly more often than third year students, with an absolute difference in percentage of at least 15 per cent point. These 47 items discriminate between third year students (representing the students at the entrance of the final year of the bachelor programme (E-level) and fourth year students (representing students at the bachelor level (B-level) and are suitable items to measure the competence development of students in the last year of a bachelor programme. These 47 items are included in the final questionnaire.

There are 9 items for which less than one-third of the respondents in both groups (Entry-level and Bachelor-level students) answered that they accomplished the task. These 9 items are suitable to measure competence development of graduates after graduation and therefore these 9 items are also included in the final questionnaire.

Although Bachelor-level students indicate significantly more often that they completed a task as described in the item, they did not find these tasks significantly easier than the Entry-level students. Therefore the experienced easiness of accomplishing a task cannot discriminate the competence level of Entry-level students and Bachelor-level students and therefore this answer scale is not used in the final questionnaire.

Underlining key words in items has no additional effect in 94% of the items and therefore the final questionnaire will not use underlining of key words.

The sequence of the items had no effect on the answers given by the participants. The most obvious explanation will be that the total questionnaire took about 35 minutes, and students were relaxed and no loss of power of concentration has occurred.

So, the metric validation resulted in a validated instrument that measures the differences in competence levels between Entry-level students and Bachelor-level students. The instrument consists of four reliable scales (Cronbach's $\alpha > .7$) to measure the competence level of four competencies: to organise, to present, to co-operate and to self-direct. The instrument with 56 items is easy to use as students can complete the questions within a reasonable time.

Chapter 4

Competence development of university students

4.1 Introduction

The instrument described in the previous chapter is used to measure the competence development of international students at a Dutch University of Applied Sciences and their peers who continue their studies at the home university. This allows us to answer the first two research questions of this thesis:

1. *What is the competence development of international students in the last year of a competence based bachelor programme at a University of Applied Sciences?*
2. *How is the competence development of internationally mobile students in a competence based bachelor programme at a University of Applied Sciences compared to the competence development of their peers who stay at the home university in a knowledge based curriculum?*

When measuring the competence development of students who study abroad we must take into account that students studying abroad may be different on a number of characteristics from their peers who stay home. Therefore the current chapter starts in section 4.2 with a review of characteristics of students that may influence the decision to study abroad and may influence the competence development. Section 4.3 describes the methods used to answer the research questions. Section 4.4 gives the results of the analyses of selectivity of the research group of mobile students compared to the group of students staying at home university and the results of the analyses of selectivity of the group that completed the questionnaire both at the start and at the end of the academic year, compared to the group of students that completed the first questionnaire only. In section 4.5 we compare the competence development of the mobile group and home group are compared with each other and section 4.6 gives the analyses of characteristics affecting the competence development. Finally, section 4.7 presents the conclusions of this chapter.

4.2 Characteristics of students influencing mobility and competence development

This section gives an overview of student characteristics which are known from previous research to affect the decision to study abroad or to affect the competence development. These characteristics are split into three groups: personality traits, other personal characteristics and family characteristics.

Personality traits

Tupes and Christal empirically found five factors to describe personality traits, now known as the five-factor model of personality or the Big Five (Tupes & Christal, 1961). The five-factor model of personality is a description of personality traits in terms of five basic dimensions: Agreeableness, Conscientiousness, Extraversion, Neuroticism, and Openness to Experience (McCrae & John, 1992). Personality traits can explain difference in academic performance and thus in competence

development (Poropat, 2009) and can explain differences in the decision to stay at home or to study abroad (Bakalis & Joiner, 2004).

Agreeableness is related to social harmony, likability and friendliness. Agreeable people are friendly, helpful and are willing to compromise and show good cooperation with others. Disagreeable people are self-interested and less co-operative. It is not sure whether agreeableness affects the decision to study abroad, but once abroad an agreeable student may establish more easily an interpersonal relationship with host nationals (Dwyer & Peters, 2004; Shaffer, Harrison, Gregersen, Black, & Ferzandi, 2006). In a meta-analysis of personality-academic relationships Poropat (2009) found a small effect of agreeableness on academic performance ($d=0.14$). Agreeableness may have a positive impact on academic performance as it can be linked to complying with instructions and staying focussed on learning tasks (Raad de & Schouwenburg, 1996; Vermetten, Lodewijks, & Vermunt, 2001).

Conscientiousness reflects self-discipline and the will to achieve. People scoring high on conscientiousness are generally hard working, well organised, efficient, persistent and show a preference for planned actions rather than spontaneous actions. People scoring low on conscientiousness are less goal oriented and less driven by success. It is not sure whether conscientiousness affects the decision to study abroad, but conscientious students tend to have a network of family rather than a network of friends (Eggens, 2011). A family network might have a negative effect on study mobility (Doyle et al., 2009) because conscientious people will consider whether the behaviour (i.e. studying abroad) is socially acceptable to others (Goel, Jong de, & Schnusenberg, 2010). Conscientiousness is the personality trait that is most related to learning and can have a positive impact on academic performance as it is linked to the willingness to perform through setting goals, continuous effort and concentration on self-learning and time management (Bidjerano & Dai, 2007; Trautwein & Lüdtke, 2006). This learning behaviour is more rewarded in knowledge based educational practice than in education based on constructivist theories (Vermetten et al., 2001). Poropat (2009) found a medium-sized effect of conscientiousness on academic performance ($d = 0.46$) and at the level of tertiary education he found that conscientiousness was the only personality trait that had an overall association with academic performance ($r = .17$) which was of a similar magnitude as intelligence ($r = .14$).

Extraversion is a broad construct of sociability and assertiveness. People scoring high on extraversion, the extroverts, enjoy social contacts and like to draw attention to themselves. The introverts, scoring low for extraversion, are less involved in the social world and more quiet in the company of others. The relationship between extraversion and studying abroad is not clear. Extraverts may decide to go abroad, not for the excitement of new experience, but to meet new social interaction (Goel et al., 2010). Also the relationship between extraversion and academic performance is not clear. Extraverts may perform better because they have more energy, on the other hand they may spend this energy on other activities (Eysenck, 1992). Extraversion may be positively related to academic performance for high verbal ability persons and negatively related for low verbal ability persons (Petrides, Chamorro/Premuzic, Frederickson, & Furnham, 2005).

Neuroticism, also called emotional (in)stability, is related to tolerance for stress. Neurotics, scoring high for neuroticism, are emotionally reactive and vulnerable to stress. Balanced people, scoring low on neuroticism, are calm and less easily upset. Exchange students scored significantly ($p < .01$) higher on emotional stability than non-exchange students (Daly, 2007) which may have affected their decision to study abroad. Emotional balance is, indirectly, correlated with

academic performance. Balanced people show self-control, confidence and perceived control over outcomes, which gives better academic performance. Neurotics are more easily focussed on their own emotional state which reduces academic performance (Petrides et al., 2005; Raad de & Schouwenburg, 1996).

Openness to Experience is the appreciation for adventure, for unusual ideas and for emotion. Open people are explorers seeking actively new experiences and have more appreciation for unconventional ideas. Closed people, with lower scores, have more conventional ideas and are conservatives. Exchange students scored significantly ($p < .01$) higher on openness than non-exchange students (Daly, 2007) and students with a high degree of openness are more likely to participate in exchange programmes than students with a low degree of openness (Bakalis & Joiner, 2004; Salisbury et al., 2010; Wiers-Jenssen, 2008). Individuals high on openness are more likely to work effectively in cross-cultural situations and to acculturate in foreign countries (Shaffer et al., 2006). Openness is positively related to intelligence and people scoring higher on openness may have a better academic performance. Poropat (2009) found a small effect of openness on academic performance ($d=0.24$), but McKenzie et al. (2004) found no effect. Openness is also positively related with motivation to learn (Tempelaar, Gijselaers, Schim van der Loeff, & Nijhuis, 2007) and has a strong negative correlation with absenteeism (Lounsbury, Steel, Loveland, & Gibson, 2004) which can explain better academic performance.

From the above we may expect that students who decide to study abroad are more open to experience and emotionally more stable than students who stay home. We also expect that conscientiousness may have an effect on the competence development of students.

Other personal characteristics

Few studies compare internationally mobile students with non-mobile students on factors that might affect the decision to go abroad (Rodrigues, 2012; Salisbury et al., 2010; Souto Otero, Huisman, Beerkens, Wit de, & Vujic, 2013). However, scholars frequently report the characteristics indirectly through describing respondents to the survey, but the relationship between the student's characteristics and studying abroad remains unclear (Daly, 2007). The few studies addressing the socio-economic background of mobile students, directly or indirectly, also show inconsistencies, which will become clear in the next paragraph. There are more studies that report on the relationship between socio-economic characteristics of students and academic performance in general, and also here we can notice inconsistencies.

A *gender* effect on international mobility of students is well known. Most exchange students are female, ranging between 55-71% of all exchange students (Alfraser, Fellingner, & Taivere, 2011; Dolby, 2004; Hoof van & Verbeeten, 2005; Wiers-Jenssen, 2002). Some scholars found the predominance of females consistent with the gender balance at the universities (European Union, 2000; Isserstedt & Kandulla, 2010; King & Ruiz-Gelices, 2003; Messer & Wolter, 2007; Richters et al., 2012) while others report relatively more female mobile students than female non-mobile students (Commission on the Abraham Lincoln Study Abroad Fellowship Program, 2005; Daly, 2007; King, Findlay, & Ahrens, 2010). Studies are not consistent about the relationship between gender and academic performance (Li, Cheng, & Duanmu, 2010). Studies found no gender effect on academic performance (Rhine, 1989), found that male students perform better (B. Anderson,

Benjamin, & Fuss, 1994), or found that females perform better (Sheard, 2009; Sonnert & Fox, 2012; Williams, Waldauer, & Duggal, 1992).

King & Ruiz-Gelices (2003) found that the *age* of mobile students was consistent with the average age at the University. As expected, most scholars report that exchange students are in their early twenties (like Alfraser et al., 2011). Messer & Wolter (2007) found that Swiss students who are younger at the start of their academic studies have a significant ($p < .01$) greater chance of opting for an exchange programme, which is confirmed in the HEFCE²¹ 2009 study (King et al., 2010). The effect of age on the academic performance is inconsistent. Scholars report that mature students perform better (Sheard, 2009) or that younger students perform better (Clark and Ramsey, 1990).

Grades obtained in previous years may predict international mobility. Research amongst Nordic students reveals that exchange students have a higher grade point average (GPA) than non-mobile students (Wiers-Jenssen, 2011) which is also observed in the UK (Brooks & Waters, 2009). Prior academic achievement is a key academic predictor of the student's achievements. Students with higher GPA are more likely to continue their high academic achievement (McKenzie, Gow, & Schweitzer, 2004). There is a relationship between work experience and grades, as full-time students with no employment have higher GPA's than students with part-time employment. This is possibly explained by time-restraints (McKenzie & Schweitzer, 2001).

No relationship is found between *hours studying* and studying abroad. There is a small relationship between hours studied and grades (Rau & Durand, 2000; Schuman, Walsh, Olson, & Etheridge, 1985). This finding of Schuman et al. is largely accepted today, although results of other studies indicate that the effect of studying is substantial (Stinebrickner & Stinebrickner, 2007). There are more factors related with higher grades, like higher class attendance, better study skills and a quiet study environment which require students to spend less time on studying while achieving the same results (Plant, Ericsson, Hill, & Asberg, 2005). The study habit of spending a number of hours studying is also the result of study motivation which is strongly related to the personality trait 'conscientiousness' (Crede & Kuncel, 2008).

Messer & Wolter (2007) find that Swiss students with study related and study unrelated *work experience* have a significant ($p < .05$) greater chance of opting for an exchange programme compared to students with only study related work experience, compared to students with only non-study related work experience and compared to students without work experience. Messer & Wolter (2007) also find that Swiss students who went on a vocational placement before university have a significant ($p < .01$) greater chance of opting for an exchange programme than students who did not have such a placement period.

Previous international experience might predict study mobility. Research results show that two-thirds of the internationally mobile students had at least one month international experience before studying abroad (Oppen, Teichler, & Carlson, 1990), that more than 80% of Erasmus students had spent a period abroad before participating in the Erasmus programme (Maiworm & Teichler, 1996) and that half of the mobile students had a prior sojourn abroad lasting three months or more ((Wiers-Jenssen, 2002). In other words, most of the mobile students had international experience before participating in an exchange programme. Probably these students are interested in other cultures and in travelling anyhow (Daly, 2007; Hoof van & Verbeeten, 2005). On the

21 HEFCE: Higher Education Funding Council for England

other hand international experience may not be a predictor for studying abroad (Goldstein & Kim, 2006), because travelling is quite common amongst students and also non-exchange students may have international experience.

Based on available study results we may expect that the group of internationally mobile students in our study consists of more females than males, have prior international experience, have some work experience and have higher grades.

Family characteristics

Previous studies found that mobile students are a socially selective group compared to average students (Isserstedt & Kandulla, 2010; King et al., 2010; Orr, Gwosc', & Netz, 2011; Souto Otero, 2008; Teichler & Jahr, 2001). Commonly used indicators in international studies to describe the socio-economic background of students are parents' education, parents' occupation and parents' income.

Parents' education as predictor of international student mobility is well documented. In a 1984/1985 study 50% of the internationally mobile students had fathers with a higher education degree (ISCED²² 5 or 6) and 32% had mothers with a higher education degree (Oppen et al., 1990). In the 1988/1989 Erasmus survey 38% of the mobile students had at least one parent with a higher education degree (Maiworm & Teichler, 1996). Around 35% of the Erasmus students in 2004/2005 had parents with a higher education degree and 58% had at least one parent with a higher education degree (Souto Otero, 2008). In the 2005 EUROSTUDENT survey 25-40% of all students had a father with a higher education degree and these figures were a bit lower for mothers (HIS, 2005) and in the EUROSTUDENT survey 2008-2011 less than 50% of all student's parents attended higher education (Orr et al., 2011). Messer & Wolter (2007) find that Swiss students having a mother with a tertiary degree have a significant ($p < .01$) higher chance of opting for an exchange programme. Wiers-Jensen (2002, 2008, 2011) reports a similar trend for the Nordic countries where 71% of the mobile students have at least one higher educated parent against an average of 48% for all Nordic students. Although there are differences between the studies we can say that the international mobile group of students have more well-educated parents than other students. The reason can be that parents with a higher education degree may be more aware of the benefits of international mobility and stimulate international mobility of their children (European Union, 2000; Eurostudent, 2009).

Almost two-thirds of the 1998/1999 and 2004/2005 Erasmus students had at least one parent in the high-level *occupations*²³ (managerial, professional or technical jobs) which was not different from the general student population in 1997 (European Union, 2000) but in 2005 this figure was less than 40% for higher education students in general (Souto Otero, 2008). At the other end of the scale, less than 10% of Erasmus students reported that their parents were employed in elementary occupations, which was more than 30% for higher education students in general (European Union, 2000; Souto Otero, 2008). Few mobile students come from economically inactive or unemployed parents.

22 The International Standard Classification of Education (ISCED) is accepted across most countries as an appropriate way of classifying different levels of educational attainment.

23 Similarly to the ISCED Classification for education, there is an International Standard Classification of Occupations (ISCO) developed by the International Labour Organisation (ILO).

Obviously, *parents' income* is related to parents' education and occupation. Earlier reports (1997) indicate that parents' income status is not a selection factor for Erasmus students (European Union, 2000). In 2004/2005 about half of the Erasmus students indicated that their parents had an average income, and about 37% that the parents' income was (much) higher than average (Souto Otero & McCoshan, 2006). Daly (2006) reports that the median reported household income for Australian exchange students (\$40,000 - \$60,000) was significantly higher than that of non-exchange students (\$20,000 - \$40,000). But the relationship between international mobility and parents' income is more complex. In the West European countries students are more likely to come from families with higher income levels, whereas in the (poorer) East European Countries students participating in the Erasmus programme are coming from less well-off social backgrounds (Souto Otero & McCoshan, 2006). This might reflect mobility for 'consumption' versus mobility for 'investment' (Souto Otero, 2008). However, the results of previous studies indicate that internationally mobile students in Europe are more likely to have parents with higher incomes than non-mobile students. The reason might be that students from parents with lower incomes will find financial obstacles to international mobility. We may expect that in our study the internationally mobile students from Latvia, Poland, Hungary and France are more likely to come from families in the higher social classes compared with non-mobile students.

Being a member of an *immigrant family* may be another factor predicting international student mobility. Students growing up in a multicultural environment show lower levels of ethnocentrism (Harrison, 2012) and may as such easier pursue a study abroad. German students who have at least one parent of foreign nationality are more often studying abroad (19%) compared to German students without an immigrant background (14%) while naturalized students are comparatively rarely international mobile (11%) (Isserstedt & Kandulla, 2010).

The characteristics mentioned in this section indicate potential selectivity of internationally mobile students. Therefore these characteristics will be used as predictors of the decision to study abroad in the Netherlands and as predictors of competence development.

4.3 Methods used

Research design

Groups of internationally mobile students of a University of Applied Sciences in the Netherlands serve as case-studies to answer the research questions.

Figure 4.1 Research design.

We measure the competence development of students who are internationally mobile from knowledge based education in Latvia, Hungary, Poland and France into competence based education at a University of Applied Sciences in the Netherlands. These students start their studies in the Netherlands in September and return to their home country in July or August the next year. During this year these students complete the final year of the bachelor programme at the University of Applied Sciences and receive a bachelor diploma.²⁴ We determine the competence development of this group of students (mobile group) by measuring the competence level of the students at the start of the programme and at the end of the programme. At the same time we determine the competence development of reference groups of peer students who stayed at their home university in the respective four countries (home group), to allow a conclusion of a possible relationship between competence development and the study abroad. The design of the study has a quasi-experimental pre-test/post-test control group set-up.

To answer the research question we collected three groups of data. First, data on the competence levels of the participants. Second, data on participants' characteristics that may affect the odds of studying abroad in the Netherlands and that may affect the competence development. Third, data on family characteristics of the participant that also may affect the odds of studying abroad in the Netherlands or may affect the competence development.

Research instrument: competence level

We used the instrument which is described in chapter 3 of this thesis to collect data about the competence levels of the participants. The instrument is validated in a pilot setting in two ways. A content validation by students and experts to determine the item-competence match and a metric validation to select items on discriminatory power. The instrument is validated again with the empirical data of students as well as with comparable data of graduates (results of data analyses of graduates are in chapter 5). We looked at the distributions of the competence levels (see figure 4.2 and the statistics in table A.4.1. in the annex).

²⁴ The French students officially complete the programme a few months later as they follow a French 'Agricadre' (Bac+4) programme parallel to the Dutch programme.

Figure 4.2 Distribution of competence levels for student and graduates.

Most of the distributions of the competence levels show a normal kurtosis. Three distributions of the competence levels are significantly platykurtic (flatter than normal): the distribution of the competence 'to self-direct' for students at the start (z -score -1.97, $p < .05$), the distribution for the competence 'to present' for graduates (z -score -2.35, $p < .05$) and the distribution for the competence 'to self-direct' for graduates (z -score -2.18, $p < .05$).

We expect lower competence levels at the start of the academic year and therefore expect that the distribution of the competence levels of the students at the start of the academic year show a positive skewness. This is the case for the distribution of the competence levels of the competencies 'to organise' (z -score 2.25, $p < .05$) and 'to present' (z -score 2.57, $p < .05$), but the distribution of the levels of the competencies 'to co-operate' and 'to self-direct' are not skewed. On the other hand, we expect higher competence levels at the end of the academic year and thus that the distribution of the competence levels of the students at the end of the academic year show a negative skewness. This is only the case for the distribution of the competence levels of the competence 'to self-direct' (z -score -2.01, $p < .05$), while the competence levels of the other competencies show a normal distribution. Figure 4.2 shows that the distributions of the competence levels of students at the end of the academic year shift to the right compared to the distributions of the competence levels of students at the start of the academic year. This can be

an indication of competence growth during the academic year and will be analysed further in this chapter.

For the graduates, the distribution of the competence levels of ‘to organise’ is not skewed, the distribution of the competence levels of ‘to present’ is positively skewed (z -score 2.11, $p < .05$), and the distribution of the competence levels of ‘to co-operate’ (z -score -2.24, $p < .05$), and ‘to self-direct’ (z -score -2.08, $p < .05$), are negatively skewed.²⁵

The reliability of the four scales of the competence instrument is checked by calculating the Cronbach’s α on the empirical data. Table 4.1 gives the results of the Cronbach’s α that is calculated on the competence measurements of the combined group of students at the start of the academic year and the competence measurements of graduates as well as the Cronbach’s α that is calculated on the competence measurements for the groups separately.

Table 4.1 *Results of Cronbach’s α test on the four competence scales*

Competence	Number of items in scale	Cronbach’s α				
		Students at start + Graduates	Students at start	Graduates	Students at end	Pilot study
To organise	19	.81	.76	.81	.77	.85
To present	14	.74	.67	.77	.67	.77
To co-operate	11	.65	.61	.63	.63	.75
To self-direct	12	.57	.54	.59	.51	.70
To self-direct (new scale)	10	.60	.55	.63	.54	.72
		n=570	n=263	n=307	n=203	n=108

The reliability of the scales for the competencies ‘to organise’ ($\alpha=.81$) and ‘to present’ ($\alpha=.74$) are good. The scale for the competence ‘to co-operate’ ($\alpha=.65$) was reasonable. The scale for the competence ‘to self-direct’ was weak ($\alpha=.57$) but becomes reasonable ($\alpha=.60$) after deleting two items. Therefore further analyses were done with a reduced scale for the competence ‘to self-direct’ and the other three scales remained unchanged.

The reliability of the scales are lower compared to the reliabilities as calculated for the developed instrument in the pilot study (see chapter 3). The reliability of the scales for ‘to organise’ and ‘to present’ (which were .85 and .77) are slightly lower, while the reliability of the scales for ‘to co-operate’ and ‘to self-direct’ are .10 point lower. The lower reliability of the scales is not surprising. In the pilot study we had a homogenous group of students. The students in the pilot group were all Dutch and had a 3 to 4 year experience with competence based education, which means that these students will probably have a more unambiguous interpretation of the items. In the current study we have a heterogeneous group of students from four different countries

25 Figure 4.2 also shows that the distributions of the competence levels of graduates on the labour market measured with our instrument, shift to the left compared to the distributions of the competence levels of students at the end of the bachelor programme. This can indicate that there is no further competence development after the bachelor study but we found that the difference in competence levels between bachelor students and graduates on the labour market is not always statistically significant.

with no competence based education experience. Also the graduates are a heterogeneous group as they come from different countries and some have competence based education experience and others do not have this experience. As a result of this heterogeneity the reliability of the scale will decrease. Nevertheless the reliability of the scales is still reasonable to good.

Research instrument: personal characteristics

Data that describe participants' characteristics that may affect the competence level and the decision to study abroad are split into two groups: personality traits and other personal and family characteristics.

Personality traits

To describe the personality traits participants completed a standard test with 25 items that is used at the University of Applied Sciences. This test identifies five personality factors based on the Big Five model (agreeableness, conscientiousness, extraversion, neuroticism and openness to experience). Participants indicated on a 5-point scale which description describes them best.

The reliability for the five sub-scales of personality traits is checked by calculating the Cronbach's α on the empirical data. The reliability of the scales improves after deleting one item. All analyses are done with the scales with four items. Table 4.2 gives the results of the reliability analysis of the scales for personality traits.

Table 4.2 *Results of Cronbach's α test on the scales for personality traits (Big Five)*

Competence	Number of items in scale	Cronbach's α		
		Students and Graduates	Students	Graduates
Agreeableness	5	.57	.59	.56
	4	.58	.59	.59
Conscientiousness	5	.66	.68	.64
	4	.68	.71	.65
Extraversion	5	.72	.72	.72
	4	.72	.72	.73
Neuroticism	5	.40	.38	.40
	4	.52	.51	.52
Openness	5	.37	.33	.37
	4	.42	.42	.41
		n=570	n=263	n=307

The reliability of the scales is good for extraversion ($\alpha=.72$), reasonable for conscientiousness ($\alpha=.68$), weak for agreeableness ($\alpha=.58$) and neuroticism ($\alpha=.52$) and very weak for openness to experience ($\alpha=.42$).

Other personal characteristics and family characteristics

The major topics of other personal characteristics were: study behaviour, study achievement, work experience and previous international experience. The major topics of the family characteristics were: the international mobility of the family, parents' education, parents' job and parents' income. This part of the questionnaire resulted in 24 questions. These characteristics are operationalized in the questionnaire using an existing instrument (Allen & Velden van der, 2011).

The final instrument consisted of a 14 page questionnaire with 105 items (annex B). National categories had to be used for schooling types and grades obtained.

The questionnaires were translated from English into Latvian, Hungarian, Polish and French. The translation was done by native speakers except for the French questionnaire that was translated by a language teacher and checked by a native speaker. All translators were familiar with the Dutch competence based education.²⁶ The translations were double-checked by students from the four countries who orally translated the questionnaires back into English. The back-translations gave no reason to change the translations.

Data recodes

Before analysing the data, the collected data are recoded into new, condensed, categories. Table A.4.2 in the annex gives the data transformation. When necessary, missing data were recoded into the category with the highest frequency or replaced by the mean (calculated without the missing data). Table A.4.3 in the annex gives the descriptive statistics of the variables used in the analysis.

Participants in the student survey

The mobile group of this study were diploma mobile students at a University of Applied Sciences in the Netherlands. All diploma mobile students from Latvia, Poland, Hungary and France of the academic years 2010-2011 and 2011-2012 were included in the research (non-response percentage is zero). The home group consisted of the peers of the internationally mobile students in the respective four countries who did not go abroad. We visited the universities and all peers who attended classes at the day of visiting were included in the research (non-response percentage is zero). The numbers of students involved in the research is given in table 4.3.

26 The Polish translation was done by a Polish lecturer of the University who is a graduate of the University and completed her Master degree in Poland; the Hungarian translation was done by a Hungarian/Dutch lady who studied in the Netherlands and currently works in Hungary; the Latvian translation was done by a graduate of the University who completed her Master degree in Latvia, now working in Latvia; the French translation was done by a French language lecturer of the University.

Table 4.3 *Participants in the study on competence development*

Country	Number of participants		
	Mobile group (in the Netherlands)	Home group (in home country)	Total number
Poland	12	21	33
Hungary	17	40	57
Latvia	22	47	69
France	34	70	104
Total number	85	178	263

In Poland the mobile students came from three universities at distant locations and because of logistics the home group in 2010-2011 was taken from one university while in 2011-2012 we did not succeed to organise a Polish home group. The diploma mobile students from Hungary came from three universities, and the home group was a mix from these three universities. In Latvia the mobile students came from two universities, but the home group came from one university which was the home university of the majority (80%) of the mobile students. This was done for logistic reasons. In France all students came from one university

The group of 263 students with a mean age of 22 years 4 months (SD 2 years, 1 month) included 122 males (46%) and 141 females (54%). Most of the students had been on a placement (75%), had study related work experience (60%) and had non-study related work experience (75%). About half of the students had a work or study period abroad (54%). The parents of the students had an average income, 37% of the fathers and 45% of the mothers were high educated (ISCED 5 or 6) and 7% of the students came from an immigrant family. More data of the students' characteristics are given in table A.4.3 in the annex.

Procedure

It suffices to measure the personal characteristics and the family characteristics of the students once, which was done at the start of the academic year.

To measure competence development two measurements of competence level are necessary. Therefore the students completed this part of the questionnaire at the start of the academic year and also at the end of the academic year. To connect the first (at the beginning) and second (at the end) questionnaires to each other the students filled in their name on a cover sheet.

The mobile students completed the first questionnaire during their first week in the Netherlands. The students received a hard copy of the questionnaire and completed the questionnaire in class. At the end of the academic year these students were on an internship programme and mailed the completed questionnaire to the university administration or completed the questionnaire after defending their thesis. For completing the second questionnaire the students received an incentive.

Also the home group completed the first questionnaire at the beginning of the academic year. Since the start date of the academic year is not the same in all countries, the home groups completed the questionnaires within a period of 6 weeks. The students received a hard copy of the questionnaire that was completed in class. The home group completed the second questionnaire

at the end of the academic year in class. Because of logistics and reducing costs the second data collection of the 2010-2011 academic year in France, Poland and Hungary was combined with the first data collection at the beginning of the 2011-2012 academic year. Also these students received an incentive for completing the second questionnaire.

4.4 Results

4.4.1 Selectivity checks

Two selectivity checks are done: (1) a check whether the research group of mobile students has similar characteristics as the group of students staying at the home university and (2) a check whether the response group (the group of mobile and home students that completed a questionnaire both at the start and at the end of the academic year) has similar characteristics as the non-response group (the group of mobile and home students that completed the first questionnaire only).

Selectivity check of mobile group versus home group

Students studying abroad in the Netherlands may be significantly different in background characteristics. To see whether there is selectivity on the chance to study abroad in the Netherlands we analyse in a binary logistic regression the characteristics that could have a predictive value on the odds of a student going to the Netherlands for study.

We are particularly interested whether competence levels have a predictive value on the odds of studying in the Netherlands (SIN) because these are the main variables to be affected by the study abroad. Therefore we estimate in the first model (equation 1) the effects of competence levels. We add dummies for the countries as well.

$$(1) \quad \text{Logit}(\text{SIN}_i) = \beta_0 + \beta_1 \text{Country}_i + \beta_2 \text{Competence}_i + \varepsilon_i$$

In this equation SIN_i indicates whether a student i goes abroad to study in the Netherlands, β_0 is the constant; Country_i is a vector of countries, Competence_i is a vector of competencies and ε_i is the residual term.

In the second model we add a vector of the Big-Five personality traits.

$$(2) \quad \text{Logit}(\text{SIN}_i) = \beta_0 + \beta_1 \text{Country}_i + \beta_2 \text{Competence}_i + \beta_3 \text{BigFive}_i + \varepsilon_i$$

In the third model we add a vector of the other personal characteristics (gender, age, prior education, grade obtained last year, hours spent on study last year, volunteer in study organisation, went on placement, study related work experience, non-study related work experience and whether the student went abroad for study or to work).

$$(3) \quad \text{Logit}(\text{SIN}_i) = \beta_0 + \beta_1 \text{Country}_i + \beta_2 \text{Competence}_i + \beta_3 \text{BigFive}_i + \beta_4 \text{OtherPersonalCharacteristics}_i + \varepsilon_i$$

In the fourth model we add a vector of the family characteristics (immigrant family, father high educated, mother high educated and parents' income).

$$(4) \quad \text{Logit}(SIN_i) = \beta_0 + \beta_1 \text{Country}_i + \beta_2 \text{Competence}_i + \beta_3 \text{BigFive}_i + \beta_4 \text{OtherPersonalCharacteristics}_i + \beta_5 \text{FamilyCharacteristics}_i + \varepsilon_i$$

Table 4.4 and table A.4.4. in the annex give the results of the binary logistic regression.

In the first model we see that there was no predictive value of the competencies 'to organise', 'to present' and 'to co-operate' on the odds of studying abroad in the Netherlands. However we did find that the odds of studying in the Netherlands were higher for students who had a lower competence level for the competence 'to self-direct'. This was an unexpected result. We expected that students who are more self-directing will make a well-considered decision to go abroad, yet they make the decision to stay home. When including personality traits, other personal characteristics and family characteristics in the model, we see an even stronger negative predictive value of the competence 'to self-direct' on studying abroad in the Netherlands. This is not problematic as the negative predictive value of the competence 'to self-direct' is against our hypothesis and will lead to more conservative estimates of the effect of studying abroad in the Netherlands.

In the second model there was, as expected from previous studies, some predictive value of the personality trait 'openness to experience'. Students who scored higher on 'openness to experience' were the more 'researching' types of person and were seeking new challenges. For these students seeking new challenges the odds of studying in the Netherlands were higher compared to their peers who were more 'conservative'. We did not find a predictive value of the personality trait 'neuroticism' as did some previous studies.

In the third model we see that there was some predictive value of a few other personal characteristics but not in the expected direction. The odds of studying in the Netherlands were higher for students who had lower grades, students who were not volunteers in a student organisation or another organisation, students with no work experience and students who had not been abroad yet. Other studies showed that students with higher grades, with more work experience and with more international experience have a greater chance of studying abroad. Other studies also found that more females study abroad, while we did not find a gender effect. Students with an academic secondary school education have a greater chance of studying abroad in the Netherlands.

In the fourth model we see that students from an immigrant family were less likely to go abroad compared to students from a local family.

Summarizing we could say that the odds of studying in the Netherlands were higher for students who had a lower competence level for the competence 'to self-direct' and who were not very active at the university (the students who had lower grades, not doing volunteer work at the university) nor outside the university (the students who had no work experience, not doing volunteer work). This is in contrast to what is known from previous studies. We have no obvious explanation for this unexpected selectivity, but this is not problematic as we can conclude that the mobile group of students at least is not a positively selected group. In line with previous studies the odds of studying in the Netherlands were higher for students who scored higher on the personality trait 'openness to experience'.

Table 4.4 *Logit estimates of studying in the Netherlands.*

Model	(1)	(2)	(3)	(4)
Term	Coefficient	Coefficient	Coefficient	Coefficient
Constant	.035	-3.076	6.582	10.121
Country (dummy)				
Poland	-.329	-.483	-3.006**	-3.490**
Latvia	-.183	-.132	-2.573**	-2.524**
Hungary	-.204	-.117	-2.096**	-2.123*
Competencies				
To organise	.102	.050	-.030	-.048
To present	.038	.067	.061	.069
To co-operate	.056	.073	.080	.095
To self-direct	-.158*	-.190*	-.264**	-.274**
Personality traits				
Agreeableness		-.126	-.149	-.160
Conscientiousness		.043	.057	.080
Extraversion		.011	-.053	-.037
Neuroticism		.068	.079	.080
Openness to experience		.304**	.333**	.357**
Other personal characteristics				
Gender			.444	.456
Age			-.057	-.062
Prior education			1.431**	1.615**
Grade last year			-.430**	-.505**
Hours spent on study last year			.195	.247
Volunteer in study organisation			-1.068**	-1.119**
Went on placement			-.173	-.111
Study related work experience			-.963*	-1.103**
Non-study related work experience			-.072	-.161
Went abroad for study or to work			-.834*	-.744
Family characteristics				
Immigrants				-2.133**
Father high educated				-.192
Mother high educated				-.714
Parents' income				-.344
Block χ^2		$\chi^2 (5) = 20.149^{**}$	$\chi^2 (10) = 45.804^{**}$	$\chi^2 (4) = 15.018^{**}$
Model χ^2	$\chi^2 (7) = 7,551$	$\chi^2 (12) = 27,700^{**}$	$\chi^2 (22) = 73,504^{**}$	$\chi^2 (26) = 88,521^{**}$
-2 Log likelihood	323.436	303.288	257.484	242.466*
Nagelkerke r ²	.040	.140	.341	.399

*p < .05 **p < .01

Selectivity check: Response group versus non-response groups

The response to the second questionnaire was 86% for the mobile group and 73% for the home group. Table 4.5 gives the details per country and per group of students.

Table 4.5 *Response to second questionnaire per country and per group of students*

	Mobile group of students (in the Netherlands)			Home group of students (in home country)		
	Number		% responded twice	Number		% responded twice
	Start	End		Start	End	
Poland	12	9	75	21	16	76
Hungary	17	15	88	40	18	45
Latvia	22	20	91	47	40	85
France	34	29	85	70	56	80
Total	85	73	86	178	130	73

There might be selectivity for the response group. To check whether there was selectivity for the response groups, we compare the response groups (completed a questionnaire at the start and at the end of the academic year) and the non-response groups (completed the first questionnaire only) in a binary logistic regression to detect the characteristics that have a significant predictive value on the odds that a student completed two questionnaires. This was done separately for the mobile group and the home group. The results are reported in tables A.4.5 and A.4.6 in the annex.

Because of the high response percentage (86% and 73%) we did not expect much predictive value of the included variables on completing the second questionnaire and this was confirmed in the logistic regression. Most important, in both groups we see no predictive value of the competence levels on completing the second questionnaire (see tables A.4.5 and A.4.6 in the annex). In the mobile group there are no characteristics that had a significant effect on the odds of completing the second questionnaire. There was some predictive value of other characteristics within the home group where students who went on placement before completing the first questionnaire had a smaller chance to complete the second questionnaire and students who have study related work experience had a greater chance of completing a second questionnaire. However, as the effects are small these results should not bias our analyses and we include them in our analyses as controls.

4.4.2 Competence development

We investigated whether students had any competence development during one academic year. Therefore, for the four competencies, we compare the mean competence level at the start with the mean competence level at the end of the academic year and calculate the competence growth for those students who completed the questionnaires at the start and at the end of the academic year. Table 4.6 gives the results. Table 4.6 also gives the observed difference in mean competence growth between students studying abroad in the Netherlands and students staying home.

Table 4.6 *Comparing competence levels at the start and at the end of the academic year and comparing competence growth between mobile group and home group (independent samples t-test)*

	Mean Mobile group (SE) n=73	Mean Home group (SE) n=130	Difference (mobile group- home group) (SE)	t-statistic difference (mobile group-home group) df=201
Start level ^a				
To organise	3.22 (0.17)	3.02 (0.16)	0.20 (0.25)	0.786
To present	3.25 (0.20)	3.07 (0.17)	0.18 (0.28)	0.662
To co-operate	4.56 (0.22)	4.29 (0.18)	0.26 (0.29)	0.900
To self-direct	5.15 (0.24)	5.51 (0.18)	-0.36 (0.30)	-1.191
Final level				
To organise	6.24 (0.21)	3.99 (0.16)	2.25 (0.26)**	8.659
To present	6.29 (0.20)	4.13 (0.17)	2.16 (0.27)**	9.063
To co-operate	6.97 (0.20)	4.98 (0.18)	1.99 (0.28)**	7.049
To self-direct	7.38 (0.19)	5.96 (0.19)	1.42 (0.29)**	4.987
Growth				
To organise	3.02 (0.17)**	0.97 (0.14)**	2.05 (0.23)**	9.056
To present	3.04 (0.20)**	1.07 (0.14)**	1.98 (0.24)**	8.088
To co-operate	2.42 (0.22)**	0.69 (0.17)**	1.73 (0.28)**	6.198
To self-direct	2.23 (0.23)**	0.45 (0.18)*	1.78 (0.29)**	6.077

^a Competence levels on a 0-10 scale * $p < .05$ ** $p < .01$

The mean competence levels at the start of the academic year are not significantly different between the mobile group and the home group. At the end of the academic year the mean competence levels of the mobile group are significantly ($p < .01$) higher than the mean competence levels of the home group. The results show a significant growth ($p < .05$) in competence level for all four competencies for students in the mobile group as well as for students in the home group. The results also show that for all four competencies the mean competence growth of students in the mobile group is higher than the mean competence growth of students in the home group. On average both groups show competence growth but not all students equally developed their competencies. For both groups of students, the mobile group and the home group, the frequencies per class of competence growth is shown in figure 4.3 for the four competencies.

Figure 4.3 Frequencies per class of competence growth for four competencies of mobile group of students and home group of students. The competence growth is based on competence levels, measured on a 0-10 point scale.

The bar diagrams of figure 4.3 show that in both groups there are students who increase their competence level on a 0-10 points scale by more than 5 points. On the other hand, there are also students who even decrease in competence level although less in the mobile group. The mobile group of students had less higher frequencies in the higher growth classes compared to the home group.

4.4.3 Competence development and international mobility

Now we know that there was a significant competence development during the academic year and that this competence development was significantly higher for students who studied in the Netherlands, the next question to answer is: was the difference in competence development between mobile students and their peers who stay at the home university related to studying at a university of applied sciences in the Netherlands? To answer this question we start with an OLS regression model. Thereafter we use a repeated measures design to control for possible relations between the error terms of first and second measure of competence level.

OLS regression models

We use regression models with the competence level at the end of the academic year as the dependent variable and the characteristics of the respondents as predictors. In the first regression model (equation 1) we estimate the effect of studying in the Netherlands and the effect of the competence level at the start of the academic year and add dummies for the countries.

$$(1) \quad Endlevel_i = \beta_0 + \beta_1 Startlevel_i + \beta_2 SIN_i + \beta_3 Country_i + \varepsilon_i$$

In this equation, $Endlevel_i$ is the competence level of student i at the end of the academic year, $Startlevel_i$ is the competence level at the start of the academic year, SIN_i indicates whether a student i goes abroad to study in the Netherlands, $Country_i$ is a vector with dummies for the home country of the student and ε_i is the residual term.

In the second model we added a vector with the variables for personality traits with the corresponding coefficients.

$$(2) \quad Endlevel_i = \beta_0 + \beta_1 Startlevel_i + \beta_2 SIN_i + \beta_3 Country_i + B_4 BigFive_i + \varepsilon_i$$

In the third model we added a vector with the variables of the other personal characteristics (gender, age, prior education, grade obtained last year, hours spent on study last year, volunteer in study organisation, went on placement, study related work experience, non-study related work experience and whether the student went abroad for study or to work).

$$(3) \quad Endlevel_i = \beta_0 + \beta_1 Startlevel_i + \beta_2 SIN_i + \beta_3 Country_i + B_4 BigFive_i + \beta_5 OtherPersonalCharacteristics_i + \varepsilon_i$$

In the fourth model we added a vector with the variables for the family characteristics (immigrant family, father high educated, mother high educated and parents' income) with the corresponding coefficients.

$$(4) \quad Endlevel_i = \beta_0 + \beta_1 Startlevel_i + \beta_2 SIN_i + \beta_3 Country_i + B_4 BigFive_i + \beta_5 OtherPersonalCharacteristics_i + \beta_6 FamilyCharacteristics_i + \varepsilon_i$$

Table 4.7 - table 4.10 and table A.4.7 - A.4.10 in the annex give the results of the OLS for the four different competencies.

Table 4.7 *Competence 'to organise': competence level at the end of the academic year (OLS)*

Model	(1)	(2)	(3)	(4)
Term	Coefficient	Coefficient	Coefficient	Coefficient
Constant	2.372**	1.088	-3.066	-3.139
Studied in the Netherlands	2.151**	2.133**	2.255**	2.213**
Competence level at start	.602**	.584**	.569**	.566**
Country (dummy)				
Poland	-.192	-.271	-.844	-.802
Latvia	-.362	-.314	-.693	-.687
Hungary	-.467	-.593	-1.525**	-1.516**
Personality traits				
Agreeableness		.027	.032	.032
Conscientiousness		.053	.042	.044
Extraversion		.040	.044	.048
Neuroticism		-.051	-.039	-.034
Openness to experience		.022	.020	.018
Other personal characteristics				
Gender			.226	.244
Age			.175	.170
Prior education			.001	-.016
Grade last year			.132	.131
Hours spent on study last year			-.066	-.059
Volunteer in study organisation			-.368	-.365
Went on placement			.331	.299
Study related work experience			-.135	-.109
Non-study related work experience			.109	.127
Went abroad for study or to work			.074	.069
Family characteristics				
Immigrants				.247
Father high educated				.121
Mother high educated				.056
Parents' income				-.010
Adjusted R ²	.538	.546	.551	.543
Regression	479.919	496.389	519.379	520.830

*p < .05 **p < .01

Table 4.8 *Competence 'to present': competence level at the end of the academic year (OLS)*

Model	(1)	(2)	(3)	(4)
Term	Coefficient	Coefficient	Coefficient	Coefficient
Constant	2.401**	1.679	3.196	2.493
Studied in the Netherlands	2.062**	1.915**	1.929**	2.030**
Competence level at start	.573**	.562**	.581**	.567**
Country (dummy)				
Poland	.097	.089	.503	.286
Latvia	-.061	-.131	.660	.550
Hungary	-.136	-.235	.494	.343
Personality traits				
Agreeableness		-.094	-.096	-.096
Conscientiousness		.052	.062	.053
Extraversion		.014	.016	.007
Neuroticism		-.014	-.006	-.013
Openness to experience		.123*	.131*	.126*
Other personal characteristics				
Gender			-.026	.010
Age			-.121	-.093
Prior education			-.208	-.169
Grade last year			-.025	-.003
Hours spent on study last year			.001	-.014
Volunteer in study organisation			-.118	-.112
Went on placement			.661*	.608
Study related work experience			-.406	-.467
Non-study related work experience			.296	.272
Went abroad for study or to work			.318	.277
Family characteristics				
Immigrants				-.310
Father high educated				-.101
Mother high educated				-.184
Parents' income				.235
Adjusted R ²	.501	.510	.517	.517
Regression	458.378	476.408	503.810	512.234

*p < .05 **p < .01

Table 4.9 *Competence 'to co-operate': competence level at the end of the academic year (OLS)*

Model	(1)	(2)	(3)	(4)
Term	Coefficient	Coefficient	Coefficient	Coefficient
Constant	2.857**	2.009	3.879	3.964
Studied in the Netherlands	1.911**	1.901**	2.049**	2.048**
Competence level at start	.504**	.503**	.497**	.501**
Country (dummy)				
Poland	-.075	-.029	.302	.365
Latvia	.177	.277	.806	.840
Hungary	-.644	-.517	.061	.175
Personality traits				
Agreeableness		.004	.002	.004
Conscientiousness		-.017	-.011	-.006
Extraversion		.075	.092	.089
Neuroticism		.032	.057	.057
Openness to experience		-.033	-.043	-.040
Other personal characteristics				
Gender			.335	.339
Age			-.137	-.143
Prior education			.178	.230
Grade last year			.000	-.015
Hours spent on study last year			.027	.035
Volunteer in study organisation			-.281	-.292
Went on placement			.295	.317
Study related work experience			-.058	-.051
Non-study related work experience			-.134	-.135
Went abroad for study or to work			.015	.047
Family characteristics				
Immigrants				.250
Father high educated				-.175
Mother high educated				-.103
Parents' income				-.007
Adjusted R ²	.426	.420	.407	.398
Regression	413.110	421.497	437.340	440.804

*p < .05 **p < .01

Table 4.10 *Competence 'to self-direct': competence level at the end of the academic year (OLS)*

Model	(1)	(2)	(3)	(4)
Term	Coefficient	Coefficient	Coefficient	Coefficient
Constant	3.355**	2.565	2.520	1.988
Studied in the Netherlands	1.563**	1.503**	1.298**	1.341**
Competence level at start	.473**	.470**	.468**	.479**
Country (dummy)				
Poland	-.446	-.468	-.526	-.718
Latvia	.000	-.065	-.310	-.417
Hungary	.423	.318	.144	-.108
Personality traits				
Agreeableness		.028	.020	.020
Conscientiousness		.021	.004	-.005
Extraversion		-.054	-.064	-.077
Neuroticism		-.005	-.011	-.026
Openness to experience		.079	.089	.079
Other personal characteristics				
Gender			-.227	-.286
Age			.031	.062
Prior education			-.247	-.310
Grade last year			.026	.048
Hours spent on study last year			.015	-.003
Volunteer in study organisation			.242	.274
Went on placement			-.288	-.294
Study related work experience			.479	.416
Non-study related work experience			.068	.058
Went abroad for study or to work			-.123	-.197
Family characteristics				-.395
Immigrants				-.121
Father high educated				.319
Mother high educated				.161
Parents' income				
Adjusted R ²	.328	.320	.305	.303
Regression	296.184	303.776	320.662	331.357

*p < .05 **p < .01

In the first model we see for all four competencies a significant effect ($p < .01$) of the competence level at the start of the academic year on the competence level at the end of the academic year. The effect was the strongest for the competence 'to organise' ($B=.60$) and the weakest for 'to self-direct' ($B=0.47$). This means that, on average, for every point a student scored on a 0-10 scale for competence level at the start of the academic year, the student had a higher score at the end of the academic year of 0.47 points for the competence 'to self-direct', of 0.50 points for the competence 'to co-operate', 0.57 points for the competencies 'to present' and of 0.60 points for the competence 'to organise'.

In the first model there was also a significant effect ($p < .01$) of studying in the Netherlands on the competence level at the end of the academic year. The effect was the strongest for 'to organise' ($B=2.15$) and the weakest for 'to self-direct' ($B=1.56$). Students studying abroad in the Netherlands scored at the end of the academic year on a 0-10 scale for the competence 'to organise' 2.15 points higher than the students who stayed at home. For the competence 'to present' that was 2.06 points higher, for the competence 'to co-operate' 1.91 points higher and for the competence 'to self-direct' 1.56 points higher on a 0-10 point scale.

The effects of the competence level at the start of the academic year and studying in the Netherlands hardly changed after adding other variables in model 2, 3 and 4. This indicates that the difference in the competence levels at the end of the academic year is hardly caused by differences in the personality traits, other personal characteristics or family characteristics. There was a small effect of the personality trait 'openness to experience' on the end level of the competence 'to present' ($p < .05$). For every point scored higher on 'openness to experience' (4-20 scale), that was towards a more open type of person, the end level of the competence 'to present' was 0,1 point higher. Students who had a higher score on the personality trait 'openness to experience' also had a greater probability of studying abroad in the Netherlands, and therefore the effect of this personality trait on competence level at the end of the academic year was not surprising. On the other hand, there was no effect of 'openness to experience' on the competence level at the end of the academic year of other competencies.

Repeated measures design

As a robustness check, we also analysed the data in a repeated measures design to control for correlated measurement errors in the competence development.²⁷

The OLS results revealed that most variables do not affect the competence level at the end of the year. Therefore we can use a simple mixed repeated measures design with a limited number of variables. We are most interested in the effects of studying in the Netherlands and the effect of home country and the effect of competence level at the start of the academic year on the competence levels at the end of the year. That implies two within-subject factors and two between-subject factors. The within-subject factors are the changes within the students, that is (1) the changes over time, (between the 'start' of the academic year and the 'end' of the academic year)

27 Where the OLS partitions the total variance SS_t into variance SS_m that is explained by the regression model and the unexplained variance SS_r ($SS_t = SS_m + SS_r$), the repeated measures design partitions the total variance SS_t into the variance between participants as a result of the experiment SS_b and the variance within the participants SS_w . This variance within participants is split into variance SS_m that is an effect of the experimental condition and unexplained variance SS_r . Summarizing: $SS_t = SS_b + (SS_m + SS_r)$.

and (2) the changes in competence levels (for the four competencies ‘to organise’, ‘to present’, ‘to co-operate’ and ‘to self-direct’). The between-subject factors are the differences in (1) ‘group’ (the mobile group versus the home group) and (2) ‘country’ (Poland, Hungary, Latvia and France). The structure of the repeated measures analyses is as follows:

- Analysis of the one way effects (the main effects of the within-subject factors and the between-subject factors). With four factors, there are four main effects.
- Analysis of the two-way interaction effects (the interaction effects of the within-subject factors and the between-subject factors with each other). With four factors, there are six two-way interaction effects.
- Analysis of the three-way interaction effects of the within-subject factors and the between-subject factors. With four factors, there are four three way interaction effects.
- Analysis of the four-way interaction effect (interaction of all four factors together).

Main effects

a. Time

There was a significant main effect of the within-subject factor time on competence levels, $F(1,195) = 406.06$ ($p < .01$), $r = .82$, Observed power 1.0. Estimated marginal means of competence level at start $M = 3.96$ ($SE=.012$) and competence level at end $M= 5.69$ ($SE=.011$).

b. Competence

There was a significant main effect of the within-subject factor competence on competence levels, $F(2.53, 493.67) = 113.34$ ($p < .01$), $r = .06$, Observed power =1.0. Estimated marginal means of competence level for ‘to organise’ $M = 4.01$, $SE=0.12$, for ‘to present’ $M= 4.09$, $SE=0.13$, for ‘to co-operate’ $M=5.16$, $SE=0.14$, for ‘to self-direct’ $M=6.04$, $SE=0.14$.

c. Group

There was a significant effect of the between-subject factor group on the competence levels, $F(1, 195) = 26.42$ ($p < .01$). Estimated marginal means of competence level of mobile students $M = 5.37$, $SE= 0.17$ and for home students $M=4.27$, $SE=0.13$.

d. Country

There was a non-significant ($p > .05$) main effect of the between-subject factor country on the competence levels.

The main effects indicate that the competence levels change over time, that the competence levels are significantly different for the four competencies and that competence levels are significantly different between the mobile group and the home group. There is no main effect of country on the competence levels, indicating that the competence levels are not significantly different between students from the four countries.

Two-way interaction effects

a. Competence * group

There was a significant interaction effect between competence and group, $F(2.53, 493.67) = 6.09$ ($p < .01$). These results imply that the competence levels of the four competencies were significantly higher for the mobile group compared to the home group. This is shown in table 4.11 and figure 4.4.

Table 4.11 *Estimated marginal means of competence levels of mobile group and home group*

Competence	Mean competence level (SE)	
	Mobile group	Home group
To organise	4.72 (0.19)	3.31 (0.15)
To present	4.68 (0.20)	3.49 (0.16)
To co-operate	5.84 (0.22)	4.49 (0.17)
To self-direct	6.26 (0.22)	5.81 (0.18)

Figure 4.4 Estimated marginal means of competence level for groups of students per competence.

b. Time * group

There was a significant interaction effect between time and group, $F(1, 195) = 117.11$ ($p < .01$), $r = .61$, Observed power = 1.0. The mean competence levels of the mobile group at start is 4.05 (SE=0.18) and at the end 6.70 (SE=0.18) and the mean competence levels of the home group at start 3.88 (SE=0.14) and at the end 4.68 (SE=0.14). The results show that the mean competence levels of the mobile increase significantly more than the competence levels of the home group. The growth of competence levels is shown in figure 4.5.

Figure 4.5 Estimated marginal means of competence level for mobile group and home group.

c. Time * competence

There was a significant interaction between time and competence, $F(2.66, 518.27) = 8.85$ ($p < .01$), $r = .21$, Observed power = .99 which means that the growth of competence levels was significantly different for the four competences. Table 4.12 and figure 4.6 give the estimated marginal means of competence levels at the start and at the end of the academic year.

Table 4.12 *Estimated marginal means of competence levels at the start and at the end of the academic year.*

	Mean competence level	
	at start (SE)	at end (SE)
To organise	3.01 (0.14)	5.01 (0.14)
To present	3.02 (0.14)	5.15 (0.14)
To co-operate	4.42 (0.16)	5.91 (0.16)
To self-direct	5.39 (0.17)	6.68 (0.16)

Figure 4.6 Estimated marginal means of competence levels at the start and at the end of the academic year.

From the table 4.12 and figure 4.6 we see that the mean competence level at the start and at the end of the academic year is higher for the competencies 'to self-direct' and 'to co-operate' compared to the competencies 'to organise' and 'to present'. To break down these differences, contrasts were performed comparing all four competencies with each other for the interaction effects of 'time x competence'. These contrasts revealed that the interaction 'time x to self-direct' was significantly different from the interaction 'time x to organise' ($F(1,195)=11.32, p < .01$) and the interaction 'time x to present' ($F(1,195)=17.94, p < .01$). There was also a significant difference between the interaction 'time x to co-operate' and the interaction 'time X to organise' ($F(1,195)=9.27, p < .01$) as well as the interaction 'time x to present' ($F(1,195)=11.92, p < .01$). The interaction 'time x to self-direct' was not significantly different from the interaction 'time x to co-operate', which was also the case for interaction 'time x to organise' and the interaction 'time x to present' ($p > .05$). This means that the growth in competence levels is significantly less for 'to self-direct' and 'to co-operate' compared to the growth in competence levels of 'to present' and 'to organise'.

d. Competence * country

There was a significant interaction effect between competence and country, $F(7.60, 493.67) = 7.00 (p < .01)$, $r = .31$ Observed power = 1.0. These results mean that competence levels of the four competencies were significantly different between the students from different countries. This is shown in table 4.13 and figure 4.7.

Table 4.13 *Estimated marginal means of competence levels per competence per country*

	Mean competence level (SE)			
	Poland	Hungary	Latvia	France
To organise	4.11 (0.31)	3.49 (0.27)	3.97 (0.21)	4.48 (0.17)
To present	4.10 (0.32)	4.01 (0.27)	3.40 (0.21)	4.84 (0.18)
To co-operate	5.49 (0.36)	4.63 (0.30)	5.24 (0.23)	5.28 (0.20)
To self-direct	5.83 (0.36)	6.42 (0.30)	6.04 (0.24)	5.85 (0.20)

Figure 4.7 Estimated marginal means of competence level per country per competence.

e. Country * group

The interaction effect between country and group was non-significant ($p > .05$). This means that we see for students from all four countries higher marginal mean competence levels of the mobile group of students compared to the home group of students (figure 4.8).

Figure 4.8 Estimated marginal means of competence levels per country for home group of students and mobile group of students.

f. Time * country

The interaction effect between time and country was not significant ($p > .05$). The results show that the competence growth is not significantly different for students from the four countries. Figure 4.9 shows the estimated marginal means of competence level for groups of students per country.

Figure 4.9 Estimated marginal means of competence level for groups of students per country.

The two-way interactions show that the average competence levels of the four competencies are significantly higher for mobile students than for home students which is due to the higher competence levels of all four competencies for the mobile group at the end of the academic year. At the same time the results show that the growth of competence levels is different for the four competencies. The results also show that the competence levels are significantly different in the

four countries, but in all four countries the average competence levels of the mobile students are always higher than the home students and the growth of competence levels is not significantly different in the four countries.

Three-way interaction effects

a. Time * competence * group

The interaction effect time * competence * group was not significant ($p > 0,05$), which means for all competencies the competence growth was higher in the mobile group compared to the home group (the significant effect of the time*group interaction). Figure 4.10 shows the estimated marginal means of competence levels of four competencies for mobile group and home group at the start and at the end of the academic year.

Figure 4.10 Estimated marginal means of competence levels of four competencies for mobile group and home group at the start and at the end of the academic year.

b. Time * competence * country

The interaction effect time * competence * country was not significant ($p > 0,05$), which means that the observed significant effect of time on the competence levels (i.e. increase in competence level) occurs in all countries in the same way.

c. Time * group * country

The interaction effect time * group * country was not significant ($p > 0,05$), which means that the observed significant higher competence growth of mobile students compared to home students was not significantly different between the countries. This is shown in figure 4.11 where the pattern of competence growth was the same for students from the four countries, but the level of competence was different.

Figure 4.11 Estimated marginal means of competence levels of four competencies for mobile group and home group at the start and at the end of the academic year.

d. Competence * group * country

The interaction effect competence * group * country was not significant ($p > 0,05$) which means that the observed higher competence levels for the mobile group compared to the home group (the competence*group interaction) applied to all countries.

The four-dimensional interaction effect time * competence * group * country was not significant ($p > 0,05$).

The analysis in a repeated measurement design confirms the results of the analyses in a regression design. The competence development of mobile students studying in the Netherlands was higher compared to their peers who stay at home. The higher competence development applies to all competencies and was not different for students from different countries. A covariate analyses showed no significant effects of the covariates.

4.5 Conclusion

The analyses reported in this chapter have shown that there was no selectivity of having a higher competence level at the start of the academic year on the chance of students studying in the Netherlands. On the contrary, the odds for studying abroad in the Netherlands were higher for students who had a lower competence level for the competence ‘to self-direct’.

There are a few characteristics of students that affect the chance of students going to study in the Netherlands. As expected from previous studies, the odds for studying abroad in the Netherlands were higher for students who were more open to new experiences. On the other hand, we did not find, as did some previous studies, an effect of neuroticism on the odds of studying abroad in the Netherlands. The odds for studying abroad in the Netherlands were higher for students who had lower grades, students who were not volunteer in a student organisation or another organisation, students with no work experience, students who did not go abroad so far and students who do not come from an immigrant family. This is in contrast to what is known from previous studies that showed that students with higher grades, with more work experience and with more international experience have a greater chance of studying abroad. Other studies also

found that more females study abroad, while we did not find a gender effect. We have no obvious explanation for this unexpected selectivity. On the other hand the somewhat negative selectivity of mobile students is not problematic as we can conclude that the mobile group of students at least is not a positively selected group.

The results also indicate that there is no important selectivity whether or not students complete one or two questionnaires.

In other words, there was some negative selectivity for studying in the Netherlands and there was no difference between the response group to the second questionnaire and the non-response group. It implies that there is no indication that any differences found in competence levels at the end of the academic year between the mobile group, students studying in the Netherlands, and the home group, students staying at the home university, are an effect of personal characteristics or family characteristics and, more important, an effect of competence levels at the start of the academic year.

The analyses on competence level at the end of the academic year have shown that the competence level at the beginning of the academic year and whether or not the students studied in the Netherlands affect the competence level at the end of the academic year. Students, in the mobile group and in home group, who have a higher score on the competence level in the beginning of the year, are more likely to show a higher competence level at the end of the year. Students who studied in the Netherlands are more likely to have a higher competence level at the end of the year compared to their peers who stayed at home. Other personal or family characteristics that explained a difference between the students studying in the Netherlands and the students staying home, do not explain the difference in competence level at the end of the academic year. So, there is a significant effect of studying in the Netherlands that explains the difference in competence level at the end of the academic year.

With these results it is interesting to analyse whether or not this advantage in competence levels will materialise when these students enter the labour market. This will be analysed in chapter 5.

Chapter 5

Labour market benefits of having studied abroad

5.1 Introduction

In this chapter we look into the effects of international student mobility into a competence based programme on the labour market position of graduates. This analysis answers two research questions:

3. *What are the benefits on the labour market of having studied in a competence based bachelor programme at a University of Applied Sciences?*
4. *How do graduates use the competencies that they have developed in a competence based bachelor programme in their professional work?*

To answer these two research questions we analyse the labour market position of graduates who studied at a University of Applied Sciences in the Netherlands compared to graduates who did not study in the Netherlands. The latter group is split into a group of graduates who never went abroad during the studies and a group of graduates who went abroad during their studies but not to the Netherlands. The current chapter is organised as follows. Section 5.2 describes characteristics of graduates affecting labour market benefits. Section 5.3 describes the methods used to answer the research sub-questions. Section 5.4 gives the results of the analyses of labour market positions of graduates. Section 5.5 gives the Net Present Value of studying at a Dutch University of Applied Sciences and finally, section 5.6 gives the conclusions.

5.2 Characteristics of graduates affecting labour market benefits

In this chapter we look at the predictive value of international mobility during the studies on labour market outcomes and at the predictive value of competence levels on labour market outcomes. As we saw in chapter 4, mobile and non-mobile students are different with respect to some personal characteristics. The odds for studying abroad in the Netherlands are higher for students who are more open to new experiences, for students who have lower grades, for students who are not volunteer in a student organisation or another organisation, for students with no work experience, for students who did not go abroad so far and for students who do not come from an immigrant family. To determine the impact of international student mobility and the impact of competencies on labour market benefits it is necessary to take these characteristics into consideration. But we also have to take into consideration possible predictors of labour market benefits. These possible predictors of labour market benefits are: (1) situational characteristics, (2) personal characteristics and (3) family characteristics of the graduates. For situational characteristics we consider the country in which the graduate works and the size of the organisation where the graduate is employed. For personal characteristics that might influence the labour market benefits we distinguish: personality traits, gender, age, average grade at graduation and work experience during studies. We take the level of the parent's education as family characteristic into account as well. We briefly explain how these factors may affect labour market benefits

Situational characteristics

Country specific situations may affect the transition of higher education graduates into the labour market (Robert, 2011). There are country differences in gender equality for chances on the labour market and country differences in average income (standardised by purchasing power parity²⁸) (Mora, Vila, & Garcia-Aracil, 2005; Støren & Arnesen, 2011). Depending on the economic situation in the countries, the likelihood of being unemployed differs between countries (OECD, 2013b; Velden van der & Wolbers, 2003). The country's educational system, in particular with respect to the integration of the world of work into the curriculum (like placements, assignments) may have an effect on the transition of higher education graduates into the labour market (Velden van der & Wolbers, 2003). But also labour market structures, like labour market legislation, employment protection and coverage of trade unions affect the chance of getting employment after graduation (Ryan, 2001; Saar et al., 2008). For our research it is worth mentioning that the transformation of the Central and Eastern European countries from a state planned economy towards a more open market economy had a negative impact on employment rates. The transition in Hungary and Estonia lead to higher participation in higher education which was not accompanied by an equal increase in corresponding jobs (Kogan & Unt, 2005). This might also be true for Poland and Latvia.

The *size of an organisation* may influence the income. Graduates who are employed in larger companies have a higher income than graduates employed in small or medium size companies (Fox, 2009; Schmidt & Zimmermann, 1991; Schomburg, 2011).

Personal characteristics: personality traits

Tupes and Christal empirically found five factors to describe personality traits, now known as the five-factor model of personality or the Big Five (Tupes & Christal, 1961). The five-factor model of personality is a description of personality traits in terms of five basic dimensions: Agreeableness, Conscientiousness, Extraversion, Neuroticism, and Openness to Experience (McCrae & John, 1992). The Big Five personality traits are frequently used in personnel selection research (Tett, Jackson, & Rothstein, 1991), to study the relationship between personality and job performance (Hurtz & Donovan, 2000) and to study the relation between personality and job satisfaction (Judge, Heller, & Mount, 2002). Some scholars argue that studying the relationship between detailed job descriptions and personality requires more contextualised personality descriptors than the broad Big Five dimensions (Lievens, De Corte, & Schollaert, 2008; Pace & Brannick, 2010). The broad scope of the Big Five dimensions may be the reason for somehow conflicting results of empirical studies. On one hand studies in the nineties found that only the Big Five dimension 'conscientiousness' is a consistent predictor for job performance while the predictive value of the other personality traits depends on the occupation and on the job performance criterion used (Barrick & Mount, 1991; Tett et al., 1991). On the other hand, scholars found that all personality traits play a part in job performance (Borghans, Duckworth, Heckman, & Weel ter, 2008; Rust, 1999). A rather obvious explanation for the conflicting results is that different jobs have different requirements and scholars usually do not study the same jobs. However, in the past decades, the

28 ppp=Purchasing Power Parity, which is a technique to adjust official currency exchange rates in such a way that the purchasing power becomes equivalent.

Big Five traits have been replicated in many different contexts and validated against a number of different criteria (Lounsbury et al., 2012). At the same time there are few studies into the effects of personality on labour market outcomes of graduates who enter the labour market. The results of a study amongst Dutch university graduates show that personality traits have a direct and solid effect on labour market outcomes (Semeijn, Boone, Velden van der, & Witteloostuijn van, 2005).

Agreeableness is related to interpersonal interactions and co-operation. Agreeable people may be more successful in occupations where teamwork and customer service are important (Hurtz & Donovan, 2000; Lounsbury et al., 2012). Extremely agreeable people may sacrifice their success in pleasing others (Judge, Higgins, Thoresen, & Barrick, 1999). People scoring low on agreeableness are able to make tough decisions (Rust, 1999) and may perform better in some managerial positions.

Conscientiousness, related to reliability, dedication and commitment, appears to have the strongest relationship to overall job performance of the Big Five personality traits and it is generalizable for all occupations (Hurtz & Donovan, 2000; Salgado, 1997). High scorers on conscientiousness are hard-working and reliable people who excel in tasks that require specific attention, although they may pay too much attention to details (Rust, 1999). High scores are more beneficial for performance in high complexity jobs than in low complexity jobs (Le et al., 2011). Low scorers on conscientiousness are less patient (Rust, 1999). The strength of the relationship between conscientiousness and job performance depends on the person's scores on the other personality traits. The relationship between conscientiousness and job performance is stronger for persons high in agreeableness than for those low in agreeableness (Witt, Burke, Barrick, & Mount, 2002). For introverted workers conscientiousness is unrelated to job performance, for extraverted and highly conscientious people there is a positive relationship and for extraverted and low conscientious people there is a negative relationship between conscientiousness and job performance (Witt, 2002). The literature also suggests a positive relationship between conscientiousness and job satisfaction (DeNeve & Copper, 1998; Judge et al., 2002; Lounsbury et al., 2003).

Extraversion in jobs is often called sociability (Barrick & Mount, 1991; Judge et al., 1999). Extraverts are generally happier working with others in a team, while introverts generally prefer work that requires a degree of independence (Rust, 1999). Extraversion is a valid predictor of performance in jobs that are characterised by social interaction, such as sales, customer services and personnel managers (Barrick & Mount, 1991; Rothmann & Coetzer, 2003). There are well known effects on job performance through interactions between extraversions and other personality traits. The combination of emotional stability and extraversion (a calm but buoyant personality) may lead to better performance than either trait on its own (Judge & Erez, 2007). High extraversion may be necessary for conscientious workers to reach the highest levels of effectiveness. In other words, without extraversion, conscientiousness may add little to performance in jobs requiring interpersonal interaction (Witt, 2002). Extraverts are more satisfied with their job than introverts (Judge et al., 2002).

Neuroticism, or emotional stability, is the level of emotional resilience to stressful situations and job pressure (Lounsbury et al., 2012). High scorers, neurotics, will be of a nervous disposition but will also show empathy for others. Emotionally balanced people stay calm in stressful situations and will perform well but emotionally balanced people may not exercise great caution (Rust, 1999). Emotional balance is more beneficial in high-complexity jobs than in low-

complexity jobs (Le, 2009). We mentioned the interactions between neuroticism and extraversion on job performance. Neuroticism emerged as the strongest and most consistent correlate of job satisfaction (Judge et al., 2002). Emotional stable people are more satisfied with their jobs than neurotics (Lounsbury et al., 2012; Lounsbury et al., 2003).

Openness to experience is the level of receptivity for change and innovation (Lounsbury et al., 2012). Openness may be especially helpful in jobs that require people to adapt to rapidly changing work demands. Open people want to do things in an unconventional way while closed people prefer the traditional way of doing things (Rust, 1999). Of the Big Five, 'openness to experience' is the least predictive for job performance. Griffin (2004) argues that might be due multidimensionality of this personality factor: a negative relationship between job performance and the dimension openness to internal experience (reflection) and a positive relation between job performance and the dimension openness to external experience (environment) resulting in low correlations between openness to experience and job performance (Griffin & Hesketh, 2004). There is a positive relation between openness to experience and job satisfaction (Lounsbury et al., 2012).

Other personal characteristics

Gender and *age* are usually included as 'standard' controls in labour market analyses. Gender may play a role in labour market success in different ways. In the transition from university to labour market female graduates in Hungary, Estonia and Slovenia have a significantly lower probability of getting their first job (Kogan & Unt, 2005) although results from another study in Hungary showed that there are no gender differences (Audas, Berde, & Dolton, 2005). In the HEGESCO²⁹ study female graduates have a significant longer job search period than males (Allen et al., 2011c). The unemployment rate reported in the CHEERS study is 4.8% for women compared to 2.8% for men (Mora et al., 2005). Three large scale studies, the CHEERS study, the REFLEX study and the HEGESCO study found that women earn 7-10% less (Allen et al., 2011c; Garcia-Aracil & Velden van der 2008; Mora et al., 2005). The REFLEX study showed that females end up more often in lower level jobs but females have a slight advantage compared to males in getting a job where they can fully utilise their skills (Velden van der & Allen, 2011).

In most countries salary increases with age. In addition older persons generally have a higher status in organisations than younger employees (Kuijpers, Schyns, & Scheerens, 2006).

Grade point average (GPA) at graduation is a well-known predictor of labour market success. Employers use the GPA as a filter in the selection process (Stuart, Lido, Morgan, Solomon, & May, 2011). The HEGESCO study revealed that good grades shorten the job search period after graduation, which was not confirmed in the REFLEX study (Allen et al., 2011c). The REFLEX study showed that having a high relative grade prevents graduates from falling down to low level jobs (Velden van der & Allen, 2011). The HEGESCO study found a weak effect of grades on wages (+ 0.6%) (Allen et al., 2011c) and the REFLEX study found that grades above average increase the wage by 3 per cent. This was also found in a Dutch study where employers of graduates in business administration reward every 0.5 higher GPA (1-10 scale) with € 60-70 higher monthly starting salary (Bijker, 2013).

29 HEGESCO: Higher Education as a Generator of Strategic Competences; this study used the REFLEX methodology in 2008 to collect data from 9,000 graduates in 5 European countries that were not included in the REFLEX project.

Further education after bachelor graduation and obtaining a master degree increases the person's human capital and may be rewarded on the labour market with a wage gain of 11% (Titus, 2007). Also a PhD degree will be awarded with a wage gain of 5 to 13 per cent compared to second degree holders (Mertens & Röbbken, 2013; Støren & Arnesen, 2011). Most of the participants in our graduate survey will have obtained a second degree, however, we do not expect that many graduates in our study will have completed a PhD already.

Work experience during studies particularly affects search duration. Work experience will build up the CV profile and enhances employability after graduation (Stuart et al., 2011). Another possibility is that graduates continue working for their employer after graduation. Results of the HEGESCO study showed a significant shorter search duration for graduates with study related work experience (search period less by half) but no effect for non-study related work experience. The HEGESCO study also showed that work experience results in a significant higher salary, but the effect depends on the country (from no effect to +8% higher salary) (Allen et al., 2011c). The REFLEX study showed that graduates who had study related work experience as a student, are more often employed with relevant work which means no horizontal or vertical mismatch (Støren & Arnesen, 2011).

Some scholars report that also volunteer work provides work experience, shortens the search period (Allen et al., 2011c) and raises the future earnings (Day & Devlin, 1998; Ruiter & Graaf de, 2009) but others report no effect of volunteer work on labour market outcomes (Allen et al., 2011c).

Family characteristics

The educational level of parents has some predictive power for the labour market success of university graduates. The HEGESCO study reported a significant shorter job search period for university graduates with a higher educated father (search period less by 80%) (Allen et al., 2011c). University graduates with tertiary educated parents have a lower probability of being over-educated in their first job compared with graduates with lower educated parents (Kogan & Unt, 2005). On the other hand, Audas (2005) found that parent's level of education has little predictive value on initial labour market decisions once having controlled for GPA. REFLEX data showed that having parents with higher education increases the wage with about 2 per cent point (Støren & Arnesen, 2011). CHEERS data revealed that graduates with higher educated parents were more often satisfied with their job (69%) than those whose parents had a non-higher education (61.5% satisfied with their job) (Mora et al., 2005).

Also parents' employment has some predictive power on the labour market success. Those who had fathers employed in non-qualified jobs had a lower chance of getting their first job (Pozzoli, 2009).

In the analysis of the labour market position of graduates we shall control for these characteristics that may affect the labour market position of the graduates i.e. personal characteristics (personality traits, gender, age, GPA, work and volunteer experience during the studies, completed post graduate programme), the parents' education and environmental characteristics (country and size of organisation).

5.3 Methods used.

The objective of the study is to compare the labour market position of graduates of the Dutch University of Applied Sciences with graduates who did not study in the Netherlands. We measured the labour market situation for graduates from universities in Poland, Hungary, Latvia and France who studied at a University of Applied Sciences in the Netherlands. We also measured the labour market situation of two reference groups. The first reference group are graduates who graduated from the same universities as the research groups, and also studied abroad, but not in the Netherlands.³⁰ The second reference group are graduates, also from the same universities as the research groups and the first reference group, who never studied abroad. In the analyses we compare the labour market situation of these three groups with each other. The research design is given in figure 5.1.

Figure 5.1 Research design.

The research instrument

The instrument will generate data to analyse the effect of international mobility during the studies and the effect of competence levels on labour market success while controlling for other characteristics of graduates. Therefore the instrument includes three categories of questions to collect the required data.

First, questions that provide data to determine the labour market success of graduate. We distinguish four categories of predictive variables. First, the employment situation. Here we look into whether the graduates are (self)-employed, whether they faced period(s) of unemployment, whether they have a job matching their academic field and their academic level, and if they have supervisory responsibilities. Second, the importance of international experience in their work and the general use of skills. Third, the more subjective aspects of employment satisfaction and career prospects. Fourth, the wages earned. To operationalize the required variables we used an accepted and validated instrument (Allen & Velden van der, 2011).

30 Two French graduates completed a one month internship in the Netherlands.

Second, questions to collect data about the competence level of the participants. We use the instrument as described in chapter 3 (and adapted in chapter 4) to collect these data.

Third, questions to collect data about characteristics of participants that may influence the labour market position. These characteristics are personality traits, other personal characteristics (like gender, age), family characteristics (education parents) and the size of the organisation. To operationalize these required variables we used an accepted and validated instrument (Allen & Velden van der, 2011).

Annex 2 gives the instrument that we used in the data collection. The instrument was translated from English into Latvian, Hungarian, Polish and French. The translation was done by native speakers except for the French questionnaire that was translated by a language teacher and checked by a native speaker. All translators were familiar with the Dutch competence based education.³¹ The translations were double-checked by students from the four countries who orally translated the questionnaires back into English. The back-translations gave no reason to change the translations.

Data transformation

Before conducting the analyses, the data are recoded into new categories to reduce the number of variables. When necessary, missing data were transformed into the most frequent category (categorical data) or the mean (continuous data). The data transformation is given in the annex, table A.5.1. and the descriptive statistics of the variables used in the analysis in table A.5.2 in the annex.

Participants in the graduate survey

The study has been done with graduates of the Dutch University of Applied Sciences who graduated in 2007, 2008 and 2009. All graduates from Poland and Hungary and 31% of the Latvian graduates completed a master degree at their home university about one year after their bachelor degree in the Netherlands. Of the Latvian graduates 69% entered the labour market with a (Dutch and Latvian) Bachelor Degree. The French graduates followed a two year double degree programme and obtained their Dutch bachelor degree after 16 months of study (that is, early 2008, 2009 or 2010) and the French ‘Agricadre’³² degree six months later. The graduates were interviewed between August and December 2011, and had 0-4 years of work experience (mean 2 years 6 months; SE 1 month). Table 5.1 gives the number of respondents included in the analyses.

31 The Polish translation was done by a Polish lecturer of the University who is a graduate of the University and completed her Master degree in Poland; the Hungarian translation was done by a Hungarian/Dutch lady who studied in the Netherlands and currently works in Hungary; the Latvian translation was done by a graduate of the University who completed her Master degree in Latvia, now working in Latvia; the French translation was done by a French language lecturer of the University.

32 The ‘Agricadre’ degree is a so-called BAC+4 degree: after the baccalauréat (exam of the lycée, the French academic secondary school) a four year university education (an MSc degree is a BAC+5 programme).

Table 5.1 *Number of respondents included in the analyses*

Country	Number graduates 2007-2009 studied in the Netherlands			Number references ^{a)}		Total number in analyses
	Total number	% responded	Number responded	Studied abroad elsewhere	Not studied abroad	
Latvia	29	93	27	10	43	80
Poland	47	70	33	3	58	94
France	27	70	19	28	5	52
Hungary	129	32	41	9	25	75
Total	232	53	120	50	131	301

a) the response % of the reference group is not known; see 'survey process', this section.

A total of 301 graduates are included in the analyses. Six questionnaires were not used in the analyses because the respondents graduated before 2007 (2 questionnaires), graduated in 2012 (2 questionnaires) or the date of graduation is missing (2 questionnaires). The reference group of graduates is split into a group of 50 graduates who never went abroad during the studies and a group of 131 graduates who went abroad during their studies but to another country.

Graduates who studied abroad in the Netherlands may be different in background characteristics which may affect the labour market outcomes. We analysed in a multinomial logistic regression the characteristics that may have a predictive value on the probability of a student having studied in the Netherlands or having studied abroad elsewhere with the equation:

$$\text{Logit}(\text{Abroad}_i) = \beta_0 + \beta_1 \text{Country}_i + \beta_2 \text{BigFive}_i + \beta_3 \text{OtherPersonalCharacteristics}_i + \varepsilon_i$$

In this equation Abroad_i indicates whether a student (i) goes abroad to study in the Netherlands or elsewhere, β_0 is the constant; Country_i is a vector of countries, BigFive_i is a vector of the Big-Five personality traits, $\text{OtherPersonalCharacteristics}_i$ is a vector of the other-personal-characteristics (gender, age, average grade at graduation, volunteer in study organisation, study related work experience during studies, whether the graduate completed an additional programme, father high educated, mother high educated) and ε_i is the residual term. Table 5.2 and table A.5.3 in the annex give the results of the multinomial logistic regression.

Table 5.2 *Probability of having studied in the Netherlands or elsewhere. Multinomial logistic regression*

Term	Studied in the Netherlands versus Not studied abroad	Studied abroad, not in the Netherlands versus Not studied abroad
	Coefficient	Coefficient
Intercept	-10.755*	-4.959
Country (dummy)		
Poland	3.117**	5.700**
Hungary	1.992*	3.899**
Latvia	2.456**	4.226**
Personality traits		
Agreeableness	-0.063	-0.019
Conscientiousness	0.044	0.048
Extraversion	0.000	-0.005
Neuroticism	-0.043	-0.107
Openness to experience	0.130	0.231*
Other personal characteristics		
Gender	-0.408	0.850
Age	0.175	-0.296
Grade at graduation	0.265	0.218
Volunteer in study organisation	-0.583	-1.452**
Study related work experience	-0.814	-0.304
Completed post graduate programme	-0.438	-0.080
Family characteristics		
Father high educated	-0.507	-0.374
Mother high educated	-0.356	-0.268
Model χ^2		144.264
-2 Log likelihood		468.646
Nagelkerke R^2		.439

* $p < .05$ ** $p < .01$

We see that experience as a volunteer during study has a negative predictive value on the odds of having studied abroad but not in the Netherlands. The odds for having studied abroad but not in the Netherlands were also higher for graduates scoring higher on 'openness to experience'. In chapter 4 we saw that the odds of studying in the Netherlands were lower for students who did volunteer work and higher for students scoring higher on 'openness to experience' but we do not find this effect in the multinomial regression in the group of graduates.

Procedure

The names and addresses of the graduates of the Dutch University of Applied Sciences and their parents were obtained from the archives of the university administration. In every country a research assistant was appointed. This research assistant was a native speaker (in Poland and Hungary graduates from the Dutch University of Applied Sciences in 2011, in Latvia a graduate of 2009 and in France a university student). The research assistants approached the graduates, often through their parents as many addresses were no longer current. But even then it was not always possible to trace the graduates. The graduates completed the written questionnaire and gave it to the research assistant, or posted it if the graduate preferred anonymity.

The names and addresses of the reference group were obtained through the graduates of the Dutch University of Applied Sciences who named two or three friends with whom they studied and graduated together. The research assistant subsequently approached these references and asked them to participate in the survey. Sometimes the graduates of the Dutch University of Applied Sciences would approach their friends first before submitting the names and addresses. Therefore, and as the research assistants did not record how many references they approached, the response percentage of the reference group is not known.

All participants received a small incentive and the research assistants were paid per completed questionnaires, with a bonus for a 'full set' (one graduate from the Dutch University of Applied Sciences + two references).

5.4 Results

Competence levels.

The results of chapter 4 show that international mobile students who studied at a University of Applied Sciences in the Netherlands have higher competence levels compared to their peers who stayed at the home university. Before analysing the labour market position of the graduates we analyse whether the competence levels of graduates who studied in the Netherlands are also higher compared to the competence levels of graduates who did not study abroad. Figure 5.2 illustrates the competence development. The descriptive statistical data are given in table A.5.4 in the annex.

Figure 5.2 Competence levels for graduates who studied in the Netherlands and graduates who did not study in the Netherlands.

The graph in figure 5.2 on the left, shows the increase of competence levels of students while studying in the Netherlands and lower competence levels after they entered the labour market. The graph on the right shows the same pattern for students and graduates who did not study abroad but the increase during the studies is less and the competence level after entering the labour market remains lower. It should be noted that in both graphs, left and right, the groups of students ('international mobile' on the left and 'home university' on the right) and the groups of graduates ('work') are different cohorts. The students studied abroad (or stayed home) in 2010-2011 or 2011-2012, while the graduates studied abroad (or stayed home) between 2006 and 2009. The group of students who studied abroad but not in the Netherlands is not included in figure 5.2 because we measured competence levels of students who stayed home, but we did not measure competence levels of students who went abroad to another country than the Netherlands. Table 5.3 shows the mean competence levels for all three groups of graduates at the time of study, that is, on average, 2 ½ years after entering the labour market.

Table 5.3 *Mean competence levels for four competencies and for three groups of graduates (SE)*

Group of graduates	Mean competence level (SE)			
	To organise	To present	To co-operate	To self-direct
Studied in the Netherlands n=120	5.6 (0.2)	4.6 (0.2)	6.2 (0.2)	7.2 (0.2)
Studied abroad, elsewhere n=50	4.1 (0.3)	4.2 (0.4)	5.6 (0.3)	5.3 (0.3)
Not studied abroad n=124*	3.6 (0.2)	2.9 (0.2)	4.8 (0.2)	5.6 (0.2)

* 7 graduates did not complete these questions

We see in table 5.4 that the competence levels of graduates who studied in the Netherlands are higher compared to the competence levels of the other two groups of graduates. Also after controlling for personal and family characteristics in a variance analysis the differences in competence levels are sustained (table 5.4).

Table 5.4 *Estimated marginal means of competence levels for four competencies and three groups of graduates (SE) (Anova[#])*

Group of graduates	Mean competence level (SE)			
	To organise	To present	To co-operate	To self-direct
Studied in the Netherlands n=120	5.4 (0.2)** ¹	4.3 (0.2)** ²	6.1 (0.2)** ²	7.1 (0.2)** ¹
Studied abroad, elsewhere n=50	3.5 (0.3)	3.6 (0.3)	5.3 (0.3)	5.5 (0.3)
Not studied abroad n=124*	3.9 (0.2)	3.4 (0.2)	5.0 (0.2)	5.6 (0.2)

[#] *Covariates*: Countries, Personality traits, Personal characteristics, Family characteristics, Organisation.

¹ significant (p < .01) higher than mean competence level of the other two groups.

² significant (p < .01) higher than mean competence level of graduates who did not study abroad.

* 7 graduates did not complete these questions

Table 5.5 *Parameter estimates for four competencies (OLS)*

Parameter	Competence			
	To organise Coefficient	To present Coefficient	To co-operate Coefficient	To self-direct Coefficient
Constant	4.309	5.322	5.194	8.903*
Studied abroad or not				
Studied in the Netherlands	1.411**	.825**	1.065**	1.526**
Studied abroad	-.503	.133	.577	-.216
Not studied abroad (ref)				
Country (dummy)				
Poland	-1.338*	-1.733*	-.674	1.301
Hungary	-.876	-1.435*	-.341	2.221**
Latvia	-.563	-1.710**	.060	.469
Personality traits				
Agreeableness	-.004	-.035	-.019	-.067
Conscientiousness	-.027	.068	.036	.102*
Extraversion	.030	-.037	.014	.041
Neuroticism	-.164**	-.222**	-.140*	-.186**
Openness to experience	.098	.115	.116	.000
Other personal characteristics				
Gender	.016	.594	.254	-.449
Age	.003	-.050	-.037	-.085
Average grade at graduation	.105	.172	.037	-.181
Volunteer in study organisation	.686**	.479	.210	-.280
Study related work experience	.550	.958*	.578	.030
Completed post graduate programme	-.119	.150	.676*	.012
Family characteristics				
Father high educated	.005	-.136	.079	-.243
Mother high educated	.371	.100	-.084	-.141
Job characteristics				
Over-educated	-.247	-.114	.331	.134
Within field of study	.095	.230	-.477	.367

*p < .05 **p < .01

The graduates who studied in the Netherlands have significantly ($p < .01$) higher competence levels for 'to organise' and 'to self-direct' compared to the competence levels of the other graduates. The competence levels for the competencies 'to present' and 'to co-operate' of graduates who studied in the Netherlands are significantly higher than the competence levels of graduates who did not study abroad but not significantly different from the competence levels of the graduates who studied abroad but not in the Netherlands. Finally, the competence levels of graduates who studied abroad but not in the Netherlands are not significantly different from the competence levels of graduates who did not study abroad.

Table 5.5 shows the parameter estimates revealing which characteristics of graduates affect the competence levels (more details in the annex, table A.5.5).

Personality traits affect the competence levels in various ways. Graduates who score higher on 'neuroticism' (who are less emotionally balanced) will have lower levels of all competencies. Graduates who are more 'conscientious' have higher levels for the competence 'to self-direct'. Graduates who did volunteer work during their studies have a higher score on the competence 'to organise', graduates with study-related work experience have a higher score on the competence 'to present' and graduates who completed an additional programme score higher on the competence 'to co-operate'.

Employment

Of all graduates, 268 (89%) graduates are employed, 10 (3%) are unemployed and 23 (8%) are studying or not employed and not job searching. There is no significant association between being employed and international mobility during the studies (Pearson $\chi^2(2) = 1.22$, $p > .05$).

We analyse in a binary logistic regression whether there are any differences in employment rates between students who went abroad to the Netherlands, students who went abroad somewhere else and students who stayed at the home university. At the same time we are interested to know if there are other characteristics of graduates that affect the chance of employment. We are particularly interested in whether competence levels affect the employment chances of graduates on the labour market. Table 5.6 gives the results (more details in the annex, table A.5.6).

Table 5.6 *Probability of having employment Logistic regression*

Term	Model	(1) Coefficient	(2) Coefficient	(3) Coefficient	(4) Coefficient
Constant		20.537	16.874	19.670	-13.340
Studied abroad					
In the Netherlands		-.857	.624	1.002	1.269
Abroad not in the Netherlands		.911	.582	.123	1.176
Not studied abroad (ref)					
Competencies					
To organise			.348	.362	.366
To present			.139	.126	.052
To co-operate			.083	.050	.087
To self-direct			.204	.227	.228
Controls for					
Country (dummy)	included	included	included	included	included
Personality traits			included	included	included
Other personal characteristics					included
Family characteristics					included
Size organisation (dummy)					
Block χ^2			10.643	3.198	7.169
Model χ^2		9.802	20.445	23.643	30.812
-2 Log likelihood		69.452	58.809	55.611	48.442
Nagelkerke r ²		.140	.286	.329	.423

*p < .05 **p < .01

As expected, because almost all graduates have employment, the chance of having employment is not different for graduates who went abroad during their studies (to the Netherlands or somewhere else) and graduates who stayed in their home country during their studies. Competence levels and other characteristics that are included in the analysis do not affect the employment chances of graduates on the labour market (table A.5.6 in the annex).

The graduates indicated the type of employment (table 5.7 and the detailed results are given in the annex, table A.5.7).

Table 5.7 *Number and percentage of graduates per job type*

	Studied abroad in the Netherlands	Studied abroad elsewhere	Not studied abroad
	Number (%)	Number (%)	Number (%)
Managers and non-business professionals	39 (36%)	6 (14%)	24 (21%)
Business professionals	39 (36%)	8 (18%)	42 (38%)
Associate business professionals	17 (16%)	16 (36%)	38 (34%)
Other associate professionals and other jobs	14 (13%)	14 (32%)	8 (7%)
Total number	109	44	112

The majority of the graduates are business (associate) professionals. This is in line with their study programmes which was mainly business administration. Graduates who studied in the Netherlands are significantly more often managers and professionals compared to the other graduates. Of the graduates who studied in the Netherlands, 16% are managers, 20% have a job as non-business professional and 36% as business professional and 29% have lower classified jobs as associate professional or skilled labourers. Of the graduates who went abroad but not to the Netherlands 5% have a job as manager and 9% have a job as non-business professional, 18% have a job as business professional, 68% have other jobs. For graduates who did not study abroad 7% are managers and 14% non-business professional, while 38% are business professionals and 41% have lower qualified jobs.

Period of unemployment

Graduates will not find employment immediately after graduation. They may also experience a period of unemployment in between two jobs. We asked the graduates whether they were ever unemployed since graduation. About 42% of the graduates experienced a period of unemployment since graduation (table 5.8).

Table 5.8 *Number of graduates, per category, who experienced a period of unemployment*

Category	Ever unemployed		Total *
	No	Yes	
Studied in the Netherlands	62	51 (45%)	113
Studied abroad, not in the Netherlands	31	14 (31%)	45
Not studied abroad	67	53 (44%)	120
Total	160	118 (42%)	278

* excluding 23 graduates who are studying (14) or unemployed but not job searching (9).

There is no significant association between experiencing a period of unemployment and international mobility during the studies (Pearson χ^2 (2) = 2.85, $p > .05$).

We analyse in a binary logistic regression whether students who went abroad to the Netherlands, students who went abroad somewhere else and students who stayed home have a

different chance of experiencing a period of unemployment. At the same time we analyse whether competence levels or other characteristics of graduates affect the chance of being unemployed for some time. Table 5.9 gives the results (more details in the annex, table A.5.8).

Table 5.9 *Probability of having experienced a period of unemployment Logistic regression*

Term	Model	(1) Coefficient	(2) Coefficient	(3) Coefficient	(4) Coefficient
Constant		1.049	1.067	-1.719	.283
Studied abroad					
In the Netherlands		-.204	-.296	-.330	-.347
Abroad not in the Netherlands		-.175	-.161	-.115	-.191
Not studied abroad (ref)					
Competencies					
To organise			-.059	-.058	-.080
To present			-.032	-.003	.004
To co-operate			.020	.017	.028
To self-direct			.024	.043	.036
Controls for					
Country (dummy)	included	included	included	included	included
Personality traits			included	included	included
Other personal characteristics					included
Family characteristics					included
Size organisation (dummy)					
Block χ^2			1.323	5.620	11.977
Model χ^2		7.682	9.005	14.625	26.602
-2 Log likelihood		367.413	366.090	360.470	348.493
Nagelkerke r ²		.037	.043	.070	.124

The chance of having experienced a period of unemployment is not different for graduates who went abroad during their studies (to the Netherlands or somewhere else) or graduates who stayed at home during their studies. The competence level of the graduates has no influence on the chance of experiencing a period of unemployment. The results of the full analysis (table A.5.8 in the annex) show that graduates who are emotionally less stable (scoring higher on neuroticism) have a significant greater chance of a period of unemployment compared to graduates who are emotionally stable. Graduates with a high educated mother have a significant smaller chance of facing a period of unemployment.

Self-employment

Some graduates may have their own business. Out of 268 graduates who are employed, 25 (9%) are self-employed. Table 5.10 gives the numbers per group of graduates.

Table 5.10 *Self-employment and having studied abroad or not*

Category	Self-employed		Total *
	No	Yes	
Studied in the Netherlands	99	11 (10%)	110
Studied abroad, not in the Netherlands	40	4 (9%)	44
Not studied abroad	104	10 (9%)	114
Total	243	25 (9%)	268

* excluding 33 graduates who are studying (14), unemployed (10) or unemployed but not job searching (9).

The cross-tabulation shows that the percentage of self-employment is about the same in all groups and the Pearson's Chi-square test shows that there is no significant association between having studied abroad (in the Netherlands or elsewhere) or not and being self-employed (Pearson χ^2 (2) = 0.10, $p > .05$).

The binary logistic regression reveals that there is no characteristic included in the analyses that influences the chance of being self-employed. Table 5.11 gives the results of the logistic regression (more details in the annex, table A.5.9).

Table 5.11 *Probability of being self-employed Logistic regression*

Term	Model	(1) Coefficient	(2) Coefficient	(3) Coefficient	(4) Coefficient
Constant		-3.770*	-2.985	-.259	-5.556
Studied abroad					
In the Netherlands		.106	.045	.072	.286
Abroad not in the Netherlands		-.453	-.468	-.711	-.387
Not studied abroad (ref)					
Competencies					
To organise			.217	.199	.231
To present			-.126	-.132	-.150
To co-operate			.020	-.010	-.093
To self-direct			-.208	-.230	-.230
Controls for					
Country (dummy)	included	included	included	included	included
Personality traits			included	included	included
Other personal characteristics					included
Family characteristics					included
Size organisation (dummy)					
Block χ^2			5.171	7.376	13.700
Model χ^2		4.126	9.297	16.673	30.700
-2 Log likelihood		161.678	156.507	149.131	135.431
Nagelkerke r ²		.015	.074	.131	.233

*p < .05

Appropriateness of level of education for the current job

The graduates indicated what they feel is the most appropriate education for the work they are doing at this moment. We know the university qualification gained and possible additional qualifications of the graduates. When combining the most appropriate education for the work and the highest qualification of the graduates we can determine whether or not the graduates are overeducated for their current job. Table 5.12 gives the details per group of graduates.

Table 5.12 *Appropriateness of level of education for the current job*

Category	Overeducated			Total *
	No	Yes		
Studied in the Netherlands	95	15	(14%)	110
Studied abroad, not in the Netherlands	40	4	(9%)	44
Not studied abroad	88	26	(23%)	114
Total	223	47	(17%)	268

* excluding 33 graduates who are studying (14), unemployed (10) or unemployed but not job searching (9).

About 17% of all graduates are overeducated for the current job. The percentage of over-education is the lowest for graduates who studied abroad but not in the Netherlands and the highest for graduates who were not internationally mobile during their studies. However, the Pearson's Chi-square test shows that there is no significant association between having studied abroad (in the Netherlands or elsewhere) or not and being over-educated for the current job (Pearson χ^2 (2) = 5.60, $p > .05$). A binary logistic regression analysis confirms this and shows that the odds of being over-educated for the current job are not affected by the competence levels, personality traits, other personal characteristics, family characteristics or firm size (table 5.13) (more details in the annex, table A.5.10).

Table 5.13 *Probability of having the appropriate level of education for the current job (Logistic regression)*

Term	Model	(1)	(2)	(3)	(4)	(5)
		Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Constant		-2,928	-3,599	-,690	-15.078	-14,592*
Studied abroad						
In the Netherlands		-,481	-,434	-,472	-,314	-,292
Abroad not in the Netherlands		,307	,321	,256	,354	,233
Not studied abroad (ref)						
Competencies						
To organise			-,141	-,138	-,139	-,163
To present			,018	-,004	,009	,028
To co-operate			,099	,094	,079	,088
To self-direct			,088	,066	,096	,087
Controls for						
Country (dummy)	included	included	included	included	included	included
Personality traits			included	included	included	included
Other personal characteristics				included	included	included
Family characteristics				included	included	included
Size organisation (dummy)					included	included
Block χ^2			2.541	4.332	7.132	2.347
Model χ^2		14.329	16.870	21.203	28.335	30.683
-2 Log likelihood		227.503	224.962	220.630	213.497	211.150
Nagelkerke r ²		.052	.103	.128	.169	.182

*p < .05 **p < .01

Appropriateness of field of study for the current job

The graduates indicated whether their field of study was the most appropriate for their current job. Most of the graduates (72%) indicated that their field of study was the most appropriate for their current job (table 5.14).

Table 5.14 *Appropriateness of field of study for the current job*

Category	Field of study		Total number *
	Exclusively own or related	(Completely) Different or no particular	
Studied in the Netherlands	82 (75%)	28	110
Studied abroad, not in the Netherlands	35 (80%)	9	44
Not studied abroad	77 (68%)	37	114
Total	194 (72%)	74	268

* excluding 33 graduates who are studying (14), unemployed (10) or unemployed but not job searching (9).

There seems to be some difference between graduates who studied abroad and the graduates who did not study abroad, but the Pearson's Chi-square test shows that the difference is not significant (Pearson $\chi^2(2) = 2.72$, $p > .05$). Table 5.15 shows the results of a binary logistic regression analysing factors that may affect the odds of having a job that matches with the field of study (more details in the annex, table A.5.11).

Table 5.15 *Probability of having the current job within the field of study (Logistic regression)*

Term	Model	(1)	(2)	(3)	(4)	(5)
		Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Constant		-.363	-.601	-1.756	-.480	-.526
Studied abroad						
In the Netherlands		.069	.189	.133	.326	.235
Abroad not in the Netherlands		-.139	-.008	.034	-.021	.021
Not studied abroad (ref)						
Competencies						
To organise			.019	.028	.038	.041
To present			.129	.144	.121	.143
To co-operate			-.213*	-.223*	-.263*	-.307**
To self-direct			.133	.124	.155	.164
Controls for						
Country (dummy)	included	included	included	included	included	included
Personality traits			included	included	included	included
Other personal characteristics				included	included	included
Family characteristics				included	included	included
Size organisation (dummy)					included	included
Block χ^2			6.966	7.501	12.659	4.605
Model χ^2		30.697	37.663	45.164	57.823	62.428
-2 Log likelihood		283.843	276.877	169.376	256.717	252.112
Nagelkerke r ²		.157	.190	.225	.282	.302

*p < .05 **p < .01

Whether the graduate studied abroad or not does not affect the odds of having a job within their field of study. Graduates scoring higher on the competence 'to co-operate' have a greater chance of not having a job within their field of study, while the levels of the other competencies do not influence this chance. The detailed data (table A.5.11 in the annex) show that graduates who are older have a greater chance of having a job where the own field of study is not necessary. Other personal characteristics as well as family characteristics and firm size do not affect this chance.

Supervising others

The graduates indicated whether or not they are supervising others. About 39% indicate that they supervise others in the current job (table 5.16).

Table 5.16 *Supervising others in the current job*

Category	Supervising others		Total number *
	Yes	No	
Studied in the Netherlands	43 (39%)	67	110
Studied abroad, not in the Netherlands	15 (34%)	29	44
Not studied abroad	46 (40%)	68	114
Total	104 (39%)	164	268

* excluding 33 graduates who are studying (14), unemployed (10) or unemployed but not job searching (9).

From table 5.16 it is clear that there is not much difference between the graduates who studied abroad and the graduates who stayed at the home university (Pearson $\chi^2(2) = 5.30$, $p > .05$). However, we are interested whether competencies and personal characteristics influence the chance of having a job with supervising others. The binary logistic regression analysis is given in table 5.17 (more details in table A.5.12 in the annex).

Table 5.17 *Probability of supervising others within the current job (Logistic regression)*

Term	Model	(1)	(2)	(3)	(4)	(5)
		Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Constant		-2.079*	-3.752**	-1.537	-10.668*	-10.371*
Studied abroad						
In the Netherlands		-.020	.522	.593	.726*	.743*
Abroad not in the Netherlands		-.548	-.500	-.442	-.197	-.184
Not studied abroad (ref)						
Competencies						
To organise			.424**	.463**	.517**	.513**
To present			-.104	-.135	-.175	-.188*
To co-operate			-.071	-.053	-.095	-.074
To self-direct			.008	-.013	.010	.011
Controls for						
Country (dummy)	included	included	included	included	included	included
Personality traits			included	included	included	included
Other personal characteristics				included	included	included
Family characteristics				included	included	included
Size organisation (dummy)					included	included
Block χ^2			24.854	7.475	14.387	2.202
Model χ^2		13.860	38.714	46.189	60.577	62.778
-2 Log likelihood		340.310	315.455	307.980	293.593	291.391
Nagelkerke r ²		.069	.184	.217	.277	.286

*p < .05 **p < .01

The odds of supervising others are higher for graduates who studied in the Netherlands compared to other graduates. Graduates who have a higher level of the competence ‘to organise’ have a greater chance of having a job where they supervise others. Graduates who have a higher level of the competence ‘to present’ have a smaller chance of having a job where they supervise others. The levels of other competencies do not affect this chance. The detailed results in table A.5.12 in the annex show that the odds of supervising others higher for older graduates. The other personal characteristics as well as family characteristics and firm size do not affect the odds.

Use of knowledge and skills

The graduates indicated on a 1-5 Likert scale to what extent they use their knowledge and skills in their current job ((1=not at all; 5= to a very high extent). The pairwise comparison in the variance analyses shows no significant difference between students who studied in the Netherlands,

graduates who studied abroad somewhere else and graduates who stayed at home during their studies ($F(2,242)=1.06, p > .05$) (table 5.18).

Table 5.18 *Pairwise comparisons of use of skills and knowledge (Anova[#])*

			Mean difference	SE
Studied abroad, the Netherlands	vs	Studied abroad, elsewhere	-0.041	0.207
Studied abroad, the Netherlands	vs	Not studied abroad	-0.238	0.152
Studied abroad, elsewhere	vs	Not studied abroad	-0.196	0.209

[#] *Covariates*: Countries, Personality traits, Personal characteristics, Family characteristics, Organisation.

We analysed in a regression model whether competencies affect the use of knowledge and skills in the current job. Table 5.19 gives the results of the regression analysis (more details in the annex, table A.5.13).

Table 5.19 *Characteristics affecting the use of knowledge and skills in the current job (OLS)*

Term	Model	(1) Coefficient	(2) Coefficient	(3) Coefficient	(4) Coefficient	(5) Coefficient
Constant		3,199**	2,477**	1,218	2,892	2,860
Studied abroad						
In the Netherlands		-,013	-,231	-,220	-,239	-,238
Abroad not in the Netherlands		-,038	-,088	-,098	-,184	-,196
Not studied abroad (ref)						
Competencies						
To organise			,005	,011	-,002	-,003
To present			,080*	,076*	,063	,070
To co-operate			,016	,012	,030	,026
To self-direct			,054	,045	,051	,051
Controls for						
Country (dummy)	included	included	included	included	included	included
Personality traits			included	included	included	included
Other personal characteristics				included	included	included
Family characteristics				included	included	included
Size organisation (dummy)					included	included
R ²		.055	.119	.140	.186	.194
Adjusted R ²		.037	.088	.092	.112	.110
Regression		14.650	31.457	37.061	49.072	51.331

* $p < .05$ ** $p < .01$

The results of the regression analysis show that in model 2 and 3 there is a significant effect of the competence 'to present' but this effect disappears after controlling for personal, family and organisation characteristics. There is no significant effect of competence levels of the other three competencies on the use of skills and knowledge. The detailed results in table A.5.13 in the annex show that graduates who completed an additional programme utilize their knowledge and skills significantly less than graduates who did not complete an additional programme ($p < .05$).

International aspects of the current job.

The graduates indicated on a 1-5 Likert scale to what extent their present job requires international experience, to what extent international experience makes the work easier and whether they have international contacts in their job (1= not at all; 5= to a very high extent)..

First we analysed to what extent the present job requires international experience. The pairwise comparison in the variance analyses shows that graduates who studied abroad, in the Netherlands or elsewhere, have jobs where significantly more international experience is required, compared to the jobs of graduates who did not study abroad. There was no significant difference between graduates who studied in the Netherlands and graduates who studied abroad somewhere else (table 5.20).

Table 5.20 *Pairwise comparisons of 'international experience required for work' (Anova[#])*

			Mean difference	SE
Studied abroad, the Netherlands	vs	Studied abroad, elsewhere	0.162	0.292
Studied abroad, the Netherlands	vs	Not studied abroad	0.899**	0.214
Studied abroad, elsewhere	vs	Not studied abroad	0.737*	0.294

Covariates: Countries, Personality traits, Personal characteristics, Family characteristics, Organisation.

* $p < .05$ ** $p < .01$)

In a regression design we analysed factors affecting whether international experience is required for the work (table 5.21) (more details in the annex, table A.5.14).

Table 5.21 *Characteristics affecting whether international experience is required for the current job (OLS)*

Term	Model	(1)	(2)	(3)	(4)	(5)
		Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Constant		1.389**	.670	1.394	-.258	-.166
Studied abroad						
In the Netherlands		1.308**	1.054**	1.050**	.922**	.899**
Abroad not in the Netherlands		1.037**	.962**	.908**	.758**	.737*
Not studied abroad (ref)						
Competencies			.072	.061	.035	.033
To organise			.069	.063	.057	.057
To present			.032	.029	.031	.039
To co-operate			-.007	-.009	.014	.011
To self-direct						
Controls for						
Country (dummy)	included	included	included	included	included	included
Personality traits			included	included	included	included
Other personal characteristics				included	included	included
Family characteristics				included	included	included
Size organisation (dummy)					included	included
R ²		.168	.212	.2219	.248	.251
Adjusted R ²		.152	.184	.176	.179	.172
Regression		94.494	119.059	123.392	139.181	140.870

*p < .05 **p < .01

The results of the regression analysis show significant effects of having studied abroad (in the Netherlands or elsewhere) but no significant effect of competence levels and other characteristics of the graduates on having a job where international experience is required.

The second international aspect of the current job was to what extent international experience makes the work in the present job easier. The pairwise comparison in the variance analyses (table 5.22) shows that graduates who studied abroad in the Netherlands significantly more often indicated that international experience makes their work easier compared to graduates who stayed at the home university during their studies ($p < .01$). There was no significant difference between graduates who studied abroad somewhere else and graduates who studied in the Netherlands.

Table 5.22 *Pairwise comparisons of 'international experience makes work easier' (Anova[#])*

			Mean difference	SE
Studied abroad, the Netherlands	vs	Studied abroad, elsewhere	0.37	0.290
Studied abroad, the Netherlands	vs	Not studied abroad	1.024 **	0.213
Studied abroad, elsewhere	vs	Not studied abroad	0.653*	0.292

Covariates: Countries, Personality traits, Personal characteristics, Family characteristics, Organisation.

* p <.05 ** p <.01)

In a regression design we analysed factors affecting having a job where international experience makes the work easier (table 5.23) (more details in the annex, table A.5.15).

Table 5.23 *Characteristics affecting whether international experience makes the work easier (OLS)*

Term	Model	(1) Coefficient	(2) Coefficient	(3) Coefficient	(4) Coefficient	(5) Coefficient
Constant		1.593**	.739*	1.757	-.040	.016
Studied abroad						
In the Netherlands		1.505**	1.173**	1.182**	1.063**	1.024**
Abroad not in the Netherlands		.923**	.871**	.830**	.702*	.653*
Not studied abroad (ref)						
Competencies						
To organise			.140*	.127*	.103	.101
To present			.034	.033	.031	.038
To co-operate			.023	.024	.024	.031
To self-direct			.002	.001	.019	.014
Controls for						
Country (dummy)	included	included		included	included	included
Personality traits				included	included	included
Other personal characteristics					included	included
Family characteristics					included	included
Size organisation (dummy)						included
R ²		.211	.269	.278	.304	.318
Adjusted R ²		.196	.244	.237	.241	.247
Regression		129.408	164.870	170.066	186.070	194.694

*p <.05 **p <.01

The regression analysis shows that a study abroad, in the Netherlands or elsewhere, affects the chance of having a job in which international experience makes the work easier (p <.05). The

results also show that there is a significant effect of the competence ‘to organise’ in model 2 which is sustained in model 3 after controlling for personality traits. However, this effect becomes non-significant after controlling for other personal characteristics, family characteristics and organisation characteristics. There is no significant effect of competence levels of the other three competencies on the chance of having a job in which international experience makes the work easier. The other factors make no significant contribution to the regression model.

The third international aspect of the current job was to what extent graduates have international contacts in their work. The pairwise comparison in the variance analyses shows that graduates who studied in the Netherlands have significantly more international contacts than the other graduates ($p < .05$). There was no significant difference between graduates who studied abroad but not in the Netherlands and graduates who did not study abroad (table 5.24).

Table 5.24 *Pairwise comparisons of ‘international contacts in present job’ (Anova[#])*

			Mean difference	SE
Studied abroad, the Netherlands	vs	Studied abroad, elsewhere	0.825*	0.303
Studied abroad, the Netherlands	vs	Not studied abroad	1.294**	0.224
Studied abroad, elsewhere	vs	Not studied abroad	0.469	0.304

[#] Covariates: Countries, Personality traits, Personal characteristics, Family characteristics, Organisation.

* $p < .05$ ** $p < .01$

In a regression design we analysed factors affecting having a job with international contacts (table 5.25) (more details in the annex, table A.5.16).

Table 5.25 *Characteristics affecting whether the jobs contains international contacts (OLS)*

Term	Model	(1)	(2)	(3)	(4)	(5)
		Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Constant		1.409**	1.206**	1.460**	2.194**	2.276**
Studied abroad						
In the Netherlands		1.529**	1.415**	1.414**	1.342**	1.294**
Abroad not in the Netherlands		.800**	.750**	.678*	.505	.469
Not studied abroad (ref)						
Competencies			.095	.083	.061	.064
To organise			.043	.043	.037	.038
To present			.005	-2.228E-5	.009	.015
To co-operate			-.077	-.073	-.064	-.068
To self-direct						
Controls for						
Country (dummy)	included	included	included	included	included	included
Personality traits			included	included	included	included
Other personal characteristics				included	included	included
Family characteristics				included	included	included
Size organisation (dummy)					included	included
R ²		.244	.270	.287	.302	.312
Adjusted R ²		.229	.245	.248	.240	.241
Regression		165.697	183.829	195.113	205.611	211.860

*p <.05 **p <.01

The results, given in table 5.25 and table A.5.16 in the annex, show that apart from having studied in the Netherlands, the characteristics included in the regression analysis have no significant effect on the extent of international contacts in the work. There is a significant effect of studying abroad but not in the Netherlands in model 1, 2 and 3 but this effect becomes non-significant after controlling for other personal characteristics, family characteristics and organisation characteristics.

Work satisfaction.

The graduates indicated on a 1-5 Likert scale how satisfied they are with their current work (1=not at all; 5= very satisfied). The pairwise comparison in the variance analysis gave no significant differences between the three groups (table 5.26).

Table 5.26 *Pairwise comparisons of work satisfaction (Anova[#])*

			Mean difference	SE
Studied abroad, the Netherlands	vs	Studied abroad, elsewhere	-0.095	0.188
Studied abroad, the Netherlands	vs	Not studied abroad	-0.157	0.136
Studied abroad, elsewhere	vs	Not studied abroad	-0.063	0.187

Covariates: Countries, Personality traits, Personal characteristics, Family characteristics, Organisation.

In a regression design we analysed factors affecting the work satisfaction. The results are given in table 5.27 (more details in the annex, table A.5.17).

Table 5.27 *Characteristics affecting work satisfaction (OLS)*

Model	(1)	(2)	(3)	(4)
Term	Coefficient	Coefficient	Coefficient	Coefficient
Constant	4.048**	3.304	3.793*	2.925
Studied abroad				
In the Netherlands	.147	-.112	-.122	-.157
Abroad not in the Netherlands	.053	.028	-.009	-.063
Not studied abroad (ref)				
Competencies				
To organise		.061	.061	.052
To present		.088*	.069*	.074*
To co-operate		-.024	-.025	-.024
To self-direct		.045	.030	.032
Controls for				
Country (dummy)	included	included	included	included
Personality traits			included	included
Other personal characteristics				included
Family characteristics				included
Size organisation (dummy)				
R ²	.036	.139	.173	.189
Adjusted R ²	.017	.109	.127	.115
Regression	7.902	30.572	37.885	41.427

*p < .05 **p < .01

A higher level of the competence ‘to present’ is associated with more work satisfaction (p < .05). Table A.5.17 (in the annex) shows that a higher score on the personality trait ‘neuroticism’ (that are graduates who are emotionally less stable) is associated with less work satisfaction (p < .01).

Career prospects

The graduates indicated on a 1-5 Likert scale how they consider their career prospects (1=very poor; 5=very good). The pairwise comparison in the variance analysis gave no significant differences between the three groups (table 5.26).

Table 5.28 *Pairwise comparisons of career prospects (Anova[#])*

			Mean difference	SE
Studied abroad, the Netherlands	vs	Studied abroad, elsewhere	-0.184	0.211
Studied abroad, the Netherlands	vs	Not studied abroad	0.005	0.153
Studied abroad, elsewhere	vs	Not studied abroad	0.189	0.212

Covariates: Countries, Personality traits, Personal characteristics, Family characteristics, Organisation.

In a regression design we analysed factors affecting the career prospects. The results are given in table 5.29 (more details in the annex, table A.5.18).

Table 5.29 *Characteristics affecting career prospects (OLS)*

Term	Model	(1) Coefficient	(2) Coefficient	(3) Coefficient	(4) Coefficient
Constant		3.720**	3.107**	4.302**	3.009
Studied abroad					
In the Netherlands		.309*	.084	.064	.005
Abroad not in the Netherlands		.359	.337	.231	.189
Not studied abroad (ref)					
Competencies					
To organise			.072	.061	.051
To present			.062	.035	.035
To co-operate			-.017	-.023	-.021
To self-direct			.025	.008	.017
Controls for					
Country (dummy)	included		included	included	included
Personality traits				included	included
Other personal characteristics					included
Family characteristics					included
Size organisation (dummy)					
R ²		.074	.132	.209	.221
Adjusted R ²		.057	.102	.165	.151
Regression		21.403	38.044	60.181	63.683

*p < .05 **p < .01

The results show that there is no effect of competence levels on career prospects. Table A.5.18 in the annex shows that graduates with a higher score on the personality trait ‘neuroticism’ (that are graduates who are emotionally less stable) consider significantly less career perspectives than graduates who have a higher score for ‘neuroticism’ (who are emotionally more stable) ($p < .01$).

5.5 Financial returns of studying abroad

To make a financial analysis of studying in a competence based programme at a Dutch University of Applied Sciences we use data on the income of the graduates and the costs of studying abroad of the internationally mobile students.

Income

The graduates indicated their gross monthly earnings. However, not all respondents were willing to provide their income and some respondents indicated that they were not allowed to provide details of their income. The number of employed graduates that indicated their gross monthly income as well as the response percentage per group of employed graduates is given in table 5.30.

Table 5.30 *Number and respondents who indicated income*

	Number of respondents			Percentage of employed respondents who indicated income
	Total	Employed	Indicated income	
Studied abroad, the Netherlands	120	110	71	65
Studied abroad, elsewhere	50	44	38	86
Not studied abroad	131	114	101	89
Total	301	268	210	78

We see a significant lower response percentage for the group of graduates that studied in the Netherlands, while the response percentage of the other two groups was about the same (Pearson $\chi^2(2) = 10.653$, $p < .01$). Three graduates who studied in the Netherlands work abroad while all other graduates work in their home country.³³

For those graduates who indicated their income we find a difference in ppp income (The World Bank, 2013) between graduates who studied in the Netherlands, graduates who studied abroad elsewhere and graduates who stayed home during their studies (table 5.31 and figure 5.3). To take care of outliers we used a trimmed mean³⁴ of 5% for every country group of respondents which means that we excluded 14 data as ‘outliers’.

33 The income of these three graduates (ppp corrected for the country where they work) is about the mean income of all graduates of their home country.

34 Trimmed mean: a mean based on the distribution of scores after some extreme scores have been removed. We removed, for every group of respondents per country, the lower and upper 2.5% of the scores.

Table 5.31 *Trimmed means of ppp income and mean log ppp income per group of graduates*

	Mean (SE)	
	ppp income (US\$)	Log ppp income
Studied in the Netherlands	2470 (111)	3.363 (0.021)
Studied abroad not in the Netherlands	2284 (127)	3.337 (0.024)
Not studied abroad	2105 (100)	3.272 (0.021)

Figure 5.3 Trimmed means of ppp and log ppp income for three groups of graduates.

The Analysis of Variance shows that there is a significant effect on income of having studied in the Netherlands, having studied abroad elsewhere or having studied at home. ($F(2,169) = 3.517$, $p < .01$). The estimated marginal trimmed means, controlled for personal, family and organisational characteristics, show that the income of graduates who studied in the Netherlands is significantly higher than the income of graduates who stayed home during their studies but is not significantly higher than graduates who studied abroad but not in the Netherlands (table 5.32).

Table 5.32 *Estimated marginal trimmed means of ppp income and log ppp income per group of graduates (Anova[#])*

	Mean (SE)	
	ppp income (US\$)	Log ppp income
Studied in the Netherlands	2524 (123) ^a	3.373 (0.025) ^a
Studied abroad not in the Netherlands	2222 (179)	3.315 (0.037)
Not studied abroad	2050 (100)	3.274 (0.021)

[#] Covariates appearing in the model are evaluated at the following values: DummyPoland = .31. DummyHungary = .20. DummyLatvia = .31. to organise = 4.337. to present = 3.681. to cooperate = 5.417. to self-direct = 6.144. Agreeableness = 15.19. Conscientiousness = 14.75. Extraversion = 13.85. Neuroticism = 11.14. Openness to experience = 11.24. Gender = .42. Age = 28.30. AgeSquared = 802.9439. EdFatherHigh = .41. EdMotherHigh = .44. Grade recoded = 4.52. Volunteer Y/N = .34. srWork Y/N = .84. Completed additional programme = .27. Dummy size organisation >10 = .26. Dummy size organisation >100 = .36. Dummy size organisation >1000 = .18. Supervising Y/N = .38.

^a significant higher than mean ppp income of graduates who did not study abroad ($p < .05$)

Table 5.33 *Regression analysis of characteristics affecting the 'log ppp income' (outliers excluded)*

Term	Model	(1) Coefficient	(2) Coefficient	(3) Coefficient	(4) Coefficient	(5) Coefficient
Constant		3.320**	3.346**	3.373**	.032	.666
Studied abroad						
In the Netherlands		.075*	.083**	.085**	.089*	.099**
Abroad not in the Netherlands		.035	.028	.024	.036	.041
Not studied abroad (ref)						
Country (dummy)						
Poland		-.021	-.014	-.016	-.021	-.022
Hungary		.030	.047	.054	.044	.050
Latvia		-.118**	-.125**	-.123	-.123	-.121
Competencies						
To organise			.000	.000	-.001	-.004
To present			-.002	-.002	-.002	.003
To co-operate			.008	.007	.007	.005
To self-direct			-.012	-.013*	-.014*	-.013
Personality traits						
Agreeableness				-.008	-.009	-.007
Conscientiousness				.004	.004	.003
Extraversion				.003	.003	.002
Neuroticism				-.003	-.003	-.002
Openness to experience				.005	.005	.006
Other personal characteristics						
Gender					.014	.008
Age					.229	.181
Age squared					-.004	-.003
Average grade at graduation					-.003	-.005
Volunteer in study organisation					.001	.001
Study related work experience					-.020	-.028
Completed post graduate programme					-.014	-.009
Family characteristics						
Father high educated					-.013	-.003
Mother high educated					.007	.000
Size organisation (dummy)						
10-99						.032
100-999						.039
≥1000						.082
Supervising others						.050
R ²		.145	.146	.178	.190	.219
Adjusted R ²		.123	.123	.114	.081	.092
Regression		0.947	1.065	1.158	1.239	1.425

*p < .05 **p < .01

Other factors do have some corrective influence on the income but do not change the significant higher income for graduates who studied in the Netherlands. The results of the regression analysis is given in table 5.33 and table A.5.19 in the annex.

The results show that there is a significant positive effect of studying in the Netherlands on the income ($p < .01$). The significant negative effect of the competence 'to self-direct' on the income ($p < .05$) in model 3 and model 4 disappears in model 5 where we control for the size of the organisation. The significant positive effect on the income of studying in the Netherlands even compensates for the negative effect on the income of the competence 'to self-direct'.

In model 4 the income of graduates who studied in the Netherlands is 8.9% higher than the income of graduates who did not study abroad while in model 5 the income of graduates who studied in the Netherlands is 9.9% higher than the income of graduates who did not study abroad.³⁵ Model 4 controls for factors affecting the transition from university into the labour market and model 5 also controls for the job characteristics firm size and supervisory status. Although we do find a stronger effect of having studied in the Netherlands in model 5 compared to model 4, there is not a significant effect of one of these factors.

Costs of studying in the Netherlands

The students who studied in the Netherlands indicated the costs of studying one year in the Netherlands and the costs of studying one year in their home country. They also indicated possible income from a scholarship or from a job. Before conducting the analyses we transformed the data (see annex, table A.5.21). The mean costs and income are taken to calculate the net costs of studying in the Netherlands. Table 5.34 presents the results for all students. The results per country of origin are in table A.5.22 in the annex.

35 We repeated the analyses on all available data, i.e. not trimmed for outliers. The results show that the income in the regression model 4 is 9.7 % higher ($p < .01$) for graduates who studied in the Netherlands compared to graduates who did not study abroad, and in model 5 the income is 10.5% higher. In model 5 we do find a significant effect of organisation size (> 100) ($p < .05$) and of supervising others ($p < .01$) but no effect of the other variables that are included in the regression model.

Table 5.34 *Costs and income of studying in the Netherlands and at home university in Euro (€)*

Description	Amount per year	SE
The Netherlands		
Costs		
Tuition fee the Netherlands	1725	32
Tuition fee Home university	877	124
Books	30	0
Other costs study	160	12
Accommodation	2341	87
Other living	2056	84
Travel	1040	77
Miscellaneous costs	184	14
Total costs/year	8415	266
Income		
Income scholarships	2674	
Income jobs	993	
Total income/year	3667	301
Costs-income/year	4747	453
Home University		
Costs		
Home tuition	877	124
Home books	21	6
Home other costs	130	18
Home accommodation	943	156
Home other living	1415	136
Home travel	656	74
Miscellaneous costs	195	50
Total costs/year	4236	367
Income		
Home scholarship	451	104
Home income jobs	1296	290
Total income/year	1747	317
Costs-income/year	2489	376
Net costs study the Netherlands	2258	458

The bootstrap procedure revealed that the 95% confidence interval for the extra net costs for studying in the Netherlands for one year ranges from € 1,375 to € 3,206.

Net Present Value

We use the Net Present Value (NPV) to calculate the private monetary benefits on the labour market of studying abroad. The Net Present Value is the difference between the sum of the present value of benefits and present value of costs. We calculate the present value of benefits (income) and costs (costs of international education) by discounting benefits and costs back to the beginning of the investment with a set rate of interest (discount rate). To calculate the NPV we use the formula:

$$NPV = \sum_{i=1}^n \frac{B_i}{(1+r)^i} - C$$

with n being the number of years on the labour market plus 1½, B being the monetary benefits of having studied in the Netherlands, r the discount rate and C the initial costs of studying in the Netherlands.

We assume that the investment in education in the Netherlands is made during the year abroad, so on average half a year before graduation in the Netherlands. After the study abroad the students studied one year at the home university to complete their master programme. Thus, on average, the investment in education in the Netherlands is made one and a half year before entering the labour market.

The monetary benefits B are the higher income of the graduates who studied in the Netherlands compared to their peers who stayed at the home university. The monthly income of the graduates who studied in the Netherlands is \$ 474 or € 354³⁶ higher compared to the graduates who did not study abroad. On an annual basis these benefits are € 4.248.

The costs of component C are the additional costs of studying abroad. The mean net costs of studying abroad in the Netherlands for one year are on average € 2.258 (see table 5.34). The foregone earnings of the internationally mobile students are zero because the year of studying in the Netherlands is part of the regular study programme of the students and the students will graduate at the same time as their peers who stayed at the home university. We do not take into account costs of transition from university to the labour market as the odds of having employment and the odds of experiencing a period of unemployment are not different between graduates who studied abroad and graduates who stayed at the home university.

We discount the costs and the benefits to the present value. The discount rate r reflects the long term interest rate minus inflation rate in the four countries plus the risk of the investment. We use a discount rate of 3%, which corresponds with an interest rate of 5% (OECD, 2012).

We calculate the NPV for the 5 year period after entering the labour market to get a short term view of the benefits of studying abroad in the Netherlands. We surveyed the graduates two and a half years after entering the labour market and as we have no additional information we assume that, after discounting, the average salary is constant in the first five years on the labour market and equals the salary at the time of survey, two and a half years after entering the labour market. The NPV in the first five years after entering the labour market is € 16,613 on average, which makes clear that an investment in studying abroad is a viable investment. In chapter 4 we saw that there

36 Mean exchange rate between September 2011 and January 2012 (the time of the survey) was Euro 1 = US\$ 1,34 (De Nederlandse Bank, 2013).

is negative selectivity of internationally mobile students, and in the current chapter we saw that the group of graduates with an international study experience is not a positively selected group. Therefore the NPV we calculated here is a conservative estimate of the real NPV. We realise that we do not take into account that the value of international experience on the labour market differs between countries. We come back to this in chapter 6.

Comparing NPV calculations is not advisable as the underlying data may differ (OECD, 2012). However, to get some idea of the value of the NPV of international student mobility, we mention the OECD data on the NPV of tertiary education five years after graduation for men in France (€ 70,129), in Poland (€ 36,764) and in Hungary (€ 48,263). For women the figures are for France (€ 59,285), in Poland (€ 47,335) and in Hungary (€ 56,721) (OECD, 2012). Our data do not differentiate between males and females and do not differentiate between countries. But when we compare the calculated NPV of international student mobility with the NPV of higher education, we see that international student mobility increases the NPV of higher education by 25-45%.

Example

Males in Hungary who completed a higher education after secondary education, earned in the first 5 years after graduation € 48,263 more than males with only secondary education earned since they entered the labour market (which is the period to complete higher education + 5 years). When the male Hungarian university graduate spent one year of his studies in the Netherlands, he earned in the first 5 years after graduation € 48,263 + € 16,613 = € 64,876 more than a male who entered the labour market after secondary education earned since he entered the labour market. It means that the university graduate increased the NPV of his university education 5 years after graduation by 34%.

5.6 Conclusions

The analyses reported in this chapter showed that graduates who studied in the Netherlands have significantly higher competence levels than graduates who did not study abroad. Graduates who studied in the Netherlands also have significantly higher competence levels than graduates who studied abroad but not in the Netherlands for the competencies ‘to organise’ and ‘to self-direct’, while the competence levels for the competencies ‘to present’ and ‘to co-operate’ are not significantly higher. Competence levels of graduates are lower than the competence levels of students. The graduates who studied in the Netherlands are not significantly different from the graduates in the reference groups on personality traits, on a number of other personal characteristics and there is also no significant difference in their parents’ education. In other words, the only difference between the group of graduates that studied in the Netherlands and the reference groups is the higher competence level, which is, as we saw in chapter 4, a result of studying in the Netherlands.

We analysed the labour market position of graduates who studied in the Netherlands compared to graduates who never went abroad during the studies and graduates who went abroad during their studies but not to the Netherlands.

First, the analysis in a binary logistic regression of some objective parameters of the labour market position shows that the odds for having employment, for having experienced a period of unemployment, for being self-employed, for having a job at the own level of education, for having a job within the own field of study and for having a job in which knowledge and skills are used are not different for graduates who studied in the Netherlands, for graduates who studied abroad but not in the Netherlands and for graduates who did not study abroad. However the odds of supervising others are significantly higher for graduates who studied in the Netherlands than for the other graduates.

Second we analysed the perceived benefits of international experience in the present job. Graduates who studied at a Dutch University of Applied Sciences have significantly more often a job with international contacts compared to the other graduates and more often a job where international experience makes the work easier compared to the graduates who did not study abroad. Graduates who studied abroad, in the Netherlands or elsewhere, more often have a job in which international experience is required compared to the graduates who did not study abroad.

Third, the analysis of the degree of satisfaction with the current job and the career prospects shows no significant difference between the graduates who studied in the Netherlands, graduates who studied abroad but not in the Netherlands and graduates who did not study abroad.

Fourth we analysed the income in the current job and see that the income of graduates who studied in the Netherlands is significantly higher (+ 9.9%) compared to the income of graduates who did not study abroad. The income of graduates who studied in the Netherlands is not significantly higher than the income of graduates who studied abroad but not in the Netherlands, and the income of graduates who studied abroad but not in the Netherlands is not significantly higher than the income of graduates who did not study abroad. The mean net costs of studying in the Netherlands are € 2,258 (SE 458) (95% interval €1,375 to € 3,206). Five year after entering the labour market the Net Present Value (NPV) of studying for one year in the Netherlands was € 16,613 which increases the NPV of higher education by 25-45%.

Fifth we see in the analyses that for three variables the competence level affects the outcome. Graduates scoring higher on the competence 'to co-operate' less often have a job within their own field of study, graduates scoring higher on the competence 'to organise' more often supervise others and graduates scoring higher on the competence 'to present' are more satisfied with their job. However, in general we conclude that competence levels do not structurally affect the labour market position of the graduates. We also see some effect of the personality trait 'neuroticism' where graduates who are emotionally less stable experience a longer period of unemployment, are less satisfied with their jobs and expect less career prospects. Graduates who are more 'open to new experience' less often have work within their field of study and see more career prospects. Incidentally we saw some effect of other characteristics of the graduates or of the organisation where they are employed on the labour market outcomes.

Summarizing we conclude that graduates who studied in the Netherlands benefit from this international experience in their present job as they have more supervisory status, have jobs with more international aspects and have a higher income compared to the other graduates. In general these benefits are in general not affected by the competence levels or other personal and family characteristics that were included in the analyses. In chapter 6 we will further discuss these results.

Chapter 6

Discussion and conclusions

6.1 Introduction

This thesis reports a study on the competence development of internationally mobile students in formal competence based higher education in the Netherlands and the relevance of acquired competencies for the start of their professional career. In this final chapter we summarize and discuss the findings of the analyses reported in the previous chapters and give the conclusions. This chapter also gives the policy implications and directions for future research. Section 6.2 recaps the previous chapters and answers the research questions that are formulated in the first chapter. In section 6.3 we discuss the major results of the analyses and, based on results and discussion, section 6.4 gives the main conclusions. Section 6.5 gives policy implications and finally sections 6.6. provides directions for future research.

6.2 Summary of main findings

Students are becoming increasingly internationally mobile and more often temporarily study abroad. Some studies suggest that graduates benefit from having studied some time abroad, however, it is not clear what really causes these labour market effects. We can use two theories to explain the results: (a) the students, while being abroad, experience an academic development or a personal development which makes them perform better on the labour market (human capital theory), or (b) a relationship between personal development and labour market outcomes does not exist and employers on the labour market value the sole fact of having studied abroad or value international experience as a signal of personal attributes (signalling theory). There is little research giving evidence that the labour market effects of studying abroad are caused by an academic development as a result of formal learning while studying abroad. Therefore the main research question of this thesis was:

What do international students learn at a Dutch University of Applied Sciences that they do not learn at their home university and how does this affect their later professional career?

We used a sample of internationally mobile students who moved into a competence based programme at a Dutch University of Applied Sciences and measured academic development by measuring competence development. When measuring competence development, it must be clear what is called ‘competence’, as there is not a single overarching concept of competence. The definition of the concept of competence that we elaborated in Chapter 2 and used in this thesis is based on two principles: the relationship between education and the world of work and on the learnability of competencies. The definition of the concept of competence reads: *Competence is the personal capability to mobilize and use required knowledge, skills, motivation and values to accomplish a task in a specific context.* This definition implies that competence is a separate capability and that competence is related to task accomplishment. To measure competence development we distinguish two dimensions of competence level: a complexity level and an expertise level. The 4Cyourway competence language describes complexity levels of tasks (De Jong & De Jong, 2008). Someone who accomplishes a more complex task (i.e. higher level task) is more competent than someone who can only accomplish a less complex task. The Dreyfus

model describes the variation in expertise level (novice to expert) that exists in accomplishing a task at a certain level of task complexity (Lester, 2005). A higher expertise level also indicates a higher competence level.

In Chapter 3 we describe the development and validation of a self-assessment questionnaire instrument that is sensitive to measure the competence development of students in their final bachelor year. We developed an instrument to measure the complexity level and expertise level of competence. We measure the complexity level of competence by measuring whether students have accomplished professional tasks at a pre-set level. We measure the expertise level by measuring how the students experienced the difficulty when accomplishing these professional tasks. We selected four competencies ('to cooperate', 'to present', 'to organise' and 'to self-direct') and developed items (task descriptions) with which these competencies were measured. The items were refined and validated in three studies with students and experts. Finally, we conducted a pilot study to select the items on discriminatory power. The pilot study revealed that the answer scale to measure the expertise level of competence cannot discriminate the competence level of students at the start and at the end of the final year of a bachelor programme and therefore this answer scale is not used in the final questionnaire. Consequently the instrument only uses accomplishment of tasks at a certain complexity level to measure competence level. The validation and selection process resulted in four reliable scales to measure the differences in competence levels of students at the start and at the end of the final year of a bachelor programme and to measure the competence levels of graduates.

Chapter 4 describes the competence development of students who move from a knowledge based education in Latvia, Hungary, Poland and France into competence based education at a University of Applied Sciences in the Netherlands and also describes the competence development of their peers who stayed home. In chapter 4 we answer the following research sub-questions:

1. *What is the competence development of international students in the final year of a competence based bachelor programme at a University of Applied Sciences?*
2. *How is the competence development of internationally mobile students in a competence based bachelor programme at a University of Applied Sciences compared to the competence development of their peers who stay at the home university in a knowledge based curriculum?*

When measuring the competence development of students who study abroad we must take into account issues of selectivity and causality. To address selectivity we not only measured the competence development of the internationally mobile students and the reference groups but we also collected educational, social and personal characteristics that may affect the odds of studying abroad in the Netherlands and that may affect the competence development. To allow a tentative conclusion on a possible causal relationship between competence development and the study abroad, the study design has a quasi-experimental pre-test/post-test control group set-up.

The results, based on 263 participants, show that there was no selectivity of competence level at the start of the academic year on the chance of students studying in the Netherlands. On the contrary, the odds for studying abroad in the Netherlands were higher for students who had a lower competence level for the competence 'to self-direct'. There are a few characteristics of students that affect the chance of students going to study in the Netherlands. The odds for studying abroad in the Netherlands were higher for students who were more open to new experiences, for students who had lower grades, for students who were not volunteers in a student organisation or

another organisation, for students with no work experience, for students who did not go abroad so far and for students who do not come from an immigrant family. In other words, except for the anticipated result of openness to experience, there was some negative selectivity for studying in the Netherlands. However, this is not a problem as it is in contrast to what we expected on the basis of previous studies and implies that the estimates of effects of international mobility will be on the low side. There was no difference in background characteristics between the response group and the non-response group when we look at the response to the second questionnaire at the end of the year.

The analyses of competence level at the end of the academic year show that the competence development in one academic year is affected by international mobility and is affected by the competence levels at the beginning of the academic year. Other personal characteristics or family characteristics do not explain the difference in competence development after one year of study. As the competence levels at the beginning of the year were not significantly different between the mobile group and the home group, we conclude that the difference in competence development is a result of international mobility into competence based education at a Dutch University of Applied Sciences.

We analysed whether or not this advantage in competence levels materialises when students enter the labour market. Chapter 5 gives the results of the graduate study which addresses the next research sub-questions:

3. *What are the benefits on the labour market of having studied at a Dutch University of Applied Sciences?*
4. *How do graduates use the competencies that they have developed in a competence based bachelor programme at a Dutch University of Applied Sciences in their professional work?*

We compared the labour market situation of graduates from universities in Poland, Hungary, Latvia and France who studied for one year at a Dutch University of Applied Sciences with the labour market situation of graduates from the same universities who studied abroad but not in the Netherlands and with graduates who never studied abroad. To determine the labour market situation of graduates we collected four categories of data: 1) several indicators on the employment situation, 2) the importance of international experience in their work, 3) job satisfaction and career prospects and 4) the wages earned. We used the same validated instrument as in the first study to collect data about the competence level of the participants. Finally, we controlled for other possible predictors of labour market benefits: situational characteristics, personal characteristics and family characteristics of the graduates.

The results, based on 301 participants, show that the group of graduates that studied in the Netherlands were not significantly different from the reference groups on characteristics included in the study but were different in competence levels. Graduates who studied in the Netherlands have significantly higher competence levels than graduates who did not study abroad. This means that the higher competence level as a result of competence based education is maintained several years after graduation (on average 2½ years). We see that the graduates who studied abroad but not in the Netherlands hold an intermediate position. Their competence levels are not significantly different from graduates who did not study abroad and the competence levels for 'to-co-operate' and 'to present' are also not significantly different from the competence levels of the graduates who studied in the Netherlands. Graduates who studied abroad but not in the Netherlands have

significantly lower competence levels for the competencies ‘to organise’ and ‘to self-direct’ than graduates who studied in the Netherlands.

We analysed four aspects of the labour market position of graduates. First, the analyses on the indicators of the employment situation show that the three groups of graduates do not differ with respect to having employment, having experienced a period of unemployment, being self-employed, having a job at the own level of education, having a job within the own field of study and having a job in which knowledge and skills are used to a (very) high extent. However the odds of supervising others are significantly higher for graduates who studied in the Netherlands than for the other graduates. Second, the analysis of the international aspects of the present job shows that graduates who studied in the Netherlands have significantly more often a job with international contacts compared to the other graduates and more often a job where international experience makes the work easier compared to the graduates who did not study abroad. Graduates who studied abroad, in the Netherlands or elsewhere, more often have a job in which international experience is required compared to the graduates who did not study abroad. Third, the analysis of the degree of satisfaction with the current job and the career prospects shows no significant difference between the groups of graduates. Fourth, the income in the current job of graduates who studied in the Netherlands is significantly 9.9% higher compared to the income of graduates who did not study abroad but not significantly higher than the income of graduates who studied abroad but not in the Netherlands. The income of graduates who studied abroad but not in the Netherlands is not significantly higher than the income of graduates who did not study abroad. We use the Net Present Value (NPV) to calculate the private monetary benefits on the labour market of studying abroad. The Net Present Value is the difference between the sum of the present value of benefits and the present value of costs. We calculate the present value of benefits (income) and costs (costs of international education) by discounting benefits and costs back to the beginning of the investment with a set rate of interest (discount rate). Five years after entering the labour market the Net Present Value (NPV) of studying for one year in the Netherlands is € 16,613, which is about one third of the NPV five years after graduation for men obtaining tertiary education in the same countries. We see in the analyses that there is some effect of competence levels on the labour market outcomes, but in general we conclude that competence levels do not affect the labour market position of the graduates.

Summarizing we conclude that graduates who studied in the Netherlands benefit from this international experience in their present job and have a higher income compared to the other graduates. In general these benefits are not affected in a structural way by the competence levels or other personal and family characteristics that were included in the analyses.

Limitations of our study

This thesis reports studies on the competence development of international students in a competence based curriculum at a Dutch University of Applied Sciences and the effects of these competencies after graduation on the labour market in four European countries. Therefore the generalizability, e.g. to other educational systems and to other countries, of the results of this thesis are limited. The study amongst students measured competence development but did not measure other aspects of personal development, like intercultural sensitiveness or language proficiency. The labour market outcomes must be put in the perspective that Hungary, Poland and Latvia joined

the European Union in 2004 and their economies were still in transition in 2011 when the research data was gathered. The labour market outcomes of graduates must also be put in the perspective of the economic crisis in Europe, which started at the end of 2008 and had particularly severe effects in Latvia and Hungary. The economic crisis may have affected the data in absolute terms, but may also have affected possible advantages on the labour market of the research group or reference groups of graduates. Despite these limitations, this thesis makes important contributions to the knowledge of and the discussion about international student mobility and the effects of competence based education on the labour market.

6.3 Discussion

We discuss some aspects of the methodology and the results. First we discuss the self-assessment questionnaire instrument to measure competence levels. Second, we discuss the competence development of students. Third we discuss why there is no effect of competence levels on the labour market outcomes and fourth the benefits of international mobility and the possible explanation for these benefits.

(1) We developed and validated a self-assessment questionnaire instrument to measure competence levels.

We discuss four issues with respect to measuring the competence levels: (a) the concept of competence, (b) describing competence levels, (c) international use of the instrument and (d) self-assessment.

(a) We describe the concept of competence as the capability to use knowledge, skills, motivation and values in accomplishing a professional task. This implies that our instrument measures the self-perception of accomplishment of professional tasks. We designed and validated well-defined tasks in such a way that only one competence is needed to accomplish this task. A scale for one competence consists of a number of such task descriptions. After applying the instrument to the internationally mobile students and their peers at home and applying the instrument to the graduates, the four competence scales proved to be reliable and an explorative factor analysis showed that the scales had no other dimensions than designed. However, we realise that an authentic professional task is a compound of elements and requires several competencies to accomplish it. Although the instrument is reliable and proved to be useful, it does not reflect the reality of accomplishing professional tasks.

We consider competence as a separate, holistic capability. This implies that our instrument does not measure the underlying constituents (knowledge, skills, motivation and value). It might be that the reference groups of students have developed some of these constituents better than the internationally mobile students. Although the claim of an activating learning environment like competence based education is that students develop these constituents in a balanced way, we lack sufficient evidence that this is the case.

(b) We use level indicators to describe tasks at different complexity levels (De Jong & De Jong, 2008). As indicated earlier, the validation in a group of experienced lecturer-assessors was only partially successful as for many items one could not agree on the complexity level. There

might be three reasons for the disagreement among the experts. First, there are professional tasks that are independent of a complexity level, i.e. tasks that everybody has to do. Lecturers may be involved in a particular phase of the curriculum and will ascribe the item level to this phase. Second, the items are designed, on purpose, without context to make them useable to measure the competence levels of students in different study programmes and to measure the competence levels of students in different countries. Probably the experts read an item and 'see' a context that is familiar to them in a particular year of study and as such different lecturers may validate the item at different levels. Third, the lecturer-assessors may need a (long) checklist to assess the competence level of tasks and feel uncomfortable without it. As the lecturers could not determine the level of complexity, the validation of complexity level is done in a field test with students which resulted in reliable scales for the four competencies to distinguish the competence level of students at the beginning and end of the final year of a bachelor programme.

We could very well use the complexity level of the task to determine the competence level, but we were not able to use the expertise level of accomplishing a task to determine the competence level. We intended to use experienced difficulty of accomplishing a task as an indication of expertise level of competence but found no difference between students at the start and students at the end of the academic year in experienced difficulty of accomplishing a task. Actually, this is not surprising as it requires experience to become more proficient in accomplishing a professional task. Markowitsch et. al. (2008) argue that reaching level three of the five step Dreyfus scale (novice to expert), requires an occupational practice of two to three years. Educational programmes expose students briefly to a particular task, before moving on to the next learning task. The students do not have the opportunity to gain enough experience in accomplishing professional tasks and do not develop any routines to accomplish tasks easier. A university gives a pass when students accomplish a task at expertise level 2 (advanced beginner) (Markowitsch et al., 2008) and then continues with tasks of a higher complexity level. In the world of work employees need an 'expert' rating before they will be promoted to a next higher level job with more complex tasks. The novice-expert model might therefore be right to describe the common practice of using competence levels in the world of work but is probably not applicable to university situations.

(c) We developed the instrument with Dutch students and then applied the instrument after translation in an international context. There might be two factors that can affect the consistency of the answers. First, the translations itself (in English, Polish, Hungarian, Latvian and French) may give loss of nuances which results in task descriptions that are slightly different in the five languages. Second, there might be a cultural bias in understanding the task descriptions. These two effects may result in different answers of participants on some of the items and explains the some-what lower internal reliabilities of the four competence scales in comparison to the reliabilities in the pilot study (Maneesriwongul & Dixon, 2004; Tobi & Kampen, 2013). Applying the instrument in an international context in four countries with students as well as with graduates also implies applying the instrument in groups of participants that are less homogenous compared to the Dutch students and may also result in less reliable scales. Nevertheless, we found that the reliability of the instrument was only slightly lower after translations and international applications in heterogeneous groups, so we are confident that the instrument is able to measure competence levels in an international context.

We measured competence development for internationally mobile students, addressed issues of selectivity and causality but we could question the usefulness of the instrument to measure competence development of students who stay at the home university. We first applied the instrument at the start of the academic year with students who were unfamiliar with competence based education. The fact that the instrument measured no difference in competence levels between the mobile and home group confirmed the confidence that we used a valid instrument. Second, we applied the instrument at the end of the academic year with students who were still unfamiliar with competence based education, the home group, and measured a small but significant, competence growth. So, we are confident that the instrument is also able to measure a small competence development. It is noteworthy that students also develop these competencies in a knowledge based curriculum. As a result of these two observations we are, after the careful validation process, confirmed in our confidence that we used a reliable and valid instrument.

(d) Students and graduates indicated accomplishment of activities in a self-assessment instrument. There are conflicting study results on whether students and graduates are able to self-assess their competencies (Braun, Woodley, Richardson, & Leidner, 2012). Some scholars state that self-assessment is vulnerable to inaccuracy (Bowman, 2011; Ehrlinger, Johnson, Banner, Dunning, & Kruger, 2008) but other scholars report that self-assessment ratings are correlated with alternative measurements (Gosling, John, Craik, & Robins, 1998; Spain, Eaton, & Funder, 2000). We do not think that inaccuracies in the self-assessment played an important role in our studies. First, the participants rated activities they did in the past year, which means that unintentional inaccuracies due to loss of memory will be negligible. Second, we see that the competence level at the end of the year depends on the competence level at the beginning of the academic year for mobile as well as for home students which make intentional inaccuracy less likely. Third, no consequences were attached to the self-ratings, which also makes intentional inaccuracy less likely. Fourth, the self-assessment will not be biased by the educational level of the participants, as the participants in the mobile group and home group are at the same university level.

(2) Internationally mobile students at a Dutch university of Applied Sciences show a higher competence development than their peers who stay at the home universities.

The results of applying the instrument in an international context revealed that students who studied in a final year of a competence based bachelor programme at a Dutch University of Applied Sciences show a higher competence development compared to their peers who study in a knowledge based curriculum although the mobile students started the year with a lower grade point average than the students who stayed at the home university. Perhaps it is not surprising that students who studied in a competence based curriculum show a higher competence development in areas that are typical for this learning environment compared to their peers who study in a knowledge based curriculum. First, the descriptions of tasks are based on authentic tasks in the Dutch professional practice and the Dutch curriculum has strong links with the same professional practice. Second, the competence based curriculum will expose the students more often to these professional tasks and thus enhance the competence development. Third, the validation of the instrument that we used to measure competence levels is done by lecturers and students from the same university of applied sciences where the internationally mobile students from France, Poland, Latvia and Hungary, studied for one year. On the other hand, the fact that students who

moved into another educational culture and showed a competence development that is comparable to students who are already in this competence based educational culture for three years shows that these internationally mobile students have adapted well to the new educational culture.³⁷

Another point is whether we measured competence development that is the result of studying in a competence based programme. Competence development is the result of activities and experiences inside and outside university. Students may have work experiences from home and often have jobs during their period of study (Gmelch, 1997; Hager, 2004). During the validation process of the instrument we saw that students may mix experiences from private life and university experiences when answering the items because the items consist purposely of task descriptions without context. Therefore the students were instructed to restrict themselves when answering the items to experiences related to their study programme (experiences within their programme of study, internships, experiences in students organisations or experiences in jobs that are connected with their study). It seems that students followed the instructions. The results of the study at the beginning of the academic year show no significant difference in competence levels of internationally mobile students and students who stayed at the home university although the latter group of students had a higher GPA, had more work experience and had more experience as a volunteer compared to the internationally mobile group. The results of the study at the end of the academic year show a significant higher competence level of the internationally mobile students compared to the students who stayed at the home university. We know that internationally mobile students, on average, had not more jobs than they had at home and we assume that the home students kept their jobs. We have no evidence that mobile students were involved in more extracurricular activities than the students who stayed at the home university. Therefore we conclude that the competence development is a result of studying in a competence based educational programme and not the result of experiences outside the university.

(3) The higher competence levels of graduates of a Dutch University of Applied Sciences do not affect the labour market outcomes.

Internationally mobile students maintain the higher competence levels after transition into the labour market. We analysed the effect of four competencies on thirteen parameters of the labour market outcome of graduates and found that competence levels affect the labour market outcome for only three variables. In general we conclude that differences in competence levels do not affect the differences in labour market outcomes. This is in line with the findings of Meng (2005) who reports that neither for the level of 'academic competencies' nor for the level of 'discipline specific competencies' a direct link could be established with the gross hourly wages three years after graduation. We mention three explanations why we do not find an effect of competence levels on the labour market outcomes. First, we conducted the study about 2½ years after graduation. In the modern world of work competence management is the basis for personnel management but competencies do not yet play a dominant role 2½ years after graduation but start doing this later. That also explains why we do not see an effect of competence levels on salaries. When graduates enter the labour market, the salaries in the first years are not based on competence levels but are based on formal characteristics like the job level and the qualification

37 The drop-out figure during the study was less than 5%.

level. The reason for this is that employers cannot directly observe the competencies of graduates, so they have to base their wage offer on the more formal characteristics. Second, we measured the competence levels of competencies that are well recognised by the world of work in a wide range of countries and covering a wide range of industry sectors and jobs. On the other hand it is known that employers may prioritize competencies in another way than a competence based curriculum does (Bijker, 2013). This may be more evident when students develop competencies in a Dutch context and use these competencies after entering the labour market in another country. We did not study the appreciation of the competencies included in the instrument on the labour market in Latvia, Hungary, Poland and France and cannot exclude that these labour markets use other concepts of competencies in their HRD and HRM policies. Third, we developed an instrument that measures competence levels by means of measuring accomplishment of tasks. In the world of work competence management and subsequent promotion and higher salaries, is based on the quality of accomplishing tasks at a certain complexity level i.e. the expertise level of the employee. However as indicated earlier, we were not able to measure this expertise dimension of competence.

(4) Graduates who studied at a Dutch University of Applied Sciences benefit from their international mobility on the labour market.

Despite the fact that we do not find an effect of competencies on the labour market outcomes, we do find some significant differences in the labour market outcomes of graduates who studied at a Dutch University of Applied Sciences compared to graduates who studied abroad elsewhere and graduates who stayed at the home university. The odds of supervising others were higher for graduates who studied at a Dutch University of Applied Sciences. Graduates who studied at a Dutch University of Applied Sciences also have more often a job with international contacts compared to the other graduates and more often a job where international experience makes the work easier compared to the graduates who did not study abroad. Graduates who studied abroad, in the Netherlands or elsewhere, more often have a job in which international experience is required compared to the graduates who did not study abroad. Finally the results show that graduates who studied at a Dutch University of Applied Sciences have a 9.9% higher income compared to graduates who did not study abroad. Can we explain these labour market outcomes with existing theories such as the *Human Capital Theory* (Becker, 1963) or the *Signalling Theory* (Spence, 1973)?

Explaining the labour market benefits of graduates who were internationally mobile during their studies with the *Human Capital Theory* assumes that graduates have developed certain qualities that employers recognise and use to determine the future productivity of the graduate and subsequently will appreciate in the form of more attractive job conditions. The more attractive job conditions of the prospective employees who were internationally mobile, may be a result of appreciating qualities that these applicants developed before or during their international mobility.

First, it is possible that employers offer better employment conditions to internationally mobile students because of certain qualities that internationally mobile students developed prior to their international mobility. These qualities that are appreciated by employers and which are already present prior to international mobility, could also have positively affected the decision to go and study in the Netherlands. However, with the exception of openness to experience, we

found a negative selectivity of students for studying abroad in the Netherlands: they had lower grades, less work experience and less experience as a volunteer. Yet we see that this negatively selected group of students perform better on the labour market than the other groups of graduates, nor was there an effect of openness to experience. We therefore conclude that it is unlikely that the higher wages result from unobserved qualities that were present before the international mobility.

Second, employers may appreciate qualities that job applicants developed during their international study mobility. Although we observed that graduates who were internationally mobile during their studies into a competence based educational programme have higher competence levels than other graduates, these higher competence levels did not affect the labour market outcomes. Of course one might argue that graduates who were internationally mobile also developed other skills, such as their language proficiency and intercultural sensitiveness to a larger extent than graduates who stayed home during their studies. Given the fact that the graduates more often work in a job that requires international experience it is likely that these kind of skills will have affected the wages.

When we use the *Signalling Theory* to explain the labour market benefits of graduates with international experience in the Netherlands, we assume that employers cannot directly measure the qualities of job applicants, but collect information from observable factors related with productivity to determine the worker's productivity. In our case it implies that employers consider international mobility as an indication of the presence of qualities that other graduates may not possess (Hilmer, 2002). In our study we collected data about personality traits and found that the odds for studying abroad in the Netherlands are higher for students who are more 'open to experience'. It is possible that employers assume that graduates who were internationally mobile during their studies are more 'open to experience'. Employers may also assume that the graduates with international experience will distinguish themselves in the fields of language proficiency or intercultural sensitiveness and will more easily deal with greater responsibilities, possess greater flexibility and will perform better in an international environment (Allen & Velden van der, 2007; Bracht et al., 2006; Weert de, 2007). Jobs with greater responsibilities and more international aspects assume more capabilities to perform well, and will therefore be more rewarding. This is in line with the results of our study: the job selection process results in graduates who had international experience during their studies getting jobs with more responsibility (supervising others) and jobs that are more internationally oriented and therefore jobs with a higher salary. So even if employers do not directly consider competence levels during the hiring process, these competencies may still play a role through the signalling effect of having studied abroad.

We find in our study that graduates who studied in the Netherlands benefit more on the labour market than graduates who studied abroad somewhere else. Graduates who studied abroad but not in the Netherlands have significantly more often a job where international experience is required compared to graduates without international experience but do not have a statistically significant higher income or other job benefits. It is likely that this is caused by the composition effect. In the reference group of graduates who studied abroad but not in the Netherlands more than half of the graduates are French. The reference group of graduates who never studied abroad consists almost entirely of graduates from Poland, Hungary and Latvia, because most of the French graduates have gained some international experience. This would suggest that for the French graduates international experience is not that distinctive, as most of graduates will have

some international experience. This is different in the three other countries. Employers in the Eastern European countries, still economies in transition, may consider the education abroad to be better than the education in their own country. Someone who completed a study abroad has proven to protrude above the level of the local graduates, which will be valued on the labour market (Bracht et al., 2006). This is also confirmed in a recent study by Humburg, Van der Velden and Verhagen (forthcoming) that shows that employers in certain countries (Italy, Poland and Spain) clearly prefer graduates who did their entire study abroad over graduates who did their entire study at home.

Summarizing we conclude that the labour market benefits of graduates who were internationally mobile during their studies is probably not the result of recognition and appreciation by employers of qualities that these graduates have developed before being internationally mobile nor does it result from having developed the competencies that we analysed in this study: to cooperate, to present, to organise and to self-direct. However, international mobile students may also develop other competencies during their study abroad and perhaps these competencies are being valued by employers. On top of this employers may use international experience as an indication of other non-measured qualities of graduates or as an indication of a presumed higher quality of the educational programme.

6.4 Main conclusions

The main question of our study was: *What do international students learn at a Dutch University of Applied Sciences that they do not learn at their home university and how does this affect their later professional career?* Based on the results and discussion we conclude that:

- Internationally mobile students in a competence based education develop four selected competencies significantly more than their peers in a knowledge based education.
- The higher competence levels are maintained after graduation but do not affect the labour market outcomes.
- Graduates who studied at a Dutch University of Applied Sciences benefit from their international mobility on the labour market by having a higher salary in a job with more international aspects and more supervisory roles.

6.5 Policy implications

Allow students to further develop their expertise level of their competencies.

We developed an instrument that measures complexity levels of competence by measuring accomplishment of tasks. We were not able to measure the expertise dimension of competence. This may be due to the fact that a university of applied sciences gives students a pass when they accomplish a task at expertise level 2 (advanced beginner) and then exposes the students to tasks of a higher complexity level. The universities should ask themselves whether they really want to deliver ‘beginners’ to the labour market, or that they have to deliver graduates with higher capabilities. To reach these higher expertise levels the university is probably not the most

suitable learning environment but requires stronger learning environments in authentic situations. Universities should think of more dual learning, where students in their final year(s) fulfil a role in industry where they have more opportunities to learn how to deal with dilemma's, make choices and take responsibility. At the same time students use their experiences for reflection and direct their own learning, guided by the lecturers of the university.

Universities: stimulate and facilitate international student mobility.

Our study shows that the labour market appreciates international experience of university graduates. Universities have to prepare students for a global labour market and for global citizenship and should take their responsibility by facilitating and crediting the international experience of students. Although we do not find an effect of competence development on the labour market outcomes, a sojourn at a university abroad is a safe environment for a student to gain international experience without falling behind with the study programme if the study abroad is credited at the home university. Another possibility to gain international experience during the studies is an internship in an international company abroad. In this, universities play an important role to guarantee a powerful learning environment by demanding the right complexity level of professional tasks to be accomplished and use the proper instrument to measure and credit the learning of the student. The least universities can do is removing obstacles to international experience of students (like inflexible programmes, too many core courses) and not considering international study experience or internship as an 'add-on'.

Governments: give loans instead of scholarships.

We question whether the government should provide scholarships for international student mobility. We are fully aware of the fact that the most important barriers to international student mobility are, apart from family relationships and the already mentioned credit recognition by the universities, financial constraints. But the personal benefits are so high that students are capable for compensating for the personal costs of the international experience after graduation, which justifies a loan instead of a scholarship, at least for the countries under study. Our study also shows that after graduation almost all internationally mobile students from these countries find employment in their home country. It means that the benefits of international student mobility are for the home country, which should provide the loans to the students. But for the host country the education of the internationally mobile students who return to their home country after graduation is a loss-making activity. Therefore they could charge the full costs of education to these students, which means that the loans of the home country have to be higher.³⁸

Undoubtedly, the ERASMUS programme has given a boost to international student mobility. We studied the effects of one year international student mobility for which no official Erasmus funds are available. Unsubsidized international experience of students has proven to give benefits on the labour market, thus contributing to fulfil the requirements of the employers, and the international study experience will also improve European citizenship. We could, in line with the foregoing and based on our results, question whether subsidizing international student

38 We do not deny that countries who face a shortage of high educated professionals may attract students from abroad to study in their country, hoping they will settle there after graduation, and therefore subsidize internationally mobile students.

mobility for 3-6 months is the most efficient way to reach the objectives of the European Union, also when we observe that short international sojourns are not only for ‘development’ but also used for ‘consumption’.

6.6 Directions for future research

Refinement of the instrument to measure competence levels

We described competence level as a combination of complexity level of the task and the expertise level of the person. We could very well use the complexity level of the task to determine the competence level, but we were not able to use experienced difficulty of accomplishing a task as an indication of expertise level of competence in the student population involved in the pilot study. We know that students receive different marks because they deliver different quality when accomplishing tasks at a given complexity level. Further research may result in another proxy for expertise level and therewith refining the instrument.

We used a self-assessment questionnaire instrument that is based on a solid concept of competence and that is sensitive to measure competence levels of students to show the competence development in the final year of a bachelor programme. For a valid evaluation of the effect of studying in a competence based educational programme, an identical instrument had to be used for all groups of students and graduates. Therefore the scales of the instrument consist of items that describe professional tasks without context. To make the instrument more sensitive, items can include more context. When including more context in the task descriptions of the items, we have to consider the pros and cons. Less context means application of the instrument in a wider range of programmes while more context means application in a narrower range of programmes thus higher costs as more instruments are needed.

Study design

The study to compare the competence development of internationally mobile students and their peers who stayed at the home university was a cohort study with a pre-test/post-test design. The study to compare the labour market outcomes of graduates was a cross-sectional study with another group of participants than the participants of the first study. We used the outcomes of the first study to explain the results of the second study. This is not the most optimal way to determine causal relations. Therefore an extended cohort study till 5 years after graduation may refine the conclusions of this thesis.

Appreciation of competencies on the labour market

We saw that internationally mobile students in a competence based education show a higher competence development than their peers in a knowledge based education. Nevertheless we did not find an effect of competence levels on the labour market outcomes. It is interesting to know whether this is also true for the appreciation of competencies on the Dutch labour market. The results of such a study can direct further research. If competencies of Dutch graduates of Dutch bachelor programmes do not affect the labour market outcomes on the Dutch labour market, then it is not surprising that these competencies do not affect the labour market outcomes of

graduates in Latvia, Hungary, Poland and France. In that case we should have a further look into competence education in general and see if students develop the right competencies. If however the competencies that Dutch students develop in a bachelor programme are valued on the Dutch labour market, there might be the need to have a closer look at the competencies valued on the labour markets of other countries.

Labour market

We need a better understanding why international study experience affects the labour market outcomes of university graduates. More information is needed about the appreciation of international experience in the recruitment process. Employers attribute a number of characteristics to applicants who have an international experience (like expecting more ‘openness to experience’) which raises the question whether employers appreciate the international study experience of applicants or appreciate the sojourn abroad in itself. In the light of this, it would be illuminating if we knew whether signalling on the labour market also occurs for graduates who did not study abroad, but had a work experience abroad. And it remains unclear what characteristics employers attribute to applicants with an international experience that make the decisive difference to employers to hire or to reject the graduate.

We saw monetary benefits of an international study experience that are higher than reported by other scholars and we concluded that this is due to a country effect. In a recent study covering nine European countries (Humburg, Velden van der, & Verhagen, 2013) the country effect in appreciating the international experience is confirmed. But we do not know the effects in other countries and we can raise a number of other questions. What is the monetary value of international experience on the labour market in other countries? How does the country in which the job applicant gained international experience affect the labour market outcomes? What role does the field of specialisation play in appreciating international experience? What is the effect of the length of international experience? What is the difference in appreciation on the labour market between international study experience and international work experience during the studies?

Effects of competence based education

Our study fits into the literature on international student mobility. But the students in our study also moved into another educational culture. What would happen if students move from a knowledge based curriculum into a competence based curriculum within their own country? There is some research into the effects of competence based education on labour market outcomes (Bijker, 2013; Meng, 2005) but the number of studies is limited as competence based educational programmes started recently and the first graduates of these programmes have just obtained five years of work experience. This research into the effects of competence based education should not only compare graduates of competence based education with graduates from knowledge based education, but also the effects of how the competence development is affected when students move from a knowledge based curriculum into a competence based curriculum.

In our study we combined the results of a longitudinal study amongst students and the results of a cross-sectional study of graduates. However to properly examine competence development over time, we need a longitudinal study design that incorporates the competence development of

students and graduates. This study should start when students enter the universities and continue for several years after they have entered the labour market.

Finally, we measured the competence development of four competencies in internationally mobile students. It is worthwhile to study the competence development of the other four 'Great Eight' competencies ('to innovate', 'to research', 'to enterprise' and 'to show leadership')³⁹ and study the effect of competence levels on labour market outcomes.

Financial effects of public funding of international student mobility

Public funding of international student mobility is justified if it increases the international mobility of students and if these students repay the subsidies through higher taxes on their higher incomes after graduation. This study shows that for the countries under study the benefits of international mobility largely accrues to the students themselves. This warrants further studies into the private and social returns of public funding of international student mobility.

39 In Bartram (2005) called 'Creating and Conceptualising', 'Analysing and Interpreting', 'Enterprising and Performing', 'Leading and Deciding' respectively. See also table 3.2.

References

- Abarbanel, J. (2009). Moving with emotional reliance between and within cultures. *Intercultural Education*, 20(Sup1), S133-141.
- Alfrasender, E., Fellinger, J., & Taivere, M. (2011). *E-Value-ate Your Exchange: Research Report of the ESNSurvey 2010*. Brussels: Erasmus Student Network AISBL.
- Allen, J., Coenen, J., & Humburg, M. (2011a). Higher Education Experiences. In J. Allen, S. Pavlin & R. van der Velden (Eds.), *Competencies and Early Labour Market Careers of Higher Education Graduates in Europe* (pp. 11-28). Ljubljana: University of Ljubljana, Faculty of Social Sciences.
- Allen, J., Coenen, J., & Humburg, M. (2011b). The Role of Higher Education in Producing Relevant Competences. In J. Allen, S. Pavlin & R. van der Velden (Eds.), *Competencies and Early Labour Market Careers of Higher Education Graduates in Europe* (pp. 55-72). Ljubljana: University of Ljubljana, Faculty of Social Sciences.
- Allen, J., Coenen, J., & Humburg, M. (2011c). The Transition and Early Career. In J. Allen, S. Pavlin & R. Velden van der (Eds.), *Competencies and Early Labour Market Careers of Higher Education Graduates in Europe* (pp. 29-54). Ljubljana: University of Ljubljana, Faculty of Social Sciences.
- Allen, J., Coenen, J., & Velden van der, R. (2007). Afgestudeerden van het hoger onderwijs in vergelijking met andere landen. Resultaten van het REFLEX-project. Den Haag: Ministerie van OCW.
- Allen, J., & Velden van der, R. (2003). *The Role of Self-Assessment in Measuring Skills*, . REFLEX Working paper 2. ROA. Maastricht.
- Allen, J., & Velden van der, R. (2007). Transitions From Higher Education to Work. In U. Teichler (Ed.), *Careers of University Graduates; Views and Experiences in Comparative Perspectives* (17 ed., pp. 55-77). Dordrecht: Springer.
- Allen, J., & Velden van der, R. (2011). *The Flexible Professional in the Knowledge Society : New Challenges for Higher Education* (Vol. 35). Dordrecht: Springer.
- Allen, J., & Velden van der , R. (2012). Skills for the 21st Century: Implications for Education ROA-RM-2012/11 (Ed.) Retrieved from (http://www.roa.unimaas.nl/pdf_publications/2012/ROA_RM_2012_11.pdf)
- Anderson, B., Benjamin, H., & Fuss, M. A. (1994). The determinants of success in university introductory economics courses. *Journal of Economic Education*, 25(2), 99-119.
- Anderson, L. E. (1994). A new look at an old construct: cross-cultural adaptation. *International Journal of Intercultural Relations*, 18(3), 293-328.
- Angulo, S. K. (2008). *Identity Change in Students Who Study Abroad*. PhD, University of Texas, Austin.
- Audas, R., Berde, É., & Dolton, P. (2005). Youth unemployment and labour market transitions in Hungary. *Education Economics*, 13(1), 1-25.
- Bachner, D., & Zeuschel, U. (2009). Long-term effects of international educational youth exchange. *Intercultural Education*, 20(S1), S45-S58.
- Bakalis, S., & Joiner, T. A. (2004). Participation in tertiary study abroad programs: the role of personality. *International Journal of Educational Management*, 18(5), 286-291.

- Ball, R., & Chik, R. (2001). Early employment outcomes of home and foreign educated graduates - the Malaysian experience. *Higher Education*, 42, 171-189.
- Ballatore, M. (2011). *Professional and personal paths for Europe's qualified youth; A survey of French, Italian and English ex-Erasmus students' trajectories*. AlmaLaurea. www.almalaurea.it. AlmaLaurea Inter-University Consortium. Bologna.
- Barrick, M. R., & Mount, M. K. (1991). The Big Five Personality Dimensions and Job Performance: A Meta-Analysis. *Personnel Psychology*, 44(4), 1-26.
- Barron, P., Gourlay, L. J., & Gannon-Leary, P. (2010). International students in the higher education classroom: initial findings from staff at two post-92 universities in the UK. *Journal of Further and Higher Education*, 34(4), 475-489.
- Bartram, D. (2005). The Great Eight Competencies: A Criterion-Centric Approach to Validation. *Journal of Applied Psychology*, 90(6), 1185-1203.
- Becker, G. S. (1963). *Human Capital (Third Edition 1993)* (Third Edition ed.). Chicago and London: The University of Chicago Press.
- Bemmel van, A. (2006). Hogescholen en hbo in historisch perspectief. The Hague: HBO-Raad.
- Benner, P. (1982). From novice to expert. *The American Journal of Nursing*, 82(3), 402-407.
- Bennett, M. J. (1986). A developmental approach to training for intercultural sensitivity. *International Journal of Intercultural Relations*, 10, 179-195.
- Bennett, M. J. (1993). Towards ethnorelativism: A developmental model of intercultural sensitivity. In R. M. Paige (Ed.), *Education for the intercultural experience* (pp. 21-71). Yarmouth: ME: Intercultural Press.
- Bennett, M. J. (2009). Defining, measuring, and facilitating intercultural learning: a conceptual introduction to the Intercultural Education double supplement. *Intercultural Education*, 20(S1), S1-S13.
- Bidjerano, T., & Dai, D. Y. (2007). The relationship between the big-five model of personality and self-regulated learning strategies. *Learning and Individual Differences*, 17, 69-81.
- Biemans, H., Nieuwenhuis, L., Poell, R., Mulder, M., & Wesselink, R. (2004). Competence-based VET in the Netherlands: background and pitfalls. *Journal of Vocational Education and Training*, 56(4), 523-538.
- Biemans, H., & van Mil, M. (2008). Learning Styles of Chinese and Dutch Students Compared within the Context of Dutch Higher Education in Life Sciences *The Journal of Agricultural Education and Extension*, 14(3), 265-278.
- Biemans, H., Wesselink, R., Gulikers, J., Schaafsma, S., Verstegen, J., & Mulder, M. (2009). Towards competence-based VET: dealing with the pitfalls. *Journal of Vocational Education & Training*, 61(3), 267-286.
- Bijker, M. (2013). *Understanding the gap between business school and the workplace: Overconfidence, maximizing benefits, and the curriculum*. PhD, Open University, Heerlen.
- Borghans, L., Duckworth, A. L., Heckman, J. J., & Weel ter, B. (2008). The Economics and Psychology of Personality Traits. *The Journal of Human Resources*, 43(4), 972-1059.

- Borghans, L., & Weel ter, B. (2000). *Hoe computerisering de arbeidsmarkt verandert: de feiten op een rij vanuit een nieuw raamwerk*. Maastricht: Faculteit der Economische Wetenschappen en Bedrijfskunde.
- Bouffard, T., Vezeau, C., Roy, M., & Lengelé, A. (2011). Stability of bias in self-evaluation and relations to well-being among elementary school children. *International Journal of Educational Research*, 50(4), 221-229.
- Bowman, N. A. (2011). Validity of College Self-Reported Gains at Diverse Institutions. *Educational Researcher*, 40, 22-24.
- Bracht, O., Engel, C., Janson, K., Over, A., Schomburg, H., & Teichler, U. (2006). The Professional Value of ERASMUS Mobility. Kassel, Germany: International Centre for Higher Education Research (INCHER-Kassel) University of Kassel.
- Braun, E., Woodley, A., Richardson, J. T. E., & Leidner, B. (2012). Self-rated competences questionnaires from a design perspective. *Educational Research Review*, 7, 1-18.
- Breimer, D. D., Boom, C., & Broesterhuizen, E. A. A. M. (2009). Evaluatie NESO-programma. The Hague: Ministry of Education.
- British Council. (2004). Forecasting International Student Mobility: a UK Perspective Retrieved 22 October, 2012, from http://www.internationaleducationgateway.org/Vision_2020_International_Students_UK_Perspective.pdf
- Brockmann, M., Clarke, L., & Winch, C. (2009). Competence and competency in the EQF and in European VET systems. *Journal of European Industrial Training*, 33(8/9), 787-799.
- Brooks, R., & Waters, J. (2009). International higher education and the mobility of UK students. *Journal of Research in International Education*, 8(2), 191-209.
- Carlson, J. S., & Widaman, K. F. (1988). The effects of studying abroad during college on attitudes towards other cultures. *International Journal of Intercultural Relations*, 12, 1-17.
- CBS. (2012) Retrieved 10 August, 2012, from <http://statline.cbs.nl/>
- Cheetham, G., & Chivers, G. (1996). Towards a holistic model of professional competence. *Journal of European Industrial Training*, 20(5), 20-30.
- Cheetham, G., & Chivers, G. (1998). The reflective (and competent) practitioner: a model of professional competence which seeks to harmonise the reflective practitioner and competence -based approaches. *Journal of European Industrial training*, 22(7), 267-276.
- Commission on the Abraham Lincoln Study Abroad Fellowship Program. (2005). Global Competence & National Needs. One million Americans studying abroad.
- CPB. (2012). *De economische effecten van internationalisering in het hoger onderwijs*. CPB.
- Crede, M., & Kuncel, N. R. (2008). Study Habits, Skills, and Attitudes. The Third Pillar Supporting Collegiate Academic Performance. *Perspectives in Psychological Science*, 3(6), 425-453.
- Cremers, P., Eggink, J., & Hoetink, F. (2005). Competency Based education; curriculum (re)design beyond the hype. Groningen: Hanzehogeschool.

- Daly, A. J. (2007). *Outbound student exchange at Australian and New Zealand universities: the effects of pre-departure decision-making, in-country experiences and post-sojourn outcomes*. PhD, Griffith University, Southport, Queensland.
- Day, K. M., & Devlin, R. A. (1998). The payoff to work without pay: volunteer work as an investment in human capital. *The Canadian Journal of Economics*, 31(5), 1179-1191.
- De Jong, F., & De Jong, C. (2008). A language for competence (capacity) grew for 'moving up' on secondary, middle, higher vocational education and university. Paper presented at the PBPR-conference Bergen, Norway. Retrieved 14th September, 2011, from [http://www.4cyourway.nl/4cyourway/tabid/1238/Default.aspx](http://www.4cyourway.nl/4cyourway/tabid/1238/Default.aspxhttp://www.4cyourway.nl/4cyourway/tabid/1238/Default.aspx)
- De Klerk, L. F. W. (1979). *Inleiding in de onderwijspsychologie*. Deventer: Van Loghum Slaterus B.V.
- De Nederlandse Bank. (2013). Wisselkoersen Retrieved 11th February, 2013, from <http://www.statistics.dnb.nl/index.jsp?lang=nl&todo=Koersen&service>
- Deardorff, D. K. (2006). Identification and Assessment of Intercultural Competence as a Student Outcome of Internationalization. *Journal of Studies in International Education*, 10(3), 241-266.
- Deardorff, D. K. (2011). Assessing Intercultural Competence. *New Directions for Institutional Research*, 131, 65-79.
- Delaney, A. M. (2004). Ideas to Enhance Higher Education's Impact on Graduates' Lives; Alumni Recommendations. *Tertiary Education and Management*, 10, 89-105.
- DeNeve, K. M., & Copper, H. (1998). The Happy Personality: A Meta-Analysis of 137 Personality Traits and Subjective Well-Being. *Psychological Bulletin*, 124(2), 197-229.
- Dolby, N. (2004). Encountering an American Self: Study Abroad and National Identity. *Comparative Education Review*, 48(2), 150-173.
- Doyle, S., Gendall, P., Meyer, L. H., Hoek, J., Tait, C., McKenzie, L., & Looiparg, A. (2009). An Investigation of Factors Associated With Students Participation in Study Abroad. *Journal of Studies in International Education*, 14(5), 471-490.
- Dreyfus, S. E., & Dreyfus, H. L. (1980). *A Five-Stage Model of the Mental Activities Involved in Directed Skill Acquisition*. Berkely: Operations Research Centre, University of California.
- Duffy, T. M., & Jonasson, D. H. (1992). Objectivist and constructivist conceptions of learning and instruction. In T. M. Duffy & D. H. Jonasson (Eds.), *Constructivism and the Technology of Instruction: A Conservation* (pp. 1-16). Hillsdale, New Jersey: Lawrence Erlbaum Associates Inc.
- Dwyer, M. M. (2004). More is Better: the Impact of Study Abroad Program Duration. *Frontiers: The Interdisciplinary Journal of Study Abroad*, X(Fall 2004), 151-163.
- Dwyer, M. M., & Peters, C. K. (2004). The benefits of study abroad. *Transitions Abroad Magazine*, 27(5), 56-57.
- Eggens, L. (2011). *The student X-factor : social and psychological determinants of students' attainment in higher education*. PhD, University of Groningen, Groningen.
- Ehrlinger, J., Johnson, K., Banner, M., Dunning, d., & Kruger, J. (2008). Why the unskilled are unaware: Further explorations of (absent) self-insight among the incompetent. *Organizational Behavior and Human Decision Processes*, 105(1), 98-121.

- Elsen, M. (1998). Studie-uitval in de propedeuse een pluriform verschijnsel. In ICLON (Interfacultair Centrum voor Lerarenopleiding Onderwijsontwikkeling en Nascholing) (Ed.), (Vol. Rapport 49). Leiden: RUL.
- Engle, L., & Engle, J. (2004). Assessing language aquisition and intercultural sensitivity development in relation to study abroad program design. *Frontiers: The Interdisciplinary Journal of Study abroad*, X, 219-246.
- Eraut, M. (1998). Concepts of competence. *Journal of interprofessional care*, 12(2), 127-139.
- Eraut, M. (2003). National vocational qualifications in England-Description and analysis of an alternative qualification system. In G. A. Straka (Ed.), *Zertifizierung non-formell und infromell erworbener beruflicher Kompetenzen* (pp. 117-126). Münster, Germany: Waxman.
- Ertmer, P. A., & Newby, T. J. (1993). Behaviorism, Cognitivism, Constructivism: Comparing Critical Features from an Instructional Design Perspective. *Performance Improvement Quarterly*, 6(4), 50-72.
- European Higher Education Area (EHEA). (2011). Bologna process, from www.ehea.info
- European Union. (1987). *87/327/EEC: Council Decision of 15 june 1987 adopting the European Community Action Scheme for the Mobility of University students (Erasmus)*. Brussels.
- European Union. (2000). *Survey into the socio-economic background of Erasmus students*.
- European Union. (2006). *Implementing the Community Lisbon Programme. Proposal for a Recommendation of the European Parliament and of the council on the establishment of the European Qualifications Framework for lifelong learning*. (2006/0163 (COD)). Brussels.
- European Union. (2007). Lisbon Treaty. *Official Journal of the European Union*, 50(C 306/01).
- European Union. (2009a). *Promoting the learning mobility of young people*. Brussels: Commission of the European Communities.
- European Union. (2009b). *Recommendation of the European Parliament and of the Council on the establishment of the European Qualifications Framework for lifelong learning*. (2009/C 155/01).
- European Union. (2012a). Europe 2020 Retrieved 6th August, 2012, from http://ec.europa.eu/europe2020/index_en.htm
- European Union. (2012b). Youth on the Move Retrieved 6th August, 2012, from <http://ec.europa.eu/youthonthemove/>
- European Union Parliament. (2000). *Lisbon European Council 23 and 24 March Presidency Conclusions*.
- Eurostat. (2012) Retrieved 8 August, 2012, from <http://epp.eurostat.ec.europa.eu>
- Eurostudent. (2009). *Social and economic conditions of students life in Europe; Synopsis of indicators. Final report. Eurostudent III (2005-2008)*. Eurostat: European Commision
- Eurydice. (2009). *Organisation of the Educational System in the Netherlands*. European Commission.
- Eysenck, H. J. (1992). Personality and education: The influence of Extraversion, Neuroticism an Psychticism. *German Journal of Educational Psychology*, 6(2), 133-144.
- Findlay, A. M., Stam, A., King, R., & Ruiz-Gelices, E. (2005). International opportunities: searching for the meaning of student migration *Geographica Helvetica*, 60(3), 192-200.

- Forsey, M., Broomhall, S., & Davis, J. (2012). Broadening the Mind? Australian Student Reflections on the Experience of Overseas Study. *Journal of Studies in International Education*, 16, 128-139.
- Fox, J. T. (2009). Firm Size Wage Gaps, Job Responsibility, and Hierarchical Matching. *Journal of Labor Economics*, 27(1), 83-126.
- Friedberg, R. M. (2000). You can't take it with you? Immigrant Assimilation and the Portability of Human Capital. *Journal of Labour Economics*, 18(2), 221-251.
- Gangani, N., McLean, G. N., & Braden, R. A. (2006). A Competency-based Human Resource Development Strategy. *Performance Improvement Quarterly*, 19(1), 127-139.
- Garcia-Aracil, A., & Velden van der, R. (2008). Competencies for young European higher education graduates: labor market mismatches and their payoffs. *Higher Education*, 55, 219-239.
- Gmelch, G. (1997). Crossing cultures: students travel and personal development. *International Journal of Intercultural Relations*, 21(4), 475-490.
- Goel, L., Jong de, P., & Schnusenberg, O. (2010). Toward a Comprehensive Framework of Study Abroad Intentions and Behaviors. *Journal of Teaching in International Business*, 21(4), 248-265.
- Goldstein, S. B., & Kim, R. I. (2006). Predictors of US college students' participation in study abroad programs: A longitudinal study. *International Journal of Intercultural Relations*, 30, 507-521.
- González, C. R., Mesanza, R. B., & Mariel, P. (2011). The determinants of international student mobility flows: an empirical study on the Erasmus programme. *Higher Education*, 62, 413-430.
- González, J., & Wagenaar, R. (Eds.). (2005). *Universities' contributions to the Bologna Process*. Bilbao: Publicaciones de la Universidad de Deusto.
- Gosling, S. D., John, O. P., Craik, K. H., & Robins, R. W. (1998). Do people know how they behave? Self-reported act frequencies compared with on-line codings by observers. *Journal of Personality and Social Psychology*, 74(5), 13.
- Griffin, B., & Hesketh, B. (2004). Why Openness to Experience is not a Good Predictor of Job Performance. *International Journal of Selection and Assessment*, 12(3), 243-251.
- Grollmann, P. (2008). Professional competence as a benchmark for a European space of vocational education and training. *Journal of European Industrial Training*, 32(2/3), 138-156.
- Gu, Q., Schweisfurth, M., & Day, C. (2010). Learning and growing in a 'foreign' context: intercultural experiences of international students. *Compare: A Journal of Comparative and International Education*, 40(1), 7-23.
- Gury, N. (2011). Dropping out of higher education in France: a micro-economic approach using survival analysis. *Education Economics*, 19(1), 51-64.
- Hager, P. (2004). The competence affair, or why vocational education and training urgently needs a new understanding of learning. *Journal of Vocational Education & Training*, 56(3), 409-433.
- Hammer, M. R., Bennett, M. J., & Wiseman, R. (2003). Measuring intercultural sensitivity: The intercultural development inventory. *International Journal of Intercultural Relations*, 27(4), 421-443.
- Harrison, N. (2012). Investigating the impact of personality and early life experiences on intercultural interaction in internationalised universities. *International Journal of Intercultural Relations*, 36, 224-237.

- Hasan, A. (1994). Ontwikkelingen op de arbeidsmarkt en onderwijs- en scholingsbeleid. *Europees Tijdschrift Beroepsopleiding*, 94(2), 14-22.
- Heffernan, T., Morrison, M., Basu, P., & Sweeney, A. (2012). Cultural differences, learning styles and transnational education. *Journal of Higher Education Policy and Management*, 32(1), 27-39.
- Hilmer, M. J. (2002). Student migration and institution control as screening devices. *Economics letters*, 76(1), 19-25.
- HIS. (2005). EUROSTUDENT Report 2005. Social and Economic Conditions of Student Life in Europe 2005 Hochschul-Informations-System (Ed.)
- Hofstede, G. (1991). *Allemaal andersdenkenden; Omgaan met cultuurverschillen*. Amsterdam: Contact.
- Holmes, P. (2005). Ethnic Chinese Students' Communication with Cultural Others in a New Zealand University. *Communication Education*, 54(4), 289-311.
- Hoobroeckx, F., & Haak, E. (2002). *Onderwijskundig ontwerpen; Het ontwerp als basis voor leermiddelenontwikkeling*: Bohn Stafleu van Loghum.
- Hoof van, H. B., & Verbeeten, M. J. (2005). Wine Is for Drinking, Water Is for Washing: Student Opinions About International Exchange Programs. *Journal of Studies in International Education*, 9, 42-61.
- Humburg, M., & Velden van der, R. (2012). What is Expected from Higher Education Graduates in the 21st Century? (under review) *Oxford Handbook of Skills and Training*. Oxford.
- Humburg, M., Velden van der, R., & Verhagen, A. (2013). The Employables: What Makes the Difference? The employers' perspective on graduate employability. Maastricht: Research Centre for Education and the Labour Market (ROA), Maastricht University.
- Hurtz, G. M., & Donovan, J. J. (2000). Personality and Job Performance: The Big Five Revisited. *Journal of Applied Psychology*, 85(6), 869-879.
- Ingraham, E. C., & Peterson, D. L. (2004). Assessing the Impact of Study Abroad on Student Learning at Michican State University. *Frontiers: The Interdisciplinary journal of Study Abroad*, 10, 83-100.
- Isserstedt, W., & Kandulla, M. (2010). *Internationalisierung des Studiums; Ausländische Studierende in Deutschland; Deutsche Studierende im Ausland*. Berlin: Bundesministerium für Bildung und Forschung.
- Jackson, J. (2009). Intercultural learning on short-term sojourns. *Intercultural Education*, 20(S1), S59-71.
- Johnson, L., Levine, A., Smith, R., & Stone, S. (2010). The 2010 Horizon Report. In The New Media Consortium (Ed.). Austin, Texas.
- Johnstone, C. J., Bottsford-Miller, N. A., & Thompson, S. J. (2006). Using the think aloud method (cognitive labs) to evaluate test design for students with disabilities and English language learners. *Technical Report 44*. Minneapolis: University of Minnesota, National Center on Educational Outcomes.
- Joint Quality Initiative informal group. (2004). Shared 'Dublin' descriptors for Short Cycle, First Cycle, Second Cycle and Third Cycle Awards. Retrieved 2 september, 2012, from <http://www.jointquality.org/>
- Joy, S., & Kolb, D. A. (2009). Are there cultural differences in learning style? *International Journal of Intercultural Relations*, 33(1), 69-85.

- Judge, T. A., & Erez, A. (2007). Interaction and intersection: the constellation of emotional stability and extraversion predicting performance. *Personnel Psychology*, 60, 573–596.
- Judge, T. A., Heller, D., & Mount, M. K. (2002). Five-Factor Model of Personality and Job Satisfaction: A Meta-Analysis. *Journal of Applied Psychology*, 87(3), 530–541.
- Judge, T. A., Higgins, C. A., Thoresen, C. J., & Barrick, M. R. (1999). The Big Five personality traits, general mental ability, and career success across the life span. *Personnel Psychology*, 52, 621–652.
- Khaled, A., Gulikers, J., Oonk, C., Biemans, H., & Lans, T. (2011). *Competentie Ontwikkeling Meter*. Wageningen: Wageningen University.
- King, R., Findlay, A., & Ahrens, J. (2010). International student mobility literature review. Bristol: HEFCE.
- King, R., & Ruiz-Gelices, E. (2003). International student migration and the European “year abroad”: Effects on European identity and subsequent migration behaviour. *International Journal of Population Geography*, 9(3), 229–252.
- Klaauw van der, B., Vuuren van, A., & Berkhout, P. (2004). Labor Market Prospects, Search Intensity and the Transition from College to Work (Vol. TI 2004-064/3). Rotterdam: Tinbergen Institute.
- Klink van der, M. R. (2003). Competenties en hoger onderwijs: stand van zaken en toekomstperspectief. In M. Mulder, R. Wesselink, H. Biemans, L. Nieuwenhuis & R. Poell (Eds.), *Competentievericht beroepsonderwijs. Gediplomeerd maar ook bekwaam?* Houten: Wolters Noordhoff.
- Klink van der, M. R., & Boon, J. (2003). Competencies: the triumph of a fuzzy concept. *International Journal of Human Resources Development and Management*, 3(2), 125–137.
- Klink van der, M. R., Boon, J., & Schlusmans, K. (2007). Competences and vocational higher education: Now and in future. *European journal of vocational training*, 40(1), 67–81.
- Knight, J. (2011). “Doubts and Dilemmas with Double Degree Programs”. In: “Globalisation and Internationalisation of Higher Education”. *Revista de Universidad y Sociedad del Conocimiento (RUSC)*, 8(2), 297–312. Retrieved from <http://rusc.uoc.edu/ojs/index.php/rusc/article/view/v8n2-knight/v8n2-knight-eng>
- Kogan, I., & Unt, M. (2005). Transition from school to work in transition economies. *European Societies*, 7(2), 219–253.
- Kooij, P. (2008). Het landbouwonderwijs in de twintigste eeuw. In M. Duijvendak, E. H. Karel & P. Kooij (Eds.), *Groen Onderwijs. Terugblik en uitzicht naar aanleiding van het 100-jarig bestaan van de Vereniging voor Hoger Landbouwonderwijs (1906-2006)* (Vol. 41, pp. 9–42). Groningen/Wageningen: Nederlands Agronomisch Historisch Instituut.
- Korthagen, F., & Lagerwerf, B. (2008). *De sleutel voor onderwijsverbetering: coachen op kwaliteiten en talenten*. Biezenmortel: MesoConsult.
- Kuijpers, M. A. C. T., Schyns, B., & Scheerens, J. (2006). Career Competencies for Career Success. *The Career Development Quarterly*, 55(December), 168–178.
- Lacante, M., De Metsenaere, M., De Lens, W., Van Esbroeck, R., De Jaeger, K., De Coninck, T., . . . Santy, L. (2001). Drop-out in het hoger onderwijs: Onderzoek naar achtergronden en motieven van drop-out in het eerste jaar hoger onderwijs. Leuven - Brussel: Katholieke Universiteit Leuven - Vrije Universiteit Brussel.

- Lans, T., Bergevoet, R., Mulder, M., & Woerkom van, C. (2005). *Identification and measurement of competences of entrepreneurs in agribusiness*. Paper presented at the 8th Ph.D. Conference on Business Economics, Management and Organization Science, PREBEM/NOBEM, Enschede.
- Le Deist, F. (2009). Compétence: conceptual approach and practice in France. *Journal of European Industrial Training*, 33(8/9), 718-735.
- Le Deist, F., & Winterton, J. (2005). What Is Competence? *Human Resource Development International*, 8(1), 27-46.
- Le, H., Oh, I.-S., Robbins, S. B., Ilies, R., Holland, E., & Westrick, P. (2011). Too Much of a Good Thing: Curvilinear Relationships Between Personality Traits and Job Performance. *Journal of Applied Psychology* 96(1), 113-133.
- Lester, S. (2005). Novice to Expert: the Dreyfus model of skill acquisition Retrieved 2 October, 2011, from <http://www.sld.demon.co.uk/dreyfus.pdf>
- Li, G., Cheng, W., & Duanmu, J.-L. (2010). Determinants of International Students' Academic Performance : A Comparison Between Chinese and Other International Students. *Journal of Studies in International Education*, 14(4), 389-405.
- Lievens, F., De Corte, W., & Schollaert, E. (2008). A Closer Look at the Frame-of-Reference Effect in Personality Scale Scores and Validity. *Journal of Applied Psychology*, 93(2), 268-279.
- Lörz, M., & Krawietz, M. (2011). Internationale Mobilität und soziale Selektivität: Ausmaß, Mechanismen und Entwicklung herkunftsspezifischer Unterschiede zwischen 1990 und 2005. *Kölner Zeitschrift für Soziologie und Socialpsychologie*, 63(2), 185-205.
- Lounsbury, J. W., Foster, N., Carmody, P. C., Kim, J. Y., Gibson, L. W., & Drost, A. W. (2012). Key personality traits and career satisfaction of customer service workers. *Managing Service Quality*, 22(5), 517-536.
- Lounsbury, J. W., Loveland, J. M., Sundstrom, E. D., Gibson, L. W., Drost, A. W., & Hamrick, F. L. (2003). An Investigation of Personality Traits in Relation to Career Satisfaction. *Journal of Career Assessment*, 11(3), 287-307.
- Lounsbury, J. W., Steel, R. P., Loveland, J. M., & Gibson, L. W. (2004). An Investigation of Personality Traits in relation to Adolescent School Absenteeism. *Journal of Youth and Adolescence*, 33(5), 457-466.
- Maiworm, F., & Teichler, U. (1996). *Study abroad and Early Career - Experiences of former ERASMUS students*. London: Jessica Kingsley Publishers.
- Man, T. W. Y., Lau, T., & Chan, K. F. (2002). The competitiveness of small and medium enterprises A conceptualization with focus on entrepreneurial competencies. *Journal of Business Venturing*, 17, 123-142.
- Manders, H., Dijkhuizen, E., & Swierstra, J. (1984). *Agrarisch Positief; bij het honderdjarig bestaan van het Koninklijk Nederlands Landbouw-Comité*. Den Haag: Koninklijk Nederlands Landbouw-Comité.
- Maneesriwongul, W., & Dixon, J. K. (2004). Instrument translation process: a methods review. *Methodological issues in nursing research* 48(2), 175-186.
- Markowitsch, J., Luomi-Messerer, K., Becker, M., & Spöttl, G. (2008). Putting Dreyfus into action: the European credit transfer system. *Journal of European Industrial Training*, 32(2/3), 171-186.

- Markowitsch, J., & Plaimauer, C. (2009). Descriptors for competence: towards an international standard classification for skills and competences. *Journal of European Industrial Training*, 33(8/9), 817-837.
- Maurer, T. J., Wrenn, K. A., Pierce, H. R., Tross, S. A., & Collins, W. C. (2003). Beliefs about 'improvability' of career-relevant skills: relevance to job/task analysis, competency modelling, and learning orientation. *Journal of Organizational Behavior*, 24(1), 107-131.
- McClelland, D. (1998). Identifying competencies with behavioural-event interviews. *Psychological Science*, 9(9), 331-339.
- McCrae, R. R., & John, O. P. (1992). An introduction to the Five-Factor Model and Its Applications. *Journal of Personality*, 60(2), 175-215.
- McKenzie, K., Gow, K., & Schweitzer, R. (2004). Exploring first-year academic achievement through structural equation modelling. *Higher Education Research & Development*, 23(1), 95-112.
- McKenzie, K., & Schweitzer, R. (2001). Who succeeds at university? Factors predicting academic performance in first year Australian university students. *Higher Education Research and Development*, 20(1), 21-33.
- McLeod, M., & Wainwright, P. (2009). Researching the Study Abroad Experience. *Journal of Studies in International Education*, 13, 66-71.
- Medina-López-Portillo, A. (2004). Intercultural Learning Assessment: The Link between Program Duration and the Development of Intercultural Sensitivity. *Frontiers: The Interdisciplinary journal of Study Abroad*, X, 179-199.
- Meng, C. M. (2005). *Discipline-Specific or Academic? Acquisition, Role and Value of Higher education Competencies*. PhD, Maastricht University, Maastricht.
- Merriënboer van, J. J. G., Klink van der, M. R., & Hendriks, M. (2002). Competenties: van complicaties tot compromis. Den Haag: Onderwijsraad.
- Mertens, A., & Rübken, H. (2013). Does a doctoral degree pay off? An empirical analysis of rates of return of German doctorate holders. *Higher Education*, 66(2), 217-231.
- Messer, D., & Wolter, S. C. (2007). Are student exchange programs worth it? *Higher Education*, 54(5), 647-663.
- Milstein, T. (2005). Transformation abroad: Sojourning and the perceived enhancement of self-efficacy. *International Journal of Intercultural Relations*, 29(2), 217-238.
- Ministry of Education. (2006). *Brief aan de Tweede Kamer betreffende Beleidsreactie Internationaliseringsreactie Onderwijsraad (IB/2006/6900)*. The Hague.
- Ministry of Education. (2008a). *Het grenzeloze goed*. The Hague.
- Ministry of Education. (2008b). *Naamgeving Hogescholen*. The Hague.
- Ministry of Education. (2009a). *Brief aan de Tweede Kamer betreffende Beleidsreactie evaluatie Neso programma (HO&S/BL/156288)*. The Hague.
- Ministry of Education. (2009b). *Internationale positionering van de Nederlandse onderwijs- en kennisinstellingen*. The Hague.

- Ministry of Education. (2012). *Brief aan de Tweede kamer betreffende Kosten en baten van internationalisering in het hoger onderwijs (405143)*. The Hague.
- Ministry of Education. (2013). *Make it in the Netherlands, programma 2013-2016*. The Hague.
- Mistretta, W. (2008). *Life-enhancing: An exploration of the long-term effects of study abroad* PhD, State University of New York at Buffalo.
- Mora, J.-G., Vila, L. E., & Garcia-Aracil, A. (2005). European Higher Education Graduates and Job Satisfaction. *European Journal of Education*, 40(1), 35-44.
- Mulder, M. (2001). Competence development - some background thoughts. *The Journal of Agricultural Education and Extension*, 7(4), 147-158. doi: 10.1080/13892240108438822
- Mulder, M. (2007). Competence - the essence and use of the concept in ICVT. *European journal of vocational training*, 40(1), 6-21.
- Mulder, M., Gulikers, J., Biemans, H., & Wesselink, R. (2009). The new competence concept in higher education: error or enrichment? *Journal of European Industrial Training*, 33(8/9), 755-770.
- Mulder, M., Weigel, T., & Collins, K. (2007). The concept of competence in the development of vocational education and training in selected EU member states: a critical analysis. *Journal of Vocational Education & Training*, 59(1), 67-88.
- Murray, S. T., Clermont van, Y., & Binkley, M. (2005). *Measuring Adult Literacy and Life Skills: New Frameworks for Assessment* (Vol. Catalogue no. 89-552-MIE nr 13, ISBN 0-662-39834-3): Centre for Education Statistics, Statistics Canada.
- Norris, E. M., & Gillespie, J. (2009). How Study Abroad Shapes Global Careers : Evidence From the United States. *Journal of Studies in International Education*, 13, 382-397.
- NVAO. (2013). Joint degrees Retrieved 10th August 2013, 2013
- OECD. (2010). Education at a Glance 2010 *OECD Indicators*
- OECD. (2012). Education at a Glance 2012 *OECD Indicators*
- OECD. (2013a). Education at a Glance 2013 *OECD Indicators*
- OECD. (2013b). <http://stats.oecd.org/index.aspx?queryid=36324#> (retrieved 29th April 2013).
- Onderwijsraad. (2003). *Leren in een kennissamenleving (learning in a knowledge society)*. The Hague.
- Oosterbeek, H., & Webbink, D. (2006). Assessing the returns to studying abroad (Vol. 64). The Hague: CPB Netherlands bureau for Economic Policy Analysis.
- Opper, S., Teichler, U., & Carlson, J. S. (1990). *Impacts of study abroad programmes on students and graduates* (Vol. 2). London: Jessica Kingsley Publishers.
- Orr, D., Gwose, C., & Netz, N. (2011). *Social and Economic Conditions of Student Life in Europe. Synopsis of indicators. Final report. Eurostudent IV 2008–2011*. Bielefeld: W. Bertelsmann Verlag.
- Pace, V. L., & Brannick, M. T. (2010). Improving Prediction of Work Performance Through Frame-of-Reference Consistency: Empirical evidence using openness to experience. *International Journal of Selection and Assessment*, 18(2), 230-235.
- Paige, R. M., Fry, G. W., Stallman, E. M., Josić, J., & Jae-Eun, J. (2009). Study abroad for global engagement: the long-term impact of mobility experiences. *Intercultural Education*, 20(S1), S29-S40.

- Parey, M., & Waldinger, F. (2011). Studying Abroad and the Effect on International Labour Market Mobility: Evidence from the Introduction of ERASMUS. *Economic Journal*, 121(551), 194-222.
- Paulson, K. (2001). An Annotated Bibliography on Competencies. *New Directions for Institutional Research* 110(Summer), 97-111.
- Petrides, K. V., Chamorro/Premuzic, T., Frederickson, N., & Furnham, A. (2005). Explaining individual differences in scholastic behaviour and achievement. *British Journal of Educational Psychology*, 75, 239-255.
- Plant, E. A., Ericsson, K. A., Hill, L., & Asberg, K. (2005). Why study time does not predict grade point average across college students: Implications of deliberate practice for academic performance. *Contemporary Educational Psychology*, 30, 96-116.
- Poropat, A. E. (2009). A Meta-Analysis of the Five-Factor Model of Personality and Academic Performance. *Psychological Bulletin*, 135(2), 322-338.
- Pozzoli, D. (2009). The Transition to Work for Italian University Graduates. *Labour*, 23(1), 131-169.
- Raad de, B., & Schouwenburg, H. C. (1996). Personality in learning and education: a review. *European Journal of Personality*, 10, 303-336.
- Rau, W., & Durand, A. (2000). The Academic Ethic and College Grades: Does Hard Work Help Students to "Make the Grade"? *Sociology of Education*, 73(1), 19-38.
- Rauner, F. (2007). Practical knowledge and occupational competence. *European journal of vocational training*, 40(1), 52-66.
- Rhine, S. L. (1989). The effect of state mandates on student performance. *American Economic Review*, 79, 231-235.
- Richters, E., Roodenburg, S., & Becker, R. (2012). *Mapping Mobility 2011*. The Hague: Nuffic.
- Robert, P. (2011). Country Patterns of Labour Market Entry and Early Career. In J. Allen, S. Pavlin & R. Velden van der (Eds.), *Competencies and Early Labour Market Careers of Higher Education Graduates in Europe* (pp. 107-126). Ljubljana: University of Ljubljana, Faculty of Social Sciences.
- Rodrigues, M. (2012). Determinants and Impacts of Student Mobility: A Literature Review. In Joint Research Centre European Union (Ed.), *Scientific and Technical Reports*. Luxembourg: Institute for the Protection and Security of the Citizen.
- Rothmann, S., & Coetzer, E. P. (2003). The Big Five personality dimensions and job performance. *SA Journal of Industrial Psychology*, 29(1), 68-74.
- Ruiter, S., & Graaf de, N. D. (2009). Socio-Economic Payoffs of Voluntary Association Involvement: A Dutch Life Course Study. *European Sociological Review*, 25(4), 425-442.
- Rust, J. (1999). Discriminant validity of the 'Big Five' personality traits in employment settings. *Social Behaviour and Personality*, 27(1), 99-108.
- Ryan, P. (2001). The School-to-Work Transition: A Cross-National Perspective. *Journal of Economic Literature*, 39(1), 34-92.
- Rychen, D. S., & Salganik, L. H. (2003). *Highlights from the OECD Project Definition and Selecting Competencies: Theoretical and Conceptual Foundations (DeSeCo)*. Paper presented at the Annual meeting of the American Educational Research Association, Chicago.

- Saar, E., Unt, M., & Kogan, I. (2008). Transition from Educational System to Labour Market in the European Union : A Comparison between New and Old Members. *International Journal of Comparative Sociology*, 49(1), 31-59.
- Salgado, J. F. (1997). The Five Factor Model of Personality and Job Performance in the European Community. *Journal of Applied Psychology*, 82(1), 30-43.
- Salganik, L. H. (2001). Competencies for Life: A Conceptual and Empirical Challenge. In D. S. Rychen & L. H. Salganik (Eds.), *Defining and Selecting Key Competencies*. Göttingen: Hogrefe & Huber.
- Salisbury, M. H., Paulsen, M. B., & Pascarella, E. T. (2010). To See the World or Stay at Home: Applying an Integrated Student Choice Model to Explore the Gender Gap in the Intent to Study Abroad. *Research in Higher Education*, 51(7), 615-640.
- Sandberg, J. (2000). Understanding human competence at work: an interpretative approach. *Academy of Management Journal*, 43(1), 9-25.
- Sawir, E. (2011). Dealing with diversity in internationalised higher education institutions. *Intercultural Education*, 22(5), 381-394.
- Schmidt, C. M., & Zimmermann, K. F. (1991). Work Characteristics, Firm Size and Wages. *The Review of Economics and Statistics*, 73(4), 705-710.
- Schomburg, H. (2011). The Professional Work of Graduates. In J. Allen & R. Velden van der (Eds.), *The Flexible Professional in the Knowledge Society: New Challenges for Higher Education* (pp. 55-82). Dordrecht Heidelberg London New York: Springer.
- Schomburg, H., & Teichler, U. (2006). *Higher education and Graduate Employment in Europe* (Vol. 15). Dordrecht: Springer.
- Schuman, H., Walsh, E., Olson, C., & Etheridge, B. (1985). Effort and Reward: The Assumption that College Grades Are Affected by Quantity of Study. *Social Forces*, 4, 945-966.
- Schweisfurth, M., & Gu, Q. (2009). Exploring the experiences of international students in UK higher education: possibilities and limits of interculturality in university life. *Intercultural Education*, 20(5), 463-473.
- Semeijn, J., Boone, C., Velden van der, R., & Witteloostuijn van, A. (2005). Graduates' personality characteristics and labor market entry an empirical study among dutch economics graduates. *Economics of Education Review*, 24, 67-83.
- Shaffer, M. A., Harrison, D. A., Gregersen, H., Black, J. S., & Ferzandi, L. A. (2006). You can take it with you: individual differences and expatriate effectiveness. *Journal of Applied Psychology*, 91(1), 109-125.
- Sheard, M. (2009). Hardiness commitment, gender, and age differentiate university academic performance. *British Journal of Educational Psychology*, 79, 189-204.
- Sociaal-Economische Raad. (2013). *Make it in the Netherlands*. The Hague: Sociaal-Economische Raad, Advies 13/01.
- Sonnert, G., & Fox, M. F. (2012). Women, Men, and Academic Performance in Science and Engineering: The Gender Difference in Undergraduate Grade Point Averages. *The Journal of Higher Education*, 83(1), 73-101.

- Souto Otero, M. (2008). The socio-economic background of erasmus students: a trend towards wider inclusion? *International Review of Education*, 54, 135-154.
- Souto Otero, M., Huisman, J., Beerkens, M., Wit de, H., & Vujic, S. (2013). Barriers to International Student Mobility : Evidence From the Erasmus Program. *Educational researcher*, 42, 70-77.
- Souto Otero, M., & McCoshan, A. (2006). Survey of the Socio-Economic Background of ERASMUS Students. Final report to the European Commission. Birmingham: ECOTEC Research and Consulting Limited.
- Spain, J. S., Eaton, L. G., & Funder, D. C. (2000). Perspectives on Personality: The Relative Accuracy of Self Versus Others for the Prediction of Emotion and Behavior. *Journal of Personality*, 68(5), 837-867.
- Spence, A. M. (1973). Job market signalling. *Quarterly Journal of Economics*, 87(3), 355-374.
- Spencer, L. M., & Spencer, S. M. (1993). *Competence at Work: A Model for Superior Performance*. New York: Wiley.
- Stinebrickner, T. R., & Stinebrickner, R. (2007). The causal effect of studying on academic performance *NBER working paper series* (Vol. Working Paper 13341). Cambridge: National Bureau of Economic Research.
- Stoof, A., Martens, R. L., Merriënboer van, J. J. G., & Bastiaens, T. J. (2002). The boundary approach of competence: A constructivist aid for understanding and using the concept of competence. *Human Resource Development Review*, 1(3), 345-365.
- Støren, L. A., & Arnesen, C. Å. (2011). Winners and Losers. In J. Allen & R. Velden van der (Eds.), *The Flexible Professional in the Knowledge Society: New Challenges for Higher Education* (pp. 199-240). Dordrecht Heidelberg London New York: Springer
- Støren, L. A., & Wiers-Jenssen, J. (2010). Foreign Diploma versus Immigrant Background : Determinants of Labour Market Success or Failure? *Journal of Studies in International Education*, 14, 29-49.
- Strang, K. D. (2010). Global Culture, Learning Style, and Outcome: An Interdisciplinary Empirical Study of International University Students. *Intercultural Education* 21(6), 519-533.
- Strijker, D. (2008). Informeel leren. In M. Duijvendak, E. H. Karel & P. Kooij (Eds.), *Groen Onderwijs. Terugblik en uitzicht naar aanleiding van het 100-jarig bestaan van de Vereniging voor Hoger Landbouwonderwijs (1906-2006)* (Vol. 41, pp. 43-54). Groningen/Wageningen: Nederlands Agronomisch Historisch Instituut.
- Stronkhorst, R. (2005). Learning Outcomes of International Mobility at Two Dutch Institutions of Higher Education. *Journal of Studies in International Education*, 9, 292-315.
- Stuart, M., Lido, C., Morgan, J., Solomon, L., & May, S. (2011). The impact of engagement with extracurricular activities on the student experience and graduate outcomes for widening participation populations. *Active Learning in Higher Education*, 12, 203-215.
- Tange, H., & Jensen, I. (2012). Good teachers and Deviant Learners? The Meeting of Practices in University Level International Education. *Journal of Research in International Education*, 11(2), 181-193.
- Teekens, H. (2003). The Requirement to Develop Specific Skills for Teaching in an Intercultural Setting. *Journal of Studies in International Education*, 7(1), 108-119.
- Teichler, U. (2002). Graduate employment and work in Europe: Diverse situations and common perceptions. *Tertiary Education and Management*, 8(3), 199-216.

- Teichler, U. (2007). International dimensions of higher education and graduate employment. In J. Allen & R. Velden van der (Eds.), *The Flexible Professional in the Knowledge Society: General Results of the REFLEX Project*. Maastricht: Research Centre for Education and the Labour Market, Maastricht University, The Netherlands.
- Teichler, U. (2008). *Higher Education and the World of Work: European Experiences and Debates*. Paper presented at the HEGESCO project, Lublijana.
- Teichler, U., & Jahr, V. (2001). Mobility During the Course of Study and After Graduation. *European Journal of Education*, 36(4), 443-458.
- Teichler, U., & Janson, K. (2007). The Professional Value of Temporary Study in Another European Country: Employment and Work of Former ERASMUS Students. *Journal of Studies in International Education*, 11, 486-495.
- Tempelaar, D. T., Gijssels, W. H., Schim van der Loeff, S., & Nijhuis, J. F. H. (2007). A structural equation model analyzing the relationship of student achievement motivations and personality factors in a range of academic subject-matter areas. *Contemporary Educational Psychology*, 32, 105-131.
- Terri, K. (2009). Transnational academic mobility, internationalization and interculturality in higher education. *Intercultural Education*, 20(5), 395-405.
- Tett, R. P., Jackson, D. N., & Rothstein, M. (1991). Personality measures as predictors of job performance: a meta-analytical review. *Personnel Psychology*, 44, 703-742.
- The World Bank. (2013). PPP Conversion Factor Retrieved 11th February 2013, from <http://data.worldbank.org/indicator/PA.NUS.PPP>
- Titus, M. A. (2007). Detecting selection bias, using propensity score matching, and estimating treatment effects: An Application to the Private Returns to a Master's Degree. *Research in Higher Education*, 48(4), 487-521.
- Tobi, H., & Kampen, J. K. (2013). Survey error in an international context: an empirical assessment of cross-cultural differences regarding scale effects. *Quality & Quantity*, 47(1), 553-559.
- Trautwein, U., & Lüdtke, O. (2006). Predicting Homework Effort: Support for a Domain-Specific, Multilevel Homework Model. *Journal of Educational Psychology*, 98(2), 438-456.
- Tupes, E. C., & Christal, R. C. (1961). *Recurrent personality factors based on trait rating*. (ASD Tech. Rep. No. 61-97). Texas: USAF.
- UNESCO. (2011). International Standard of Classification of Education (ISCED) 2011.
- UNESCO Institute for Statistics. (2012). *Global Education Digest 2012*. Montreal, Canada.
- Vande Berg, M., Connor-Linton, J., & Paige, R. M. (2009). The Georgetown Consortium Project: Interventions for Student Learning Abroad. *Frontiers: The Interdisciplinary journal of Study Abroad*, XVII(Fall), 1-75.
- Velde, C. (1999). An alternative conception of competence: implications for vocational education. *Journal of Vocational Education & Training*, 51(3), 437-447.
- Velden van der, R., & Allen, J. (2011). The Flexible Professional in the Knowledge Society. In J. Allen & R. Velden van der (Eds.), *The Flexible Professional in the Knowledge Society: New Challenges for Higher Education*. (pp. 15-54). Dordrecht Heidelberg London New York: Springer

- Velden van der, R., & Wolbers, M. H. J. (2003). The Integration of Young People into the Labour Market: The Role of Training Systems and Labour Market Regulation. In W. Müller & M. Gang (Eds.), *Transitions from Education to Work in Europe. The Integration of Youth into EU Labour Markets* (pp. 186-211). Oxford: Oxford university Press.
- Vermetten, Y. J., Lodewijks, H. G., & Vermunt, J. D. (2001). The Role of Personality Traits and Goal Orientations in Strategy Use. *Contemporary Educational Psychology*, 26, 149-170.
- Wang, L., & Byram, M. (2011). 'But when you are doing your exams it is the same as in China' – Chinese students adjusting to western approaches to teaching and learning. *Cambridge Journal of Education*, 41(4), 407-424.
- Wartenbergh, F., & Broek van den, A. (2008). *Studieuitval in het hoger onderwijs; achtergronden en oorzaken*. Nijmegen: ResearchNed bv.
- Weert de, E. (2007). Graduate Employment in Europe: the Employers' Perspective. In U. Teichler (Ed.), *Careers of University Graduates* (Vol. 17, pp. 225-245). Dordrecht: Springer.
- Weigel, T., Mulder, M., & Collins, K. (2007). The concept of competence in the development of vocational education and training in selected EU member states. *Journal of Vocational Education & Training*, 59(1), 53-66.
- Weinert, F. E. (2001). Concept of Competence: A Conceptual Clarification. In D. S. Rychen & L. H. Salganik (Eds.), *Defining and Selecting Key Competencies* (pp. 45-65). Göttingen: Hogrefe & Huber.
- Wesselink, R. (2010). *Comprehensive competence-based vocational education*. PhD, Wageningen University, Wageningen.
- Wesselink, R., Biemans, H., Mulder, M., & Elsen van den, E. R. (2007). Competence-based VET as seen by Dutch reseachers. *European journal of vocational training*, 2007(1), 38-51.
- White, R. (1959). Motivation reconsidered: the concept of competence. *Psychological Review*, 66, 279-333.
- Wiers-Jenssen, J. (2002). *Norwegian students abroad - Experiences of students from Europe's northern boundary*. Paper presented at the 16th Australian International Education Conference New-times, New Approaches, Hobart, Tasmania.
- Wiers-Jenssen, J. (2008). Does Higher Education Attained Abroad Lead to International Jobs? *Journal of Studies in International Education*, 12, 101-130.
- Wiers-Jenssen, J. (2011). Background and Employability of Mobile vs. Non-Mobile Students. *Tertiary Education and Management*, 17(2), 79-100.
- Williams, M. L., Waldauer, C., & Duggal, V. G. (1992). Gender Differences in Economic Knowledge: An Extension of the Analysis. *The Journal of Economic Education*, 23(3), 219-231.
- Witt, L. A. (2002). The Interactive Effects of Extraversion and Conscientiousness on Performance. *Journal of Management*, 28(6), 835-851.
- Witt, L. A., Burke, L. A., Barrick, M. R., & Mount, M. K. (2002). The Interactive Effects of Conscientiousness and Agreeableness on Job Performance. *Journal of Applied Psychology*, 87(1), 164-169.
- Wu, W., & Hammond, M. (2011). Challenges of university adjustment in the UK: a study of East Asian Master's degree students. *Journal of Further and Higher Education*, 35(3), 423-438.

- Yamazaki, Y. (2005). Learning styles and typologies of cultural differences: A theoretical and empirical comparison. *International journal of intercultural relations*, 29(5), 521-548.
- Zijlstra, W. (2011). In hoeverre kan een onderwijsinstelling uitval voorkomen? *Tijdschrift voor Hoger Onderwijs*, 29(3), 167-182.

Summary

This thesis reports a study on the competence development of internationally mobile students in formal competence based higher education and the relevance of acquired competencies for the start of their professional career.

Chapter 1 describes the context of the study. Students are becoming increasingly internationally mobile and spend part of their study abroad. Some studies suggest that graduates benefit from having studied abroad, like shorter job searching time and a higher salary. However, it is not clear what really causes these labour market effects. There is little research giving evidence that on the labour market effects of studying abroad are caused by a competence development as a result of formal learning while studying abroad. We measured the competence development of internationally mobile students from Poland, Hungary, Latvia and France when they transfer within Europe from a knowledge-based education at their home university into the last year of a bachelor programme of competence based education at a Dutch University of Applied Sciences. We also measured the labour market outcomes of internationally mobile students after graduation.

When measuring competence development, it must be clear what is called ‘competence’, because there is not one single overarching concept of competence. In chapter 2 we define the concept of competence as: *Competence is the personal capability to mobilize and use required knowledge, skills, motivation and values to accomplish a task in a specific context.* The definition implies that competence of a person is expressed when accomplishing a professional task. Measuring competence development implies measuring progress from one competence level to a higher competence level, thus descriptions of competence levels are necessary. We describe two dimensions of competence level: a complexity level, which is an absolute and objective dimension, and an expertise level which is the variation that exists in accomplishing a task at a certain level of task complexity.

Chapter 3 describes how we used the definition of competence and descriptions of competence levels to develop a self-assessment questionnaire instrument to measure the competence development. Four competencies are included in the instrument (‘to cooperate’, ‘to present’, ‘to organise’ and ‘to self-direct’). Students and experts were involved in the content validation and we did a pilot study to select the items on discriminatory power. The validation and selection process resulted in four reliable scales to measure the differences between competence levels of students at the start and at the end of the final year of a bachelor programme and of the competence levels of graduates. The instrument uses complexity level to measure competence level. In chapter 6 we discuss why we could not use expertise level as an indication of competence level.

Chapter 4 describes how we used this self-assessment questionnaire instrument to measure the competence development of internationally mobile students at a University of Applied Sciences and of their peers who stay at the home university. To address issues of selectivity we also collected educational, personal and social characteristics that may affect the odds of studying abroad and that may affect the competence development. To allow a conclusion of a possible relationship between academic development and the study abroad the design of the study has a quasi-experimental pre-test/post-test control group set-up. The results, based on 263 participants, show that there is some negative selectivity for studying abroad and that the significantly higher

competence levels of mobile students at the end of the year is a result of international mobility into competence based education. Other personal characteristics or family characteristics do not explain the difference in competence level after one year of study.

Chapter 5 gives the results of the analyses whether this advantage in competence levels of formerly internationally mobile graduates materialises when the students enter the labour market. We measured the labour market situation for graduates from universities in Poland, Hungary, Latvia and France who studied at a University of Applied Sciences in the Netherlands. We also measured the labour market situation of two reference groups of graduates who graduated from the same universities at the same time as the research groups. The first reference group are graduates who also studied abroad, but not in the Netherlands. The second reference group are graduates who never studied abroad. In the analyses we compared the labour market situation of these three groups with each other. We used the validated self-assessment questionnaire instrument to collect data about the competence level of the participants. We also collected data to control in the analyses for other possible predictors of labour market benefits: situational characteristics, personal characteristics and family characteristics of the graduates.

We analysed four aspects of the labour market position of 301 graduates. First, the analysis of some objective parameters shows that the odds for having employment, for having experienced a period of unemployment, for being self-employed, for having a job at the own level of education, for having a job within the own field of study and for having a job in which knowledge and skills are used are not different between the groups of graduates. However the odds of supervising others are significantly higher for graduates who studied in the Netherlands than for the other graduates. Second, we analysed the perceived benefits of international experience in the present job. Graduates who studied at a Dutch University of Applied Sciences have significantly more often a job with international contacts compared to the other graduates and more often a job where international experience makes the work easier compared to the graduates who did not study abroad. Graduates who studied abroad, in the Netherlands or elsewhere, have more often a job in which international experience is required compared to the graduates who did not study abroad. Third, the analysis of the degree of satisfaction with the current job and the career prospects shows no significant difference between the groups of graduates. Fourth we analysed the income in the current job and see that the income of graduates who studied in the Netherlands is 9.9% higher compared to the income of graduates who did not study abroad, but the income is not significantly higher than the income of graduates who studied abroad elsewhere. We calculated the Net Present Value (NPV) of international mobility. The NPV is the difference between the sum of the present value of benefits and present value of costs. Five years after entering the labour market the Net Present Value of studying for one year in the Netherlands compared to staying at the home university is € 16,613. We estimate that international student mobility increases the NPV of higher education compared to non-higher education by 25-45%. There is some effect of competence levels on the labour market outcomes, but in general we conclude that competence levels do not affect the labour market position of the graduates.

In chapter 6 we discuss some aspects of the methodology and the results. First, concerning the instrument, we used an instrument to separately measure competence levels of four competencies, but we know that accomplishing a professional task in practise always requires several competencies. The fact that we were not able to measure expertise levels of competence might be due to the university system of progressing students and we give recommendations

to look into this issue. We also argue that inaccuracies due to self-assessment did not play a role in our study. Second we argue that it is not surprising that students in a competence based programme show a higher competence development compared to students in a knowledge based programme as they are exposed more often to professional tasks and thus enhance their competence development. Third, we give three reasons why we find no effect of competence levels on the labour market outcomes: (1) competencies do not play a dominant role in job assessment in the first years after graduation, (2) employers in Latvia, Poland, Hungary and France may use other competencies than we included in our instrument, (3) competence management in the world of work is based on the quality of accomplishing tasks, a dimension of competence level that we were not able to measure. Fourth, we explain the fact that we do not find an effect of competencies on the labour market outcomes but do find some significant differences in the labour market outcomes of graduates who studied at a Dutch University of Applied Sciences compared to graduates who studied abroad elsewhere and graduates who stayed at the home university. We conclude that the labour market benefits of graduates who were internationally mobile during their studies is probably not the result of recognition and appreciation by employers of qualities that these graduates have developed before being internationally mobile nor does it result from having developed the competencies that we analysed in this study: to cooperate, to present, to organise and to self-direct. However, international mobile students may also develop other competencies during their study abroad and perhaps these competencies are being valued by employers. On top of this employers may use international experience as an indication of other non-measured qualities of graduates or as an indication of a presumed higher quality of the educational programme.

Based on the results and discussion we conclude that:

- Internationally mobile students in a competence based education develop their competencies significantly more than their peers in a knowledge based education.
- The higher competence levels are maintained after graduation but do not affect the labour market outcomes.
- Graduates who studied at a Dutch University of Applied Sciences benefit from their international mobility on the labour market by having a higher salary in a job with more international aspects.

Samenvatting

Dit proefschrift beschrijft een studie naar de competentieontwikkeling van internationale studenten die competentiegericht onderwijs volgen en de relevantie van de ontwikkelde competenties voor het begin van hun professionele carrière.

In hoofdstuk 1 wordt de achtergrond van het onderzoek beschreven. Er gaan steeds meer studenten tijdelijk in het buitenland studeren. Er zijn in de literatuur aanwijzingen dat deze studenten hier later voordeel van hebben als ze gaan werken, bijvoorbeeld omdat ze sneller een baan vinden of omdat ze een hoger salaris hebben. Het is echter niet duidelijk wat de oorzaak is van dit voordeel op de arbeidsmarkt. Er is bijna geen onderzoek dat aantoonst dat de arbeidsmarkteffecten worden veroorzaakt omdat de studenten tijdens hun buitenlandse studie een specifieke academische ontwikkeling doormaken. In ons onderzoek hebben we de competentieontwikkeling gemeten van studenten uit Polen, Hongarije, Letland en Frankrijk. Deze studenten komen vanuit kennisgerichte onderwijs terecht in competentiegericht onderwijs waar ze het laatste jaar van een bachelor opleiding volgen op een hogeschool in Nederland. Daarnaast hebben we ook de arbeidsmarktpositie gemeten van voormalig internationale studenten.

Als we de competentieontwikkeling willen meten, moet duidelijk zijn wat we onder een competentie verstaan, want het woord competentie wordt op veel verschillende manieren gebruikt. In het tweede hoofdstuk van dit proefschrift definiëren we competentie als: *de persoonlijke bekwaamheid om de benodigde kennis, vaardigheden, motivatie en waarden te mobiliseren en te gebruiken om een beroepstaak in een specifieke context uit te voeren*. Deze definitie houdt in dat een competentie pas zichtbaar wordt als iemand een beroepstaak uitvoert. Het meten van competentieontwikkeling betekent dat we de ontwikkeling meten van een van tevoren vastgesteld niveau van competent zijn naar een hoger niveau van competent zijn en dat we dus competentieniveaus moeten onderscheiden. We onderscheiden twee dimensies van een competentieniveau: een complexiteitsniveau dat een objectief en absoluut niveau is en een expertiseniveau dat de uitvoering op een bepaald complexiteitsniveau weergeeft.

Het derde hoofdstuk beschrijft hoe we op basis van de definitie van competentie en competentieniveaus een meetinstrument ontwikkelen om competentieniveaus te meten. Het meetinstrument is een vragenlijst die de deelnemers zelf invullen en meet het niveau van vier competenties ('samenwerken', 'organiseren', 'presenteren' en 'zelfsturen'). Studenten en experts hebben de inhoudelijke validatie gedaan. Door middel van een voorstudie met studenten hebben we de vragen geselecteerd op hun vermogen om competentieniveaus te onderscheiden. Het validatieproces en het selectieproces heeft vier betrouwbare schalen opgeleverd waarmee we het verschil kunnen meten in het competentieniveau van studenten aan het begin van hun laatste bachelor jaar, aan het eind van dat jaar en na het afstuderen. Het instrument gebruikt het complexiteitsniveau van competenties om competentieniveaus te meten. Het lukte niet om door middel van het expertiseniveau competentieniveaus te meten en in hoofdstuk 6 gaan we in de discussie hier verder op in.

Hoofdstuk 4 beschrijft hoe we het vragenlijstinstrument hebben gebruikt om de competentieontwikkeling te meten van internationale studenten op een hogeschool in Nederland en van hun jaargenoten die op de universiteit in eigen land bleven. Om na te gaan of de internationaal mobiele studenten anders zijn dan de studenten die thuis blijven, hebben we ook

informatie verzameld over kenmerken van studenten die invloed hebben op de kans dat een student naar het buitenland gaat over kenmerken van studenten die de competentieontwikkeling kunnen beïnvloeden. Die gegevens betreffen studiekekenmerken, persoonlijke kenmerken en sociale kenmerken. Om een conclusie te kunnen trekken over een mogelijke relatie tussen de competentieontwikkeling en de studie in het buitenland, heeft het onderzoek een quasi-experimenteel ontwerp. Een quasi-experimenteel ontwerp betekent dat we de competentieontwikkeling op twee momenten hebben gemeten (een voormeting en een nameting) bij internationaal mobiele studenten (de onderzoeksgroep) en de studenten die thuis blijven (de referentiegroep). De resultaten van het onderzoek, waaraan 263 studenten deelnamen, geven aan dat de internationale studenten in Nederland een enigszins negatief selecte groep zijn die aan het eind van het studiejaar significant hogere competentieniveaus hebben dan hun jaargenoten die thuis zijn gebleven. Tevens kunnen we vaststellen dat de hogere competentieniveaus het gevolg zijn van hun studie in competentiegericht onderwijs en dat andere persoonlijke kenmerken of familiekenmerken geen effect hebben op het hogere competentieniveau na een jaar studie.

Vervolgens hebben we bestudeerd of dit hogere competentieniveau ook voordelen oplevert op de arbeidsmarkt. In hoofdstuk 5 worden de resultaten van het onderzoek onder afgestudeerden gepresenteerd. We hebben de arbeidsmarktpositie gemeten van afgestudeerden van universiteiten uit Polen, Hongarije, Letland en Frankrijk die een jaar aan een Nederlandse hogeschool hebben gestudeerd. Tevens hebben we de positie op de arbeidsmarkt gemeten van twee referentiegroepen die tegelijk met de afgestudeerden van de onderzoeksgroep zijn afgestudeerd aan dezelfde universiteiten. De eerste referentiegroep heeft ook in het buitenland gestudeerd maar niet in Nederland, de tweede referentiegroep heeft nooit in het buitenland gestudeerd. In de analyses vergelijken we deze drie groepen met elkaar. Het competentieniveau van de deelnemers hebben we gemeten met behulp van hetzelfde instrument dat we hebben gebruikt voor de studenten. Tenslotte hebben we gegevens verzameld om in de analyses rekening te kunnen houden met andere mogelijke oorzaken van verschillen in arbeidsmarkt positie: persoonlijke kenmerken, familiekenmerken van de afgestudeerden en de bedrijfsgrootte.

We analyseren vier aspecten van de arbeidsmarktpositie van 301 afgestudeerden. De eerste analyse van een aantal objectieve parameters laat zien dat afgestudeerden die in Nederland hebben gestudeerd een grotere kans hebben op een leidinggevende functie. Daarentegen is de kans op werk, de kans om een periode werkeloos te zijn, om als zelfstandige te werken, de kans op een baan op niveau, op een baan binnen de studierichting en op een baan waarin afgestudeerden hun kennis en vaardigheden gebruiken niet verschillend is voor de drie groepen afgestudeerden. Ten tweede hebben we geanalyseerd of internationale ervaring voordelen biedt in de huidige baan. Afgestudeerden die ook in Nederland hebben gestudeerd hebben vaker een baan met internationale contacten dan de andere afgestudeerden en ook vaker een baan waarbij de internationale ervaring het werk gemakkelijker maakt dan afgestudeerden die nooit naar het buitenland zijn geweest. Afgestudeerden die in het buitenland zijn geweest tijdens hun studie, in Nederland of in een ander land, hebben vaker een baan waarvoor internationale ervaring is vereist dan afgestudeerden die nooit in het buitenland zijn geweest. De derde analyse laat zien dat er geen verschil is tussen de drie groepen afgestudeerden wat betreft baantevredenheid en de carrière perspectieven. De vierde analyse betrof het inkomen en we zien dat het inkomen van afgestudeerden die ook in Nederland hebben gestudeerd 9,9% hoger is dan van de afgestudeerden die nooit in het buitenland zijn geweest. We hebben de Netto Contante Waarde (NCW) berekend van internationale student mobiliteit.

De NCW is het verschil tussen de contante waarde van kosten en opbrengsten. Vijf jaar na het afstuderen is de NCW van een jaar studie in Nederland vergeleken met niet naar het buitenland gaan, is € 16,613. Een voorzichtige schatting geeft aan dat internationale mobiliteit tijdens de studie de NCW van een universitaire opleiding ten opzichte van een middelbare opleiding met 25-45% verhoogt. We zien dat het competentieniveau van de afgestudeerden lager is dan van de studenten maar nog altijd hoger bij afgestudeerden die in het buitenland zijn geweest. De analyses laten zien dat bij enkele aspecten van de arbeidsmarktpositie van de afgestudeerden het niveau van een van de competenties een effect heeft, maar over het geheel genomen is de conclusie dat competentieniveaus geen effect hebben op de arbeidsmarktpositie van de afgestudeerden.

In hoofdstuk 6 bespreken we enkele aspecten van de methodologie en de resultaten. Ten eerste, realiseren we ons dat we het competentieniveau van vier competenties afzonderlijk van elkaar meten, terwijl in de praktijk altijd meerdere competenties nodig zijn om een beroepstaak uit te voeren. Dat we niet in staat waren om het expertiseniveau van competenties te meten zou kunnen liggen aan de manier waarop het onderwijs is ingericht en we doen aanbevelingen om hiernaar te kijken. We geven ook aan dat onnauwkeurigheden ten gevolge van zelfbeoordeling door de deelnemers aan het onderzoek geen rol van betekenis hebben gespeeld. Ten tweede is het niet verbazingwekkend dat studenten in competentiegericht onderwijs hun competenties beter ontwikkelen dan studenten in kennisgericht onderwijs omdat studenten in het competentiegericht onderwijs vaker professionele taken uitvoeren en daardoor hun competenties beter kunnen ontwikkelen. Ten derde noemen we drie mogelijke verklaringen waarom we geen effect van competentieniveaus op de arbeidsmarktsituatie van afgestudeerden zien: (1) competenties spelen nog geen grote rol bij functiebeoordelingen vlak na het afstuderen, (2) werkgevers in Letland, Polen, Hongarije en Frankrijk gebruiken mogelijk andere competenties dan wij in ons onderzoek hebben gemeten, (3) het competentie management van werkgevers is gebaseerd op de kwaliteit van uitgevoerde taken, een dimensie van competentieniveau die we niet konden meten. Tenslotte geven we een mogelijke verklaring voor het feit dat we geen effect van competenties op de arbeidsmarktsituatie van afgestudeerden aan kunnen tonen maar we wel enkele significante verschillen in de arbeidsmarktsituatie vinden tussen afgestudeerden die ook in Nederland hebben gestudeerd vergeleken met diegenen die elders in het buitenland of niet in het buitenland hebben gestudeerd. De conclusie is dat de voordelen op de arbeidsmarkt van afgestudeerden die in het buitenland hebben gestudeerd niet komt omdat werkgevers de kwaliteiten waarderen die deze afgestudeerden hebben ontwikkeld voordat ze naar het buitenland gingen ook niet omdat de competenties die we hebben gemeten (samenwerken, presenteren, organiseren en zelfsturen) worden gewaardeerd. Het kan zijn dat internationaal mobiele studenten andere competenties ontwikkelen tijdens hun verblijf in het buitenland die wel door werkgevers worden gewaardeerd. Daarnaast zouden werkgevers de internationale ervaring van de afgestudeerden kunnen gebruiken als een indicatie dat deze afgestudeerden andere niet-gemeten eigenschappen bezitten of als een indicatie van een betere opleiding in het buitenland.

De conclusies van het onderzoek zijn:

- Internationale studenten die in een competentiegerichte onderwijssituatie komen, ontwikkelen hun competentie beter dan hun jaargenoten die in een kennisgerichte onderwijssituatie blijven.
- De competentieniveaus blijven ook hoger na het afstuderen, maar hebben geen effect op de arbeidsmarktsituatie.

- Afgestudeerden die tijdens hun studie een jaar in Nederland zijn geweest hebben voordeel van hun studie in Nederland in de vorm van een hoger salaris en een meer internationaal georiënteerde baan.
- Met behulp van een zelfbeoordeling instrument kunnen we de competentieontwikkeling van één jaar studie meten.

About the author

Born in Meerssen on Tuesday 4th August 1953

Married to Anco van Berghem and we have four children, Anneliek, Bart, Chris and Ties.

Hockey is my sport. Nobody in my family had played hockey before, but my father, a gym teacher, was enthusiastic for all kinds of sport. I joined the Maastricht Hockey Club (MHC) in 1965 at the age of 12 when I went to the secondary school. Going to school on Saturday morning and playing matches on Saturday afternoon. After I completed secondary school in 1971, and had started my studies in Veterinary Medicine in Utrecht, I continued to play hockey in Maastricht; Saturday training and on Sunday playing the match. I stopped playing hockey in 1976, one year after my Masters degree because I couldn't combine hockey with the internships. I thought it was for a short while only, but it worked out different.

In 1978, I went on a research internship to Peru with my wife Anco. We returned in 1979 and both graduated in 1980 (DVM). Based on our Peru experience we decided to find a job in International Development Cooperation. After working some time as a General Practitioner in the Netherlands we went to São Tomé in March 1981. In São Tomé I was a veterinary practitioner and farm manager. Our daughter was born on this island, where we stayed till the end of 1982. Thereafter I worked for five years in Zambia as a District Veterinary Officer in Senanga (mainly taking care of preventive veterinary medicine) and Provincial Veterinary Research Officer in Western Province. In Senanga Anco gave birth to two sons. Back in the Netherlands, in 1988, I worked at Wageningen University analysing data from our Zambia research projects. Our third son was born in the Netherlands. I joined the University of Applied Sciences in 1988 and shortly afterwards we moved to Dronten. So, finally in 1989, after 14 years, I had the chance to play hockey again when I joined the Mixed Hockey Club Flevoland. Hoping it would be for a long time, but again it worked out differently.

As a lecturer I was teaching animal health, farm management and related subjects. I played hockey, but my daughter and two of my sons played soccer. I don't know why, but as I like all kinds of sports I was their supporter on Saturdays and they were mine on Sundays. Around 1991 the University became progressively involved in international cooperation projects with universities in developing countries. In 1993 I became project leader of a cooperation with the University of Swaziland (UNISWA). We resigned from the hockey club and soccer club and the family moved to Swaziland. In Swaziland my main task was developing the curriculum of the faculty of Agriculture towards the needs of the labour market. This involved contacts with the labour market, developing new teaching methodologies and new modules with related practical exercises. In 1997 when the project came to an end, we returned to Dronten where, with some pushing perhaps from my side, the whole family (6) became a member of the hockey club.

At the University of Applied Sciences in Dronten I was involved in international projects (Mozambique, Palestine, South-Africa) and in management duties of the Animal Husbandry Department. Both, projects and management duties, involved curriculum development. For several years (1999-2008) I was a member of the Steering Committee to develop and implement Competence Based Education (CBE). The University employed a Professor of Teaching Methodology to support the development of CBE. This Professor, Frank de Jong, nowadays at

the Stoas-Wageningen Vilentum University of Applied Sciences, suggested in 2007 that I could do a PhD study on international students and CBE. The result of his suggestion is this dissertation which was done under his supervision and the supervision of professor Rolf van der Velden of the Research Centre for Education and the Labour Market (**ROA**), a research institute of the Maastricht University School of Business and Economics. During my PhD study I continued, as a member of the Department of International Cooperation and Consultancies, with international cooperation projects (Ghana, Mozambique, Ethiopia, Kenya). In 2012 I joined the new Team of Applied Research. And hockey? In 2000, after a rupture of my anterior cruciate ligament, my hockey activities switched from active player to umpire for the Dutch Hockey Board. I only play recreational hockey. I also have some volunteer positions within the club which resulted in an honorary membership of the hockey club in Dronten. This implies a life time membership and no resignation any more.

Acknowledgements

I would like to express my gratitude to a number of people who contributed, in one way or another, to this doctoral thesis.

Tim Menger. Without you, there would have been no international students at our university and there would have been no doctoral study about their accomplishments. Without your network it would not have been possible to mobilize our international colleagues and organise the data collection in Latvia, Poland, Hungary and France. Your enthusiasm for international student mobility and for my study has really encouraged me. Your way of personnel management gave me full play to plan my other professional tasks in the context of my research activities .

Frank de Jong, co-promotor and ‘instigator’ of this doctoral thesis. You suggested to me to start a PhD study and you are the one who has guided me for five years. Always too busy, but also always time for listening, discussion and feedback. Full of ideas and not afraid of just trying them out and at the same time allowing me space to follow my own research path. You also introduced me into the research group. Besides my deep respect for your expertise, I regard you as a friend who was my fellow- traveller on my PhD journey. I hope we will have more journeys together.

Rolf van der Velden, my promotor. The first time we met, there was this personal match. It is a very special experience to meet someone who has such a stimulating and encouraging effect on me. Always words of praise, constructive feedback and the critical notes carefully packed in positive sentences. The discussions with you were a great joy and afterwards, when I returned home from Maastricht, I was on cloud nine. Yes!

A special thanks to Tom Hillegers, for his hospitality when I was in Maastricht, the interesting conversations and the warm interest in my study.

I am particularly grateful to Wim van de Weg and Wil Bekkering. Being the directors of our University you facilitated this doctoral study and from the start you had full confidence in the successful completion of it (within the agreed period of time). It remains a special feeling that you gave me this opportunity and learning experience.

My wonderful colleagues Kees Schipper, Taco Medema, Jantien Lijftogt and Olga Kujawska with whom I have done the data collection amongst students in France, Hungary, Latvia and Poland. We could combine business with pleasure, data collection with city views and interviews with restaurant visits and all the time you were good company.

Thank you, my colleagues from our international partner institutes: Maria Parlinska, Jozsef Tóth, Anne Prud’homme, Csaba Forgacs, Endre Domiczi, Veronica Csapó, Dorottya Dedon-Mezi, and Vineta Tetere. You have shown that you attach a lot of importance to the co-operation with our university. Without you I would not have been able to organise the students at your universities to complete the questionnaires. Here I also want to thank the students and graduates of these partner universities that have collected the data amongst the graduates: Nadia Smirnova, Marie-Dominique Poirier, Kasia Sikora, Veronika Palasti, Aleksandra Skoniecki, en Marta Grabska.

I am indebted my colleague Jacques Timmers for his help in understanding the statistical procedures. My colleagues Brian Thompson and Atze Oenema, thanks for your linguistic inputs and corrections. Herman van der Wal, thanks for reading through the different stages of the manuscript and your critical remarks. And thanks to my colleagues who contributed in their own way to this doctoral study: Wiggele Oosterhoff, Matthijs Breel, Hermann Schilt, Toon van Aert,

Henka Rooze, Dirk de Groot, Frans de Groot, Rinie Altena, Jan van Diepen, Daan Westrik, Jacob van Veldhuizen, Erik Hassink, Rolph ten Hulzen, Wieneke van der Heide, Jeroen Nolles, Piet van Duinen, Liesbeth Meijer, Gert Wim Stoffer, Judith van der Heide, Tineke Medema, Harwi van Eunen, Lucy van Eunen, Frans Jansen, Margreet van Pijkeren, Christiaan ten Have and of course Anja Hetsen.

The STOAS research group has been my home for five years and I experienced the added value of researching together and trying to be ecologically intelligent.

I am extremely grateful for the inspiration, self-confidence, inner calm and power I received in the Star of the Sea in Maastricht.

I dedicated this doctoral thesis to my children, Anneliek, Bart, Chris en Ties. This '*ABCT-je*' was my inspiration and driving force to persevere in executing the research and more specifically in the end in writing this doctoral thesis. All four completed their university study, but still have a lifelong learning ahead.

Many PhD graduates now come with a 'last but not least' to thank their partner. But if you have been happily married for 35 years and your wife allowed you to do a PhD study and was your most loyal supporter throughout the whole PhD process, then a word of thanks does not cover my feelings. The word love does. Love for Anco.

Annexes

The annexes of this doctoral thesis can be found at the following URL:
www.cahvilentum.nl/praktijkonderzoek

Competence development
and
labour market benefits
of
internationally mobile students

Annexes

Hans Corten

Competence development and labour market benefits of
internationally mobile students

DISSERTATION

to obtain the degree of Doctor at
Maastricht University,
on the authority of the Rector Magnificus, Prof. dr. L.L.G. Soete
in accordance with the decision of the Board of Deans,
to be defended in public
on Friday 23rd May 2014, at 14.00 hours

by

Johannes Jozef Frans Marie Corten

Supervisor:

Prof. dr. R.K.W. van der Velden

Co-supervisor:

Dr. F.P.C.M. de Jong

Assessment committee:

Prof. dr. W. Gijssels (chairman)

Prof. dr. J. van Merriënboer

Prof. dr. J.W.M. de Wit

Contents

Annex A	Tables	1
A.1	Tables chapter 1	1
A.2	Tables chapter 2	2
A.3	Tables chapter 3	4
A.4	Tables chapter 4	10
A.5	Tables chapter 5	21
Annex B	Questionnaires.....	53
B.1	Questionnaire students at start of academic year (English version).....	53
B.2	Questionnaire students at end of academic year (English version).....	68
B.3	Questionnaire graduates (English version)	76

Annex A Tables

A.1 Tables chapter 1

Table A.1.1 *Number of students in the in the Government funded Higher Education in the Netherlands 1998-2011*

Year	Total number of students	Number of international students	Percentage international students
1998-1999	449.150	13.427	3,0
1999-2000	466.190	13.838	3,0
2000-2001	478.997	16.110	3,4
2001-2002	494.561	18.890	3,8
2002-2003	503.068	20.531	4,1
2003-2004	525.222	26.808	5,1
2004-2005	546.196	31.668	5,8
2005-2006	562.728	35.374	6,3
2006-2007	575.543	35.398	6,2
2007-2008	587.515	39.196	6,7
2008-2009	604.217	43.747	7,2
2009-2010	636.406	49.065	7,7
2010-2011	658.620	52.194	7,9

CBS (2012), Richters (2003-2012)

Table A.1.2 *Number of students in the in the Government funded Universities of Applied Sciences in the Netherlands 1998-2010*

Year	Total number of students	Number of international students	Percentage international students
1998-1999	288.625	6.212	2,2
1999-2000	303.236	6.325	2,1
2000-2001	312.698	8.127	2,6
2001-2002	321.508	10.068	3,1
2002-2003	322.968	10.344	3,2
2003-2004	335.709	15.372	4,6
2004-2005	346.645	18.090	5,2
2005-2006	356.842	20.608	5,8
2006-2007	366.807	21.604	5,9
2007-2008	374.802	23.130	6,2
2008-2009	383.713	24.876	6,5
2009-2010	403.278	25.748	6,4
2010-2011	416.934	28.006	6,7

CBS (2012), Richters (2003-2012)

A.2 Tables chapter 2

Table A.2.1 *Model for competence-based learning in VET*

	Principle	Variables	Stages of realisation			
			Not competence based	Starting to be competence-based	Partially competence-based	Completely competence-based
Principle 1	The competencies that are the basis for the study programme are defined.	Putting together a job competence profile. Using a job competence Profile between education and vocational practice.	There is no job competence profile put together.	There is a job competence profile without participation of the vocational practice. This (vocational) competence profile has been used during the (re)design of the curriculum.	There is a job competence profile with participation of the vocational practice and this profile is fixed for a longer period of time. This job competence profile has been used during the (re)design of the curriculum.	There is a job competence profile with participation of the vocational practice and this profile is tuned frequently with the regional and local vocational practice including the major trends. This job competence profile has been used during the (re)design of the curriculum.
Principle 2	Vocational core problems are the organizing unit for (re)designing the curriculum (learning and assessment).	The extent to which the vocational core problems determine the curriculum.	There are no vocational core problems specified.	There are vocational core problems specified, which are used as examples in the (re)designing of the curriculum.	There are vocational core problems specified. These core problems are the basis for the (re)design of some parts of the curriculum.	There are vocational core problems specified and these lead to the (re)design of the whole curriculum.
Principle 3	Competence-development of students is assessed before, during and after the learning process.	Interaction between recognising earlier developed competencies. Formal assessment. Formulating feedback. Flexibility in format and timing of assessment	Assessment is the final stage of a learning process and takes place at a fixed moment.	Assessment takes place at several moments. Assessment is used for formal assessment and does not play a role in the learning process of students.	Assessment takes place before, during and after the learning process. Assessment is used for both formal assessment and competence development of students.	Assessment takes place before, during and after the learning process. Assessment is used both for formal assessment and competence development of students. Students determine the moment and format of assessment themselves.

Table A.2.1 (Ctd.) *Model for competence-based learning in VET*

	Principle	Variables	Stages of realisation			
			Not competence based	Starting to be competence-based	Partially competence-based	Completely competence-based
Principle 4	Learning activities take place in different authentic situations	Authenticity. Diversity. Relation with learning at school and learning in practice.	Learning in practice is of subordinate importance and there is no relation with learning at school.	Learning at school is in the lead. Sometimes, In some cases a relation is set up with learning in practice or experiences from practice.	Learning activities to a large extent take place in authentic settings, but the relation with learning at school is insufficient.	Learning activities to a large extent take place in diverse authentic settings and learning activities are clearly related to the learning activities in practice.
Principle 5	In learning and assessment processes, knowledge, skills and attitudes are integrated.	Integration of knowledge, skills and attitudes.	Knowledge, skills and attitudes are separately developed and acknowledged.	Knowledge, skills and attitudes are sometimes integrated in the learning process. Knowledge, skills and attitudes are assessed separately.	Knowledge, skills and attitudes are integrated in the learning process or in the assessment procedure, not in both processes at the same time.	Integration of knowledge, skills and attitudes is for both learning and assessment processes the starting point and therefore applied.
Principle 6	Self-responsibility and (self-) reflection of students are stimulated.	Self-responsibility. Self-reflection. Reflection on functioning in the vocational setting. Learning needs of the student.	Learning activities are characterised by external steering: students carry out assignments by means of elaborated instructions. There is no (self-) reflection.	In a limited part of the learning activities, students determined the way of learning themselves. There is hardly any reflection on the learning process and functioning in vocational settings.	Students themselves determined the way of learning, and time and place of learning, based on reflection on the learning process and functioning in vocational settings.	Students are after all responsible for their own learning processes based on their learning needs.
Principle 7	Teachers both at school and practice fulfil their roles as coaches and experts in balance.	Way of supporting the learning process. Support in the knowledge acquisition process.	There is no question of support. Knowledge transfer is central to the learning process.	To a limited extent responsibility for the learning processes is handed to students. Teachers support through guidance.	Students enjoy a certain level of autonomy in determining their own ways of learning. Teachers observe when students need support and offer it.	Teachers stimulate students to formulate learning needs and based on selfreflection determine their own learning process.
Principle 8	A basis is established for a lifelong learning attitude for students.	(Labour) identity development. Development of learning competencies. Focus on future career.	There is no attention paid to competencies that are related to learning or (labour) identity development.	In the curriculum there is attention paid to competencies that are related to learning and (labour) identity, but these competencies are not integrated in the learning process.	During learning trajectories competencies related to learning and (labour) identity development are clearly related to vocational core problems and attention is paid to those competencies to a large extent.	During learning trajectories competencies related to learning and (labour) identity development are integrated and reflection on the future careers of students has taken place.

Renate Wesselink, Harm J. A. Biemans, Martin Mulder, Elke R. van den Elsen (2007). **Competence-based VET as seen by Dutch researchers**; European journal of vocational training **48** No 40 – 2007/1

A.3 Tables chapter 3

Table A 3.1 *Competence level indicators and description of levels*

Indicator		Description of competence levels		
		Entry Level (E)	Bachelor Level (B)	(Master Level (M)
1	Roles	specialist	researcher adviser	Knowledge intensive networking entrepreneur
		operational manager	strategic manager	Employment: researcher, advisor, manager
		entrepreneur	innovative manager	Developer of business concepts
2	Responsibility	co-responsible	final responsible	Responsible for strategy, vision and co-ordination
3	Independence	own risk and initiative	own risk, own initiative	Independent in thinking and doing
				Not too sensitive for assessment by others
				Choices and reflection at meta-level. Emotional freedom/distance
4	Public	new target group within the own sector	unfamiliar or expert target groups domestic or abroad	widely different public; unknown but expert target groups; laymen; domestic and abroad
5	Time limit	1-5 years	5-10 years	From historical perspective to the next generation (20-30 years)
				Can handle the tensions between short, mid-term and long-term
				Developing an idea, organising it, and take another initiative
6	Work	several tasks	combined tasks	Overview; develops; takes up the chances/tasks of complex nature.
7	Procedures	develop	continuous innovation	Methodological and systematic analysing and designing
8	Knowledge + insight	background, explanation	integration and discussion	Scientific approach, develops theories, concepts and models
9	Insecurity	situations with unpredictable	continuously changing circumstances	Deals with uncertainties, leads changes, uses incomplete information
10	Change	control, direct, form	pro-active behaviour, innovate, design	Processes and uses social, cultural and developments
11	Scope	transfer within adjoining sectors	transfer across sectors	Integration of beta-disciplines, developing from several disciplines, synergy.

De Jong & De Jong, 2008

Table A.3.2 *Association between group of participants and items, describing tasks for the competence 'to organise', per level of complexity and per indicator*

To organise

Item number	Level of complexity	Indicator	χ^2	p (one sided)	% that did activity		mean score	
					E	B	E	B
1	2	1	4,35	0,02	61	80	3,5	3,5
2	2	2	2,06	0,08	56	69	3,3	3,7
3	2	3	2,35	0,06	71	84	3,3	3,4
4	2	5	3,96	0,02	64	82	3,2	3,4
5	2	6	0,08	0,39	63	65	3,4	3,8
6	2	7	2,34	0,06	76	88	3,3	3,5
7	2	9	2,63	0,05	73	86	3,2	3,6
8	3	1	4,35	0,02	61	80	3,5	3,4
9	3	10	0,68	0,21	80	86	3,5	3,6
10	3	2	6,87	0,00	66	88	3,5	3,4
11	3	2	4,35	0,02	61	80	3,4	3,4
12	3	4	2,14	0,07	39	53	3,2	3,5
13	3	5	7,47	0,00	22	47	3,4	3,6
14	3	6	0,01	0,46	75	76	3,4	3,7
15	3	6	9,44	0,00	64	90	3,3	3,3
16	3	9	0,53	0,23	54	61	2,7	3,0
17	3	9	4,70	0,02	68	86	3,1	3,0
18	4	1	9,10	0,00	32	61	2,7	3,1
19	4	10	3,77	0,03	29	47	3,2	3,4
20	4	10	5,38	0,01	20	41	2,8	2,8
21	4	11	9,94	0,00	19	47	2,6	3,0
22	4	2	1,01	0,16	48	57	3,5	3,6
23	4	3	7,42	0,00	39	65	2,8	3,0
24	4	4	0,95	0,16	7	12	2,8	3,3
25	4	4	6,28	0,01	9	27	3,0	3,9
26	4	5	3,67	0,03	41	59	2,7	3,2
27	4	6	4,25	0,02	54	74	3,0	3,0
28	4	7	10,20	0,00	48	78	3,1	3,1
29	4	7	2,10	0,07	15	27	3,2	3,2
30	4	8	1,74	0,09	42	54	3,0	3,4
31	4	9	0,38	0,27	49	55	3,0	3,2

selected item for final questionnaire
extra item for final questionnaire

Table A 3.3 *Association between group of participants and items, describing tasks for the competence 'to present', per level of complexity and per indicator*

To Present

Item number	Level of complexity	Indicator	χ^2	p (one sided)	% that did activity		mean score	
					E	B	E	B
1	2	1	2,47	0,06	93	84	3,9	4,1
2	2	2	2,45	0,06	100	96	4,2	4,2
3	2	4	0,23	0,32	42	47	3,9	3,8
4	2	4	6,27	0,01	80	96	3,5	3,7
5	2	5	0,11	0,37	76	74	3,2	3,6
6	2	6	1,77	0,09	78	88	3,7	3,9
7	2	7	2,11	0,07	92	98	3,4	3,7
8	2	7	0,40	0,26	88	92	3,6	3,7
9	2	7	0,66	0,21	42	35	3,3	3,4
10	2	8	1,62	0,10	86	94	3,3	3,4
11	2	9	1,92	0,08	54	67	3,0	3,0
12	2	10	7,50	0,00	68	89	3,5	3,3
13	2	11	0,14	0,40	63	59	3,5	3,4
14	3	1	7,18	0,00	86	100	3,6	3,7
15	3	1	0,17	0,27	75	80	3,4	3,2
16	3	1	3,32	0,03	36	53	3,3	3,7
17	3	2	0,70	0,20	95	98	3,7	3,8
18	3	2	10,26	0,00	66	92	3,6	3,3
19	3	3	4,68	0,02	63	82	3,0	3,4
20	3	4	0,00	0,50	80	80	2,9	2,8
21	3	5	3,57	0,03	56	74	3,1	3,5
22	3	6	3,17	0,04	53	69	2,8	3,1
23	3	7	11,67	0,00	53	84	3,7	3,5
24	3	8	3,65	0,03	73	88	3,3	3,5
25	3	8	5,50	0,01	49	71	2,9	3,2
26	3	9	0,39	0,27	39	35	3,0	3,1
27	3	9	12,42	0,00	63	92	3,0	3,4
28	3	10	3,00	0,04	51	67	2,9	3,2
29	3	11	0,16	0,34	39	43	3,2	3,4
30	3	11	0,16	0,37	24	27	3,2	3,3
31	4	1	0,03	0,44	53	51	2,6	2,9
32	4	2	0,33	0,28	24	29	3,1	3,1
33	4	4	0,48	0,24	53	59	3,0	3,1
34	4	5	2,57	0,05	39	25	3,1	3,4
35	4	6	2,94	0,04	12	25	3,0	2,8
36	4	7	2,78	0,05	63	78	3,0	3,2
37	4	8	0,04	0,42	41	39	3,0	2,9
38	4	9	2,26	0,07	27	41	3,1	3,0
39	4	10	0,77	0,19	29	37	3,2	3,6
40	4	11	2,14	0,07	39	53	3,0	3,2

selected item for final questionnaire
extra item for final questionnaire

Table A 3.4 Association between group of participants and items, describing tasks for the competence 'to co-operate' per level of complexity and per indicator

To co-operate

Item number	Level of complexity	Indicator	χ^2	p (one sided)	% that did activity		mean score	
					E	B	E	B
1	2	1	1,07	0,15	78	86	3,6	3,7
2	2	2	0,02	0,45	75	74	3,6	3,5
3	2	3	3,65	0,03	85	96	3,4	3,3
4	2	4	1,02	0,16	83	90	3,7	3,8
5	2	5	7,21	0,00	44	57	3,9	4,1
6	2	6	1,69	0,10	97	100	3,9	4,1
7	2	7	0,02	0,45	93	94	3,9	3,8
8	2	7	1,05	0,15	88	94	3,5	3,3
9	2	8	0,00	0,48	92	93	3,7	3,8
10	2	9	3,65	0,28	85	96	3,4	3,6
11	2	11	1,29	0,13	61	71	3,4	3,5
12	3	1	0,00	0,48	92	92	3,2	3,8
13	3	2	1,77	0,09	78	88	3,2	3,3
14	3	2	3,72	0,03	81	94	3,1	3,3
15	3	3	0,61	0,22	85	90	3,1	3,4
16	3	4	13,00	0,00	56	88	3,4	3,9
17	3	4	0,20	0,33	85	88	3,2	3,3
18	3	4	2,70	0,05	78	90	3,4	3,6
19	3	4	3,16	0,04	59	76	3,1	3,1
20	3	5	0,94	0,17	17	25	3,8	3,8
21	3	6	6,33	0,01	64	86	3,2	3,3
22	3	7	6,91	0,00	51	76	3,1	3,3
23	3	8	27,12	0,00	44	92	3,4	3,3
24	3	9	2,67	0,05	68	82	3,1	3,5
25	3	9	0,45	0,25	97	94	3,9	3,9
26	3	9	2,12	0,07	88	96	3,0	3,5
27	3	10	1,07	0,15	78	86	3,4	3,0
28	3	11	3,23	0,04	34	51	3,2	3,5
29	3	11	2,21	0,07	58	71	3,9	3,5
30	4	1	7,88	0,00	42	69	3,3	3,4
31	4	1	0,51	0,24	32	39	2,9	3,6
32	4	3	0,09	0,38	78	76	3,7	3,5
33	4	4	0,77	0,19	29	37	3,0	3,3
34	4	6	0,59	0,22	64	57	3,0	3,0
35	4	7	0,27	0,30	54	59	3,4	3,1
36	4	7	3,77	0,03	29	47	2,8	2,9
37	4	8	0,99	0,16	20	29	2,8	3,4
38	4	9	0,30	0,29	46	51	2,9	3,3
39	4	10	2,86	0,05	24	39	2,6	2,9
40	4	11	0,39	0,27	27	33	2,6	2,6

selected item for final questionnaire
extra item for final questionnaire

Table A 3.5 Association between group of participants and items, describing tasks for the competence 'to self-direct' per level of complexity and per indicator

To self-direct

Item number	Level of complexity	Indicator	χ^2	p (one sided)	% that did activity		mean score	
					E	B	E	B
1	2	1	3,38	0,03	76	90	3,2	3,5
2	2	2	1,27	0,13	85	92	3,5	3,1
3	2	2	3,80	0,03	58	76	3,7	3,5
4	2	3	0,19	0,45	93	94	3,8	3,7
5	2	4	1,69	0,10	97	100	3,5	3,5
6	2	5	3,38	0,03	76	90	3,4	3,7
7	2	6	3,77	0,03	88	98	4,1	4,0
8	2	7	2,26	0,07	85	94	3,6	3,7
9	2	8	0,09	0,38	78	76	3,3	3,2
10	2	9	0,18	0,34	97	98	3,6	3,4
11	2	9	1,77	0,09	78	88	3,3	3,3
12	2	10	0,13	0,36	66	69	3,0	3,2
13	3	1	1,80	0,09	73	84	3,7	3,7
14	3	2	7,50	0,00	68	90	3,6	3,5
15	3	3	0,29	0,30	86	90	3,7	4,0
16	3	3	3,17	0,04	53	69	3,3	3,6
17	3	4	2,67	0,05	68	82	3,2	3,6
18	3	5	3,66	0,03	63	80	3,4	3,6
19	3	6	1,26	0,13	80	88	3,6	3,4
20	3	6	9,74	0,00	61	88	3,3	3,4
21	3	7	0,31	0,29	73	78	3,8	3,4
22	3	8	0,04	0,42	87	88	2,9	3,0
23	3	8	2,05	0,08	75	86	3,4	3,7
24	3	9	0,85	0,18	92	96	3,4	3,8
25	3	9	0,20	0,33	85	88	3,3	3,3
26	3	10	0,69	0,20	66	74	3,1	3,2
27	4	3	0,19	0,33	51	55	3,0	3,2
28	4	4	0,05	0,41	41	43	3,1	3,4
29	4	5	3,81	0,05	37	53	3,1	3,0
30	4	6	3,81	0,03	51	69	3,5	3,5
31	4	6	3,54	0,03	39	57	3,3	3,7
32	4	7	1,54	0,11	22	33	2,7	3,3
33	4	7	0,69	0,20	49	57	2,7	3,0
34	4	8	0,16	0,34	27	31	2,9	2,9
35	4	8	0,39	0,27	39	45	2,8	2,9
36	4	9	1,83	0,09	44	57	3,0	3,3
37	4	9	8,24	0,00	70	92	3,1	3,5
38	4	10	6,33	0,01	48	71	2,8	3,3

selected item for final questionnaire
extra item for final questionnaire

Table A 3.6 *Items with a significant differences in experienced rate of difficulty in completing a task between Entry level students (E). and Bachelor level students (B). A score of 1 =difficult and a score of 5=easy*

Item level	Mean experienced level of difficulty		Mann-Whitney U	Wilcoxon W	Z	p	n*
	Entry	Bachelor					
To organise							
2	3,35	3,78	910,000	1945,000	-,501	0,02	69
2	3,19	3,57	708,000	1654,000	-1,779	0,04	85
4	2,71	3,17	255,000	555,000	-1,729	0,04	53
To present							
2	3,37	3,71	1057,500	2542,500	-1,670	0,048	102
3	2,95	3,43	513,000	1234,000	-2,212	0,01	77
3	3,06	3,47	454,000	1015,00	-1,766	0,04	69
To co-operate							
2**	3,52	3,28	980,000	2061,000	-1,672	0,048	98
3	3,22	3,76	833,500	2318,500	-2,8333	0,00	99
3**	3,35	3,02	776,500	1679,500	-1,678	0,047	88
3**	3,91	3,49	454,500	1084,500	-1,789	0,04	69
3	3,39	3,91	552,000	1113,000	-1,710	0,04	76
3	3,02	3,45	930,500	2308,500	-2,125	0,02	99
4	2,89	3,63	110,000	300,000	-2,144	0,02	38
To self-direct							
3	3,67	4,02	894,000	2220,000	-1,807	0,04	95
3	3,41	3,81	979,500	2464,500	-2,101	0,02	101
4	2,82	3,31	373,500	779,500	-1,667	0,048	63
4	2,78	2,86	710,500	1571,500	-1,957	0,03	86

* number of respondents who indicated having accomplished the task.

** Entry level students find task significantly easier than Bachelor students.

A.4 Tables chapter 4

Table A.4.1 *Statistics for the competence levels*

	N		Mean	SE	SD	Min.	Max.	Skewness	Std. Error of Skewness	Z-score skewness		Kurtosis	Std. Error of Kurtosis	Z-score kurtosis	
	Valid	Missing													
Students: at start															
To organise	263	0	3.0	0.1	1.9	0	7.9	.34	0.15	2.25 *		-0.54	0.30	-1.80	
To present	263	0	3.0	0.1	1.9	0	7.9	.39	0.15	2.27 *		-0.51	0.30	-1.70	
To co-operate	263	0	4.2	0.1	2.1	0	10	-.01	0.15	-0.03		-0.49	0.30	-1.64	
To self-direct	263	0	5.5	0.1	2.1	0	10	-.07	0.15	-0.49		-0.59	0.30	-1.97 *	
Students: at end															
To organise	203	0	4.8	0.1	2.1	0	10	.06	0.17	0.34		-0.46	0.34	-1.36	
To present	203	0	4.9	0.1	2.1	0.7	10	-.03	0.17	-0.19		-0.44	0.34	-1.29	
To co-operate	203	0	5.7	0.2	2.2	0	10	-.32	0.17	-1.87		-0.44	0.34	-1.28	
To self-direct	203	0	6.5	0.1	2.1	1.0	10	-.34	0.17	-2.01 *		-0.45	0.34	-1.31	
Graduates															
To organise	294	7	4.5	0.1	2.2	0	10,0	.01	0.14	0.06		-0.55	0.28	-1.95	
To present	294	7	3.8	0.1	2.3	0	10,0	.30	0.14	2.11 *		-0.67	0.28	-2.35 *	
To co-operate	294	7	5.5	0.1	2.2	0	10,0	-.32	0.14	-2.24 *		-0.33	0.28	-1.17	
To self-direct	294	7	6.2	0.1	2.3	0	10,0	-.29	0.14	-2.08 *		-0.62	0.28	-2.18 *	
* p< 0,05															

Table A.4.2 *Recoded data (into new variables) before analysis*

Questionnaire		Recoding (- = no change)		Score changes
Variable	Answer categories	Variable	Value	
Gender	Male, female	Male	Male = 1 Female = 0	-
Year of birth	Year	Age	19-28	>28 yrs = 28 yrs
Country of birth (self)	Open	Immigrant family (at least one of the parents born abroad)	Yes = 1 No = 0	-
Country of birth (mother)	Open			
Country of birth (father)	Open			
Country lived till age of 18	Open			
Education father (ISCED 1-6)	National categories for ISCED 1+2, ISCED 3+4, ISCED 5+6	Father high educated (ISCED 5/6) ¹	Yes = 1 No = 0	Missing = no
Education mother (ISCED 1-6)	National categories for ISCED 1+2, ISCED 3+4, ISCED 5+6	Mother high educated (ISCED 5/6)	Yes = 1 No = 0	Missing = no
Father employed	self-employed, employed, not employed, retired, passed away	Father employed	Yes = 1 No = 0	Missing = no
Mother employed	self-employed, employed, not employed, retired, passed away	Mother employed	Yes = 1 No = 0	Missing = no
Job description father	Open	Father high professional (ISEI 1,2)	Yes = 1 No = 0	Missing = no
Job description mother	Open	Mother high professional (ISEI 1,2)	Yes = 1 No = 0	Missing = no
Parents income	5 point Likert scale: much lower than average – much higher than average; + cannot tell	-	5 point Likert scale: much lower than average – much higher than average	Missing = average
Study programme at home	open	Not used in analyses		
Start date study	date	Not used in analyses		
Entry qualification study	academic, non-academic, vocational, else(open)	Prior academic education	Yes = 1 No = 0	Missing = yes Else = no
Study interrupted	Yes (months), No	Study interrupted	Yes = 1 No = 0	-
Average grade last year	6, 6.5 , 7, 7.5 , 8, 8.5 , ≥9	--	-	Missing = average

¹ ISEI: International Socio Economic Index of occupational status; the ISEI-08 is based on the ISCO-08.

Table A.4.2 (Ctd.) *Recoded data (into new variables) before analysis*

Questionnaire		Recoding (- = no change)		Score changes
Variable	Answer categories	Variable	Value	
Relative grade last year	5 point Likert scale: much lower than average – much higher than average; + cannot tell	-	5 point Likert scale: much lower than average – much higher than average	Missing = higher than average (4)
Extra work to pass exams	5 point Likert scale: not at all – to a very high extent	-	-	Missing = average
Strived for highest mark (1-5)	5 point Likert scale: not at all – to a very high extent	-	-	Missing = average
Hours spent on study	hours	Classes of hours spent on study	0-10 hours; 11-20; 21-30; 31-40; 41-50; >50	Missing = average
Position in organisation	Yes (months), No	Had a position in organisation	Yes = 1 No = 0	-
Internships	Yes (months), No	Went on placement	Yes = 1 No = 0	-
Study related work experience before study	Yes (months), No	Has study related work experience	Yes = 1 No = 0	-
Study related work experience during study	Yes (months), No			
Non-study related work experience before study	Yes (months), No	Has non-study related work experience	Yes = 1 No = 0	-
Non-study related work experience during study	Yes (months), No			
Abroad for study	Yes (months), No	Went abroad for study or to work	Yes = 1 No = 0	-
Abroad for work	Yes (months), No			
Abroad for holidays	Yes (months), No	Not used in analyses		

Table A.4.3 Descriptive statistics of variables used in analyses

Continuous variables				
	Mean	SD	Min	Max
Competence level at start				
To organise	3.0	1.9	0	7.9
To present	3.0	1.9	0	7.9
To co-operate	4.2	2.1	0	10
To self-direct	5.5	2.1	0	10
Competence level at end				
To organise	4.8	2.1	0	10
To present	4.9	2.1	0.7	10
To co-operate	5.7	2.2	0	10
To self-direct	6.5	2.1	1.0	10
Agreeableness	14.9	2.5	4	20
Conscientiousness	14.5	3.0	5	20
Extraversion	13.5	3.1	6	20
Neuroticism	11.6	2.4	6	19
Openness to experience	11.7	2.3	6	20
Age	22.2	1.8	19	28

Binominal variables		
	category	% (1)
Gender	Male = 1 ; Female = 0	46
Academic prior education	Yes = 1; No = 0	69
Volunteer in (study) organisation	Yes = 1; No = 0	37
Went on placement	Yes = 1; No = 0	75
Study related work experience	Yes = 1; No = 0	60
Non-study related work experience	Yes = 1; No = 0	75
Went abroad for study or to work	Yes = 1; No = 0	54
Immigrant family	Yes = 1; No = 0	7
Father high educated	Yes = 1; No = 0	37
Mother high educated	Yes = 1; No = 0	45

Categorical variables		
	category	%
Parents' income	Much lower than average	3
	Lower than average	14
	Average	51
	Higher than average	25
	Much higher than average	8
Hours spent on study last year	1-10 hours	18
	11-20 hours	17
	21-30 hours	18
	31-40 hours	29
	41-50 hours	14
	> 50 hours	5
Grade last year (1-10 scale)	6	13
	6,5	11
	7	21
	7,5	15
	8	21
	8,5	13
	≥9	7

Table A.4.4 *Logit estimates of studying in the Netherlands*

Model	(1)		(2)		(3)		(4)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	.035	.813	-3.076	1.842	6.582	4.296	10.121	4.661
Country (dummy)								
Poland	-.329	.436	-.483	.456	-3.006**	.812	-3.490**	.864
Latvia	-.183	.378	-.132	.405	-2.573**	.772	-2.524**	.813
Hungary	-.204	.389	-.117	.421	-2.096**	.801	-2.123*	.853
Competencies								
To organise	.102	.110	.050	.116	-.030	.133	-.048	.137
To present	.038	.101	.067	.106	.061	.122	.069	.126
To co-operate	.056	.090	.073	.094	.080	.108	.095	.114
To self-direct	-.158*	.069	-.190*	.075	-.264**	.084	-.274**	.089
Personality traits								
Agreeableness			-.126	.069	-.149	.078	-.160	.084
Conscientiousness			.043	.051	.057	.059	.080	.063
Extraversion			.011	.058	-.053	.066	-.037	.069
Neuroticism			.068	.066	.079	.077	.080	.078
Openness to experience			.304**	.074	.333**	.084	.357**	.087
Other personal characteristics								
Gender					.444	.374	.456	.394
Age					-.057	.120	-.062	.125
Prior education					1.431**	.359	1.615**	.390
Grade last year					-.430**	.134	-.505**	.146
Hours spent on study last year					.195	.123	.247	.131
Volunteer in study organisation					-1.068**	.354	-1.119**	.378
Went on placement					-.173	.454	-.111	.486
Study related work experience					-.963*	.381	-1.103**	.399
Non-study related work experience					-.072	.368	-.161	.398
Went abroad for study or to work					-.834*	.419	-.744	.436
Family characteristics								
Immigrants							-2.133**	.712
Father high educated							-.192	.407
Mother high educated							-.714	.399
Parents' income							-.344	.203
Block χ^2			$\chi^2 (5) = 20.149^{**}$		$\chi^2 (10) = 45.804^{**}$		$\chi^2 (4) = 15.018^{**}$	
Model χ^2	$\chi^2 (7) = 7.551$		$\chi^2 (12) = 27.700^{**}$		$\chi^2 (22) = 73.504^{**}$		$\chi^2 (26) = 88.521^{**}$	
-2 Log likelihood	323.436		303.288		257.484		242.466*	
Nagelkerke r^2	.040		.140		.341		.399	

*p<.05 **p<.01

Table A.4.5 *Logit estimates of completing two questionnaires: Mobile group*

Model	(1)		(2)		(3)		(4)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	1.344	2.328	-6.118	6.023	-8.336	12.415	-18.652	15.711
Country (dummy)								
Poland	.495	1.060	.236	1.301	.659	1.947	1.876	2.314
Latvia	-.485	1.183	-.528	1.314	.636	2.269	1.590	2.673
Hungary	-.300	.990	-1.053	1.145	-.731	2.349	.710	2.597
Competencies								
To organise	.007	.266	.004	.300	-.008	.353	-.003	.393
To present	.045	.328	-.021	.403	.320	.544	.500	.679
To co-operate	.253	.235	.417	.272	.482	.312	.496	.372
To self-direct	-.100	.183	-.137	.232	-.274	.288	-.302	.340
Personality traits								
Agreeableness			-.257	.197	-.250	.217	-.147	.265
Conscientiousness			-.129	.147	-.181	.186	-.149	.211
Extraversion			.532**	.206	.493*	.233	.519	.266
Neuroticism			.360	.256	.361	.326	.230	.396
Openness to experience			.225	.219	.129	.289	-.217	.333
Other personal characteristics								
Gender					1.750	1.177	1.695	1.351
Age					.036	.356	.469	.473
Prior education					-.825	.939	-1.069	1.079
Grade last year					.335	.435	.602	.586
Hours spent on study last year					-.041	.348	-.157	.395
Volunteer in study organisation					.372	1.037	.998	1.274
Went on placement					.178	1.062	-.455	1.386
Study related work experience					.015	1.168	.701	1.449
Non-study related work experience					.909	1.356	.732	1.625
Went abroad for study or to work					.211	1.293	1.367	1.553
Family characteristics								
Immigrants							-1.776	2.088
Father high educated							2.356	1.555
Mother high educated							-2.890	1.581
Parents' income							.548	.691
Block χ^2			$\chi^2 (5) = 10.163$		$\chi^2 (10) = 6.222$		$\chi^2 (4) = 5.399$	
Model χ^2	$\chi^2 (7) = 4.025$		$\chi^2 (12) = 14.188$		$\chi^2 (220) = 20.410$		$\chi^2 (26) = 25.809$	
-2 Log likelihood	65.181		55.018		48.796		43.397	
Nagelkerke r^2	.083		.276		.383		.470	

* $p < .05$ ** $p < .01$

Table A.4.6 *Logit estimates of completing two questionnaires: Home group*

Model	(1)		(2)		(3)		(4)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	.757	1.146	2.171	2.303	4.795	5.293	4.265	5.541
Country (dummy)								
Poland	.076	.606	.092	.625	.003	.993	.080	1.050
Latvia	-.687	.551	-.757	.575	-1.910	1.145	-1.941	1.164
Hungary	1.234*	.492	1.326*	.529	.762	.996	.760	1.015
Competencies								
To organise	.049	.156	.055	.162	.112	.177	.101	.179
To present	.070	.135	.069	.138	.085	.148	.074	.151
To co-operate	.064	.123	.077	.128	.058	.141	.087	.144
To self-direct	-.136	.096	-.160	.100	-.145	.110	-.128	.113
Personality traits								
Agreeableness			-.031	.099	-.046	.109	-.056	.110
Conscientiousness			.091	.070	.101	.076	.093	.078
Extraversion			-.063	.077	-.025	.084	-.027	.084
Neuroticism			-.122	.084	-.119	.095	-.119	.095
Openness to experience			.004	.096	.010	.105	-.005	.109
Other personal characteristics								
Gender					-.147	.490	-.068	.496
Age					-.087	.137	-.085	.140
Prior education					.106	.496	.112	.529
Grade last year					-.102	.168	-.085	.184
Hours spent on study last year					-.069	.167	-.079	.168
Volunteer in study organisation					.767	.472	.730	.479
Went on placement					-1.643*	.740	-1.634*	.746
Study related work experience					.965*	.462	1.010*	.473
Non-study related work experience					.077	.491	.138	.499
Went abroad for study or to work					.379	.516	.363	.533
Family characteristics								
Immigrants							.856	.976
Father high educated							.262	.521
Mother high educated							-.375	.497
Parents' income							-.026	.268
Block χ^2			$\chi^2 (5) = 4.661$		$\chi^2 (10) = 14.648$		$\chi^2 (4) = 1.718$	
Model χ^2	$\chi^2 (7) = 23.152^{**}$		$\chi^2 (12) = 27.813^{**}$		$\chi^2 (22) = 42.460^{**}$		$\chi^2 (26) = 44.179^*$	
-2 Log likelihood	184.369		179.708		165.060		163.342	
Nagelkerke r^2	.177		.210		.308		.319	

* $p < .05$ ** $p < .01$

Table A.4.7 *Competence 'to organise': competence level at the end of the academic year (OLS)*

Model	(1)		(2)		(3)		(4)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	2.372**	.265	1.088	1.136	-3.066	2.042	-3.139	2.114
Studied in the Netherlands	2.151**	.208	2.133**	.218	2.255**	.241	2.213**	.251
Competence level at start	.602**	.059	.584**	.060	.569**	.063	.566**	.064
Country (dummy)								
Poland	-.192	.323	-.271	.325	-.844	.507	-.802	.525
Latvia	-.362	.241	-.314	.247	-.693	.477	-.687	.485
Hungary	-.467	.298	-.593	.312	-1.525**	.557	-1.516**	.575
Personality traits								
Agreeableness			.027	.050	.032	.050	.032	.051
Conscientiousness			.053	.036	.042	.037	.044	.038
Extraversion			.040	.043	.044	.044	.048	.046
Neuroticism			-.051	.046	-.039	.049	-.034	.050
Openness to experience			.022	.052	.020	.053	.018	.053
Other personal characteristics								
Gender					.226	.231	.244	.239
Age					.175*	.086	.170	.089
Prior education					.001	.241	-.016	.248
Grade last year					.132	.086	.131	.089
Hours spent on study last year					-.066	.077	-.059	.079
Volunteer in study organisation					-.368	.224	-.365	.227
Went on placement					.331	.312	.299	.322
Study related work experience					-.135	.227	-.109	.232
Non-study related work experience					.109	.230	.127	.234
Went abroad for study or to work					.074	.253	.069	.257
Family characteristics								
Immigrants							.247	.431
Father high educated							.121	.240
Mother high educated							.056	.230
Parents' income							-.010	.129
Adjusted R ²	.538		.546		.551		.543	
Regression	479.919		496.389		519.379		520.830	

*p<.05 **p<.01

Table A.4.8 *Competence 'to present': competence level at the end of the academic year (OLS)*

Model	(1)		(2)		(3)		(4)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	2.401**	.299	1.679	1.213	3.196	2.148	2.493	2.200
Studied in the Netherlands	2.062**	.218	1.915**	.229	1.929**	.252	2.030**	.260
Competence level at start	.573**	.061	.562**	.061	.581**	.064	.567**	.065
Country (dummy)								
Poland	.097	.343	.089	.346	.503	.532	.286	.547
Latvia	-.061	.276	-.131	.284	.660	.508	.550	.513
Hungary	-.136	.312	-.235	.327	.494	.583	.343	.597
Personality traits								
Agreeableness			-.094	.052	-.096	.052	-.096	.052
Conscientiousness			.052	.037	.062	.039	.053	.040
Extraversion			.014	.045	.016	.046	.007	.047
Neuroticism			-.014	.048	-.006	.051	-.013	.052
Openness to experience			.123*	.055	.131*	.055	.126*	.055
Other personal characteristics								
Gender					-.026	.242	.010	.249
Age					-.121	.090	-.093	.092
Prior education					-.208	.253	-.169	.258
Grade last year					-.025	.091	-.003	.092
Hours spent on study last year					.001	.081	-.014	.082
Volunteer in study organisation					-.118	.233	-.112	.234
Went on placement					.661*	.327	.608	.335
Study related work experience					-.406	.239	-.467	.242
Non-study related work experience					.296	.242	.272	.243
Went abroad for study or to work					.318	.265	.277	.268
Family characteristics								
Immigrants							-.310	.448
Father high educated							-.101	.249
Mother high educated							-.184	.239
Parents' income							.235	.135
Adjusted R ²	.501		.510		.517		.517	
Regression	458.378		476.408		503.810		512.234	

*p<.05 **p<.01

Table A.4.9 *Competence 'to co-operate': competence level at the end of the academic year (OLS)*

Model	(1)		(2)		(3)		(4)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	2.857**	.325	2.009	1.342	3.879	2.435	3.964	2.517
Studied in the Netherlands	1.911**	.240	1.901**	.255	2.049**	.287	2.048**	.298
Competence level at start	.504**	.058	.503**	.059	.497**	.062	.501**	.063
Country (dummy)								
Poland	-.075	.372	-.029	.379	.302	.607	.365	.626
Latvia	.177	.276	.277	.287	.806	.572	.840	.579
Hungary	-.644	.338	-.517	.359	.061	.658	.175	.677
Personality traits								
Agreeableness			.004	.058	.002	.059	.004	.060
Conscientiousness			-.017	.042	-.011	.044	-.006	.045
Extraversion			.075	.051	.092	.053	.089	.054
Neuroticism			.032	.054	.057	.058	.057	.059
Openness to experience			-.033	.061	-.043	.063	-.040	.063
Other personal characteristics								
Gender					.335	.276	.339	.285
Age					-.137	.103	-.143	.105
Prior education					.178	.288	.230	.295
Grade last year					.000	.103	-.015	.106
Hours spent on study last year					.027	.092	.035	.094
Volunteer in study organisation					-.281	.265	-.292	.267
Went on placement					.295	.374	.317	.385
Study related work experience					-.058	.269	-.051	.275
Non-study related work experience					-.134	.274	-.135	.278
Went abroad for study or to work					.015	.302	.047	.307
Family characteristics								
Immigrants							.250	.513
Father high educated							-.175	.286
Mother high educated							-.103	.274
Parents' income							-.007	.153
Adjusted R ²	.426		.420		.407		.398	
Regression	413.110		421.497		437.340		440.804	

*p<.05 **p<.01

Table A.4.10 *Competence 'to self-direct': competence level at the end of the academic year (OLS)*

Model	(1)		(2)		(3)		(4)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	3.355**	.369	2.565	1.386	2.520	2.519	1.988	2.589
Studied in the Netherlands	1.563**	.249	1.503**	.266	1.298**	.301	1.341**	.310
Competence level at start	.473**	.058	.470**	.060	.468**	.063	.479**	.064
Country (dummy)								
Poland	-.446	.385	-.468	.393	-.526	.629	-.718	.646
Latvia	.000	.286	-.065	.297	-.310	.596	-.417	.600
Hungary	.423	.349	.318	.370	.144	.685	-.108	.701
Personality traits								
Agreeableness			.028	.061	.020	.062	.020	.062
Conscientiousness			.021	.044	.004	.046	-.005	.047
Extraversion			-.054	.052	-.064	.055	-.077	.056
Neuroticism			-.005	.055	-.011	.060	-.026	.061
Openness to experience			.079	.064	.089	.065	.079	.066
Other personal characteristics								
Gender					-.227	.281	-.286	.289
Age					.031	.107	.062	.109
Prior education					-.247	.297	-.310	.303
Grade last year					.026	.107	.048	.109
Hours spent on study last year					.015	.095	-.003	.097
Volunteer in study organisation					.242	.274	.274	.275
Went on placement					-.288	.386	-.294	.395
Study related work experience					.479	.278	.416	.283
Non-study related work experience					.068	.284	.058	.286
Went abroad for study or to work					-.123	.316	-.197	.320
Family characteristics							-.395	.530
Immigrants							-.121	.294
Father high educated							.319	.284
Mother high educated							.161	.158
Parents' income								
Adjusted R ²	.328		.320		.305		.303	
Regression	296.184		303.776		320.662		331.357	

*p<.05 **p<.01

A.5 Tables chapter 5

Table A.5.1 *Data re-coding and data treatment before analysis*

Questionnaire		Recoding (- = no change)		Data treatment
Variable	Answer categories	Variable	Value	
Abroad for study	Yes (months), No	Went abroad for study	No = 0	-
Country of study	Country name		Yes, the Netherlands = 1 Yes, elsewhere=2	
Year of graduation	Year	-	-	Deleted <2006 (2), in 2012 (2) and missing (2)
Gender	Male, female	-	Male = 1 Female = 0	-
Year of birth	Year	Age	19-28	
Average grade at graduation	6, 6.5 , 7, 7.5 , 8, 8.5 , ≥9	--	-	Missing = median
Position in volunteer organisation	Yes (months), No	Had a position in organisation	Yes = 1 No = 0	Missing = No
Study related work experience during study	Yes (months), No	Had study related work experience	Yes = 1 No = 0	Missing=Yes
After graduation you enrolled in :	Bachelor or master programme, PhD, other post graduate, No	Completed additional programme	Yes = 1 No = 0	Missing = No
Gained qualification?	Yes/No			
Education father (ISCED 1-6)	National categories for ISCED 1+2, ISCED 3+4, ISCED 5+6	Father high educated (ISCED 5/6)	Yes = 1 No = 0	Missing = not high
Education mother (ISCED 1-6)	National categories for ISCED 1+2, ISCED 3+4, ISCED 5+6	Mother high educated (ISCED 5/6)	Yes = 1 No = 0	Missing = not high
Employment	Employed, Not employed job seeking, Studying, Other	Employed	Yes = 1 No = 0	Missing = No
Period of unemployment	Yes (months), No	Ever unemployed?	Yes = 1 No = 0	Missing = No

Table A.5.1 (Ctd.) *Data re-coding and data treatment before analysis*

Questionnaire		Recoding (- = no change)		Data treatment
Variable	Answer categories	Variable	Value	
Self-employed	Yes No	-	Yes = 1 No = 0	-
Type of education is most appropriate for work	PhD, Master, bachelor, lower than bachelor	Over-educated?	Yes = 1 No = 0	Missing = yes
Field of study most appropriate for work	Exclusively own field, own or related field, a completely different field, no particular field	(exclusively) own field?	Yes = 1 No = 0	Missing = yes
Supervising others	Yes (number), No	-	Yes = 1 No = 0	Missing=No
Use of knowledge and skills	Likert scale 1= not at all; 5= to a very high extent	-	-	Missing = median
International experience required	Likert scale 1= not at all; 5= to a very high extent	-	-	Missing = median
International experience makes work easier	Likert scale 1= not at all; 5= to a very high extent	-	-	Missing = median
International contacts in work	Likert scale 1= not at all; 5= to a very high extent	-	-	Missing = median
Satisfied with job	Likert scale 1= not at all; 5= very satisfied	-	-	Missing = median
Career prospects	Likert scale 1= very poor; 5= very good	-	-	Missing = median
Number of people in organisation	number	Size organisation	1-9 =1 10-99 = 2 100-999 = 3 >1000 =4	Missing=median
Working hours	Hours per week	ppp income per month	Amount (US\$)	-
Gross monthly earnings from job: Contract time	Amount (local currency)			
Gross monthly earnings from job: Overtime and extra	Amount (local currency)			
Income from second job	Amount (local currency)			

Table A.5.2 Descriptive statistics of variables used in analyses

Continuous variables				
	Mean	SD	Min	Max
Competence level				
To organise	4.5	2.2	0	10
To present	3.8	2.3	0	10
To co-operate	5.5	2.2	0	10
To self-direct	6.2	2.3	0	10
Agreeableness	15.0	2.4	7	20
Conscientiousness	14.8	2.7	6	20
Extraversion	13.6	3.0	5	20
Neuroticism	11.2	2.3	5	19
Openness to experience	11.1	2.3	5	20
Age	28.4	1.5	24	33

Binominal variables		
	category	% (1)
Gender	Male = 1 ; Female = 0	43
Volunteer in study organisation	Yes = 1; No = 0	37
Study related work experience	Yes = 1; No = 0	86
Completed post graduate programme	Yes = 1; No = 0	41
Father high educated	Yes = 1; No = 0	44
Mother high educated	Yes = 1; No = 0	47

Categorical variables		
		%
Average grade at graduation	6	9
(1-10 scale)	6,5	6
	7	7
	7,5	14
	8	35
	8,5	17
	≥9	12
Size organisation	1-9	18
	10-99	25
	100-999	35
	≥1000	22

Table A.5.3 *Probability of having studied in the Netherlands or elsewhere (Multinomial logistic regression)*

	Studied in the Netherlands versus Not studied abroad	Studied abroad, not in the Netherlands versus Not studied abroad
Term	Coefficient (SE)	Coefficient (SE)
Intercept	-10.755* (4.826)	-4.959 (6.925)
Country (dummy)		
Poland	3.117** (0.871)	5.700** (1.232)
Hungary	1.992* (0.823)	3.899** (1.074)
Latvia	2.456** (0.790)	4.226** (1.038)
Personality traits		
Agreeableness	-0.063 (0.068)	-0.019 (0.115)
Conscientiousness	0.044 (0.056)	0.048 (0.0860)
Extraversion	0.000 (0.060)	-0.005 (0.094)
Neuroticism	-0.043 (0.068)	-0.107 (0.118)
Openness to experience	0.130 (0.073)	0.231* (0.100)
Other personal characteristics		
Gender	-0.408 (0.350)	0.850 (0.581)
Age	0.175 (0.119)	-0.296 (0.179)
Grade at graduation	0.265 (0.153)	0.218 (0.215)
Volunteer in study organisation	-0.583 (0.307)	-1.452** (0.459)
Study related work experience	-0.814 (0.445)	-0.304 (0.735)
Completed post graduate programme	-0.438 (0.309)	-0.080 (0.493)
Family characteristics		
Father high educated	-0.507 (0.339)	-0.374 (0.511)
Mother high educated	-0.356 (0.330)	-0.268 (0.496)
Model χ^2	144.264	
-2 Log likelihood	468.646	
Nagelkerke R^2	.439	

*p<.05 **p<.01

Table A.5.4 *Statistics for the competence levels*

	N		Mean	SD	Min.	Max.	Range	Skewness	SE Skewness	Z-score		Kurtosis	SE Kurtosis	Z-score kurtosis
	Valid	Missing								skewness				
Students: reference group														
Organising (0-10) at start	178	0	2,9	2,0	,0	7,9	7,9	0,5	0,2	2,5 *		-0,7	0,4	-1,8
Presenting (0-10) at start	178	0	2,9	2,0	,0	7,9	7,9	0,4	0,2	2,4 *		-0,5	0,4	-1,4
Cooperating (0-10) at start	178	0	4,1	2,2	,0	10,0	10,0	0,1	0,2	0,6		-0,5	0,4	-1,3
Self-directing (0-10) - Z48a - Z412	178	0	5,6	2,1	,0	10,0	10,0	-0,2	0,2	-0,8		-0,5	0,4	-1,4
Organising (0-10) at end	130	48	4,0	1,8	,0	8,4	8,4	0,0	0,2	0,1		-0,5	0,4	-1,3
Presenting (0-10) at end	130	48	4,1	1,9	,7	8,6	7,9	0,0	0,2	0,0		-0,6	0,4	-1,3
Cooperating (0-10) at end	130	48	5,0	2,1	,0	9,1	9,1	-0,2	0,2	-0,8		-0,5	0,4	-1,1
Self-directing (0-10) at end - Z48a - Z412	130	48	6,0	2,1	1,0	10,0	9,0	-0,2	0,2	-0,7		-0,6	0,4	-1,4
Students: research group														
Organising (0-10) at start	85	0	3,2	1,5	,0	6,8	6,8	0,1	0,3	0,3		0,0	0,5	0,0
Presenting (0-10) at start	85	0	3,2	1,8	,0	7,1	7,1	0,3	0,3	1,1		-0,5	0,5	-0,9
Cooperating (0-10) at start	85	0	4,4	1,9	,0	8,2	8,2	-0,3	0,3	-1,1		-0,5	0,5	-0,9
Self-directing (0-10) - Z48a - Z412	85	0	5,2	2,1	1,0	10,0	9,0	0,1	0,3	0,3		-0,6	0,5	-1,2
Organising (0-10) at end	73	12	6,2	1,8	2,1	10,0	7,9	-0,1	0,3	-0,5		-0,3	0,6	-0,6
Presenting (0-10) at end	73	12	6,3	1,7	2,9	10,0	7,1	0,0	0,3	0,1		-0,4	0,6	-0,8
Cooperating (0-10) at end	73	12	7,0	1,7	2,7	10,0	7,3	-0,4	0,3	-1,6		-0,3	0,6	-0,5
Self-directing (0-10) at end - Z48a - Z412	73	12	7,4	1,6	4,0	10,0	6,0	-0,3	0,3	-1,1		-0,5	0,6	-0,8
Alumni														
Organising (0-10)	294	7	4,5	2,2	0,0	10,0	10,0	0,0	0,1	0,1		-0,6	0,3	-1,9
Presenting (0-10)	294	7	3,8	2,3	0,0	10,0	10,0	0,3	0,1	2,1 *		-0,7	0,3	-2,3
Cooperating (0-10)	294	7	5,5	2,2	0,0	10,0	10,0	-0,3	0,1	-2,2 *		-0,3	0,3	-1,2
Self-directing (-Z48-Z412) (0-10)	294	7	6,2	2,3	0,0	10,0	10,0	-0,3	0,1	-2,1 *		-0,6	0,3	-2,2
* p < .05														

Table A.5.5 *Parameter estimates and SE for four competencies (OLS)*

Parameter	Competence							
	To organise		To present		To co-operate		To self-direct	
	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	4.309	3.531	5.322	3.702	5.194	3.515	8.903*	3.626
Studied abroad or not								
Studied in the Netherlands	1.411**	.295	.825**	.309	1.065**	.293	1.526**	.303
Studied abroad else	-.503	.428	.133	.449	.577	.427	-.216	.440
Not abroad (ref)								
Country (dummy)								
Poland	-1.338*	.678	-1.733*	.711	-.674	.675	1.301	.697
Hungary	-.876	.627	-1.435*	.657	-.341	.624	2.221**	.643
Latvia	-.563	.588	-1.710**	.616	.060	.585	.469	.604
Personality traits								
Agreeableness	-.004	.059	-.035	.062	-.019	.059	-.067	.061
Conscientiousness	-.027	.047	.068	.050	.036	.047	.102*	.049
Extraversion	.030	.054	-.037	.057	.014	.054	.041	.056
Neuroticism	-.164**	.062	-.222**	.065	-.140*	.062	-.186**	.064
Openness to experience	.098	.060	.115	.063	.116	.060	.000	.062
Other personal characteristics								
Gender	.016	.295	.594	.309	.254	.293	-.449	.302
Age	.003	.106	-.050	.111	-.037	.105	-.085	.109
Average grade at graduation	.105	.127	.172	.133	.037	.126	-.181	.130
Volunteer in study organisation	.686**	.266	.479	.279	.210	.265	-.280	.273
Study related work experience	.550	.369	.958*	.387	.578	.368	.030	.379
Completed post graduate programme	-.119	.291	.150	.305	.676*	.289	.012	.299
Family characteristics								
Father high educated	.005	.306	-.136	.321	.079	.305	-.243	.314
Mother high educated	.371	.292	.100	.306	-.084	.291	-.141	.300
Job characteristics								
Over-educated	-.247	.354	-.114	.371	.331	.352	.134	.364
Within field of study	.095	.311	.230	.326	-.477	.310	.367	.319

*p<.05 **p<.01

Table A.5.6 *Probability of having employment (Logistic Regression)*

	(1)		(2)		(3)		(4)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	20.537	4.4*10 ³	16.874	4.0*10 ³	19.670	3.8*10 ³	-13.340	3.8*10 ³
Studied abroad or not								
Studied in the Netherlands	-.857	.775	.624	1.003	1.002	1.102	1.269	1.208
Studied abroad else	.911	1.221	.582	1.218	.123	1.429	1.176	1.766
Not abroad (ref)								
Country (dummy)								
Poland	-17.844	4.4*10 ³	-18.214	4.0*10 ³	-18.457	3.8*10 ³	-14.750	3.8*10 ³
Hungary	1.020	1.205	1.212	1.258	1.193	1.361	3.730	2.274
Latvia	.224	1.277	-.100	1.320	-.278	1.430	1.780	2.131
Competencies								
To organise			.348	.278	.362	.285	.366	.325
To present			.139	.281	.126	.293	.052	.326
To co-operate			.083	.235	.050	.244	.087	.286
To self-direct			.204	.178	.227	.184	.228	.232
Personality traits								
Agreeableness					-.073	.189	.030	.219
Conscientiousness					-.032	.179	.015	.183
Extraversion					-.088	.174	-.072	.206
Neuroticism					-.207	.204	-.153	.237
Openness to experience					.246	.212	.374	.239
Other personal characteristics								
Gender							-.430	1.373
Age							.712	.449
Average grade at graduation							.555	.479
Volunteer in study organisation							.768	.889
Study related work experience							.319	1.347
Completed post graduate programme							-.393	1.365
Family characteristics								
Father high educated							.878	1.107
Mother high educated							-.917	1.097
Block χ^2			10.643		3.198		7.169	
Model χ^2	9.802		20.445		23.643		30.812	
-2 Log likelihood	69.452		58.809		55.611		48.442	
Nagelkerke R ²	.140		.286		.329		.423	

Table A.5.7 *Job titles of graduates*

Job description		Studied in the Netherlands		Studied abroad, not in the Netherlands		Not studied abroad		Total	
ISCO	Job Title	Number	%	Number	%	Number	%	Number	%
1	Manager								
11	Senior officer	4	44	0	0	2	2	6	2
12	Commercial manager	7	6	2	5	3	3	12	5
13	Production manager	6	6	0	0	2	2	8	3
14	Service manager	1	1	0	0	1	1	2	1
Total managers		18	17	2	5	8	7	28	11
2	Professionals								
21	Engineering	7	6	1	2	8	7	16	6
22	Health	1	1	0	0	1	1	2	1
23	Teaching	11	10	3	7	4	4	18	7
24	Bussiness	39	36	8	18	42	38	89	34
25		1	1	0	0	1	1	2	1
26	Social	1	1	0	0	2	2	3	1
Total professionals		60	55	12	27	58	52	130	49
Total managers + professional		78	72	14	32	66	59	158	60
3	Associate professional								
31	Science, Engineering	4	4	5	11	2	2	11	4
33	Business, administration	17	16	16	36	38	34	71	27
34	Legal, social	2	2	1	2	2	2	5	2
35	ICT	0	0	2	5	1	1	3	1
4	Clerical support								
42	Customer services	0	0	1	2	0	0	1	1
43	Recording	0	0	1	2	0	0	1	1
44	Other	0	0	0	0	1	1	1	1
5	Service and sales worker								
51	Personal service	1	1	0	0	0	0	1	1
52	Sales	1	1	0	0	0	0	1	1
Total associate professional, clerical support, service and sales worker		25	23	26	59	44	39	95	36
61	Agricultural worker	4	4	4	9	1	1	9	3
71	Building worker	1	1	0	0	0	0	1	1
74		1	1	0	0	0	0	1	1
75	Electrical worker	0	0	0	0	1	1	1	1
Total other professions		6	6	4	9	2	2	12	5
		109		44		112		265	

Table A.5.8 *Probability of having experienced a period of unemployment (Logistic Regression)*

	(1)		(2)		(3)		(4)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	1.049	.853	1.067	1.024	-1.719	1.809	.283	4.484
Studied abroad or not								
Studied in the Netherlands	-.204	.277	-.296	.307	-.330	.313	-.347	.330
Studied abroad else	-.175	.426	-.161	.433	-.115	.444	-.191	.468
Not abroad (ref)								
Country (dummy)								
Poland	-.704	.437	-.619	.446	-.667	.462	-1.784*	.754
Hungary	-.217	.435	-.145	.450	-.255	.474	-1.157	.700
Latvia	-.768	.429	-.703	.446	-.698	.458	-1.586*	.651
Competencies								
To organise			-.059	.087	-.058	.089	-.080	.095
To present			-.032	.077	-.003	.079	.004	.083
To co-operate			.020	.084	.017	.085	.028	.090
To self-direct			.024	.064	.043	.066	.036	.069
Personality traits								
Agreeableness					.025	.060	.036	.063
Conscientiousness					.002	.050	.016	.052
Extraversion					.027	.055	.031	.057
Neuroticism					.141*	.066	.169*	.069
Openness to experience					.031	.063	.021	.064
Other personal characteristics								
Gender							.062	.319
Age							.027	.111
Average grade at graduation							-.257	.138
Volunteer in study organisation							.072	.286
Study related work experience							-.541	.397
Completed post graduate programme							.272	.313
Family characteristics								
Father high educated							.265	.322
Mother high educated							-.747*	.317
Block χ^2			1.323		5.620		11.977	
Model χ^2	7.682		9.005		14.625		26.602	
-2 Log likelihood	367.413		366.090		360.470		348.493	
Nagelkerke R^2	.037		.043		.070		.124	

*p<.05

Table A.5.9 *Probability of being self-employed. (Logistic Regression)*

	(1)		(2)		(3)		(4)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	-3.770*	1.334	-2.985	1.636	-.259	2.822	-5.556	7.588
Studied abroad or not								
Studied in the Netherlands	.106	.487	.045	.532	.072	.562	.286	.610
Studied abroad else	-.453	.712	-.468	.714	-.711	.728	-.387	.786
Not abroad (ref)								
Country (dummy)								
Poland	1.298	.747	1.163	.758	1.234	.788	-.120	1.339
Hungary	.223	.626	-.040	.644	.154	.687	-.908	1.187
Latvia	.510	.654	.698	.689	.686	.702	-1.392	1.171
Competencies								
To organise			.217	.148	.199	.155	.231	.165
To present			-.126	.124	-.132	.132	-.150	.136
To co-operate			.020	.142	-.010	.146	-.093	.170
To self-direct			-.208	.114	-.230	.124	-.230	.136
Personality traits								
Agreeableness					-.037	.112	-.036	.121
Conscientiousness					-.114	.083	-.102	.092
Extraversion					.029	.103	.098	.115
Neuroticism					-.189	.117	-.140	.130
Openness to experience					.115	.104	.147	.105
Other personal characteristics								
Gender							-1.067	.588
Age							.322	.192
Average grade at graduation							-.329	.263
Volunteer in study organisation							.362	.537
Study related work experience							-1.576	1.113
Completed post graduate programme							-.002	.577
Family characteristics								
Father high educated							-.794	.566
Mother high educated							-.421	.536
Block χ^2			5.171		7.376		13.700	
Model χ^2	4.126		9.297		16.673		30.700	
-2 Log likelihood	161.678		156.507		149.131		135.431	
Nagelkerke R^2	.015		.074		.131		.233	

*p<.05

Table A.5.10 *Probability of having the appropriate level of education for the current job (Logistic Regression)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	-2.928	2.167	-3.599	2.284	-.690	3.064	-15.078	6.869	-14.592*	6.938
Studied abroad or not										
Studied in the Netherlands	-.481	.371	-.434	.409	-.472	.417	-.314	.435	-.292	.443
Studied abroad else	.307	.620	.321	.627	.256	.652	.354	.706	.233	.717
Not abroad (ref)										
Country (dummy)										
Poland	2.365*	1.091	2.447*	1.096	2.295*	1.118	3.942	1.451	3.984**	1.462
Hungary	2.194*	1.094	2.300*	1.102	2.202	1.128	3.694	1.386	3.672**	1.393
Latvia	2.328*	1.085	2.327*	1.097	2.159	1.115	3.090	1.325	3.075*	1.336
Competencies										
To organise			-.141	.122	-.138	.125	-.139	.131	-.163	.133
To present			.018	.104	-.004	.106	.009	.110	.028	.113
To co-operate			.099	.117	.094	.117	.079	.125	.088	.128
To self-direct			.088	.086	.066	.087	.096	.092	.087	.094
Personality traits										
Agreeableness					-.084	.082	-.067	.083	-.074	.084
Conscientiousness					-.024	.068	-.043	.069	-.036	.070
Extraversion					.090	.073	.126	.076	.120	.077
Neuroticism					-.088	.087	-.060	.093	-.072	.096
Openness to experience					-.085	.088	-.079	.091	-.066	.092
Other personal characteristics										
Gender									-.036	.428
Age									.313	.166
Average grade at graduation									.289	.199
Volunteer in study organisation									.298	.385
Study related work experience									-.025	.511
Completed post graduate programme									.357	.428

Table A.5.10 (Ctd) *Probability of having the appropriate level of education for the current job (Logistic Regression)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Family characteristics										
Father high educated									.215	.463
Mother high educated									-.561	.459
Size organisation (dummy)										
10-99									-.834	.595
100-999									-.295	.578
≥1000									-.338	.625
Block χ^2			2.541		4.332		7.132		2.347	
Model χ^2	14.329		16.870		21.203		28.335		30.683	
-2 Log likelihood	227.503		224.962		220.630		213.497		211.150	
Nagelkerke R ²	.052		.103		.128		.169		.182	

*p<.05 **p<.001

Table A.5.11 *Probability of having the current job within the field of study (Logistic Regression)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	-.363	1.089	-.601	1.273	-1.756	2.021	-.480	.381	-.526	.389
Studied abroad or not										
Studied in the Netherlands	.069	.323	.189	.363	.133	.372	.326	.398	.235	.406
Studied abroad else	-.139	.503	-.008	.517	.034	.529	-.021	.559	.021	.572
Not abroad (ref)										
Country (dummy)										
Poland	1.617*	.530	1.641*	.545	1.663*	.556	2.087*	.928	2.235*	.943
Hungary	-.526	.626	-.405	.642	-.454	.663	-.034	.915	.133	.927
Latvia	1.019	.525	.797	.548	.681	.555	.743	.783	.701	.795
Competencies										
To organise			.019	.104	.028	.107	.038	.113	.041	.115
To present			.129	.090	.144	.092	.121	.097	.143	.099
To co-operate			-.213*	.104	-.223*	.105	-.263*	.110	-.307**	.115
To self-direct			.133	.078	.124	.081	.155	.085	.164	.086
Personality traits										
Agreeableness					.079	.070	.088	.074	.090	.075
Conscientiousness					.034	.057	.039	.060	.032	.061
Extraversion					.079	.065	.066	.069	.077	.070
Neuroticism					.001	.076	-.001	.080	.018	.083
Openness to experience					-.128	.077	-.124	.081	-.139	.085
Other personal characteristics										
Gender							-.100	.137	-.108	.137
Age							-1.003*	.398	-.973*	.406
Average grade at graduation							-.124	.353	-.078	.357
Volunteer in study organisation							.043	.463	.034	.476
Study related work experience							-.527	.366	-.589	.377
Completed post graduate programme							.727	5.445	.235	.494

Table A.5.11 (Ctd.) *Probability of having the current job within the field of study (Logistic Regression)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Family characteristics										
Father high educated							.472	.374	.482	.382
Mother high educated							.161	.170	.137	.173
Size organisation (dummy)										
10-99									.347	.478
100-999									1.086	.557
≥1000									.506	5.468
Block χ^2			6.966		7.501		12.659		4.605	
Model χ^2	30.697		37.663		45.164		57.823		62.428	
-2 Log likelihood	283.843		276.877		169.376		256.717		252.112	
Nagelkerke R ²	.157		.190		.225		.282		.302	

*p<.05 **p<.001

Table A.5.12 *Probability of supervising others within the current job (Logistic Regression)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	-2.079*	.855	-3.752**	1.131	-1.537	1.900	-10.668*	5.218	-10.371*	5.231
Studied abroad or not										
Studied in the Netherlands	-.020	.294	.522	.340	.593	.346	.726*	.371	.743*	.376
Studied abroad else	-.548	.444	-.500	.471	-.442	.481	-.197	.521	-.184	.522
Not abroad (ref)										
Country (dummy)										
Poland	.748	.434	.646	.464	.720	.482	1.127	.821	1.108	.824
Hungary	1.355**	.456	1.510**	.492	1.690**	.529	2.178**	.813	2.206**	.822
Latvia	.185	.422	.268	.464	.268	.478	.252	.706	.311	.706
Competencies										
To organise			.424**	.100	.463**	.105	.517**	.113	.513**	.114
To present			-.104	.083	-.135	.086	-.175	.093	-.188*	.095
To co-operate			-.071	.094	-.053	.096	-.095	.102	-.074	.104
To self-direct			.008	.073	-.013	.075	.010	.080	.011	.080
Personality traits										
Agreeableness					.001	.066	.019	.070	.023	.070
Conscientiousness					.051	.054	.063	.057	.065	.057
Extraversion					-.075	.061	-.071	.065	-.081	.066
Neuroticism					-.102	.072	-.088	.077	-.102	.078
Openness to experience					-.099	.068	-.130	.071	-.136	.072
Other personal characteristics										
Gender							-.661	.358	-.667	.360
Age							.305*	.130	.310*	.130
Average grade at graduation							.000	.150	.026	.152
Volunteer in study organisation							-.169	.317	-.195	.319
Study related work experience							-.713	.451	-.769	.457
Completed post graduate programme							-.436	.341	-.461	.354

Table A.5.12 (Ctd) *Probability of supervising others within the current job (Logistic Regression)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Family characteristics										
Father high educated							.540	.361	.592	.365
Mother high educated							-.179	.348	-.137	.353
Size organisation (dummy)										
10-99									-.260	.452
100-999									-.581	.435
≥1000									-.577	.495
Block χ^2			24.854		7.475		14.387		2.202	
Model χ^2	13.860		38.714		46.189		60.577		62.778	
-2 Log likelihood	340.310		315.455		307.980		293.593		291.391	
Nagelkerke R ²	.069		.184		.217		.277		.286	

*p<.05 **p<.001

Table A.5.13 *Characteristics affecting the use of knowledge and skills in the current job (OLS)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	3.199**	.197	2.477**	.265	1.218	.719	2.892	1.702	2.860	1.711
Studied abroad or not										
Studied in the Netherlands	-.013	.137	-.231	.146	-.220	.147	-.239	.150	-.238	.152
Studied abroad else	-.038	.201	-.088	.199	-.098	.200	-.184	.208	-.196	.209
Not abroad (ref)										
Country (dummy)										
Poland	.241	.205	.328	.204	.307	.209	.198	.327	.180	.327
Hungary	.690**	.203	.677**	.206	.704**	.216	.531	.308	.521	.310
Latvia	.394	.202	.533*	.205	.564**	.208	.511	.284	.539	.285
Competencies										
To organise			.005	.041	.011	.041	-.002	.042	-.003	.043
To present			.080*	.036	.076*	.037	.063	.037	.070	.037
To co-operate			.016	.040	.012	.040	.030	.040	.026	.041
To self-direct			.054	.031	.045	.031	.051	.032	.051	.032
Personality traits										
Agreeableness					.013	.028	.016	.028	.014	.028
Conscientiousness					.042	.023	.038	.023	.039	.023
Extraversion					.019	.026	.020	.026	.020	.026
Neuroticism					.009	.030	.013	.030	.012	.031
Openness to experience					.012	.029	.016	.029	.021	.029
Other personal characteristics										
Gender							.203	.142	.194	.143
Age							-.080	.050	-.078	.050
Average grade at graduation							.107	.061	.099	.061
Volunteer in study organisation							-.033	.130	-.047	.130
Study related work experience							.105	.178	.082	.180
Completed post graduate programme							-.307	.140	-.344*	.144

Table A.5.13 (Ctd.) *Characteristics affecting the use of knowledge and skills in the current job (OLS)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Family characteristics										
Father high educated							-.049	.144	-.026	.145
Mother high educated							.110	.139	.124	.140
Size organisation (dummy)										
10-99									-.143	.185
100-999									.097	.178
≥1000									.087	.199
R ²	.055		.119		.140		.186		.194	
Adjusted R ²	.037		.088		.092		.112		.110	
Regression	14.650		31.457		37.061		49.072		51.331	

*p<.05 **p<.001

Table A.5.14 *Characteristics affecting whether international experience is required for the current job (OLS)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	1.389**	.270	.670	.366	1.394	.999	-.258	2.387	-.166	2.408
Studied abroad or not										
Studied in the Netherlands	1.308**	.188	1.054**	.201	1.050**	.204	.922**	.210	.899**	.214
Studied abroad else	1.037**	.276	.962**	.275	.908**	.279	.758**	.291	.737*	.294
Not abroad (ref)										
Country (dummy)										
Poland	.848**	.281	1.012**	.282	.999**	.291	.261	.458	.269	.460
Hungary	.499	.279	.586*	.284	.543	.300	-.129	.432	-.098	.436
Latvia	.851**	.277	.983**	.283	.977**	.290	.476	.399	.474	.402
Competencies										
To organise			.072	.056	.061	.057	.035	.059	.033	.060
To present			.069	.049	.063	.051	.057	.052	.057	.052
To co-operate			.032	.055	.029	.055	.031	.056	.039	.057
To self-direct			-.007	.042	-.009	.044	.014	.045	.011	.045
Personality traits										
Agreeableness					-.011	.039	-.013	.040	-.016	.040
Conscientiousness					-.019	.032	-.025	.032	-.022	.033
Extraversion					.009	.036	.013	.036	.011	.036
Neuroticism					-.045	.042	-.028	.043	-.031	.043
Openness to experience					.021	.040	.031	.040	.035	.041
Other personal characteristics										
Gender							-.034	.200	-.049	.201
Age							.037	.070	.037	.070
Average grade at graduation							.146	.085	.149	.086
Volunteer in study organisation							.275	.182	.276	.183
Study related work experience							.094	.250	.081	.253
Completed post graduate programme							.029	.197	-.010	.203

Table A.5.14 (Ctd.) *Characteristics affecting whether international experience is required for the current job (OLS)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Family characteristics										
Father high educated							.231	.202	.240	.205
Mother high educated							.046	.195	.056	.197
Size organisation (dummy)										
10-99									-.173	.261
100-999									-.045	.250
≥1000									-.220	.281
R ²	.168		.212		.2219		.248		.251	
Adjusted R ²	.152		.184		.176		.179		.172	
Regression	94.494		119.059		123.392		139.181		140.870	

*p<.05 **p<.001

Table A.5.15 *Characteristics affecting whether international experience makes the job easier (OLS)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	1.593**	.274	.739*	.368	1.757	1.003	-.040	2.396	.016	2.397
Studied abroad or not										
Studied in the Netherlands	1.505**	.191	1.173**	.202	1.182**	.205	1.063**	.211	1.024**	.213
Studied abroad else	.923**	.280	.871**	.276	.830**	.280	.702*	.292	.653*	.292
Not abroad (ref)										
Country (dummy)										
Poland	.830**	.285	.995**	.283	1.029**	.292	.410	.460	.403	.458
Hungary	.728*	.283	.782**	.285	.773*	.301	.210	.434	.249	.434
Latvia	.915**	.281	1.007**	.285	1.032**	.291	.614	.401	.643	.400
Competencies										
To organise			.140*	.057	.127*	.058	.103	.059	.101	.060
To present			.034	.050	.033	.051	.031	.052	.038	.052
To co-operate			.023	.055	.024	.056	.024	.057	.031	.057
To self-direct			.002	.043	.001	.044	.019	.045	.014	.045
Personality traits										
Agreeableness					-.018	.039	-.015	.040	-.021	.040
Conscientiousness					-.034	.032	-.042	.032	-.036	.033
Extraversion					.025	.036	.030	.036	.027	.036
Neuroticism					-.038	.042	-.018	.043	-.022	.043
Openness to experience					-.010	.040	-.003	.041	.009	.041
Other personal characteristics										
Gender							-.102	.200	-.135	.200
Age							.038	.070	.041	.070
Average grade at graduation							.123	.086	.117	.086
Volunteer in study organisation							.087	.182	.075	.182
Study related work experience							.228	.251	.179	.252
Completed post graduate programme							.030	.198	-.070	.202

Table A.5.15 (Ctd.) *Characteristics affecting whether international experience makes the job easier (OLS)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Family characteristics										
Father high educated							.169	.202	.214	.204
Mother high educated							.228	.196	.263	.196
Size organisation (dummy)										
10-99									-.375	.260
100-999									.094	.249
≥1000									-.221	.279
R ²	.211		.269		.278		.304		.318	
Adjusted R ²	.196		.244		.237		.241		.247	
Regression	129.408		164.870		170.066		186.070		194.694	

*p<.05 **p<.001

Table A.5.16 *Characteristics affecting whether the jobs contains international contacts (OLS)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	1.408**	.280	1.186**	.385	2.885**	1.045	4.158	2.516	4.170	2.527
Studied abroad or not										
Studied in the Netherlands	1.561**	.195	1.443**	.212	1.408**	.213	1.352**	.222	1.306**	.224
Studied abroad else	.780**	.287	.728*	.288	.700*	.292	.531	.307	.487	.308
Not abroad (ref)										
Country (dummy)										
Poland	1.157**	.292	1.331**	.296	1.290**	.304	1.044*	.483	1.048*	.483
Hungary	1.172**	.290	1.339**	.298	1.261**	.314	1.052*	.455	1.101*	.457
Latvia	.919**	.288	1.021**	.297	.972**	.303	.743	.421	.756	.422
Competencies										
To organise			.086	.059	.082	.060	.062	.062	.063	.063
To present			.051	.052	.038	.053	.032	.054	.033	.055
To co-operate			.003	.058	.003	.058	.010	.059	.018	.060
To self-direct			-.072	.045	-.074	.046	-.066	.047	-.071	.047
Personality traits										
Agreeableness					-.025	.041	-.024	.042	-.029	.042
Conscientiousness					-.016	.033	-.022	.034	-.017	.034
Extraversion					-.032	.037	-.037	.038	-.040	.038
Neuroticism					-.066	.044	-.059	.045	-.061	.046
Openness to experience					.021	.042	.023	.043	.033	.043
Other personal characteristics										
Gender							-.164	.210	-.191	.211
Age							-.055	.074	-.054	.074
Average grade at graduation							.066	.090	.063	.090
Volunteer in study organisation							.107	.191	.106	.192
Study related work experience							.332	.264	.292	.265
Completed post graduate programme							-.104	.208	-.182	.213

Table A.5.16 (Ctd.) *Characteristics affecting whether the jobs contains international contacts (OLS)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Family characteristics										
Father high educated							.084	.213	.120	.215
Mother high educated							.059	.205	.088	.206
Size organisation (dummy)										
10-99									-.225	.274
100-999									.106	.262
≥1000									-.244	.295
R ²	.248		.271		.286		.301		.310	
Adjusted R ²	.233		.248		.246		.238		.238	
Regression	166.548		183.722		192.191		202.559		208.173	

*p<.05 **p<.001

Table A.5.17 *Characteristics affecting work satisfaction (OLS)*

	(1)		(2)		(3)		(4)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	4.048**	.181	3.304	.239	3.793*	.643	2.925	1.548
Studied abroad or not								
Studied in the Netherlands	.147	.126	-.112	.131	-.122	.131	-.157	.136
Studied abroad else	.053	.185	.028	.179	-.009	.179	-.063	.189
Not abroad (ref)								
Country (dummy)								
Poland	-.236	.189	-.105	.184	-.172	.187	-.176	.297
Hungary	-.373*	.187	-.366	.185	-.444*	.193	-.446	.280
Latvia	-.451*	.186	-.282	.185	-.279	.186	-.269	.259
Competencies								
To organise			.061	.037	.061	.037	.052	.038
To present			.088*	.032	.069*	.033	.074*	.033
To co-operate			-.024	.036	-.025	.036	-.024	.037
To self-direct			.045	.028	.030	.028	.032	.029
Personality traits								
Agreeableness					.009	.025	.012	.026
Conscientiousness					.027	.020	.027	.021
Extraversion					-.009	.023	-.008	.023
Neuroticism					-.073**	.027	-.066*	.028
Openness to experience					.011	.026	.011	.026
Other personal characteristics								
Gender							-.143	.129
Age							.026	.046
Average grade at graduation							-.025	.055
Volunteer in study organisation							.007	.118
Study related work experience							.140	.162
Completed post graduate programme							-.027	.128
Family characteristics								
Father high educated							.118	.131
Mother high educated							.080	.126
R ²	.036		.139		.173		.189	
Adjusted R ²	.017		.109		.127		.115	
Regression	7.902		30.572		37.885		41.427	

*p<.05 **p<.001

Table A.5.18 *Characteristics affecting career prospects (OLS)*

	(1)		(2)		(3)		(4)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	3.720**	.203	3.107**	.275	4.302**	.719	3.009	1.736
Studied abroad or not								
Studied in the Netherlands	.309*	.141	.084	.151	.064	.147	.005	.153
Studied abroad else	.359	.208	.337	.206	.231	.201	.189	.212
Not abroad (ref)								
Country (dummy)								
Poland	-.086	.212	.034	.212	-.078	.209	-.374	.333
Hungary	-.637**	.210	-.617**	.213	-.773**	.216	-1.069**	.314
Latvia	-.076	.209	.051	.213	.026	.209	-.129	.290
Competencies								
To organise			.072	.042	.061	.041	.051	.043
To present			.062	.037	.035	.037	.035	.038
To co-operate			-.017	.041	-.023	.040	-.021	.041
To self-direct			.025	.032	.008	.031	.017	.032
Personality traits								
Agreeableness					.003	.028	.005	.029
Conscientiousness					.011	.023	.009	.024
Extraversion					-.010	.026	-.006	.026
Neuroticism					-.131**	.030	-.122**	.031
Openness to experience					.051	.029	.057	.029
Other personal characteristics								
Gender							.022	.145
Age							.033	.051
Average grade at graduation							.062	.062
Volunteer in study organisation							.039	.132
Study related work experience							-.010	.182
Completed post graduate programme							-.049	.143
Family characteristics								
Father high educated							.191	.147
Mother high educated							-.008	.142
R ²	.074		.132		.209		.221	
Adjusted R ²	.057		.102		.165		.151	
Regression	21.403		38.044		60.181		63.683	

*p<.05 **p<.001

Table A.5.19 *Characteristics affecting the 'log ppp income' (outliers excluded) (OLS)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Constant	3.320**	.041	3.346**	.061	3.373**	.158	.032	4.273	.666	4.310
Studied abroad or not										
Studied in the Netherlands	.075*	.029	.083**	.032	.085**	.032	.089*	.035	.099**	.035
Studied abroad else	.035	.041	.028	.041	.024	.042	.036	.045	.041	.045
Not abroad (ref)										
Country (dummy)										
Poland	-.021	.044	-.014	.045	-.016	.047	-.021	.072	-.022	.071
Hungary	.030	.042	.047	.044	.054	.047	.044	.067	.050	.068
Latvia	-.118**	.041	-.125**	.043	-.123	.044	-.123	.063	-.121	.063
Competencies										
To organise			.000	.008	.000	.009	-.001	.009	-.004	.009
To present			-.002	.008	-.002	.008	-.002	.008	.003	.008
To co-operate			.008	.008	.007	.008	.007	.009	.005	.009
To self-direct			-.012	.006	-.013*	.007	-.014*	.007	-.013	.007
Personality traits										
Agreeableness					-.008	.006	-.009	.007	-.007	.007
Conscientiousness					.004	.005	.004	.005	.003	.005
Extraversion					.003	.006	.003	.006	.002	.006
Neuroticism					-.003	.006	-.003	.007	-.002	.007
Openness to experience					.005	.006	.005	.006	.006	.007
Other personal characteristics										
Gender							.014	.033	.008	.033
Age							.229	.304	.181	.307
Age squared							-.004	.005	-.003	.005
Average grade at graduation							-.003	.014	-.005	.014
Volunteer in study organisation							.001	.030	.001	.030
Study related work experience							-.020	.038	-.028	.038
Completed post graduate programme							-.014	.031	-.009	.032

Table A.5.19 (Ctd.) *Characteristics affecting the 'log ppp income' (outliers excluded) (OLS)*

	(1)		(2)		(3)		(4)		(5)	
Term	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Family characteristics										
Father high educated							-.013	.032	-.003	.032
Mother high educated							.007	.031	.000	.031
Size organisation (dummy)										
10-99									.032	.039
100-999									.039	.038
≥1000									.082	.044
Supervising others									.050	.029
R2	.145		.146		.178		.190		.219	
Adjusted R2	.123		.123		.114		.081		.092	
Regression	0.947		1.065		1.158		1.239		1.425	

*p<.05 **p<.001

Table A.5.20 *Job titles of graduates who also indicated their income*

Job description		Studied in the Netherlands		Studied abroad, not in the Netherlands		Not studied abroad		Total	
ISCO	Job Title	Number	%	Number	%	Number	%	Number	%
1	Manager								
11	Senior officer	3	5	0	0	1	1	4	2
12	Commercial manager	3	5	2	6	3	3	8	4
13	Production manager	1	2	0	0	1	1	2	1
14	Service manager	0	0	0	0	1	1	1	1
Total managers		7	6%	2	6%	6	6%		
2	Professionals								
21	Engineering	5	8	1	3	4	4	10	5
22	Health	1	2	0	0	1	1	2	1
23	Teaching	9	14	2	6	4	4	15	8
24	Bussiness	17	27	5	14	39	42	61	32
26	Social	1	2	0	0	2	2	3	2
Total professionals		33	57%	8	23%	50	53%		
Total managers + professional		40	63%	10	29%	56	60%		
3	Associate professional								
31	Science, Engineering	3	5	5	14	2	2	10	5
33	Business, administration	14	22	11	31	32	34	57	30
34	Legal, social	2	3	1	3	1	1	4	2
35	ICT	0	0	2	6	1	1	3	2
4	Clerical support								
42	Customer services	0	0	1	3	0	0	1	1
43	Recording	0	0	1	3	0	0	1	1
44	Other	0	0	0	0	1	01	1	1
5	Service and sales worker								
51	Personal service	1	2	0	0	0	0	1	1
52	Sales	1	2	0	0	0	0	1	1
Total associate professional, clerical support, service and sales worker		21	33%	21	60%	37	39%	79	
61	Agricultural worker	2	3	4	11	0	0	6	3
71	Building worker	1	2	0	0	0	0	1	1
75	Electrical worker	0	0	0	0	1	1	1	1
Total other professions		3	5%	4	11%	1	1%	8	
		64		35		94		193	

Table A.5.21 *Transforming financial data*

Before conducting the analyses we transformed the categories ‘smaller than’ into a value of (mean - 2*SD), but not smaller than 0, and the categories ‘greater than’ into a value (mean +2*SD).

Description	Mean	SD	Data transformation	Nr respondents changed	Total number respondents
CAH tuition			-	-	64
Books (=30)			-	-	64
Other costs study	14.2	7.98	<5 = 0 >30 = 30	3 10	63
CAH accommodation			-	-	64
CAH other living	205.36	67.90	<150 = 70 >300 = 341	4 4	64
CAH travel	82.14	45.63	< 25 = 0 >150 = 173	3 19	64
Misc costs	17.14	7.90	<5 = 1 >30 = 33	8 14	64
Income scholarships	281.03	116.81	<100 = 47 >400 = 515	19 15	63
Income jobs	107.81	63.06	<50 = 0 >125 = 234	27 20	63
Home tuition			-	-	63
Home books			-	-	62
Home other costs	13.28	13.93	<5 = 0	2	63
Home accomm			-	-	63
Home other living	147.17	103.77	<150 = 0	3	63
Home travel	62.58	54.86	>150 = 172	2	62
Misc costs	18.88	38.50	<5 = 0 >30 = 96	2 1	62
Home scholarship	52.59	89.06	<100 = 0	4	62
Home income jobs	129.33	224.64	<50 = 0 >125 = 579	3 1	61

Table A.5.22 *Costs and income of studying in the Netherlands and at home university*

	from Poland n=9		from Hungary n=13		from Latvia n=19		from France n=20		All students n=61	
	Mean	Per year	Mean	Per year	Mean	Per year	Mean	Per year	Mean	Per year
The Netherlands										
Annual costs										
Tuition fee		1681		1844		1691		1705		1727
Books		30		30		30		30		30
Monthly costs										
Other costs study	16	160	15	150	19	190	14	140	16	160
Accommodation	200	2000	225	2250	209	2090	279	2790	234	2341
Living costs	176	1760	226	2260	207	2070	205	2050	206	2056
Travel costs	99	990	88	880	98	980	122	1220	104	1040
Miscellaneous costs	21	210	11	110	18	180	23	230	18	184
Total costs		6831		7524		7231		8165		7538
Income per month										
Scholarship	211	2110	299	2990	407	4070	140	1400	267	2670
Jobs	191	1910	114	1140	121	1210	28	280	99	990
Total income		4020		4130		5280		1680		3660
Costs-income in the Netherlands		2811		3394		1951		6485		3878

Home university	from Poland n=9		from Hungary n=13		from Latvia n=19		from France n=20		All students n=61	
	Mean	Per year	Mean	Per year	Mean	Per year	Mean	Per year	Mean	Per year
Annual costs										
Tuition fee		0		31		773		1919		877
Books		4		28		4		39		21
Monthly costs										
Other costs study	2	20	12	120	15	150	17	170	13	130
Accommodation	85	850	41	410	44	440	181	1810	94	943
Living costs	131	1310	88	880	158	1580	165	1650	142	1415
Travel costs	97	970	47	470	53	530	76	760	66	656
Miscellaneous costs	50	500	5	50	9	90	26	260	20	195
total costs		3654		1989		3567		6608		4237
Income per month										
Scholarship	50	500	73	730	39	390	30	300	45	451
Jobs	194	1940	86	860	103	1030	154	1540	130	1296
Total income		2440		1590		1420		1840		1747
Costs-income at home university		1214		399		2147		4768		2490
Net costs study in the Netherlands		1597		2995		-196		1717		1388

Annex B Questionnaires

B.1 Questionnaire students at start of academic year (English version)

QUESTIONNAIRE HANS CORTEN

- ▶ The data of this questionnaire will only be seen by Hans Corten and not used for any other purpose.
- ▶ At the end of this academic year, you will be asked to fill in a second questionnaire. We need your name only to connect the answers of the two questionnaires. After this, this page with your name will be removed.

Please fill in your name

- ▶ Please mark your answer by placing a cross in the relevant box.
Some questions allow multiple answers. Where this is the case, this is clearly indicated.
- ▶ If you would like to correct your answer, completely blacken the box, and mark the right answer by placing a cross there.
- ▶ If you are unsure of the exact answer to some questions, please estimate the answer to the best of your ability.

Thank you very much for your cooperation!

A: About your professional activities during your study

► All statements describe a professional activity. That is to say: something you have done in your study (including company placements) and in your professional work (activities related to your study, like volunteer work in your professional field).

► Do not skip a statement

► Answer YES only if you have completed the activity exactly as is written down. In all other cases answer NO.

► There are NO wrong answers! Every answer is RIGHT!

1	I guided some colleagues step by step through a difficult process.	YES	NO
2	I chose almost exclusively these professional activities that fit my personal development goals.	YES	NO
3	I organised a change process in response to social developments.	YES	NO
4	This year I cooperated with people I never met before.	YES	NO
5	I was responsible for the allocation of people, materials and funds to tasks.	YES	NO
6	I have made a plan for executing a task although many things were not yet clear.	YES	NO
7	I regularly exchanged knowledge and experiences with professionals from other companies and whenever I found it necessary I co-operated with them.	YES	NO
8	I determined whether my personal qualities fit in another business culture.	YES	NO

9	Together with somebody from another study programme I answered a question for which we had to combine our professional knowledge.	YES	NO
10	I proposed an improvement after a systematic analysis.	YES	NO
11	I organised a meeting with participants from various countries.	YES	NO
12	I did not accept a task because I knew the level was too high for me.	YES	NO
13	In planning a project, I have, from the beginning, taken into account that there would be dropouts and newcomers.	YES	NO
14	For some months I worked in a long-term project with people who had been working on the project for a longer period.	YES	NO
15	I develop new methods to measure and optimize things.	YES	NO
16	I convinced the audience of the benefits of the proposed strategic choices.	YES	NO
17	I determined what tasks are in line with the capabilities of my team.	YES	NO
18	I determined in what direction I will further develop myself the next 3 years.	YES	NO
19	Together with people, with opposite interests, I came to results that were acceptable to all.	YES	NO
20	I made a planning for a group assignment and co-ordinated the implementation.	YES	NO
21	In my capacity of responsible manager, I explained the company strategy to the personnel in understandable words.	YES	NO
22	I decided what I was going to learn and discussed this with my mentor.	YES	NO

23	I determined my learning pathway myself.	YES	NO
24	For a report I wrote a chapter for which I was the only one to have the required expertise.	YES	NO
25	I stood firm in a situation with ever changing circumstances.	YES	NO
26	I developed and organised an idea into a new business activity.	YES	NO
27	I organised a meeting for national and international experts in order to discuss the topic from different angles.	YES	NO
28	I formulated my development goals for the coming 3 years.	YES	NO
29	I chose a position within the company in which I can develop myself best.	YES	NO
30	I adjusted the work processes and activities in a changing environment.	YES	NO
31	I gave a presentation about a topic for experts who were critical towards this topic.	YES	NO
32	I have made a planning for the next 5 to 10 years.	YES	NO
33	I developed a questionnaire to review my performance.	YES	NO
34	In a report I compared the development of a non-agricultural sector with the developments in agriculture.	YES	NO
35	I made an action plan for the execution of an assignment that took some months.	YES	NO
36	I created an agreement between people from different academic fields.	YES	NO

37	I converted long term objectives into clear activities.	YES	NO
38	I successfully completed a presentation where unexpected things happened.	YES	NO
39	I gave an oral presentation for stakeholders, some of whom I did not know before.	YES	NO
40	I explained to somebody how to develop his enterprise.	YES	NO
41	I have implemented the more efficient organisation of a non-agricultural company (as much as possible) into our company.	YES	NO
42	Halfway a group assignment I made a proposal to improve co-operation.	YES	NO
43	In a group I saw to it that the thinking was at the theoretical model level.	YES	NO
44	With a colleague I worked on a task that consisted of a number of subtasks that could not be executed independently from each other.	YES	NO
45	I made the planning for a project in which several people were involved.	YES	NO
46	I used several didactical methods in one oral presentation to explain a complex topic.	YES	NO
47	I summarized scientific texts and related them to the professional practice.	YES	NO
48	I took additional training to better perform my professional activities.	YES	NO
49	I wrote a professionally relevant paper in which I adapted the style of writing to the readers.	YES	NO
50	I participated actively in a group discussion about an ethical issue.	YES	NO

51	In front of stakeholders in the organisation I verbally set out my arguments to support my ideas.	YES	NO
52	I made a methodical analysis of the organisation and proposed systematic restructuring.	YES	NO
53	I determined which job fits my capacities.	YES	NO
54	I formulated clear deadlines for a team or an organisation.	YES	NO
55	As project leader I presented the core of an extensive project to its financiers.	YES	NO
56	For a report I used a set-up that was appropriate to my topic instead of the prescribed set-up.	YES	NO

B: About yourself

► Indicate on every scale below which word describes you best.

► Circle the most suitable number

► If both words are evenly true, circle the 3

Restless	1	2	3	4	5	Calm
Prefers company	1	2	3	4	5	Prefers to be alone
Dreamer	1	2	3	4	5	No-nonsense
Polite	1	2	3	4	5	Blunt
Tidy	1	2	3	4	5	Messy
Careful	1	2	3	4	5	Self-confident
Optimistic	1	2	3	4	5	Pessimistic
Theoretic	1	2	3	4	5	Practical
Generous	1	2	3	4	5	Egoistic

Decisive	1	2	3	4	5	Keeping options open
Easily discouraged	1	2	3	4	5	Cheerful
‘Open book’	1	2	3	4	5	Uncommunicative
Guided by creativity	1	2	3	4	5	Guided by authority
Warm	1	2	3	4	5	Cold
Target oriented	1	2	3	4	5	Easily distracted
Shy	1	2	3	4	5	"The rest can go to the devil"
Easily associating with others	1	2	3	4	5	Reserved
Looking for new things	1	2	3	4	5	Looking for familiar things
Team player	1	2	3	4	5	Independent
Likes order	1	2	3	4	5	At ease with chaos
Easily disturbed	1	2	3	4	5	Cool
A talker	1	2	3	4	5	A thinker
Vagueness is OK	1	2	3	4	5	Preferring clearness

Full of confidence	1	2	3	4	5	Sceptical
Always in time	1	2	3	4	5	Postponing

C: General information

- 1 Gender ☐ male ☐ female
- 2 Year of birth 19
- 3 Country of birth:
- Yourself
- Mother
- Father
- 4 Where did you mainly live till the age of 18? Country
- 5 What is your parents highest education?
- Father ☐ ISCED 1+2 ☐ ISCED 3+4 ☐ ISCED 5+6
- Mother ☐ ISCED 1+2 ☐ ISCED 3+4 ☐ ISCED 5+6
- 6 Does your father hold a paying job? ☐ self employed ☐ in employment ☐ not employed
- Provide the job title.
- Avoid vague occupational titles such as manager, clerk, or farmer.*
- Describe the kind of work he does in that job.
- 7 Does your mother hold a paying job? ☐ self employed ☐ in employment ☐ not employed
- Provide the job title.
- Avoid vague occupational titles such as manager, clerk, or farmer.*
- Describe the kind of work she does in that job.

8	What is your parents' total income	<div style="display: flex; justify-content: space-between; width: 100%;"> much lower than average much higher than average cannot tell </div>					
		1	2	3	4	5	
		☐	☐	☐	☐	☐	☐

D: About your study programme AT HOME

9 What is the name of the study programme?

(e.g. economics, civil engineering)

10 What was the start date of this study programme? Start: |_|_| (month) |_|_|_|_| (year)

11 What was your highest qualification before you entered higher education for the first time?

☐ academic secondary education

☐ non-academic general secondary education

☐ vocational secondary education

☐ other (please specify)

12 Did you at any time interrupt this study programme-for 4 or more months? If so, for how many months? ☐ no ☐ yes, for |_|_| (months)

· Do not count interruptions related to your study, such as internships or study abroad

· Do not count interruptions between bachelors and masters programmes

13	What was your average grade when you finished last year?	6	6,5	7	7,5	8	8,5	9 or higher
		☐	☐	☐	☐	☐	☐	☐
14	How do you rate this grade compared to other students from your study programme?	much lower than average			much higher than average			cannot tell
		1	2	3	4	5		
		☐	☐	☐	☐	☐		☐
15	To what extent do the following descriptions apply to your study behaviour?	not at all				to a very high extent		
		1	2	3	4	5		
	a) I did extra work above what was required to pass my exams	☐	☐	☐	☐	☐		
		1	2	3	4	5		
	b) I strived for the highest possible marks	☐	☐	☐	☐	☐		
16	<p>Altogether, approximately how many hours did you spend on your study? <input type="text"/> <input type="text"/> hours per week</p> <p><i>· Please refer to a typical semester week during the last one to two years of the programme</i></p> <p><i>· Include activities such as lectures, self-study, internships etc.</i></p>							
17	During your time in higher education, did you hold a position in student or other voluntary organizations? <i>(e.g. chair, committee member)</i>	☐ yes, for approximately <input type="text"/> <input type="text"/> months in total					☐ no	
18	Did you take part in one or more work placements/internships as part of your study programme?	☐ yes, for approximately <input type="text"/> <input type="text"/> months in total					☐ no	

19 Did you acquire any study-related work experience:

· *Either fulltime or part-time*

· *Not work placements/internships already reported in 18*

a) before higher education?

☐ yes, for approximately |__|__| months in total

☐ no

b) during higher education?

☐ yes, for approximately |__|__| months in total

☐ no

20 Did you acquire any non-study-related work experience:

· *Either fulltime or part-time*

· *Not work placements/internships already reported in 18*

a) before higher education?

☐ yes, for approximately |__|__| months in total

☐ no

b) during higher education?

☐ yes, for approximately |__|__| months in total

☐ no

E: About studying abroad (mobile group)

21 Did you spend any time abroad during higher education for study, work or holidays?

· *Multiple reply possible*

☐ no

☐ yes, |__|__| months for study

☐ yes, |__|__| months for work-related reasons

☐ yes, |__|__| months for holidays

E: About studying abroad (reference group)

21 Did you spend any time abroad during higher education for study, work or holidays?

· *Multiple reply possible*

☐ no

☐ yes, |__|__| months for study

Country:

☐ yes, |__|__| months for work-related reasons

☐ yes, |__|__| months for holidays

22 Have you seriously considered studying abroad this year?

· Do not mention study already reported in 22

☐ no

☐ yes

23 If yes, Why did you not go abroad?

· Multiple reply possible

Reason 1

Reason 2

Reason 3

24 Do you consider going abroad at a later stage?

☐ no

☐ yes

B.2 Questionnaire students at end of academic year (English version)

QUESTIONNAIRE HANS CORTEN

- ▶ The data of this questionnaire will only be seen by Hans Corten and not used for any other purpose.
- ▶ We need your name only to connect the answers of the two questionnaires. Thereafter this page with your name will be removed.

Please fill in your name

.....

- ▶ Please mark your answer by placing a cross in the relevant box.
- ▶ If you would like to correct your answer, completely blacken the box, and mark the right answer by placing a cross there.
- ▶ On graduation day you'll receive € 10 for your cooperation.

Thank you very much!

A: About your professional activities during your study

► All statements describe a professional activity. That is to say: something you have done in your study (including company placements) and in your professional work (activities related to your study, like volunteer work in your professional field).

► Do not skip a statement

► Answer YES only if you have completed the activity exactly as is written down. In all other cases answer NO.

► There are NO wrong answers! Every answer is RIGHT!

1	For a report I used a set-up that was appropriate to my topic instead of the prescribed set-up.	YES	NO
2	I have made a plan for executing a task although many things were not yet clear.	YES	NO
3	I used several didactical methods in one oral presentation to explain a complex topic.	YES	NO
4	I have implemented the more efficient organisation of a non-agricultural company (as much as possible) into our company.	YES	NO
5	I was responsible for the allocation of people, materials and funds to tasks.	YES	NO
6	I successfully completed a presentation where unexpected things happened.	YES	NO
7	In planning a project, I have, from the beginning, taken into account that there would be dropouts and newcomers.	YES	NO
8	I proposed an improvement after a systematic analysis.	YES	NO

9	I summarized scientific texts and related them to the professional practice.	YES	NO
10	I determined whether my personal qualities fit in another business culture.	YES	NO
11	I develop new methods to measure and optimize things.	YES	NO
12	I adjusted the work processes and activities in a changing environment.	YES	NO
13	I guided some colleagues step by step through a difficult process.	YES	NO
14	I have made a planning for the next 5 to 10 years.	YES	NO
15	I organised a meeting with participants from various countries.	YES	NO
16	I explained to somebody how to develop his enterprise.	YES	NO
17	For a report I wrote a chapter for which I was the only one to have the required expertise.	YES	NO
18	I organised a meeting for national and international experts in order to discuss the topic from different angles.	YES	NO
19	I convinced the audience of the benefits of the proposed strategic choices.	YES	NO
20	In front of stakeholders in the organisation I verbally set out my arguments to support my ideas.	YES	NO
21	I determined in what direction I will further develop myself the next 3 years.	YES	NO
22	I formulated my development goals for the coming 3 years.	YES	NO

23	In a report I compared the development of a non-agricultural sector with the developments in agriculture.	YES	NO
24	I gave an oral presentation for stakeholders, some of whom I did not know before.	YES	NO
25	This year I cooperated with people I never met before.	YES	NO
26	I organised a change process in response to social developments.	YES	NO
27	I developed a questionnaire to review my performance.	YES	NO
28	I made an action plan for the execution of an assignment that took some months.	YES	NO
29	In a group I saw to it that the thinking was at the theoretical model level.	YES	NO
30	I wrote a professionally relevant paper in which I adapted the style of writing to the readers.	YES	NO
31	I took additional training to better perform my professional activities.	YES	NO
32	I stood firm in a situation with ever changing circumstances.	YES	NO
33	Together with somebody from another study programme I answered a question for which we had to combine our professional knowledge.	YES	NO
34	As project leader I presented the core of an extensive project to its financiers.	YES	NO
35	Together with people, with opposite interests, I came to results that were acceptable to all.	YES	NO
36	I made a planning for a group assignment and co-ordinated the implementation.	YES	NO

37	I determined which job fits my capacities.	YES	NO
38	I regularly exchanged knowledge and experiences with professionals from other companies and whenever I found it necessary I co-operated with them.	YES	NO
39	I formulated clear deadlines for a team or an organisation.	YES	NO
40	I decided what I was going to learn and discussed this with my mentor.	YES	NO
41	Halfway a group assignment I made a proposal to improve co-operation.	YES	NO
42	I did not accept a task because I knew the level was too high for me.	YES	NO
43	I developed and organised an idea into a new business activity.	YES	NO
44	I converted long term objectives into clear activities.	YES	NO
45	I determined my learning pathway myself.	YES	NO
46	For some months I worked in a long-term project with people who had been working on the project for a longer period.	YES	NO
47	I gave a presentation about a topic for experts who were critical towards this topic.	YES	NO
48	I created an agreement between people from different academic fields.	YES	NO
49	I determined what tasks are in line with the capabilities of my team.	YES	NO
50	In my capacity of responsible manager, I explained the company strategy to the personnel in understandable words.	YES	NO

51	I made the planning for a project in which several people were involved.	YES	NO
52	With a colleague I worked on a task that consisted of a number of subtasks that could not be executed independently from each other.	YES	NO
53	I chose almost exclusively these professional activities that fit my personal development goals.	YES	NO
54	I participated actively in a group discussion about an ethical issue.	YES	NO
55	I chose a position within the company in which I can develop myself best.	YES	NO
56	I made a methodical analysis of the organisation and proposed systematic restructuring.	YES	NO

B: Costs of studying and income (Mobile group only; not included in questionnaire for reference group)

► Please indicate the costs and income when studying at the CAH by crossing the appropriate box in the left columns.

► Please indicate the costs and income if you would have studied at home in the right columns

Costs

Expenses per month in €

At CAH

If you would have stayed home

1 Direct study costs

Tuition fee

1672

Books

30

Other costs

less

5

10

20

30

more

Computers and soft ware; Photo copying and printing (NOT books or tuition fees)

2 Costs of living

Accommodation

175 (shared)

305 (single)

Other costs

less

150

200

250

300

more

(Food, drinks, Personal care, Household goods, cleaning, etcetera)

3 Travelling

less

25

50

100

150

more

Travelling home; local travelling, placement

4 Miscellaneous

less

5

10

20

30

more

Insurances, visa, banking, other costs

Income

Income per month in €

At CAH

If you would have stayed home

5 **Scholarship and other allowances**

from home university, governments (including Erasmus), placement or employer

(Not loans (from DUO-IB group; from bank; from government at home)

less	100	200	300	400	more
------	-----	-----	-----	-----	------

6 **From jobs**

(Including placement, student assistanceship)

less	50	75	100	125	more
------	----	----	-----	-----	------

B.3 Questionnaire graduates (English version)

ALUMNI QUESTIONNAIRE FOR HANS CORTEN

The data of this questionnaire will be used for academic purposes only and are anonymous.

We need your name to check who has submitted the questionnaire and who has to be reminded.

You may send this page in a separate envelope.

If you send this page together with the questionnaire we shall keep it separated from the data.

Please fill in your name	
--------------------------	-------

- ▶ Please mark your answer by placing a cross in the relevant box or write the requested information.
- ▶ If you would like to correct your answer, completely blacken the box, and mark the right answer by placing a cross there.
- ▶ If you are unsure of the exact answer to some questions, please estimate the answer to the best of your ability.

Thank you very much for your cooperation!

A: General information

- 1 Gender ☐ male ☐ female
- 2 Year of birth 19
- 3 What is your parents highest education?
- Father ☐ ISCED 1+2 ☐ ISCED 3+4 ☐ ISCED 5+6
- Mother ☐ ISCED 1+2 ☐ ISCED 3+4 ☐ ISCED 5+6
- 4 What is (or was) your parents' total income?
- much lower than average much higher than average cannot tell
- 1 2 3 4 5 ☐
- ☐ ☐ ☐ ☐ ☐ ☐

B: About your study

- 5 What was the name of the university from which you graduated?
- 6 What was the name of the study programme?
- (e.g. economics, civil engineering)
- 7 Year of graduation
- 8 What was your average grade when you finished this study? 6 6,5 7 7,5 8 8,5 9 or higher
- ☐ ☐ ☐ ☐ ☐ ☐ ☐
- 9 During your time in higher education, did you hold a position in student or other voluntary organizations? ☐ Yes, for approximately months in total ☐ No
- (e.g. chair, committee member)
- 10 Did you acquire any study-related work experience (including work placements/internships)? ☐ Yes, for approximately months in total ☐ No
- Either fulltime or part-time

11 Did you spend any time abroad during higher education for study?

☐ Yes, |_|_| months ☐ No

If yes, please state place and country:

.....

12 a. After graduation, have you ever enrolled in any of the following types of study/training programme?

- ☐ (additional) Bachelor or Master level programmes
- ☐ PhD programme
- ☐ Other postgraduate qualifications
(including professional qualifications pursued in combination with work)

☐ No → **go to section C**

12 b. Did you gain the qualification?

☐ Yes ☐ No

C: Employment

13 Have you ever been unemployed (that is: not employed and seeking employment) since graduation?

☐ Yes, for a total of approximately |_|_| months ☐ No

14 Have you ever been employed since graduation?

☐ Yes ☐ No → **go to section F**

15 What is your current situation?

- ☐ Paid employment or self-employed
- ☐ Unemployed, seeking employment → **go to section E**
- ☐ Studying → **go to section E**
- ☐ Other → **go to section E**

D: Present employment

16 What is your current occupation or job title?
(e.g. farm advisor, sales man, researcher)

.....
.....

17 Please describe your current main tasks or activities.

(e.g. developing a marketing plan, analysing farms, advising financially)

18 Are you self-employed? ☐ Yes ☐ No

19 What are your regular working hours per week (including over time)? |_|_| hours per week

20 What are your gross monthly earnings in this job ?

From contract hours

Approximately |_|_|_|_|_| Euros **per month**

From overtime or extras

Approximately |_|_|_|_|_| Euros **per month**

21 Do you have income from a second job? Yes, Approximately |_|_|_|_|_| Euros **per month** ☐ No

22 What type of education do you feel is most appropriate for this work?

- ☐ PhD
- ☐ Master
- ☐ Bachelor
- ☐ Lower than bachelor

23 What field of study do you feel is most appropriate for this work?

- ☐ Exclusively own field
- ☐ Own or a related field
- ☐ A completely different field
- ☐ No particular field

24	To what extent is your knowledge and skills utilized in this work?	not at all					to a very high extent
		1	2	3	4	5	
		☐	☐	☐	☐	☐	
25	How many people work in your organization?	1-9	10-49	50-99	100-999	1000 or more	
		☐	☐	☐	☐	☐	
26	Do you directly or indirectly supervise other members of staff?	☐ Yes, I supervise <input type="text"/> <input type="text"/> <input type="text"/> staff members					☐ No
27	To what extent:	not at all					to a very high extent
		1	2	3	4	5	
	is international experience required for your work?	☐	☐	☐	☐	☐	
	makes international experience your work easier?	☐	☐	☐	☐	☐	
	do you have international contacts in your present work?	☐	☐	☐	☐	☐	
28	How satisfied are you with your current work?	not at all					very satisfied
		1	2	3	4	5	
		☐	☐	☐	☐	☐	
29	How do you consider your career prospects?	very poor					very good
	<i>this could be inside or outside your organisation</i>	1	2	3	4	5	
		☐	☐	☐	☐	☐	

E: About your professional activities

► All statements describe a professional activity. That is to say: something you have done in your job(s) since graduation.

► Do not skip a statement

► Answer YES only if you have completed the activity exactly as is written down. In all other cases answer NO.

► There are NO wrong answers! Every answer is RIGHT!

1	I guided some colleagues step by step through a difficult process.	YES	NO
2	I chose almost exclusively these professional activities that fit my personal development goals.	YES	NO
3	I organised a change process in response to social developments.	YES	NO
4	This year I cooperated with people I never met before.	YES	NO
5	I was responsible for the allocation of people, materials and funds to tasks.	YES	NO
6	I have made a plan for executing a task although many things were not yet clear.	YES	NO
7	I regularly exchanged knowledge and experiences with professionals from other companies and whenever I found it necessary I co-operated with them.	YES	NO
8	I determined whether my personal qualities fit in another business culture.	YES	NO
9	Together with somebody from another study programme I answered a question for which we had to combine our professional knowledge.	YES	NO
10	I proposed an improvement after a systematic analysis.	YES	NO
11	I organised a meeting with participants from various countries.	YES	NO

12	I did not accept a task because I knew the level was too high for me.	YES	NO
13	In planing a project, I have, from the beginning, taken into account that there would be dropouts and newcomers.	YES	NO
14	For some months I worked in a long-term project with people who had been working on the project for a longer period.	YES	NO
15	I develop new methods to measure and optimize things.	YES	NO
16	I convinced the audience of the benefits of the proposed strategic choices.	YES	NO
17	I determined what tasks are in line with the capabilities of my team.	YES	NO
18	I determined in what direction I will further develop myself the next 3 years.	YES	NO
19	Together with people, with opposite interests, I came to results that were acceptable to all.	YES	NO
20	I made a planning for a group assignment and co-ordinated the implementation.	YES	NO
21	In my capacity of responsible manager, I explained the company strategy to the personnel in understandable words.	YES	NO
22	I decided what I was going to learn and discussed this with my mentor.	YES	NO
23	I determined my learning pathway myself.	YES	NO
24	For a report I wrote a chapter for which I was the only one to have the required expertise.	YES	NO
25	I stood firm in a situation with ever changing circumstances.	YES	NO
26	I developed and organised an idea into a new business activity.	YES	NO

27	I organised a meeting for national and international experts in order to discuss the topic from different angles.	YES	NO
28	I formulated my development goals for the coming 3 years.	YES	NO
29	I chose a position within the company in which I can develop myself best.	YES	NO
30	I adjusted the work processes and activities in a changing environment.	YES	NO
31	I gave a presentation about a topic for experts who were critical towards this topic.	YES	NO
32	I have made a planing for the next 5 to 10 years.	YES	NO
33	I developed a questionnaire to review my performance.	YES	NO
34	In a report I compared the development of a non-agricultural sector with the developments in agriculture.	YES	NO
35	I made an action plan for the execution of an assignment that took some months.	YES	NO
36	I created an agreement between people from different academic fields.	YES	NO
37	I converted long term objectives into clear activities.	YES	NO
38	I successfully completed a presentation where unexpected things happened.	YES	NO
39	I gave an oral presentation for stakeholders, some of whom I did not know before.	YES	NO
40	I explained to somebody how to develop his enterprise.	YES	NO
41	I have implemented the more efficient organisation of a non-agricultural company (as much as possible) into our company.	YES	NO

42	Halfway a group assignment I made a proposal to improve co-operation.	YES	NO
43	In a group I saw to it that the thinking was at the theoretical model level.	YES	NO
44	With a colleague I worked on a task that consisted of a number of subtasks that could not be executed independently from each other.	YES	NO
45	I made the planning for a project in which several people were involved.	YES	NO
46	I used several didactical methods in one oral presentation to explain a complex topic.	YES	NO
47	I summarized scientific texts and related them to the professional practice.	YES	NO
48	I took additional training to better perform my professional activities.	YES	NO
49	I wrote a professionally relevant paper in which I adapted the style of writing to the readers.	YES	NO
50	I participated actively in a group discussion about an ethical issue.	YES	NO
51	In front of stakeholders in the organisation I verbally set out my arguments to support my ideas.	YES	NO
52	I made a methodical analysis of the organisation and proposed systematic restructuring.	YES	NO
53	I determined which job fits my capacities.	YES	NO
54	I formulated clear deadlines for a team or an organisation.	YES	NO
55	As project leader I presented the core of an extensive project to its financiers.	YES	NO
56	For a report I used a set-up that was appropriate to my topic instead of the prescribed set-up.	YES	NO

F: About yourself

► Indicate on every scale below which word describes you best.

► Circle the most suitable number

► If both words are evenly true, circle the 3

Restless	1	2	3	4	5	Calm
Prefers company	1	2	3	4	5	Prefers to be alone
Dreamer	1	2	3	4	5	No-nonsense
Polite	1	2	3	4	5	Blunt
Tidy	1	2	3	4	5	Messy
Careful	1	2	3	4	5	Self-confident
Optimistic	1	2	3	4	5	Pessimistic
Theoretic	1	2	3	4	5	Practical
Generous	1	2	3	4	5	Egoistic
Decisive	1	2	3	4	5	Keeping options open
Easily discouraged	1	2	3	4	5	Cheerful

'Open book'	1	2	3	4	5	Uncommunicative
Guided by creativity	1	2	3	4	5	Guided by authority
Warm	1	2	3	4	5	Cold
Target oriented	1	2	3	4	5	Easily distracted
Shy	1	2	3	4	5	"The rest can go to the devil"
Easily associating with others	1	2	3	4	5	Reserved
Looking for new things	1	2	3	4	5	Looking for familiar things
Team player	1	2	3	4	5	Independent
Likes order	1	2	3	4	5	At ease with chaos
Easily disturbed	1	2	3	4	5	Cool
A talker	1	2	3	4	5	A thinker
Vagueness is OK	1	2	3	4	5	Preferring clearness
Full of confidence	1	2	3	4	5	Sceptical
Always in time	1	2	3	4	5	Postponing

G: Comments

If you have any comments you can write these below here.