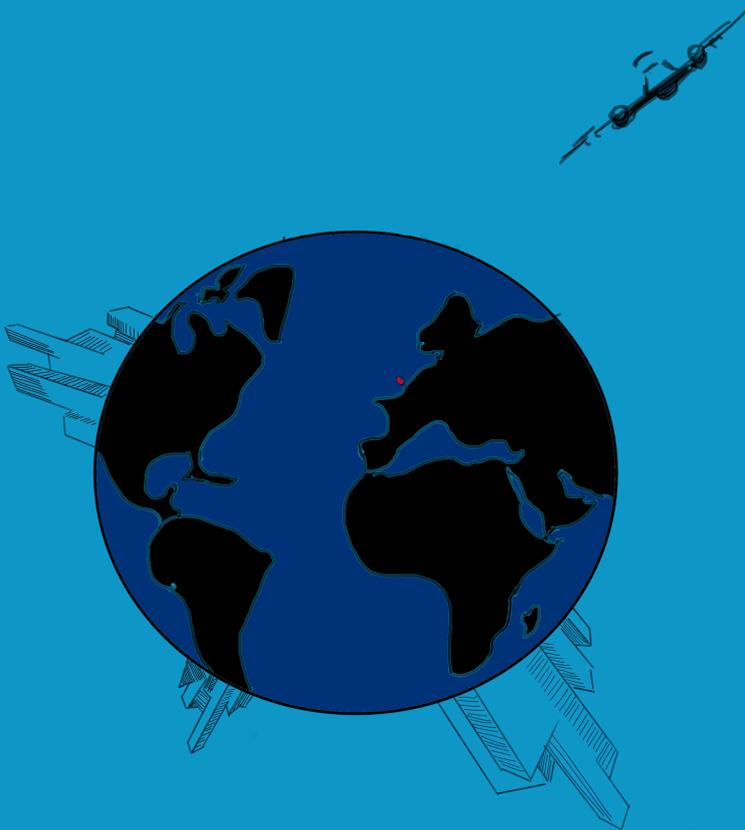


International Business Matters

Investigating Conceptual Understanding
as Knowledge Synthesis Among
Students in Higher Professional Education



Sue Ashley

International Business Matters

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Investigating Conceptual Understanding as Knowledge Synthesis Among Students
in Higher Professional Education

International Business Matters

Het Onderzoeken van Conceptueel Begrip als Kennissynthese van Studenten in het
Hoger Beroepsonderwijs

(met een samenvatting in het Nederlands)

Proefschrift

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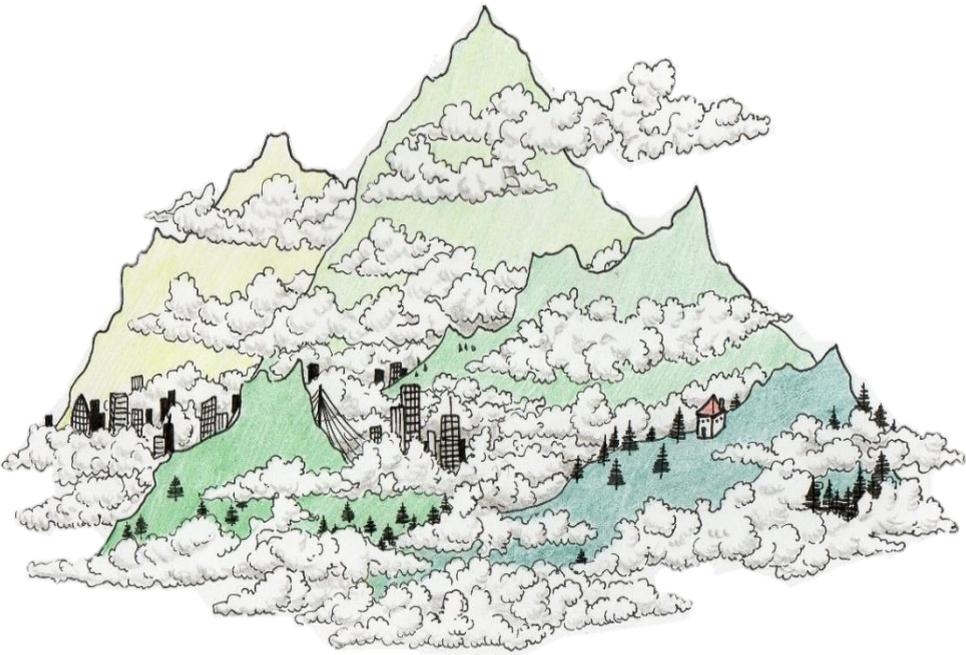
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Chapter 1

General Introduction

1.1 International Business Studies in Dutch Higher Professional Education

In response to heavy demand for suitably educated international business professionals, Dutch universities of applied sciences began introducing English-taught Bachelor of Business Administration (BBA) degree programmes in the 1990s. Dutch universities of applied sciences provide higher professional education in major cities throughout the Netherlands. Their main purpose is to prepare graduates for adequate performance in practice. They do this through internationally recognised programmes accredited by the Accreditation Organisation of the Netherlands and Flanders (NVAO).

To prepare graduates for occupations in international business, undergraduate programmes need to produce graduates with broad interdisciplinary knowledge, an international orientation, and critical thinking (Kaplan, 2014, 2018). To this end, the international business programmes at Dutch universities of applied sciences provide multidisciplinary curricula including subjects such as international marketing, global economics and foreign languages. They employ a multicultural, multilingual teaching staff with international experience in global business. These programmes also attract both domestic and foreign students who share an international mindset. Students continue to develop an international attitude through international internships and study exchange abroad. Such experiential learning opportunities are considered valuable because they provide a concrete experience on which to reflect and theorise.

Teaching and assessment within the Dutch BBA in International Business is based on programme learning outcomes prescribed by the EU Qualifications Framework (European Higher Education Area, 2018). The Dutch National Platform International Business describes 24 learning outcomes in terms of competencies or abilities that encompass the knowledge, skills and attitudes considered necessary to deliver competent practitioners for the international business domain (Sijben et al., 2017). International business students at graduate level are expected, for instance, to be able to ‘analyse patterns in global macroeconomic factors and policies that drive international trade and business development’ (p. 24), ‘collaborate effectively with different kinds of stakeholders in different cultural, organisational and political landscapes to contribute to achieving agreed goals’ (p. 25), ‘respond appropriately to an unfamiliar, or unexpectedly changing, business environment’ (p. 26), and ‘recommend financing possibilities in a dynamic international environment’ (p. 27).

1.2 Preparing Students for International Business as an Ill-Structured Professional Domain

Competence needed for adequate performance in professional practice depends on the integration of knowledge, skills and attitudes (Baartman et al., 2007; Baartman & De Bruijn, 2011). For instance, practitioners need knowledge of the domain that includes conceptual knowledge (knowledge of what), procedural knowledge (knowledge of how) and situational knowledge (knowledge of where, who and when) (Billett, 2001), skills that include communication, teamwork and information technology, and attitudes that include professionalism, reliability and self-confidence (Andrews & Higson, 2008). However, the role of higher professional education is not necessarily to produce graduates who are fully competent for practice, but to prepare graduates for entry-level professional practice (Boshuizen, 2003).

Yet even preparing graduates for entry-level professional practice is no easy task. For instance, the complexity of international business means that it can be considered what is called ill structured (Datar et al., 2011; Nab, 2015; Ramburuth & Daniel, 2011). Ill-structured professional domains are characterised by conflicting goals, fluid parameters, unclear

conditions and multiple possible solutions, none of which can ever be considered universally correct (Jonassen, 2007; Voss & Post, 1988). They can therefore be challenging for students to apply effectively the knowledge that they have learned at school (Chen, 2010; Green et al., 2013). In ill-structured professional domains, one cannot expect that tasks will be routine nor that the same strategies will work in different situations. One must be prepared to zoom in on problems so that specific features can be identified and patterns can be recognised, and then zoom back out again so that relevant connections can be made and insight into the big picture can be realised.

1.3 Conceptual Understanding as a Basis for Competence in International Business

To enable knowledge transfer between formal learning and professional practice, understanding is needed (Tynjälä, 1999). For entry-level practice in international business, for instance, graduates need a sound understanding of the theories and principles affecting global and local economies, governments, companies and institutions (Ramburuth & Daniel, 2011). Understanding helps students grasp the significance of what they learn so that they can use knowledge in real-life professional practice (Ge & Land, 2003).

For effective application in real-life practice, understanding needs to be what Biggs and Tang (2011) describe as *real* understanding. Such real understanding can be considered *performative*, because it enables one to do things in practice with what one knows (Boix-Mansilla & Gardner, 1998; Perkins, 1998). In other words, real understanding is understanding that makes knowledge usable (Newton, 2012). Yet, particularly in an ill-structured domain, where there is considerable variation between contexts, numerous effects from multiple disciplines, myriad influences and different combinations of actors, real understanding of anything is practically impossible (Van Bommel et al., 2012).

The concept of *conceptual* understanding can be considered more suitable than the concept of real understanding to describe the cohesive view of theories and practices that professionals need when confronted with the ill-defined problems typical of ill-structured domains (Entwistle, 2000; Harteis & Billett, 2013). For instance, international business professionals face many challenges that arise from the complexity of cross-border business

(Aggarwal & Goodell, 2011). They must make continual strategic decisions about how to operate in the ever-changing global marketplace, and make the best use they can of the resources that they have available to them, while all the time operating under a high degree of complexity and uncertainty. Parts of the international business arena in which they operate are visible, but other parts are not. At a local level, for instance, they may observe and experience first-hand how actors interact and how activities take place in an office, a factory or a local marketplace. Yet many activities and processes will still take place behind the scenes. At an international level, they may need to infer even more about what is taking place, piecing together second-hand information, for instance, about how worldwide commodity prices are affecting consumer demand in the global marketplace. At both levels, they will need to grasp such concepts as *market forces* or such general principles as *supply and demand*. This abstract or conceptual dimension to international business is one reason why conceptual understanding may be considered an appropriate concept for application in this ill-structured domain.

Yet, conceptual understanding is a concept more typically used in the contexts of mathematics or the natural sciences. For instance, it has been used to describe problem solving in mathematics (Silver et al., 2009), microeconomics (Green et al., 2013) and science (Jonassen, 2007; Nieswandt, 2007). Compared to international business, these disciplines can be considered as relatively well structured, because problems can be solved adequately using algorithms involving sets of rules or formulaic equations that guarantee a correct solution. Problem solving in international business is much less straightforward, as it tends to involve evaluation of problems that are ill defined and non-routine, with multiple possible strategies and multiple solutions (Laxman, 2010).

For problems like these, conceptual understanding helps to reduce complexity by enabling connection between different types of knowledge, to form what Newton (2012) describes as ‘a coherent, manageable and even satisfying order’ (p. 1), or what Krathwohl (2002) describes as ‘a novel, coherent whole’ (p, 215). Using the body of domain knowledge relevant for international business, including concepts, procedures and situational factors, conceptual understanding enables one to grasp the essence of a problem without actually acting. Therefore, since conceptual understanding can be considered useful in professional practice, this dissertation postulates that conceptual understanding is a potentially useful

concept for investigation of student learning in international business as an ill-structured professional domain.

1.4 Aims and Research Questions

Since conceptual understanding is a potentially relevant and useful concept for teaching in international business, the aim of this dissertation is to explore its nature. This dissertation investigates how conceptual understanding can be defined and measured, what it looks like, how it changes, and in what ways it differs between students.

To reach the aims of this dissertation, five research questions were formulated. The research questions are: (1) ‘How can conceptual understanding for teaching in international business be defined?’ (2) ‘How can conceptual understanding of international business be revealed?’ (3) ‘How does conceptual understanding appear in students’ writing?’ (4) ‘What types of change take place in the extent of students’ conceptual understanding during an undergraduate course?’ and (5) ‘What differences can be identified between international business undergraduates’ conceptual understanding with regard to study progress?’

1.5 Dissertation Overview

This dissertation comprises seven chapters. They include a general introduction, five empirical studies, and general conclusions and discussion. For the empirical studies, data collection took place at HU University of Applied Sciences Utrecht. The students involved were undergraduates majoring in International Business and Management Studies.

Chapter 2 endeavours to answer the first research question by exploring key components of conceptual understanding relevant for teaching international business in higher professional education. It draws on insights from international business experts to provide a definition upon which to further explore and examine conceptual understanding.

Chapter 3 addresses the second research question by comparing essays and concept maps produced by students when asked to explain international business research topics. It uses a rubric based on the definition of conceptual understanding developed in Chapter 2 to find out whether conceptual understanding is revealed most adequately by essays alone,

Chapter 1

concept maps alone, essays written after concepts maps, or concept maps produced after essays.

Chapter 4 investigates the appearance of conceptual understanding in undergraduate writing assignments. The rubric developed in Chapter 3 is used to find out what conceptual understanding looks like in students' literature reviews when they are asked to explain international business research topics.

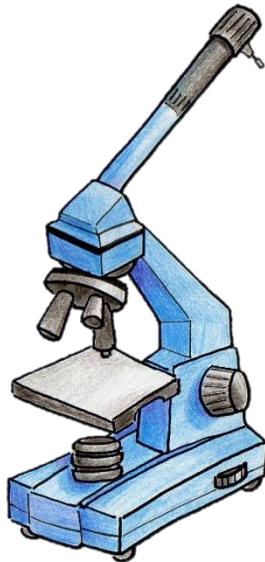
Chapter 5 deals with the fourth research question. It identifies changes in students' conceptual understanding that take place based on essays written at the beginning and end of a 14-week senior undergraduate course. During the course, students were preparing for an individual graduation research project. This study uses the rubric developed in Chapter 3 to assess conceptual understanding change.

Chapter 6 tackles the fifth research question. It explores differences between conceptual understanding in the writing of international business students at the beginning, middle and end of an undergraduate programme. The rubric developed in Chapter 3 is used to assess students' essays about a complex business case that was developed for this study.

Chapter 7 comprises general conclusions and discussion of the results obtained from the five studies that make up this dissertation. It also provides implications for education, acknowledges research limitations and makes suggestions for further research, and delivers closing remarks about the scientific and practical contribution of this dissertation.

Chapter 2

Defining Conceptual Understanding for Teaching in International Business¹



¹ This chapter is based on: Ashley, S., Schaap, H., & De Bruijn, E. (2016). Defining conceptual understanding for teaching in international business. *Journal of Teaching in International Business*. 27(2-3), 106-123. <https://doi.org/10.1080/08975930.2015.1134378>

Author contributions: Sue Ashley is the first author of this article. The second and third authors are Harmen Schaap and Elly de Bruijn, Sue Ashley's PhD supervisors. The authors collaborated on the design of the study. Sue Ashley collected and analysed data, and wrote the article. The supervisors discussed and advised on theory, checked data analysis quality, helped formulate conclusions, and reviewed and revised the manuscript.

Abstract

The aim of the exploratory study presented in this chapter is to develop a definition of conceptual understanding for teaching in international business. In international business, professionals face complex problems like what to produce, where to manufacture, which markets to target and when to expand abroad. A clear definition of conceptual understanding needed to solve such problems would provide design input for international business education. In three cycles, two independent expert panels with backgrounds in academic research, international business education and international business practice identified and validated key components of conceptual understanding in international business. Key components are the global and local contexts, general and specific business practices, and theoretical business concepts and mechanisms. Other key characteristics include factual knowledge, explanation and out-of-the-box thinking.

Keywords: conceptual understanding, higher professional education, teaching in international business, out-of-the-box thinking.

2.1 Introduction

Preparing students for careers as international business professionals is no easy task for educators. To function competently, international business professionals need conceptual understanding (Aggarwal & Goodell, 2011; Kedia & Englis, 2011a; Vos, 2013). International business professionals need to solve complex problems, make decisions and apply creativity using specialised theoretical and factual knowledge (International Labour Organization, 2012). To decide the best problem-solving strategy, to take the best decision and to apply the right measure of creativity, professionals in a domain like international business need to recognise what combination of knowledge to apply in any given situation (Middleton, 2002; Spiro et al., 1992; Van Oers, 1998b). Knowing what knowledge to apply to effectively solve complex problems, make decisions and capitalise on creativity requires a thorough understanding of the concepts involved (Entwistle, 2000; Harteis & Billett, 2013). For conceptual understanding, professionals need to have internalised domain-related concepts and routines (Billett, 2001; Schaap et al., 2009).

Defining conceptual understanding for teaching in international business is complex. To begin with, international business professionals follow many occupations. Of the ten groups of occupations identified by the International Labour Organization (2012), the two most relevant groups for international business professionals are managers and professionals. Manager occupations include directors, chief executives, and managers of finance, human resources, policy and planning, business services and administration, sales and marketing, advertising and public relations, research and development, manufacturing, supply and distribution, information and communications technology services, and retail and wholesale trade. Professional occupations include accountants, financial and investment advisers, financial analysts, management and organisation analysts, and professionals specialised in policy administration, personnel and careers, training and staff development, advertising and marketing, public relations, and information and communications technology sales.

The task of defining conceptual understanding for teaching in international business is further complicated because international business professionals work in every industry: from agriculture, energy, mining, manufacturing and construction to communications, education, environment, health and transport. They work in the private sector and they work

in the public sector. They work in their home countries dealing with their own governments and bureaucracies; they work in foreign countries dealing with foreign governments and foreign bureaucracies. They communicate in their native languages; they communicate in foreign languages. Not only must they understand the cultures and traditions of their own professional occupations and organisations, they must also understand the cultures and traditions peculiar to different industries, economic sectors, nations and ethnic groups.

Scholars and educators of international business seek more powerful teaching strategies to prepare graduates better for the multitude of multidisciplinary occupations in international business (Milhauser & Rahschulte, 2010; Prestwich & Ho-Kim, 2007; Yeoh, 2002). Enhancing conceptual understanding is key to this process. To enhance conceptual understanding of an academic discipline, a definition is needed that makes educators and students aware of what is required to develop deep understanding (Entwistle & Smith, 2013). International business schools need a definition of conceptual understanding that can be used for assessment. Existing definitions of conceptual understanding tend to be generic (Newton, 2012), or specific to other domains like chemistry (Nieswandt, 2007) or mathematics (Silver et al., 2009). A necessary first step for developing a definition for teaching in international business is to answer the question, 'How can conceptual understanding for teaching in international business be defined?'

This study takes an exploratory research approach to define and specify characteristics of conceptual understanding for teaching in international business. A preliminary definition is first formulated based upon earlier research and theory. In three rounds of sessions, two independent focus groups with backgrounds in academic research, international business education and professional international business practice then identify and validate key components of conceptual understanding for teaching in international business. Results suggest that conceptual understanding involves the articulation of general, specific, abstract and concrete knowledge specific to international business, with the deepest level signifying original, lateral and groundbreaking thinking.

2.2 Towards a Definition of Conceptual Understanding for Teaching in International Business

The starting point for defining conceptual understanding for teaching in international business was to look at general taxonomies of educational objectives. Educators created Bloom's Taxonomy to inspire a holistic approach to education through hierarchical, cumulative learning goals, from (1) knowledge, through (2) comprehension, (3) application, (4) analysis and (5) synthesis, to (6) evaluation (Bloom et al., 1956). Later, Romiszowski (1981) developed a taxonomy to deal with a need to address skills and attitudes as well as knowledge. One of the original Bloom team has since published a revised taxonomy with significant changes to the first, fifth and sixth levels, namely (1) remembering, (5) evaluating and (6) creating (Krathwohl, 2002).

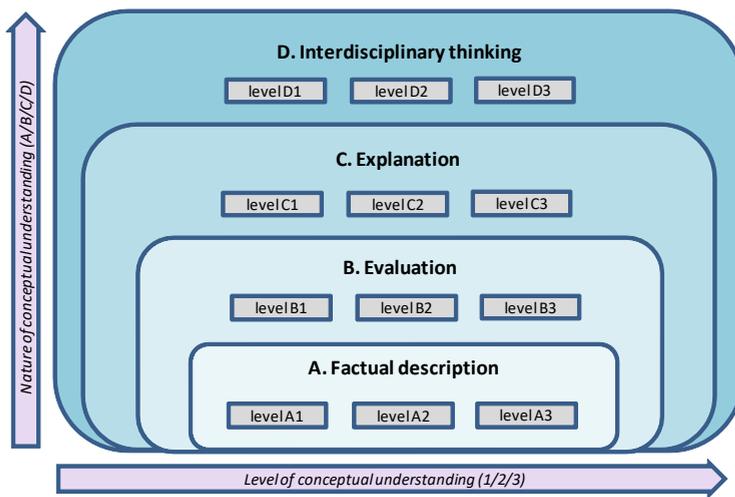
Taxonomies that are more specific to conceptual understanding also abound. Shulman (2002) suggests a hierarchical table of learning comprising six levels starting at (1) commitment and identity, and rising through (2) judgement and design, (3) reflection and critique, (4) performance and action, and (5) knowledge and understanding to (6) engagement and motivation. In what they term 'learning conceptions', Van Rossum and Hamer (2010) describe six levels of understanding in higher professional education: (1) increasing knowledge, (2) memorising, (3) reproductive understanding, (4) understanding subject matter (5) widening horizons and (6) growing self-awareness. Yet educators of international business need a definition of conceptual understanding specific to international business. Existing taxonomies do not specify the domain-specific knowledge required by international business professionals.

An initial definition with potential to be relevant for teaching in international business was Oonk's (2009) definition of the nature and level of theory used by student teachers in mathematics classes. Oonk's definition describes three levels of increasing complexity from what could be labelled surface to deep learning, the latter being required for developing conceptual understanding (Entwistle, 2000). The reason Oonk's definition could be relevant for teaching in international business is because the types of theory use are generic enough to be applied outside the mathematics domain.

For a definition of conceptual understanding more relevant to international business, some changes were made to Oonk's (2009) four types of theory use, namely *factual description*, *interpretation*, *explanation* and *metacognitive reactions*. Factual description is considered necessary for a definition of conceptual understanding for teaching in international business and so is explanation because explanation represents a stage of reflection, which is important for developing conceptual understanding (Sparks-Langer et al., 1990). However, interpretation was changed to *evaluation* because evaluation seems closer to what Oonk means by 'opinion or conclusion without foundation' (p. 140). Moreover, *metacognitive reactions* was changed to *interdisciplinary thinking* because international business professionals need interdisciplinary thinking to deal with complex professional practice (Sternberg, 2008). Figure 2.1 represents an initial definition of conceptual understanding for teaching in international business based on these changes.

Figure 2.1

Initial Representation of Conceptual Understanding for Teaching in International Business



The initial definition of conceptual understanding for teaching in international business shows four cumulative types of understanding (A to D), each with the three levels (1-3) described by Oonk (2009): Level 1 (A1 to D1) without theoretical concepts, Level 2 (A2 to D2) with at least one theoretical concept without mutual connection and Level 3 (A3 to D3) with at least one theoretical concept with a meaningful connection.

How closely this initial definition describes conceptual understanding for teaching in international business was unknown. Research was carried out to determine how closely the definition fits conceptual understanding for teaching in international business.

2.3 Method

2.3.1 Design

This exploratory study involved three rounds with two independent focus groups with backgrounds in academic research, international business education and professional international business practice to ensure content validity (Messick, 1995). First, essays and concept maps produced by students were used to trigger statements from the first panel (Panel 1) about characteristics of conceptual understanding. Since the development of a definition of conceptual understanding was expected to benefit from a variety of stimuli, Panel 1 articulated and explicated criteria used to assess the students' essays and concept maps. Essays were expected to provide a variety of stimuli because writing stimulates cognitive processes (Flower & Hayes, 1981). Concept maps were expected to provide a variety of stimuli because they stimulate visualisation of integrated knowledge (Huijts et al., 2011). Therefore, it was expected that the variety of stimuli would result in a wide range of characteristics of conceptual understanding. Member check procedures, involving participants confirming results during the three rounds of sessions, were used to validate findings (Onwuegbuzie & Leech, 2007). As this was a qualitative study involving a complicated research problem, a detailed account of the data collection and analysis was needed to ensure transparency of the findings (Akkerman et al., 2008). Such a detailed account of the procedure and data analysis that were used to develop a valid definition follows.

2.3.2 Participants

Since dynamics within groups can generate a rich array of data, focus groups are considered a suitable method for exploratory research (Kidd & Parshall, 2000; Onwuegbuzie et al., 2009). For this study, two sequential focus groups were used. Panel 1 contained three

international business lecturers who knew each other well. Such a small, homogenous group provides a safe environment for panellists to share, question and challenge each other's opinions (Kitzinger, 1995). Panel 2 comprised a larger, more heterogeneous group. While still small enough to cultivate a safe atmosphere for discussion, Panel 2 embraced a wider range of perspectives to validate data emerging from Panel 1 (Kidd & Parshall). In the third round of the procedure to validate the operationalised model, Panel 1 and Panel 2 members met with each other so panellists again had the chance to share, react, reflect and develop their own points of view.

2.3.2.1 Panel 1 Members. The three Panel 1 members were faculty staff. Member 2 ran his consultancy business four days a week (Table 2.1).

Table 2.1

Characteristics of Panel 1 Members

Member	Gender	Nationality	Area of expertise	Primary experience (PE)	Years of PE
1	Female	Iranian	International economics	Economics lecturer	5
2	Male	Dutch	International marketing	Marketing consultant	19
3	Female	U.S.	International banking	Finance lecturer	12

2.3.2.2 Panel 2 Members. Of the six Panel 2 members, four were faculty staff. Member 5 was retired and Member 6 was from another Dutch university (Table 2.2).

Table 2.2

Characteristics of Panel 2 Members

Member	Gender	Nationality	Area of expertise	Primary experience (PE)	Years of PE
1	Male	Dutch	Business administration	Education and research manager	13
2	Male	Dutch	Economic decision making	Business practitioner	7
3	Male	South African	Management and innovation	Product and market developer	15
4	Male	Dutch	Reflective practice	Educational consultant	35
5	Male	Dutch	Telecommunications	Company director	20
6	Female	Dutch	Professional communication	Professor	11

2.3.3 Procedure

2.3.3.1 Round 1: Panel 1. Five essays and five concept maps were randomly chosen from 26 produced by final-year bachelor students, 19 of whom were male (73%). The students were from 14 countries, namely Afghanistan (2), Bulgaria, Ghana, Iraq, Kuwait, Morocco, The Netherlands (11), The Netherlands Antilles (2), New Zealand, Nigeria, Romania, Somalia, Turkey and the USA. The students had one hour to ‘explain as clearly and in as much detail as you can the business area you are interested in researching for your graduation project at an international company’, an assignment expected to elicit students’ knowledge because it is considered a complex task for students (Kellogg & Whiteford, 2009). At the first 90-minute recorded session, Panel 1 discussed their assessments of the essays and concept maps, compared criteria they had used to assess the essays and concept maps, and considered key characteristics of conceptual understanding. At the second 90-minute recorded session, the improved definition of conceptual understanding for teaching in international business was discussed as member check. Main points were distilled in a summary of the transcript. A further improved definition of conceptual understanding for teaching in international business was based on this outcome.

2.3.3.2 Round 2: Panel 2. The further improved definition of conceptual understanding was sent to Panel 2, together with seven discussion questions. During a 90-minute taped session, the Panel 2 members discussed whether they thought the further improved definition adequately defined conceptual understanding and whether they agreed with Panel 1’s characteristics of conceptual understanding.

A summary of the main issues raised in the session was made based on the transcript of the session. This summary was emailed to Panel 2 as member check. An operationalised definition was developed from the outcome.

2.3.3.3 Round 3: Operationalised Definition Validation Procedure. To stimulate discussion in the third round of sessions, an operationalised definition was sent to eight of the panellists together with three essays and three concept maps, again randomly chosen from those made by the final-year bachelor students. In taped sessions, the panellists met for 90 minutes in two focus groups of four to discuss the suitability of the operationalised definition for assessing conceptual understanding in international business. The two Panel 1 lecturers

joined the director and professor from Panel 2 in one group; the Panel 1 consultant joined the Panel 2 education manager and two international business practitioners in the other. The resulting definition was based on the outcome.

2.3.4 Analysis

2.3.4.1 Round 1: Panel 1 Analysis. At the first session, extensive notes were taken as Panel 1 members discussed their rankings and assessment criteria. Data were grouped under key headings. A 1,000-word summary revealed three characteristics of conceptual understanding. The initial representation of conceptual understanding for teaching in international business (Figure 2.1) was modified in light of these characteristics, resulting in the improved definition, which was subsequently sent to Panel 1 for member check.

After Panel 1 had discussed the improved definition of conceptual understanding for teaching in international business, the first author made a 13,000-word transcript of the session. After isolating key themes related to conceptual understanding, the first author then made a five-page summary. The second and third authors discussed and checked the quality of the transcript and summary. This 2,000-word summary included improved and further improved definitions of conceptual understanding. Further collating and summarising resulted in two characteristics of conceptual understanding.

2.3.4.2 Round 2: Panel 2 Analysis. During the Panel 2 session, the seven questions asked were: (1) Does the further improved definition describe conceptual understanding for teaching in international business? (2) Should the continuum from abstract to context-specific knowledge be 'general to specific' and/or 'abstract to concrete'? (3) Are levels or types of conceptual understanding more suitable? (4) Should levels or characteristics, for instance 'theoretical to practical', be used? (5) Should articulation be a criterion for interdisciplinary thinking? (6) Can the further improved definition be used to assess conceptual understanding in international business students? and (7) What tips do you have to operationalise the further improved definition so that it can be used to assess conceptual understanding in international business students? From the 8,000-word transcript of the Panel 2 session, answers to the seven questions were listed with explanatory text resulting in a 2,000-word summary. Five propositions were identified for defining conceptual understanding for teaching in

international business. Member check responses to these propositions from Panel 2 were collated and considered in the operationalised definition.

2.3.4.3 Round 3: Operationalised Definition Validation Analysis. Transcripts of the two extra focus group sessions to operationalise the definition of conceptual understanding totalled 10,000 words. A table summarised characteristics of conceptual understanding in five rows, namely topic, knowledge, evaluation, explanation and creativity. Two columns summarised the sessions and a third column summarised proposed components of conceptual understanding specific to international business. To check content validity, comparisons were made with theory in extant literature (Kidd & Parshall, 2000).

2.4 Results

2.4.1 Panel 1 Results

The Panel 1 marketing consultant and Finance lecturer assessed the essays and concept maps more consistently than the Economics lecturer did. For the essays, the Economics lecturer gave more weight to language and structure than the other two panellists, resulting in comparatively lower scores. For the concept maps, assessments among the three panellists were more similar.

Panel 1's review of the essays and concept maps revealed a wide range of potential characteristics for assessing conceptual understanding in international business. The characteristics fitted the following five categories: (1) topic, (2) structure, (3) information, (4) language usage and (5) creativity, with only superficial differences between essays and concept maps (e.g., under *structure*, a criterion for essays was *introduction / conclusions* and for concept maps, *use of arrows*). Panel 1 typified high quality essays and concept maps representing conceptual understanding in terms of (1) a central topic, (2) structural logic, (3) support for arguments, (4) grasping of concepts, and (5) information relevance. For example, the panellists agreed an essay on neuromarketing showed conceptual understanding the best. They considered it had a clear central topic, and was logically structured with well-supported arguments, well-grasped concepts and relevant information. Here is an excerpt from this essay (grammar uncorrected):

Neuromarketing is determining consumers want or need based on the measurement of the consumers' neural (brain) activity. There are several methods to measure neural activity. A general real-time measurement of the activity, or a time consuming full brain scan. Marketers can identify true thoughts of consumers by mapping the measured neural activity and create marketing strategies based on the maps.

Meanwhile, the panellists agreed an essay on technology showed hardly any conceptual understanding: it lacked a clear central topic and logical structure, arguments were not well supported, concepts were not well grasped, and the relevance of information was unclear. An excerpt follows:

The need for technology comes together with knowledge of technology. At first a demand must be created before this demand could be fulfilled by companies and professionals. At first the target group must be researched along with a possible demand. The demand will vary from organization to organization.

In further discussion, Panel 1 elaborated on the characteristics of conceptual understanding. These are presented as three propositions (Table 2.3).

Table 2.3

Panel 1 Characteristics of Conceptual Understanding for Teaching in International Business

Propositions	Reasoning
Meaningful connections between concepts around a central theme	Business systems evoke multifaceted, interrelating processes. Isolated factual information would not suffice.
Interdisciplinary thinking as the most important characteristic of conceptual understanding	Interdisciplinary thinking requires 'out-of-the-box' approaches, seeing novel ways of looking at old problems.
Abstract and context-specific knowledge	Extensive theoretical (abstract) and practical (context-specific) detail reflect a broad knowledge base.

2.4.1.1 Meaningful Connections Between Concepts Around a Central Theme.

The first characteristic Panel 1 specified for assessing quality was meaningful connections between concepts around a central theme. Panel 1 typified this characteristic as clusters of theoretical concepts logically bound by inter and intra-connections. The marketing panellist suggested these clusters resembled the activity systems used in business to explain how competitive advantage is achieved through the interaction of a variety of events and resources

(Porter, 1985). According to Porter's strategic business model, the synergy that results when production, distribution and marketing complement each other can thwart competitors (Porter, 1996). The panellist who presented this idea indicated that just as businesses require meaningful connections between processes for entrepreneurial success, so too does students' conceptual understanding require meaningful connections between different types of knowledge. All three panellists agreed that the best essays and concept maps possessed this characteristic.

2.4.1.2 Interdisciplinary Thinking as the Most Important Characteristic of Conceptual Understanding. Panel 1 agreed interdisciplinary thinking was the most important characteristic when assessing quality because it indicates an 'out-of-the-box' mentality. Panel 1 valued original methodological approaches and novel solutions to problems more highly than application of standard practices. Particularly in the essay on neuromarketing, the panellists felt the student makes an attempt to look beyond the marketing theory learned in the classroom to the groundbreaking field of neuroscience.

2.4.1.3 Abstract and Context-Specific Knowledge. Another characteristic Panel 1 specified for assessing quality in essays and concept maps was abstract and context-specific knowledge. By abstract knowledge, Panel 1 meant typical theoretical knowledge in a business-related college textbook like Macroeconomics (Mankiw, 2010) or Principles of Marketing (Kotler et al., 2008); for instance, the Theory of Comparative Advantage and the 4Ps Model (i.e., Product, Place, Price, Promotion). Panel 1 saw context-specific knowledge as the knowledge relating to specific artefacts, situations and activities in business practice, like accounts, acquisitions and audits. Panel 1 highly rated the essays and concept maps that had detailed descriptions of relevant business theories (abstract knowledge) and specific examples from international business practice (context-specific knowledge).

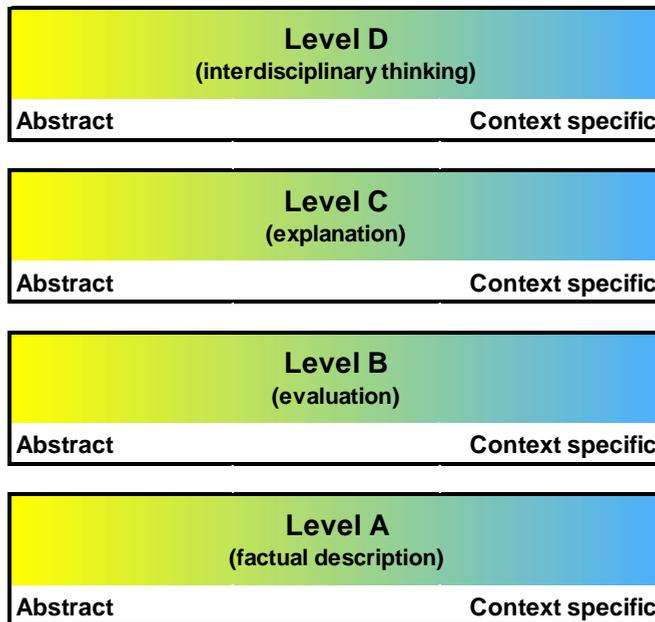
2.4.2 Improved Definition of Conceptual Understanding for Teaching in International Business

The initial definition of conceptual understanding for teaching in international business (Figure 2.1) had three levels of conceptual understanding. However, these three levels were rejected because Level 1 (without theoretical concepts) and Level 2 (with at least one

theoretical concept without mutual connection) did not meet Panel 1’s specification ‘meaningful connections between concepts around a central theme’. Panel 1 recognised four levels of conceptual understanding: from *factual description*, through *evaluation* and *explanation*, to *interdisciplinary thinking* as the deepest level. At each level, Panel 1 felt understanding could be based predominantly on abstract knowledge, predominantly on practical knowledge or, ideally, on a combination of both abstract and practical knowledge.

Figure 2.2

Improved Representation of Conceptual Understanding for Teaching in International Business



The improved definition based on Panel 1’s first session (Figure 2.2) therefore depicts four levels of conceptual understanding rather than three levels, with a continuum at each level from abstract knowledge to context-specific knowledge. The abstract end of the continuum signifies a lack of practical knowledge; the context-specific end of the continuum signifies a lack of theoretical knowledge. The middle position in the continuum indicates both abstract and context-specific knowledge, signifying knowledge of both practice and theory.

When presented with the improved definition (Figure 2.2) at the second session, Panel 1 agreed with four levels of conceptual understanding. They also recognised the continuum of *abstract to context-specific* knowledge. However, they proposed changes as well (Table 2.4).

Table 2.4

Panel 1 Revised Characteristics of Conceptual Understanding for Teaching in International Business

Panel 1 Propositions (Table 2.3)		Panel 1 Revised Propositions	
Propositions	Reasoning	Propositions	Reasoning
Meaningful connections between concepts around a central theme	Business systems evoke multifaceted, interrelating processes. Isolated factual information would not suffice.	Integrated thinking as the deepest level of conceptual understanding	Integrated thinking represents the deepest level of conceptual understanding because it involves making meaningful connections between concepts from different disciplines which requires out-of-the-box thinking.
Interdisciplinary thinking as the most important characteristic of conceptual understanding	Interdisciplinary thinking requires 'out-of-the-box' approaches, seeing novel ways of looking at old problems.		
Abstract and context-specific knowledge	Extensive abstract (theoretical) and context-specific (practical) detail reflect a broad knowledge base.	Context-specific knowledge	Knowledge of practical situations is important; theoretical knowledge is less important.

2.4.2.1 Integrated Thinking as the Deepest Level of Conceptual Understanding.

Panel 1 decided *interdisciplinary thinking* should be called *integrated thinking*. They preferred the term integrated to interdisciplinary because integrated emphasises making meaningful connections with other disciplines rather than possessing domain-specific knowledge of other disciplines. Panel 1 agreed that integrated thinking is the deepest level of conceptual understanding because it involves making meaningful connections with ideas and theories from other disciplines to solve problems, which requires out-of-the box, creative thinking.

Regarding the improved representation of conceptual understanding for teaching in international business, Panel 1 advised placing Level A, factual description, at the top and Level D, integrated thinking, at the bottom. They thought shallow understanding at the top and deep understanding at the bottom was more logical.

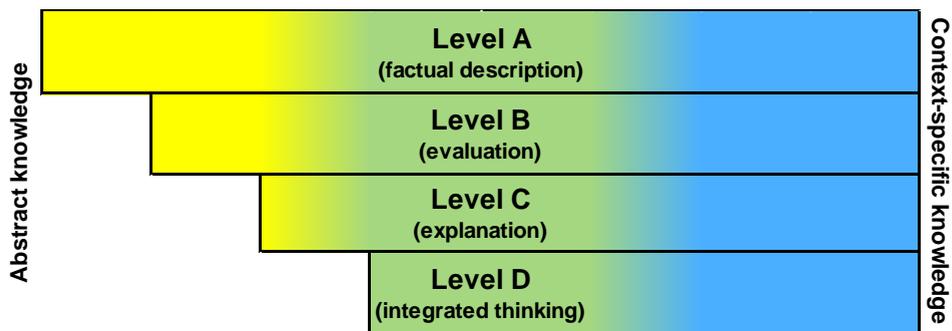
2.4.2.2 Context-Specific Knowledge. Panel 1 changed their mind about the continuum of abstract to context-specific knowledge. Originally, they thought it possible to occupy any point in the continuum at any level. After the second session, they decided that while the deepest level of conceptual understanding did not require abstract knowledge, the deepest level of conceptual understanding did require context-specific knowledge. Panel 1 thought it was possible to have deep conceptual understanding about how to market a product without any academic theoretical knowledge but thought it was not possible to have deep conceptual understanding about marketing without any practical experience.

2.4.3 Further Improved Definition of Conceptual Understanding for Teaching in International Business

Figure 2.3 shows the further improved definition of conceptual understanding for teaching in international business based on Panel 2's second session. Integrated thinking replaces interdisciplinary thinking as the deepest level of conceptual understanding and is presented at the bottom to represent depth of conceptual understanding. The shorter continuums at Levels B, C and D reflect the fact that deeper levels of conceptual understanding require context-specific knowledge.

Figure 2.3

Further Improved Representation of Conceptual Understanding for Teaching in International Business



2.4.4 Panel 2 Results

Panel 2 found it difficult to define conceptual understanding for teaching in international business. However, they were convinced conceptual understanding was important for professionals to function adequately in business practice.

Based on the session with Panel 2, five propositions regarding conceptual understanding for teaching in international business were formulated (Table 2.5). Four of the six Panel 2 members confirmed these propositions with the words ‘very accurate’, ‘reflect my memory’, ‘no objections’ and ‘an adequate report of the panel discussion’. One panellist added that students face increasingly complex tasks during their studies so need to deal with increasingly complex contexts and therefore needed increasingly deeper conceptual understanding. She also thought it undesirable not to consider language skill as a characteristic of conceptual understanding. She could follow the reasoning for leaving it out but felt that conceptual understanding would be difficult to assess without a specific language criterion. She suggested at least including language skill implicitly as a part of articulation. Another panellist had just one point in his feedback about integrated and out-of-the-box thinking. He thought integrated thinking should be explained in terms of right and left-brain thinking rather than in terms of interdisciplinary thinking. He did not feel it was always necessary to think in terms of other disciplines.

2.4.4.1 Characteristics of Conceptual Understanding. Panel 2 argued that the elements factual description, evaluation, explanation and integrated thinking are not levels of conceptual understanding; they are characteristics of conceptual understanding. Panel 2 discussed whether conceptual understanding for teaching in international business should be described as a learning process but in the end, they rejected the idea of a cumulative hierarchy, with each level linked to one characteristic (Figure 2.3). The panel decided that superficial explanation does not show deeper conceptual understanding than sophisticated factual description.

Table 2.5

Panel 2 Characteristics of Conceptual Understanding for Teaching in International Business

Panel 1 Revised Propositions (Table 2.4)		Panel 2 Propositions	
Propositions	Reasoning	Propositions	Reasoning
Integrated thinking as the deepest level of conceptual understanding	Integrated thinking represents the deepest level of conceptual understanding because it involves making meaningful connections between concepts from different disciplines, which requires out-of-the-box thinking.	Characteristics of conceptual understanding	Factual description, evaluation, explanation and integrated thinking are characteristics of conceptual understanding rather than levels.
		Relevant out-of-the-box integrated thinking	Panel 2 agreed integrated thinking requires out-of-the-box thinking, but stressed the need of relevance for international business to ensure meaningful connections between disciplines.
		Articulation	Articulation means that knowledge is explicit. It shows objective reasoning based on facts rather than intuition.
Context-specific knowledge	Knowledge of practical situations is important; theoretical knowledge is less important.	General to specific, abstract to concrete knowledge	Conceptual understanding requires theoretical knowledge as well as practical knowledge. It also implies having the flexibility to move between general to specific instances, as well as abstract to concrete concepts.
		Knowledge specific to international business	Knowledge must be specific to international business when defining conceptual understanding in this domain.

2.4.4.2 Relevant out-of-the-Box Integrated Thinking. Panel 2 agreed with Panel 1 that integrated thinking is an important characteristic of deep conceptual understanding and requires out-of-the-box thinking to extend beyond the subject. Both panels also agreed that few students show out-of-the-box thinking. However, Panel 2 stressed that to make meaningful connections with other disciplines in order to understand and solve complex problems in international business, the connections have to be relevant for international business. Otherwise, the resulting definition would be too generic to describe conceptual understanding for teaching in international business.

2.4.4.3 Articulation. Articulation means making knowledge and thinking explicit (e.g., defining a problem and describing it to others), and explaining what you do and why (Collins et al., 1989). Panel 2 discussed at length whether correct grammar, vocabulary and spelling were essential but finally decided that while language accuracy is desirable, faulty grammar, limited vocabulary and misspelled words do not indicate of themselves a lack of conceptual understanding. Ultimately, Panel 2 agreed with Panel 1 that articulation is an important characteristic of conceptual understanding for teaching in international business because it demonstrates objective reasoning based on facts rather than intuition. International business professionals need to explain decisions actively using rational argumentation; passive insight is not enough.

2.4.4.4 General to Specific, Abstract to Concrete Knowledge. Panel 2 did not understand why the continuum at Level D was narrower than at Level A in the further improved definition of conceptual understanding for teaching in international business (Figure 2.3). Panel 2 did not agree that deep conceptual understanding could be achieved without theoretical knowledge because even if the theoretical knowledge does not come from books, professionals develop their own theories based on practical experience. Moreover, Panel 2 thought ‘abstract to context-specific’ knowledge in the further improved definition of conceptual understanding for teaching in international business (Figure 2.3) was muddled because it contained two overlapping continuums. They argued that there should be two continuums: ‘general to specific’ knowledge and ‘abstract to concrete’ knowledge. The general to specific continuum of knowledge involves giving specific examples (e.g., a local company firing employees) of general concepts (e.g., an economic crisis) and vice versa. The second continuum, abstract to concrete knowledge, also involves switching back and forth; for instance, giving concrete examples (e.g., an annual report) of abstract concepts (e.g., business communication) and vice versa.

2.4.4.5 Knowledge Specific to International Business. Panel 2 suggested that a characteristic of conceptual understanding for teaching in international business is knowledge specific to international business. The definition would otherwise be too generic to explain the conceptual understanding needed to solve complex problems typical of the international business domain.

2.4.5 Resulting Definition of Conceptual Understanding for Teaching in International Business

Panel 2 described conceptual understanding for teaching in international business in terms of factual description, evaluation, explanation and relevant integrated thinking. Conceptual understanding requires the articulation of general, specific, abstract and concrete knowledge specific to international business.

When developing this definition, the eight panellists had suggestions to make the definition more relevant for teaching in international business. The panellists argued that knowledge does not exist in a vacuum: characteristics of the global and local contexts must be considered. The panellists also specified four knowledge types from the general to specific and abstract to concrete continuums, namely (1) general concrete, (2) specific concrete, (3) general abstract and (4) specific abstract. For international business, general concrete knowledge concerns business practices. Specific concrete knowledge concerns instances of business practices. General abstract knowledge concerns business concepts. Specific abstract knowledge concerns business mechanisms (Table 2.6).

Table 2.6

Components of Conceptual Understanding for Teaching in International Business

Component	Description	Examples
1 Global context characteristics	what the global situation is like	import duties, global economic climate, government policies
2 Local context characteristics	what the local situation is like	company hiring policies, council tax rates, local government spending
3 Business practices	the methods, procedures and rules companies follow to reach objectives	Just-In-Time manufacturing, accrual accounting, pricing strategies
4 Instances of business practices	what particular organisations are doing	IKEA's distribution system, Phillips' earning forecast, Disney's marketing strategy
5 Business concepts	jargon and theories	theory of comparative advantage and international trade, international financial reporting standards, brand positioning
6 Business mechanisms	how things work	quality control mechanism, exchange rate mechanism, pricing mechanism

For the resulting definition of conceptual understanding for teaching in international business, each component of conceptual understanding is assessed along a five-point scale: (1) negligible, (2) weak, (3) moderate, (4) strong, and (5) extraordinary. Both panels agreed factual description, evaluation, explanation and integrated thinking are important

characteristics of deep conceptual understanding. A missing, trivial or false description counts as *negligible*. A blurred, woolly or unclear account is considered *weak*. A general description listing essential features rates *moderate*. Panel 2 stressed that articulation is an important characteristic of conceptual understanding because it shows ‘objective reasoning based on facts’ so for *strong* conceptual understanding, claims must be defended, justified and supported. Finally, both panels agreed that integrated, out-of-box thinking is an important characteristic of conceptual understanding for teaching in international business. In the resulting definition, out-of-the box thinking represents *extraordinary* conceptual understanding. Extraordinary conceptual understanding is typified by alternative viewpoints, novel links to other disciplines and exploring possibilities (e.g., using *if* and *although*). Table 2.7 provides examples to illustrate the levels for each component.

Table 2.7

Per Level Examples of Conceptual Understanding for Teaching in International Business

Component	Five-point Scale				
	Negligible	Weak	Moderate	Strong	Extraordinary
Global context characteristics	Mentions oil prices	Implies oil prices are affecting profits	Describes the effect of oil prices on consumer demand	Uses evidence to explain how oil prices are affecting consumer demand	Considers growing environmental awareness when examining effects of oil prices on consumer demand
Local context characteristics	Mentions local government	Implies local companies buy locally	Describes how local government is offering tax breaks to local companies that buy locally-produced goods and services	Uses evidence to explain how the local government’s <i>local purchasing</i> policy is positively affecting brand image and sales of local companies	Looks at other cities to examine potential problems like <i>local washing</i> , i.e., when companies make false claims about where goods are sourced from
Business practices	States that companies charge prices	Implies that some companies use cost-plus pricing	Describes how companies using cost-plus pricing add their profit margin to the production cost	Argues that cost-plus pricing is widely used because companies can easily calculate, justify and change prices	Suggests that in circumstances such as a political boycott of competitors’ goods, cost-plus pricing could mean prices do not rise in response to resulting scarcity
Instances of business practices	States that a particular company’s smartphone is expensive	Implies that a particular company is using premium pricing	Describes how a particular company is using premium pricing meaning the price of its smartphone is over the market price	Explains that premium pricing is advantageous for the company because it is creating product exclusivity and strong market entry barriers	Suggests that different pricing strategies could suit different markets: the company could consider selling a lower-cost product in less affluent markets

Component	Five-point Scale				
	Negligible	Weak	Moderate	Strong	Extraordinary
Business concepts	Mentions brand logos	Implies brand positioning distinguishes brands	Describes how brand positioning involves creating a unique selling proposition	Explains how brand positioning means communicating a brand's unique value, which involves identifying the emotional benefit customers will experience from the brand	Reflects how global brand positioning can be problematic: different traditions and values so customers from different cultures will not view a brand's emotional benefit in the same way
Business mechanisms	Mentions pricing	Implies a relationship between pricing and demand	Describes how market prices depend on an equilibrium where the quantity demanded by consumers is the same as the quantity producers are willing to supply	Explains how companies lose sales when they price their goods too high or too low: too high and consumer demand drops; too low and potential profit is lost	Reflects that if a company can differentiate its products with brand positioning, it could price its products above market prices without risking a drop in customer demand

The resulting definition comprises six components and five degrees of conceptual understanding for teaching in international business. The deepest level signifies original, lateral and groundbreaking thinking. Table 2.8 shows the resulting definition of conceptual understanding for teaching in international business.

Table 2.8

Resulting Definition of Conceptual Understanding for Teaching in International Business

Component	Five-point Scale				
	Negligible	Weak	Moderate	Strong	Extraordinary
1 Global context characteristics	trivial	implied	described	explained	examined
2 Local context characteristics	trivial	implied	described	explained	examined
3 Business practices	trivial	implied	described	explained	examined
4 Instances of business practices	trivial	implied	described	explained	examined
5 Business concepts	trivial	implied	described	explained	examined
6 Business mechanisms	trivial	implied	described	explained	examined

2.5 Discussion

Conceptual understanding is required to solve complex problems (Middleton, 2002; Netherlands Association of Universities of Applied Sciences, 2016), but existing taxonomies of educational objectives like those of Bloom et al. (1956) and Krathwohl (2002) are not designed to assess conceptual understanding and are too generic to describe conceptual understanding in a specific domain like international business (Harteis & Billett, 2013). A

means to assess conceptual understanding for teaching in international business is needed to ensure adequate teaching and assessment strategies. Educators need insight into students' conceptual understanding so that they can best judge (1) how and when to give feedback (Chi et al., 2004) and (2) what types of assessment promote deep learning outcomes (Entwistle, 2000). A definition of conceptual understanding for teaching in international business is the first step towards such a means of assessment. This study therefore explores the question 'How can conceptual understanding for teaching in international business be defined?'

From this exploratory study, we conclude that there are six components and five degrees of conceptual understanding for teaching in international business. Given the wide range of occupations international business professionals follow, it is not possible to provide an exhaustive list of the knowledge all international business professionals need to function effectively. The resulting definition therefore specifies the general components of conceptual understanding international business professionals need to function at different levels. Yet professionals in the field must decide which actions are most fitting according to the situations they face (Harteis & Billett, 2013). Besides declarative knowledge (knowing what), vocational experts like international business professionals need other types of knowledge including procedural knowledge (knowing how) and situational knowledge (knowing where, who and when) (Billett, 2001). The resulting definition for teaching in international business describes components of conceptual understanding needed by students but further research could investigate the *types* of knowledge international business professionals need in particular situations, including what, how, where, who and when.

2.5.1 Relevance for Other Professional Domains

The extent to which the resulting definition could be relevant to other professional domains is unknown. For international business, both the local and global contexts are important components of conceptual understanding. For domains that do not focus on the international environment, the global context might be much less relevant. Again, the components of conceptual understanding based on general, specific, abstract and concrete knowledge could be adapted for other domains. Yet these components might also be much less relevant in domains with a narrower range of occupations and situations than international business. This

study involved input from international business researchers, educators and practitioners. To investigate the extent to which the resulting definition could be relevant to other professional domains, further research involving suitable experts from other domains would be required.

2.5.2 Other Aspects of the Resulting Definition

2.5.2.1 Learning Outcome. The resulting definition describes conceptual understanding for teaching in international business in terms of a learning outcome. Conceptual understanding could also be described as a learning process where ever-deeper levels of understanding are achieved by cycling repeatedly through a series of steps each linked to one characteristic. A definition of conceptual understanding as a learning process could be the basis of an effective teaching strategy because it would specify how students can achieve deeper levels. However, the ultimate aim of this study is to assess students' levels so conceptual understanding is described as a learning outcome.

2.5.2.2 Relevant out-of-the-Box Integrated Thinking. The resulting definition describes the deepest level of conceptual understanding for teaching in international business in terms of relevant out-of-the-box integrated thinking, which is considered necessary to solve the complex problems in international business occupations (International Labour Organization, 2012). The final definition describes outstanding conceptual understanding as 'typified by alternative viewpoints, novel links to other disciplines and exploring possibilities'. Yet it is possible that outstanding conceptual understanding can only be achieved in the workplace, with the development of 'intuitive expertise' that comes from experience (Harteis & Billett, 2013). How feasible it is to assess outstanding conceptual understanding from students' written text will be a question for further research.

2.5.2.3 Articulation. A characteristic of conceptual understanding is articulation. Articulation involves explanation, which is used in the resulting definition to describe strong conceptual understanding. Whether to assess grammar, vocabulary and spelling when assessing conceptual understanding is debatable. Explanation and reasoning must be communicated through language and clear communication depends on clear language. However, undue attention to language mechanics like grammar, vocabulary and spelling increases cognitive load during the writing process and therefore reduces deep processing

capabilities (Bereiter & Scardamalia, 1987). Deep processing is needed for deep conceptual understanding (Entwistle, 2000). Language mechanics relate to language quality rather than conceptual understanding. While language accuracy is generally considered an important criterion for education assessment, language mechanics are not taken up in the resulting definition as a component of conceptual understanding.

2.5.2.4 General, Specific, Abstract and Concrete Knowledge. We conclude that conceptual understanding for teaching in international business requires general, specific, abstract and concrete knowledge. Without general, context-free knowledge, transfer is limited and conceptual understanding is shallow (Ausubel et al., 1978; Davydov, 1988; Mayer, 1992). Similarly, decontextualised knowledge limits knowledge transfer and impedes conceptual understanding (Billett, 2001). We also conclude that conceptual understanding in a domain like international business involves giving concrete examples of abstract concepts and forming abstract concepts from concrete examples (Ausubel et al., 1978; Davydov, 1988; Mayer, 1992). In the resulting definition, abstract knowledge has been described in terms of business mechanisms (how things work) and business concepts (jargon and theory). One question is whether this abstract, theoretical knowledge need be based on book learning: individuals can also develop personal professional theories about a domain (Huijts et al., 2011). However, as the aim of this study is to develop a definition for educational purposes, abstract knowledge is described in terms of textbook knowledge specific to international business.

2.5.3 Methodological Issues

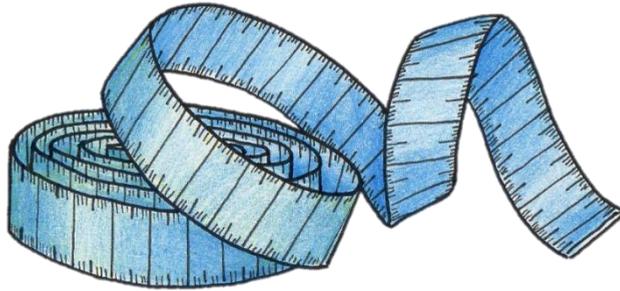
2.5.3.1 Validity. This study's purpose was to explore a basis for educators to assess students' conceptual understanding of international business. For exploratory research like this study, focus groups with close involvement and knowledge about the research question have the potential to penetrate the problem (Kitzinger, 1995). When seeking expert opinions, purposive sampling is considered appropriate since the aim is to choose participants based on their expertise in answering the research question rather than their representativeness of the population (Skulmoski et al., 2007). However, using a small, non-representative sample affects external validity so follow-up research is required to verify findings. To ascertain

whether the definition can be applied across different settings, further research is needed involving a wider sample of international business experts that is more representative of all international business occupations, industries and nations.

2.5.3.2 Reliability. Developing and testing theories to uncover new phenomena using qualitative research requires rigorous practice (Seale & Silverman, 1997). While a detailed account of data collection was kept, and the other two authors checked analyses, the first author was primarily responsible for transcribing, condensing and analysing data from panel sessions. On the one hand, internal consistency can benefit from one researcher taking a leading role in mediating sessions and conducting analyses (Kidd & Parshall, 2000). On the other hand, the first author's interpretations might have swayed the other authors' judgements. Similarly, despite a vested interest in the outcome of the study and three rounds of data collection to verify results, panellists' viewpoints might also have been impacted by the first author's interpretations. However, this study was exploratory by nature and subject to further research to clarify findings. To increase the strength of this study, further research could include extensive discourse, observation or secondary data analysis as described by Silverman (2013).

Chapter 3

Revealing Conceptual Understanding of International Business²



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Abstract

The study presented in this chapter aims to identify an adequate approach for revealing conceptual understanding in higher professional education. Revealing students' conceptual understanding is an important step towards developing effective curricula, assessment and aligned teaching strategies to enhance conceptual understanding in higher education. Essays and concept maps were used to determine how students' conceptual understanding of international business can be revealed adequately. To this end, 132 international business students in higher professional education were randomly assigned to four conditions to write essays and to construct concept maps about an international business research topic. The conditions were: essay alone, essay after concept map, concept map alone, and concept map after essay. An assessment rubric was used to assess the breadth and depth of students' conceptual understanding. Results show essays are the most adequate approach for revealing conceptual understanding of international business. In particular, concept maps revealed fewer facts and less reasoning than essays. Essays written after concept maps were less effective than essays, possibly since students perceived these essays as redundant. Results are discussed, including the suitability of essays for assessing conceptual understanding and recommendations for educators on using essays and concept maps. Further research is suggested on how educators can foster conceptual understanding.

Keywords: conceptual understanding, assessment, higher professional education, international business, essays

3.1 Introduction

Preparing international business students for the wide range of roles and contexts of the international business professions is challenging for educators. Each role and context presents unique and complex realities. A typical group of students in international business education will contain a variety of aspiring professionals who will work in a variety of contexts: perhaps an investment adviser for a financial services company in Paris, a logistics manager for an agricultural supply chain in Minneapolis, an accountant for a children's charity in Cape Town, a marketing specialist for an international sports shoe brand based in Amsterdam.

Educators need to provide international business students with a worldview, international business knowledge and a global attitude (Kedia & Englis, 2011b). At the same time, they must prepare students for the rich-textured nature of the international business domain, the type of domain scholars call *ill structured* because each situation evokes complicated and irregular patterns of interconnecting concepts where goals overlap and problems are unclear (Neubert et al., 2015; Spiro et al., 1992).

To function in an ill-structured domain, professionals need conceptual understanding, meaning a clear and complete overview of relevant facts, theories and professional practices connected to a problem (Entwistle, 2000; Harteis & Billett, 2013). Because conceptual understanding involves the interrelating and structuring of complete and correct knowledge, it enables professionals to know what knowledge to apply and when to apply it (Leppink et al., 2012; Nickerson, 1985). Conceptual understanding is important for professionals so that they know what steps to take, even when confronted with situations they have never encountered before (Newton, 2012). It enables them to solve problems, not just by connecting individual concepts, but by putting concepts together 'to form a novel, coherent whole' (Kratwohl, 2002, p. 215). This *novel, coherent whole* is more than just the sum of its parts because it does not just mean knowledge of concepts and their connections. It also means knowing how each part relates to the whole, so that knowledge can be applied in new situations (Van Oers, 1998b).

So, revealing students' conceptual understanding would help educators in higher education assess the levels and nature of students' conceptual understanding (Edens &

Shields, 2015). In business schools, it would enable educators to gauge the extent of students' professional development by assuring whether learning goals are met (Von der Heide, 2015). However, determining the kind of conceptual understanding needed in professional life and revealing the extent to which their students possess it, is difficult for educators (Bartman et al., 2007). Educators struggle to develop assessment for and grade conceptual understanding, not least because it is such a difficult concept to grasp (Nickerson, 1985). Since educators need an adequate approach to reveal conceptual understanding of international business, the aim of this study is to answer the question: 'How can conceptual understanding of international business be revealed?'

3.2 Revealing Conceptual Understanding of International Business

3.2.1 Conceptual Understanding of International Business

A first step towards revealing conceptual understanding is operationalising the concept. Chapter 2 concluded that conceptual understanding of international business includes six components: (1) global context characteristics, (2) local context characteristics, (3) business practices, (4) instances of business practices, (5) business concepts and (6) business mechanisms. For a particular international business situation, these six components represent a synthesis of general and specific knowledge, and concrete knowledge (context, practices and instances) and abstract knowledge (concepts and mechanisms). Besides describing these six components, deep conceptual understanding also means providing reasoning (Nickerson, 1985; White, 2007). Chapter 2 identified that conceptual understanding of international business ultimately involves out-of-the-box thinking, which means considering alternative points of view, making novel links to other disciplines and weighing up different possibilities.

3.2.2 Task to Reveal Conceptual Understanding

To reveal conceptual understanding of international business, a complex task is needed because a complex task reflects the complex nature of problems typical of the ill-structured domain that is international business (Datar et al., 2011). A complex task activates a deep and active approach towards tackling a problem (Entwistle, 2000). A complex task means an

open, unstructured task requiring the application and construction of knowledge (Alonso-Tapia, 2002). The type of task needed to reveal knowledge construction and thus conceptual understanding requires that students use their own language rather than repeating knowledge verbatim from lectures or literature. Students can replicate knowledge without understanding it, but when they are compelled to express knowledge in their own terms, their conceptions are more likely to become apparent (White, 2007). To fully engage, students should perceive the task as authentic, meaningful and relevant (Brown et al., 2014; Gulikers et al., 2008).

3.2.3 Communication Approach for Revealing Conceptual Understanding

Complex tasks require detailed communication for which relevant prior knowledge is retrieved and arguments and ideas are explicated (Allen & Tanner, 2006; Kellogg & Whiteford, 2009). The communication approach for revealing conceptual understanding therefore needs to enable construction of meaning (Entwistle, 2000). Meaning construction involves making connections between ideas and providing evidence for claims (Entwistle & Nisbet, 2013). A communication approach that reveals connections and argumentation will reveal conceptual understanding, thereby differentiating among deep, moderate and shallow levels. Such a communication approach will enable the expression of complex information. Assessment options with the potential to reveal conceptual understanding include essays (Rijlaarsdam & Braaksma, 2015), concept maps (Zanting et al., 2003), case studies (White, 2007) and portfolios (Klenowski et al., 2006).

However, each communication approach has different qualities for consideration. For example, essays stimulate explication of conceptual understanding because they involve writing. This is because writing is a process that requires students to negotiate meaning (Flower & Hayes, 1981). Concept maps reveal conceptual understanding through visualisation of integrated knowledge (Huijts et al., 2011). This is because concept maps reveal key concepts and connections involving the application of knowledge in a complex situation (Jonassen et al., 1993). Case studies of the type used for instruction in business schools require decision making in response to multifaceted dilemmas faced by international organisations. Portfolios can provide a rich range of work samples as evidence of understanding.

While case studies are complex and authentic, and require deep conceptual understanding, their complexity makes assessment challenging (Rochford & Borchert, 2011). Not only do they require the development of a complex case, they also require the development of one or more communication approaches to reveal conceptual understanding. Likewise, portfolios require assessors to perform considerable analysis, which also makes assessment difficult (Van der Schaaf & Stokking, 2008). Efficient assessment is desirable because it is labour-saving for educators, manageable for students and cost-effective for schools (Brown, 2004). Compared to case studies and portfolios, essays and concept maps have the advantage of demanding less time and effort from educators and students, making them potentially valuable communication approaches for revealing conceptual understanding.

A combination of essay and concept map could be an even more effective approach for revealing conceptual understanding than either one or the other because essays and concept maps reveal different types of knowledge. Essays highlight reasoning (Flower & Hayes, 1981); concept maps highlight concepts and structure (Huijts et al., 2011). It could be expected then that a concept map constructed after writing an essay would reveal more conceptual understanding than a concept map alone and that an essay written after constructing a concept map would reveal more conceptual understanding than an essay alone. The reasoning developed in the writing of an essay could potentially effect a more complex concept map with a richer range of causal connections, while the concepts and connections revealed when constructing a concept map could potentially effect a more structured essay with a richer range of concepts. Since reasoning is such an important part of conceptual understanding (Nickerson, 1985; White, 2007), essays written with the heuristic benefit of first constructing a concept map could feasibly be the best approach for revealing conceptual understanding. To conclude, it was expected that a combination of essay and concept map would reveal more conceptual understanding than an essay or concept map alone, and that essays written by students who had first constructed concept maps would reveal conceptual understanding better than concept maps produced after essays.

The aim of this study is to find an adequate approach for revealing conceptual understanding of international business. In four conditions (i.e., essay alone, essay after concept map, concept map alone, and concept map after essay), bachelor-level international

business students produced documents which reflected their conceptual understanding of international business. The documents were analysed with an operationalisation of conceptual understanding based on the outcome of the first study, as presented in Chapter 2.

3.3 Method

This study uses quantitative data to determine which of four conditions most adequately reveals conceptual understanding of international business. To provide material for analysis, international business students at a Dutch university of applied sciences wrote essays and constructed concept maps about their research.

3.3.1 Context

Data were collected during a course given by the first author in the first semester of the final year of a four-year Bachelor of Business Administration degree programme. Compared to other courses, students find the graduation research component of the curriculum challenging (Reynolds & Thompson Jr, 2011). Their research experience tends to be structured projects carried out with fellow students in an educational setting, which are heavily supervised by lecturers. To graduate, they must formulate their own applied research question, conduct literature research, write a research plan, collect and analyse data, and write and defend a graduation paper. All of this must be done in one semester while the student is interning at an international company performing a variety of work activities, often in a foreign country and sometimes in their third language. Students are assigned a supervising lecturer and a company supervisor, but they find this task daunting. Therefore, the course during which the data were collected is important for preparing students.

The course comprises 14 weekly sessions of 90 minutes during which students develop and apply domain knowledge by conducting a literature review and making a research proposal. Students prepare weekly assignments designed to help them write a 1,000-word mid-semester literature review and a 1,000-word end-of-semester research proposal on their individual research topic. Each week in class, students exchange feedback and, with students' permission, the lecturer (first author) discusses individual assignments with the

class. Assessment of the course is based on the literature review (50%) and research proposal (50%).

The students following the graduation research course have generally interned at an international company for half a semester in their second year of study. Nearly all have also studied abroad for one or two semesters in the third year at a partner university including Austria, Belgium, Canada, China, Denmark, Finland, France, Germany, Ireland, Poland, Russia, South Korea, Spain, Taiwan, Thailand and Turkey.

3.3.2 Participants

The study involved 132 students enrolled in the English-language programme International Business and Management Studies (IBMS). Eighty (61%) were male. The mean age was 23.1 years ($SD = 2.1$). Most were Dutch (80%), in the fourth year (81%), had completed the first year certificate (98%), had completed the first 10-week internship (98%) and had submitted (but not yet received a grade for or feedback on) the literature review on their research topic (84%) (Table 3.1).

Table 3.1

Participant Metadata at Time of Task (N = 132)

Nationality	The students were from 14 different countries, namely Bulgaria (10), Burundi, China, Croatia, France (2), Germany (3), Ghana, Iraq (2), Macedonia, The Netherlands (106), Russia, Somalia, Thailand and Vietnam.
Year of study	Most students were in their 4 th year (107). Students with study delay were in their 5 th year (18), 6 th year (2), 7 th year (2) or 8 th year (3).
First year certificate	Mean delay = .7 years ($SD=.8$) [no delay(36), semester delay (36), year delay (36), 2-year delay (14), over 2-year delay (8), exempted (2)]
First internship	Mean grade = 7.8/10.0 ($SD=.8$) [passed (128), not yet done (3), exempted(1)]
Literature review	Mean grade = 6.2/10.0 ($SD=1.7$) [passed (84), failed (27), not yet submitted (21)]

At the time of the research activity, students had earned an average of 174 credits ($SD = 17$) towards the 240 (73%) needed to graduate.

3.3.3 Experimental Conditions

To investigate which approach is the most adequate for revealing conceptual understanding of international business, the students were randomly assigned to one of four conditions.

Depending on the condition, students (1) wrote an essay, (2) first constructed a concept map and then wrote an essay, (3) constructed a concept map, or (4) first wrote an essay and then constructed a concept map (Table 3.2).

Table 3.2

Conditions and Sample Sizes

	Condition	n	Essay	Concept map
1	Essay alone	36	x	
2	Essay after concept map	35	x	x
3	Concept map alone	30		x
4	Concept map after essay	31	x	x

Chi-square tests showed an even spread of male students and an even spread of Dutch students per condition. ANOVA showed no significant effect of condition on age, study delay, grades or credits.

3.3.4 Task

The task given to reveal conceptual understanding was related to assessment in the graduation research course. This made the task authentic, meaningful and relevant (Brown et al., 2014). Students were asked to ‘explain as clearly and in as much detail as you can the business area you are interested in researching for your graduation project at an international company’. The task was authentic because it involved the complex domain of international business (Datar et al., 2011). The task was designed to be meaningful for students, by offering them individual feedback to help with future graduation research. The task was relevant for students because it was about their own research. Since the task was authentic, meaningful and relevant, we expected that the task would be an adequate trigger for students to reveal conceptual understanding of international business.

3.3.5 Essays and Concept Maps

Students were experienced in using MS Word for essay writing and MS Visio for concept mapping. Therefore, to reveal conceptual understanding, students used MS Word to write essays and MS Visio to construct concept maps. When producing the essays and concept

maps, students were permitted to use Word spelling and grammar, thesaurus and translation tools. They could not use the Internet, books or their own notes.

For the essays, students were advised to use an introduction, body and conclusion. For the concept maps, students were advised to use shapes, colour and arrows, and to explain concepts and connections. The concept map groups received concept maps on ‘obesity’ as an example, and also practised constructing a concept map on ‘Christmas’ with the first author.

3.3.6 Assessment Rubric

A rubric was used to assess students’ essays and concept maps because rubrics are useful tools to explicate and assess the criteria and standards of complex learning outcomes like conceptual understanding (Allen & Tanner, 2006; Reddy & Andrade, 2010). The rubric was based on results of Chapter 2. The rubric scores six components and five degrees of conceptual understanding of international business, culminating in a level of conceptual understanding from 6 for *negligible* to 30 for *extraordinary* (Table 3.3).

Table 3.3

Rubric for Revealing Conceptual Understanding of International Business

		Five-point Scale				
Components		Negligible	Weak	Moderate	Strong	Extraordinary
		trivial or false information	blurred or unnamed features	essential features	objective reasoning based on facts	out-of-the-box thinking
		1 point	2 points	3 points	4 points	5 points
Background	Global context characteristics [general]	names an international entity	implies international conditions	describes international conditions	explains significance of international conditions for topic	explores alternative ways of regarding the global situation
	Local context characteristics [specific]	names the region or country	implies local circumstances	describes local circumstances	explains significance of local circumstances for topic	explores alternative ways of regarding the local situation
Concrete	Business practices [general]	uses layman’s terms for business activities	lists business activities	describes what businesses do	gives reasons for what businesses do	explores which business practices suit which situations
	Practice instances [specific]	names the company	lists company facts	describes what particular companies do	gives reasons for what particular companies do	explores alternative viewpoints on how particular companies should act

		Five-point Scale				
		Negligible	Weak	Moderate	Strong	Extraordinary
Components		trivial or false information	blurred or unnamed features	essential features	objective reasoning based on facts	out-of-the-box thinking
		1 point	2 points	3 points	4 points	5 points
Abstract	Business concepts [general]	uses layman's terms for business concepts	lists business concepts	defines business concepts	explains significance of business concepts for topic	provides novel links to other disciplines
	Business mechanisms [specific]	uses layman's terms for business mechanisms	lists business mechanisms	describes business mechanism components	explains how business mechanisms work	explores how business mechanisms work in different situations

Content validity of the rubric was established during the previous study through two independent panels of experts from academia, education and professional practice who explicated knowledge and experience of the international business domain. Concurrent validity of the rubric was checked by determining the relationship between the students' conceptual understanding and academic performance. A positive correlation was expected between the two variables because a strong academic performance requires deep conceptual understanding (Entwistle, 2000). Conceptual understanding showed no relationship with study delay ($p = .161$), internship grades ($p = .417$) or total credit points students had achieved towards their bachelor's degree ($p = .563$). However, there was a small correlation between conceptual understanding and literature review grades, which was statistically significant, $r(130) = .23, p = .009$.

To check inter-rater reliability of the rubric, the first author and a second researcher both used the rubric to assess 12 essays (17 %) and 12 concept maps (20 %). Since it is not possible to anticipate all student reactions to tasks, collaboration between assessors is needed (Allen & Tanner, 2006; Kellogg & Whiteford, 2009). To sharpen scoring, the researchers met three times to discuss essay scores (after scoring the first two essays, next five essays and final five essays) and twice to discuss concept map scores (after scoring the first seven concept maps and final five concept maps). The researchers discussed all component levels they had scored differently. They reached consensus on the difference between a trivial (*negligible*) and an implied (*weak*) fact, the nature of an essential feature (*moderate*), how much explanation is needed for adequate argumentation (*strong*) and what signifies out-of-

the-box thinking (*extraordinary*). Discussion on the components included what counts as *global context* and *local context*, what constitutes a *business practice* or *business concept*, how detailed *specific instances* need to be, and how clearly independent and dependent variables of *business mechanisms* need to be explained.

To show the magnitude of agreement between the assessors' grades, Cohen's weighted kappa with quadratic weighting was used because this statistic gives more weight to grades close together than grades far apart (Sadler & Good, 2006). Tests of inter-rater reliability showed good agreement between the two raters' judgements for the six components in the 12 essays (72 values), $\kappa_w = .67$ ($p < .001$), 95% CI (.55, .79), for the six components in the 12 concept maps (72 values), $\kappa_w = .70$ ($p < .001$), 95% CI (.56, .84) and for the six components in the 12 essays and 12 concept maps taken together (144 values), $\kappa_w = .73$ ($p < .001$), 95% CI (.65, .81).

3.3.7 Procedure

Material for revealing conceptual understanding was collected from the students after six weeks of desk research to define their individual research topics. Data collection took place during class.

Under supervision of the first author, students were given 1 hour on school computers to write an essay or to construct a concept map about their research topic. Computers were used because they make it easier for students to produce and rearrange text and concept maps (Nobles & Paganucci, 2015; Van den Bogaart et al., 2016). In the two groups that produced an essay and concept map, students were given 1 hour for the essay *and* 1 hour for the concept map, so 2 hours in total, and these activities took place at the same session.

The first author spent about 15 minutes going through written instructions with the students on writing essays or constructing concept maps. Before students constructed the concept maps, the first author spent an additional 15 minutes eliciting a practice concept map from the group on the whiteboard about Christmas.

In each condition, students started essays and concept maps at the same time. If they ran out of ideas before the 1-hour time limit, they could finish early; in the combination conditions, they were permitted a 10-minute break until the second activity was scheduled to

start. Students saved the resulting essays and concept maps with provided code names before emailing them to the first author. Students in the combination conditions answered an open question after the second activity about how suitable they found the essay or concept map for explicating their conceptual understanding.

Since students in each condition started at the same time and emailed their essays and concept maps as soon as they finished them, the time students spent on each activity could therefore be calculated. One-way ANOVA showed no significant difference among conditions for time taken on essays ($p = .215$) or concept maps ($p = .321$). For Condition 2, a paired samples t-test showed that students spent significantly less time on the essays than the concept maps ($p = .021$). The effect size was small to medium ($d = .357$, $p = .035$). Condition 4 students spent less time on the concept maps than the essays, but not significantly so ($p = .216$) (Table 3.4).

Table 3.4

Time Spent per Condition (Minutes)

Condition	Essays		Concept maps	
	Mean	SD	Mean	SD
1 Essay alone	<u>52.6</u>	<u>8.4</u>	-	-
2 Essay after concept map	51.4	7.9	<u>54.6</u>	<u>5.5</u>
3 Concept map alone	-	-	<u>52.7</u>	<u>5.3</u>
4 Concept map after essay	<u>54.2</u>	<u>5.2</u>	<u>52.7</u>	<u>6.9</u>

* Underlined figures indicate statistically significant results.

The first author scored the essays and concept maps with the aid of the rubric. These scores were then systematically compared among conditions to decide the best condition for revealing conceptual understanding of international business.

3.3.8 Data Analysis

First, a multivariate analysis of variance (MANOVA) using Wilks' statistic was used to determine whether condition had an effect on the six components of conceptual understanding taken as a group. Next, one-way ANOVA were used to investigate whether differences in scores for each component of conceptual understanding were significantly explained by the four conditions. ANOVA assumes homogeneity of variance within groups so Levene's test of equality was used to check whether scores within each condition varied

significantly: a statistically significant result for Levene's test means the null hypothesis that assumes no difference among groups cannot be rejected (Field, 2009). Where homogeneity of variance could not be assumed, Welch's F-test was used to investigate differences among conditions because it takes differences within groups into account (Gastwirth et al., 2009).

The condition that most adequately reveals conceptual understanding is the one that best differentiates among negligible, weak, moderate, strong and extraordinary levels. For each component of conceptual understanding, the best condition should (1) produce a wide spread of scores, (2) clearly differentiate between low scores and (3) clearly differentiate between high scores. To determine which condition produced the widest spread of scores, mean scores and standard deviations were calculated for each component of conceptual understanding. ANOVA post-hoc tests were conducted to determine whether the condition that generated the highest mean scores and standard deviations for each component of conceptual understanding varied significantly from each of the other three conditions. While the Bonferroni correction reduces statistical error resulting from multiple tests, Games-Howell post hoc procedures were used to account for unequal group variances in the cases where homogeneity of variance was violated (Field, 2009).

To discover which condition most clearly differentiated between low scores, percentages of negligible and weak scores were calculated per condition for each component of conceptual understanding. Since low scores reveal little conceptual understanding, the best condition would be the one which yielded the lowest percentages of low scores.

To establish which condition most clearly differentiated between high scores, percentages of strong and extraordinary scores were calculated per condition for each component of conceptual understanding. Since high scores indicate deep conceptual understanding, the best condition is the one which yielded the highest percentages of high scores.

To capture the Condition 2 and Condition 4 student perceptions of essay and concept map suitability for explicating conceptual understanding, student comments were categorised per condition. A representative sample of comments from each condition was chosen to illustrate the main themes raised.

3.4 Results

For the six components of conceptual understanding taken as a group, multivariate effect of condition on scores was significant using Wilks' statistic, $\Lambda = 0.51$, $F(18, 348.38) = 5.15$, $p < .001$. One-way ANOVA indicated significant differences of the six components of conceptual understanding among the four conditions at the $p < .05$ level (Table 3.5).

Table 3.5

*One-way ANOVA of Condition Effect on Conceptual Understanding**

Components	df _M	df _R	Welch's <i>F</i>	<i>p</i>	η^2
Global context	3	61.70	9.01	< .001	.12
Local context	3	64.22	13.05	< .001	.22
Business practices	3	69.79	7.50	< .001	.14
Practice instances	3	60.94	16.52	< .001	.29
Business concepts	3	70.79	4.31	.008	.08
Components	df _M	df _R	<i>F</i>	<i>p</i>	η^2
Business mechanisms	3	128	3.55	.016	.08

* Levene's test produced significant results for all components except business mechanisms. Where homogeneity of variance among conditions could not be assumed, Welch's *F*-test was used.

3.4.1 Spread of Scores among Conditions

Table 3.6 shows the mean scores and standard deviations (SDs) per component of conceptual understanding for the four conditions. Condition 1 (essay alone) produced the highest mean scores for five of the six components of conceptual understanding and the highest standard deviations for four of the six components. For business mechanisms, the mean score and standard deviation were higher for Condition 2 (essay after concept map) than for Condition 1, but not significantly so ($p = 1.000$). For five of the six components of conceptual understanding, post hoc comparisons show that Condition 1 mean scores were significantly different than at least one other condition at the $p < .05$ level.

Table 3.6

*Mean scores and standard deviations of conditions**

	Condition 1		Condition 2		Condition 3		Condition 4	
	M	SD	M	SD	M	SD	M	SD
Global context	1.67 a	1.04	1.63	0.91	1.03 a	0.18	1.19	0.48
Local context	2.36 b	1.40	1.83	1.07	1.10 b	0.31	1.23 b	0.67
Business practices	2.56 c	1.11	2.49	0.95	1.77 c	0.90	1.81 c	0.60
Practice instances	2.39 d	1.27	1.60 d	0.98	1.13 d	0.43	1.03 d	0.18
Business concepts	2.58 e	0.73	2.51	0.95	2.20	0.61	2.06 e	0.57
Business mechanisms	2.03	0.81	2.09 f	0.89	1.73	0.83	1.52 f	0.68

- a. Global context mean scores vary significantly between Conditions 1 and 3 ($p = .005$).
 b. Local context mean scores vary significantly between Conditions 1 and 3 ($p < .001$), and between Conditions 1 and 4 ($p < .001$).
 c. Business practices mean scores vary significantly between Conditions 1 and 3 ($p = .011$) and between Conditions 1 and 4 ($p = .005$).
 d. Practice instances mean scores vary significantly between Conditions 1 and 2 ($p = .023$), Conditions 1 and 3 ($p < .001$), and Conditions 1 and 4 ($p < .001$).
 e. Business concepts mean scores vary significantly between Conditions 1 and 4 ($p = .010$).
 f. Business mechanisms mean scores vary significantly between Conditions 2 and 4 ($p = .029$).

* Levene's test produced significant results for all components except business mechanisms. For business mechanisms, the Bonferroni correction was used because it reduces statistical error resulting from multiple tests. For the other components, Games-Howell post hoc procedures were necessary because homogeneity of variance among conditions could not be assumed. Still, it is worth noting that Bonferroni results were also statistically significant for these tests.

For practice instances, Condition 1 scored significantly higher than the other four conditions. The mean score was 2.39 out of 5. To illustrate this level, an excerpt from an essay that scored 2 (weak) for practice instances only mentioned that a particular electronics company was marketing a Smartphone, while the description of a particular photography company in another essay that scored 3 (moderate) included their location ('20 V&D [department stores] in the Netherlands'), what they do ('taking and selling pictures') and problems they face ('[delivery] trucks are not completely full'). Condition 1 contrasts sharply with Condition 4 (concept map after essay) where none of the concept maps revealed any understanding regarding business instances.

3.4.2 Differentiation of Low Scores among Conditions

The lowest scores awarded for components of conceptual understanding were 1 (negligible) and 2 (weak). A negligible score reveals little to no conceptual understanding. For instance, one concept map scored 1 for local context because the only reference to local context was a shape labelled 'domestic outsourcing'. This concept map gave no clue of the location so this information was deemed trivial. An example from a concept map that scored 2 for local

context linked two shapes with an arrow: ‘Chinese government regulation and law regarding to waste paper import → Domestic consignee regulation’. This concept map refers to a general location and suggests some knowledge of the local context.

Table 3.7 shows the percentages of low scores per condition. Overall, Condition 1 (essay alone) produced the lowest percentage of negligible and weak scores (64% in total), while Condition 4 (concept map after essay) produced the highest (92% in total). For all components of conceptual understanding, Condition 3 (concept map alone) and Condition 4 reveal very little conceptual understanding as evidenced by the high frequencies of negligible scores.

Table 3.7

Percentages of Negligible (1) and Weak (2) Scores per Condition

Scores	Condition 1		Condition 2		Condition 3		Condition 4	
	1	2	1	2	1	2	1	2
Global context	64	17	57	29	97	3	84	13
Local context	31	42	49	34	90	10	87	7
Business practices	19	31	14	40	47	37	29	61
Practice instances	36	14	66	17	90	7	97	3
Business concepts	-	56	11	46	7	70	13	68
Business mechanisms	28	44	34	23	50	27	58	32
Totals	30	34	39	31	63	26	61	31

3.4.3 Differentiation of High Scores among Conditions

The highest scores awarded for components of conceptual understanding were 4 (strong) and 5 (extraordinary). Few concept maps produced high scores. However, an example of a concept map that scored a 4 for business practices included activities like ‘social media marketing’ and reasoning like ‘low entry barrier’, ‘increases customer turnover’ and ‘increase of ROE [return on investment]’. Only essays scored 5. As an example, an essay that scored 5 for business practices explored activities of oil companies, considering factors as diverse as ‘effects on ecosystems’, ‘tax revenues, jobs created and investments in infrastructure’, ‘technological advancements’ and ‘Public Relations’.

Table 3.8 shows the percentages of high scores per condition, namely scores of strong (4) and extraordinary (5). Overall, Condition 1 (essay alone) produced the highest percentages of strong and extraordinary scores. Condition 2 (essay after concept map) scored

a higher percentage of extraordinary scores for global context and a higher percentage of strong scores for business concepts. However, Condition 1 outscored the other conditions on all other strong and extraordinary scores.

Table 3.8

Percentages of Strong (4) and Extraordinary (5) Scores per Condition

Scores	Condition 1		Condition 2		Condition 3		Condition 4	
	4	5	4	5	4	5	4	5
Global context	11	-	-	3	-	-	-	-
Local context	11	14	9	3	-	-	3	-
Business practices	19	3	17	-	7	-	-	-
Practice instances	14	6	9	-	-	-	-	-
Business concepts	14	-	20	-	3	-	-	-
Business mechanisms	3	-	-	-	-	-	-	-
Totals	12	4	9	1	2	-	1	-

3.4.4 Condition 2 and 4 Student Perceptions

Regarding perceived suitability of the second activity for explicating their conceptual understanding, Condition 2 students (essay after concept map) and Condition 4 students (concept map after essay) indicated positive and negative points (Table 3.9). Most Condition 2 students ($n = 35$) and Condition 4 students ($n = 31$) indicated that essays or concept maps helped them identify key points, make connections, brainstorm and consider further possibilities (rows 1-4). On the other hand, comments from both conditions suggested students found the second task onerous (rows 5-6). Comments also suggested that students perceived value in constructing a concept map before writing an essay, and that students perceived concept-map construction as difficult (rows 7-8).

Table 3.9

Student Perceptions of Essays and Concept Maps

	Condition 2 perceptions of essay	Condition 4 perceptions of concept map
1	Gives opportunity to emphasise the main points (Condition 2 Student15)	Able to identify core topics (Condition 4 Student 27)
2	A useful way of combining my various thoughts (C2S20)	Helped me see better the connection between the factors (C4S28)
3	Helps to brainstorm and come up with additional ideas (C2S4)	Came up with more topics and relations (C4S9)
4	Gave me a better insight of the subjects that I have to research (C2S28)	Raises new questions (C4S16)
5	Was continuing the concept map with more words (C2S17)	Just made an overview of what I already knew (C4S12)
6	For me it's not necessary to 'extra' write down (sic) in the form of an essay (C2S19)	Downside: already partially done this in my own mind (C4S13)

7	The concept map gives a good general overview, the essay gives a more detailed overview (C2S8)	Confusing in the beginning (C4S25)
8	With the concept map it is easier to write an essay and to explore on the research topic (C2S27)	Made me confused because all is related to each other but I couldn't find a proper way to display it (C4S31)

3.5 Discussion

This study explores four approaches for revealing conceptual understanding of international business: essays, essays after concept maps, concept maps and concept maps after essays. Three criteria were used to determine which approach best reveals conceptual understanding: (1) spread of scores, (2) differentiation between low scores and (3) differentiation between high scores. From analysis of the essays and concept maps, results for all three criteria suggest that the essays are the most adequate approach for revealing conceptual understanding of international business. Essays show the widest spread of scores, and differentiate best between high scores and between low scores. That even the essays did not get a complete range of scores for all components of conceptual understanding could be because the participants of this study did not have enough complex knowledge of international business. Further research involving graduates, post graduates and professionals could be done to test whether the optimum spectrum of component scores can be achieved from participants with more complex knowledge of international business.

We had expected that the essay-after-concept-map and concept-map-after-essay conditions would reveal conceptual understanding more adequately than the essays. We expected that students who had first constructed a concept map or written an essay would reveal more conceptual understanding than students who had not. Essays were expected to reveal understanding because writing an essay involves constructing knowledge by generating relevant, salient ideas (Tynjälä et al., 2001). Concept maps were expected to reveal conceptual understand because constructing a concept map involves discovering and evaluating relevant concepts, and creating and making salient connections (Novak, 2010).

A possible reason for the combination conditions failing to reveal conceptual understanding as well as the essay-alone condition is that students did not see the point of explaining their research twice, and so did not put the same level of energy into the second activity. Student comments in this study support this conclusion that they were not as

motivated to explain their research during the second activity. This explanation is also supported by De Simone, Schmid and McEwen (2001) whose study required university students to generate both prose and concept maps during a course designed to improve learning outcomes. They report that students did not like having to both write prose and construct concept maps because of the perceived redundancy.

Another explanation could be that the essays and concept maps reveal different types of thinking. The reasoning focus of essays (Flower & Hayes, 1981) and the structural focus of concept maps (Huijts et al., 2011) are possibly not aligned. For revealing conceptual understanding, reasoning appears to be more important and that is possibly why the essays revealed more conceptual understanding than the essays written after concept maps. The concept maps could have negatively affected the reasoning developed in the essays.

The concept maps revealed conceptual understanding less adequately than the essays, which was unexpected. This is because concept maps, like essays, involve the construction and explication of meaning (Novak, 2010). In particular, the concept maps revealed hardly any conceptual understanding of global knowledge, local knowledge or specific concrete knowledge, three components of conceptual understanding identified in our previous study, as presented in Chapter 2. Hardly any concept maps contained more information about context or specific circumstances than the name of an international entity, region or company. Overall, concept maps revealed fewer facts and less reasoning than essays.

However, the concept maps might have revealed more conceptual understanding if the students had received more concept-map training on how to express complex interconnections of concepts typical of an ill-structured domain. Student comments in this study support this conclusion. Two-day intensive training sessions of the type that Novak (2010) suggests are needed to elicit knowledge from a group of business experts could be one training possibility for further investigation. Another possibility could be to prompt students with partially-completed concept maps. Novak (2010) suggests providing students with 'expert skeleton concept maps' as a prompt to aid learning, but such concept maps might also prompt students to reveal more conceptual understanding.

The core outcome of this study, that essays are the most adequate approach for revealing conceptual understanding, raises a number of issues. The discussion continues with reflections on (1) the suitability of essays for assessing conceptual understanding, (2) the

suitability of the task used in this study for revealing conceptual understanding, (3) the concurrent validity of the rubric used in this study, and (4) areas for further research.

3.5.1 Suitability of Essays for Assessing Conceptual Understanding

This study found that essays are the most adequate approach for revealing conceptual understanding of international business. This is not an unwelcome result given that essays are a practicable option for educators. However, it could be argued that since conceptual understanding is complex, a more labour-intensive assessment approach might be needed to fully reveal conceptual understanding. Labour-intensive assessment approaches can also have negative outcomes, however, since they can demotivate students by demanding more effort (Bangert-Drowns et al., 2004). Of course, essays also demand effort of students. One way to help students explicate more conceptual understanding in essays might be to use concept maps as a short prewriting activity of 5-10 minutes rather than the 1-hour approach used in this study. Concept maps constructed as a prewriting activity can help students explicate more conceptual understanding in essays because they help students brainstorm and organise content before they start writing (Flanagan & Bouck, 2015). Students perceived concept maps as potentially useful prewriting activities because, like the essays, they helped them reveal key themes, connect ideas, produce new insights and raise questions for further study. Further research could investigate the potential of using concept maps as a short prewriting activity to prompt students to reveal more conceptual understanding of international business in essays.

3.5.2 Suitability of Task for Revealing Conceptual Understanding

Regarding the student task for this study, one question that deserves attention is whether asking students to explain their individual research topics can produce comparable results. In general, comparability requires consistent scoring and conditions (Baartman et al., 2007). For instance, concerning conditions in our research, all students had the same task of explaining their graduation research. The task had the potential to fully engage all students because it was authentic, meaningful and relevant (Brown et al., 2014; Gulikers et al., 2008). The task was similarly complex for all students because it required application and construction of

knowledge (Alonso-Tapia, 2002). Students also had the same time to work on their research and were following the same course. It was assumed for this study that although the content that individual students produced was different, consistency in conditions allowed comparability. However, it could be a goal of further research to investigate whether individual research topics do indeed provide as much comparability as one topic common to all students.

3.5.3 Concurrent Validity of the Rubric

Concurrent validity of the rubric that was developed to reveal conceptual understanding of international business was indicated by the small correlation between conceptual understanding and literature review grades. A relationship between the two variables was not surprising because the research topics students explored in their essays and concept maps were the same research topics they had written about in their literature reviews. The small size of this correlation was also not surprising because the two variables do not fully converge: students' conceptual understanding does not fully relate to the grades they receive for literature reviews, since it comprises more components than the theoretical, academic understanding represented by the literature review grade. Conceptual understanding was indeed not indicated by other assessment indicators like study delay, internship grades, and total credit points students had achieved towards their bachelor's degree. Further research could investigate what assessment indicators do signal conceptual understanding.

3.5.4 Further Research

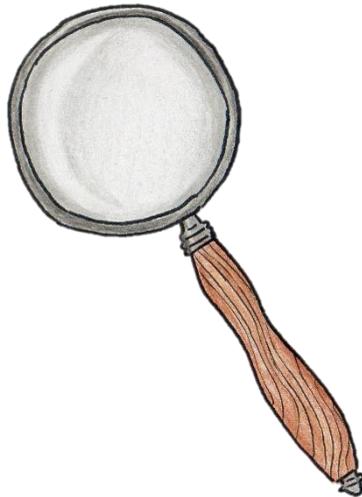
This study shows the adequacy of essays as an approach for revealing conceptual understanding of international business in final-year bachelor students, an approach involving substantial writing. There is growing consensus in higher education that assessments require too little substantial writing (Arum & Roksa, 2011b). Further research could therefore investigate the suitability of essays for revealing conceptual understanding of other domains and at other levels of education.

This study discovered that essays have the potential for assessing conceptual understanding. However, essays might also have the potential to contribute to the

development of conceptual understanding (Galbraith, 2015; Klein & Boscolo, 2016). Further research could investigate the suitability of essay writing for fostering conceptual understanding, not only of international business but also of other knowledge domains.

Chapter 4

Illustrating Conceptual Understanding in International Business Undergraduate Writing³



³ This chapter is based on: Ashley, S., Schaap, H., & De Bruijn, E. (2020). *Illustrating conceptual understanding in international business undergraduate writing*. Manuscript submitted for publication.

Author contributions: Sue Ashley is the first author of this article. The second and third authors are Harmen Schaap and Elly de Bruijn, Sue Ashley's PhD supervisors. The authors collaborated on the design of the study. Sue Ashley collected and analysed data, and wrote the article. The supervisors discussed and advised on theory, checked data analysis quality, helped formulate conclusions, and reviewed and revised the manuscript.

Abstract

This dissertation postulates that conceptual understanding is important for professionals, because the synthesis of knowledge from theory and practice implied by conceptual understanding can enable flexible and original thinking in complex problem solving. As shown in Chapter 3, writing is a key tool used to reveal conceptual understanding in higher professional education. The study presented in this chapter investigates the appearance of conceptual understanding in a writing task done by international business undergraduates. Analysed data collected from 44 international business undergraduates in their final year of studies suggest that conceptual understanding in undergraduate writing is broad rather than deep, and differs widely between students. Implications for education and further research are discussed.

Keywords: conceptual understanding, writing assignments, literature reviews, higher professional education, international business

4.1 Introduction

One major goal of higher professional education is for students to synthesise different types of knowledge from theory and practice in order to develop professional competence that will enable them to deal with the complexity of the real world (De Bruijn et al., 2017). In international business, for instance, competence requires synthesised knowledge because the real-world problems professionals face are typically messy, multifaceted and multidisciplinary (Dörner & Funke, 2017).

Conceptual understanding allows professionals to connect numerous details to provide a clear overview of the domain they are studying, which they will need for adequate performance in professional practice (Entwistle & Smith, 2013; Harteis & Billett, 2013). However, although development of conceptual understanding is important for students in higher professional education (Entwistle & Nisbet, 2013; Newton, 2012; Tynjälä, 1999), high-order thinking like conceptual understanding is challenging for teachers to identify (Rochford & Borchert, 2011). This study therefore investigates the appearance of international business students' conceptual understanding in writing assignments, a key tool that can be used to reveal conceptual understanding, as shown in Chapter 3.

4.2 Theoretical Framework

4.2.1 Conceptual Understanding in Professional Practice

Conceptual understanding means being able 'to think and act flexibly with what one knows' (Perkins, 1998, p. 40). In other words, conceptual understanding allows knowledge transfer, which enables one to apply previous knowledge to complex situations in order to grasp how concepts inter-relate (Krathwohl, 2002). For solving problems in professional practice, conceptual understanding requires both content knowledge that is 'more abstract, principle-oriented' and situational knowledge that is 'more tangible, detail-oriented' (O'Neill & Hung, 2010, p. 15)

Chapter 3 results suggest that for international business, conceptual understanding requires a synthesis of abstract, general, tangible and specific knowledge. Abstract, general knowledge includes knowledge of, for instance, what is happening globally, how companies

ought to react in such conditions, and which theories best explain a situation. It has a context-free nature, which makes it possible to transfer knowledge in professional practice so that conceptual understanding can be achieved in different situations (Ausubel et al., 1978; Davydov, 1988; Mayer, 1992). Tangible, specific knowledge includes knowledge of, for instance, local circumstances, actual companies, and how business mechanisms work in specific situations. These types of knowledge make it possible to contextualise knowledge, which is also essential for conceptual understanding to occur (Billett, 2001). When abstract, general, tangible and specific knowledge are synthesised, conceptual understanding is possible, meaning connections can be made through reasoning, and thinking can be flexible and original (Entwistle, 2008; White, 2007).

4.2.2 Conceptual Understanding in Undergraduate Writing

Graduates need to conceptually understand their professional domain if they are to perform adequately in practice (Kedia & Englis, 2011a). For aspiring professionals to develop the conceptual understanding they will need to deal with situations in a complex domain like international business, they need critical thinking and effort (Entwistle, 2000). Teachers preparing undergraduates for professional practice need to engage students in learning tasks and activities that will produce this outcome.

Learning tasks that are most likely to trigger the effortful, critical thinking that is required to elicit conceptual understanding need to be meaningful and challenging (Struyven et al., 2005). To be meaningful and challenging, tasks need to be personally relevant and to require deep thought. If students perceive that a task is meaningful and challenging, they are more likely to reflect critically and try to make sense of what they know, rather than merely repeat what they have heard or read before (Scouller, 1998).

Learning activities with the potential to involve the critical thinking and effort that are needed to elicit conceptual understanding include writing (Galbraith, 2015; Klein & Boscolo, 2016). It takes critical thinking and effort to organise ideas into a coherent text that adequately conveys the intricacies of a complex topic (Kellogg et al., 2013). To communicate how concepts link to each other and to the topic as a whole, writers need to ask themselves questions, plan, evaluate, formulate concepts, and structure knowledge (Langer & Applebee,

1987). They also need to switch continually back and forth between solving knowledge-related problems and solving rhetorical writing problems (Scardamalia & Bereiter, 1991). Writers need critical thinking and effort to figure out how concepts relate to each other and how to word their explanations so that they can show readers the logic of their story and persuade them of their point of view.

Written communication skills are a highly rated competency in both education and professional domains like international business because they allow writers to communicate what they know (Arum & Roksa, 2011a; Milhauser & Rahschulte, 2010). Therefore, writing assignments, such as library research papers, essays, reflection papers and short writing tasks, play an important role in higher professional education like international business (Cai & Cheung, 2019; Säljö, 2005).

In the second study, as presented in Chapter 3, we found that conceptual understanding could be revealed in essays. For this study, we chose to investigate the appearance of conceptual understanding shown by another typical writing task in higher professional education: library research papers. We refer to these in our study as literature reviews. In literature reviews, undergraduates are expected to show conceptual understanding by critically reflecting on key ideas in research literature (Hart, 1998). We expected literature reviews to show students' conceptual understanding because they involve writing, and writing has the potential to provoke patterns of thinking and reasoning that encourage internalisation and personalisation of knowledge. The purpose of this study is to analyse students' writing, and answer the question: 'How does conceptual understanding appear in students' writing?'

4.3 Method

4.3.1 Context

At Dutch universities of applied sciences (UAS), which is the type of higher professional institution where this study took place, the primary focus is on educating future professionals for a range of domains including business, journalism, social work, nursing, building and education. To meet growing social and economic demands for highly educated professionals with analytical, reflective skills (Oxford Economics, 2012), current Dutch government

strategy focuses on raising the quality of higher education (Ministry of Economic Affairs, 2019). For instance, Dutch UAS are currently implementing a five-year plan to double professional Master's places by 2020-2021 (Netherlands Association of Universities of Applied Sciences, 2019). Part of the quest for improved quality in higher professional education involves enabling students in higher professional education to develop extensive writing skills that they will need in professional life.

The students who took part in this study were preparing for careers as international business professionals by studying for an English-taught Bachelor of Business Administration degree. As international business professionals, they would need conceptual understanding of complex problems that occur in the international business domain. As part of their graduation trajectory, they were required to carry out and write about research on a complex problem faced by international businesses.

This study investigates the appearance of conceptual understanding in students' writing during the fourth and final year of their degree. Each student conducted a literature review, which counted for course assessment. The goal of the literature review was to explain proposed graduation research.

The first author collected data during a graduation research course she taught in the first semester of the 2014-2015 academic year. To graduate, students had to write a bachelor's dissertation based on policy-making research carried out during a one-semester internship at an international company. The one-semester preparatory research course taught by the first author required the students to attend 14, weekly, 90-minute sessions stimulating them to define a suitable business topic for individual graduation research conducted in the Netherlands or abroad. During the first half of the course, students conducted literature reviews and during the second half of the course, they wrote research proposals. Ideally, students arranged an internship company as early as possible in the course so that they could align their reviews and proposals as closely as possible to their internship company's goals and needs.

4.3.2 Participants

The study involved 44 fourth-year undergraduates majoring in International Business who were following a course to develop a suitable problem definition for an individual graduation research project. Participants volunteered to take part. Table 4.1 describes the participants.

Table 4.1

Metadata of Participants (n = 44)

Gender	Frequency	Nationality	Frequency	Age (years)
Male	26 59%	Netherlands	33 75%	Mean 23.4
Female	18 41%	Other*	11 25%	SD 2.9

* Bulgaria, Burundi, Denmark, Greece, Iraq, Netherlands Antilles (2), Pakistan, Russia, Taiwan and Turkey

4.3.3 Materials

We collected literature reviews for analysis. As in the second study presented in Chapter 3, students were asked to ‘explain as clearly and in as much detail as you can the business area you are interested in researching for your graduation project at an international company’. As in the second study, this writing task was considered meaningful to elicit conceptual understanding because it was based on a real-life problem related to the students’ major (international business), because it was about research they would actually carry out, and because it was relevant for the international business profession. Disciplines related to international business require a high level of writing proficiency (Bacon et al., 2008; Campbell et al., 2019; Prestwich & Ho-Kim, 2007). The writing task was considered challenging to elicit conceptual understanding because it required students to explicate a complex problem that they would research.

4.3.4 Procedure

Students conducted literature review research and wrote literature reviews for 8 weeks. This was considered sufficient time for them to compose their thoughts and forge links between previously known and newly discovered theories and practices. During this period, they evaluated and cited relevant scholarly research by domain experts.

For the literature reviews, students were required to include a reference list with at least 10 scholarly, peer-reviewed sources (not included in the 1,000-word limit). They were

also encouraged to use credible background sources such as McKinsey reports or official government statistics. In addition to spelling and grammar, thesaurus and translation tools, students were expected to use Internet, books, journal articles, notes, feedback from the first researcher given in class, and feedback from fellow students and others (e.g., friends, family) given in or after class.

Students digitally uploaded their literature reviews for assessment. The first author downloaded the files for assessment and analysis. For analysis, she prepared digital copies in which students' names were not visible, and saved them with code names. The students received assessment grades via the university grading system and feedback via email from the first author in her capacity as course lecturer.

4.3.5 Data Analysis

To investigate the appearance of conceptual understanding in the students' writing, the first author assessed all the literature reviews with the rubric developed in Chapter 3 (see Table 3.3). The rubric was used to score one to five points for each of six components of conceptual understanding. The second and third authors discussed analytical quality with the first author and gave feedback in cases of doubt. For instance in one case, discussion led to a working definition of what denotes a 'business concept' and how it relates to 'business theory'.

To ensure inter-rater reliability of scores, the first author and a research assistant assessed 12 literature reviews (27%) and compared scores. Cohen's weighted kappa with quadratic rating was used to assess inter-rater reliability because it takes both partial and full score agreement into account. For 72 components in 12 literature reviews, tests showed good agreement between the two raters' judgements, $\kappa_w = .64$ ($p < .001$), 95% CI (.49, .78).

To show the breadth and depth of conceptual understanding in the literature reviews, percentages of negligible, weak, moderate, strong and extraordinary scores were calculated for each component of conceptual understanding. To illustrate the appearance of conceptual understanding in the students' writing, we used excerpts from literature reviews that had received one of the top two scores for at least one component of conceptual understanding. Where more than two literature reviews received the highest score for a component, we selected extracts from the two literature reviews with the highest total scores. Where only

one literature review received the highest score for a component, we selected the second extract from the literature review with the highest total score from those literature reviews with the second highest score for that component. Using these criteria, excerpts were extracted from 10 literature reviews. Pseudonyms were used to protect students' identities.

4.4 Results

The highest scoring component of conceptual understanding for the literature reviews was business practices for which 52 percent scored at least moderate, followed by business concepts and business mechanisms. However, most scores (76%) for conceptual understanding were low (negligible or weak) (Table 4.2).

Table 4.2

*Conceptual Understanding Scores, Numbers and Percentages, n = 44**

Score	Components of conceptual understanding												Total	
	Global context		Local context		Business practices		Practice instances		Business Concepts		Business mechanisms			
Negligible (1)	18	41%	23	52%	5	11%	31	71%	9	21%	7	16%	93	35%
Weak (2)	23	52%	19	43%	16	36%	8	18%	17	39%	25	57%	108	41%
Moderate (3)	3	7%	2	5%	18	41%	4	9%	17	39%	9	21%	53	20%
Strong (4)					4	9%	1	2%	1	2%	3	7%	9	3%
Extraordinary (5)					1	2%							1	0%
Total	44	100%	44	100%	44	99%	44	100%	44	101%	44	101%	264	99%

* Some columns do not total 100% because percentages are rounded off.

Ten students' literature reviews produced one component score that was high (strong or extraordinary). Table 4.3 provides an overview of scores for the 10 literature reviews from which excerpts were used to illustrate conceptual understanding. The excerpts are presented in the subsections below.

Table 4.3

*Ten Students' Literature Review Scores**

Student	Topic	Components of conceptual understanding						Total score
		Global context	Local context	Business practices	Practice instances	Business concepts	Business mechanisms	
Abel	Sustainable supply chain management	<u>3</u>	<u>2</u>	3	2	2	2	14
Bjorn	Chinese cross-border M&As	<u>3</u>	2	2	2	<u>2</u>	2	13
Cees	Electric-powered cars	<u>2</u>	<u>3</u>	2	3	1	1	12
Dini	Investment flow in India	2	<u>3</u>	2	1	<u>1</u>	2	11
Eva	Green supply chain management	2	2	<u>4</u>	<u>1</u>	3	2	14
Finn	Interactive technology	2	2	<u>5</u>	<u>3</u>	3	2	17
Gauri	Benefits of gamification	2	<u>1</u>	3	<u>4</u>	<u>3</u>	3	16
Halie	Brand image effects on brand trust	2	1	3	2	<u>4</u>	3	15
Ivo	Financial crisis protection	<u>1</u>	2	3	1	3	<u>4</u>	14
Jorg	E-commerce for SMEs	1	2	2	1	2	<u>4</u>	12

* Bold, underlined scores indicate those chosen for illustration.

4.4.1 Global Context

Most literature reviews scored negligible (1 point) to weak (2 points) for conceptual understanding of global context. For instance, Ivo's literature review entitled 'bank and institutional investor protection against financial crises' scored negligible for global context because it merely alludes to global context with the word 'multinational' (underlined in excerpt):

An estimated 51 multinational banks have been acquired or went bankrupt due to the financial crisis since it started in 2007 (Financial Times, 2014). [Global context-negligible]

Similarly, Cees's literature review on developing a sustainable personal transportation market scored weak for global context because it implies activity by world governments and wealthy countries, for instance:

With modern technologies and the possibility of receiving financial aid and subsidizing of governments, it is the right time to switch from gas to electric powered vehicles for the everyday use in wealthy countries. [Global context-weak]

The highest scoring literature reviews for global context scored moderate (3 points). For instance, Abel's literature review entitled 'sustainable supply chain management in the airline industry' scored moderate because it includes descriptions of global circumstances, such as (1) the Kyoto Protocol initiative to combat global warming and (2) the aviation industry's global impact on pollution:

Initiatives from all over the world try to limit carbon emissions This was initiated by, among others, the Kyoto agreement (1998) [sic] which came in force in 2005.^[1] The aviation industry is excluded in this protocol although air traffic is a major contributor to worldwide air pollution, accounting for 2% of worldwide carbon emissions (Air Transport Action Group, 2014)^[2]. [Global context-moderate]

Likewise, Bjorn's literature review entitled 'The success of cross-border M&A's [Merger and Acquisitions] and global strategy of upcoming Chinese MNEs [multinational enterprises] who enter foreign markets' scored moderate because it provides facts about Chinese companies on the global market, for instance:

Nowadays there are more and more companies in the world owned by Chinese firms The growth of Chinese companies in the Fortune Global 500 list also increased six fold over the past ten years [Global context-moderate]

4.4.2 Local Context

Similar to global context, most literature reviews also scored negligible to weak for conceptual understanding of local context. For instance, Gauri's literature review on the benefits of gamification scored negligible because it does not provide any local context information. Abel's literature review on supply chain management scored weak for local context because it only alludes to vague points about local conditions, such as (1) possible actions by unspecified governments and (2 and 3) local populations:

It is a possibility that governments call for action^[1] but this too faces resistance^[2]. ... It is also unclear yet where the green taxes would be used for by governments^[3]. [Local context-weak]

The highest score for local context was moderate. For instance, Cees's literature review on electric-powered cars scored moderate for local context because it provides facts about tax incentives in the Netherlands:

For example, the Dutch government has ordered the construction of 200 electric refueling stations in end 2014, which will be ready in mid 2015. ... The Dutch government is providing discounts on taxes for electric drivers, which in turn make it even cheaper to drive such a vehicle. [Local context-moderate]

Similarly, Dini's literature review on 'the flow of investment within the financial sector of India' scored moderate for local context because it provides facts about the Indian economy including the following:

... the Indian population will probably grow to 1.45 billion in 14 years, which will exceed that of China's population (Miller, 2014). ... India's vulnerable economy might scare away investors as their overall growth is slowing down, their exchange rate is depreciating in value and their trade and budget deficit is increasing (Holmes, 2013). [Local context-moderate]

4.4.3 Business Practices

Business practices was the highest scoring component of conceptual understanding in the literature reviews. Four literature reviews produced strong scores (4 points), including one by Eva. Eva's literature review was entitled 'Decreasing company impact on global warming

with the use of green supply chain management'. In it, she explains how businesses can (1) encounter problems implementing new methods because of difficulties (2) working with partners or (3) sourcing resources:

While GSCM [global supply chain management] will bring many benefits for the company and the supply chain, also difficulties occur with implementing new methods^[1]. In bigger companies complexity exists When multiple parties are involved, it is harder to predict the future outcomes.^[2] (Sarkis, Zhu, & Lai, 2011) ... small and medium enterprises (SME) ... often lack the resources like technologies and talents^[3]. (Huang, Tan, & Ding, 2012) [Business practices-strong]

The highest scoring literature review was by Finn who wrote about 'interactive technology and brick-and-mortar store competition'. Finn's literature review scored extraordinary (5 points) for business practices because it explains different ways new interactive technology can benefit a company: (1) by involving customers more, (2) by introducing online shopping advantages like customer cards and (3) by making stores more 'appealing'.

Though the implementation of [new interactive technology] ... [c]ustomers can be involved more through extensive on site product information, not only of the product itself but also in relation to the customer e.g. personalised advice (Anitsal, Moon, & Anitsal, 2015)^[1]. This technology can also be used to implement certain favoured features of online shopping to brick and mortar stores. Through for instance personalised customer cards technology ... can give customers information based on previous purchases or interests within the store^[2]. Technology like this can make a brick and mortar store an interesting and appealing experience with several of the benefits of online stores and more which could ensure customer retention (Blázquez, 2014)^[3]. [Business practices-extraordinary]

4.4.4 Practice Instances

Most literature reviews scored low for conceptual understanding of practice instances. For instance, Eva's literature review on green supply chain management scored negligible because it does not name any companies. Nevertheless, four literature reviews scored moderate for this component and one scored strong.

For instance, Finn's literature review scored moderate for business practices because it describes what a company is doing; in this case, that Apple stores are (1) improving their company image and (2) building a loyal customer base by being involved with the customer:

Tools like for example the Genius Bars in Apple stores where customers can get help for any Apple product, no matter where it is purchased, are increasingly popular and greatly improve a company's image through involvement^[1]. ... Involvement with the customer creates a positive image for the company and can lead to customer loyalty, Apple again is a great example of this having a huge fan base and loyal customers solely buying Apple products when it comes to certain electronics.^[2] (Wu & Chan, 2011) [Practice instances-moderate]

Gauri's literature review on gamification scored strong for practice instances because in it, she explains the value of business activity for specific companies like Ford and T-Mobile:

From Ford and T-Mobile to even Chiquita Banana's, all these companies hire gamification experts to design campaigns and applications. Deployments prove that effective gamification can create measurable ROI [return on investment] and real business value which are attractive objectives for such large corporations (Bunchball, 2014). [Practice instances-strong]

4.4.5 Business Concepts

Some literature reviews scored low for conceptual understanding of business concepts. For instance, Dini's literature review on the flow of investment within the financial sector of India scored negligible for business concepts because, although it contains concepts like (1) 'foreign direct investment' and (2) 'liquidity', it does not show knowledge of their meaning, for instance:

The inflow of foreign direct investment^[1] has been growing ... will allow for the banks to manage their liquidity^[2] more efficiently ... [Business concepts-negligible]

Similarly, Bjorn's literature review on cross-border mergers and acquisitions of Chinese multinational enterprises scored weak for business concepts because it merely lists concepts, for instance:

Integration of the comparative ownership advantage framework includes five aspects: (1) national-industrial factor endowments, (2) dynamic learning, (3) value creation, (4) reconfiguration of value chain, and (5) institutional facilitation and constraints. [Business concepts-weak]

One higher scoring literature review for business concepts was the one by Gauri on the benefits of gamification. It scored moderate because it defines concepts like 'gamification', for instance:

Traditional marketing campaigns are not attracting the customer like they were used to. Gamification is a new tool applied in the marketing field which attracts customers and makes them more involved with the brand. [Business concepts-moderate]

Halie wrote the highest scoring literature review for business concepts. It was entitled, 'Factors of brand image and its effects on brand trust'. It scored strong because it (1) defines concepts like 'brand', and (2) explains their significance well, for instance:

According to Ulusu (2011), a brand can be viewed as a product, a set of values, a personality and a position it occupies in people's minds^[1]. Thomas, Hammer, Beibst and Münte (2013), state that brands create product personalities that affect consumer decisions. A brand is the personality that identifies the product.^[2] [Business concepts-strong]

4.4.6 Business Mechanisms

For conceptual understanding of business mechanisms, Ivo and Jorg are two of three students whose literature reviews produced strong scores. In his literature review on investor protection against financial crises, Ivo explains how financial institutions can go bankrupt

because (1) financial panic causes (2) the supply of shares to increase and (3) demand to decrease leading to (4) loss in value and decrease in profit:

The financial markets currently respond to a financial crisis by a going on a run to the banks ... What such a panic response does to shares^[1] ... is that financial products lose value rapidly, due to the increase in supply^[2] and decrease in demand^[3]. Not only do these products lose their value as a medium of exchange and a store of value, but the companies behind it, such as the issuers of shares or bonds, the buyers of these shares, the banks and financial brokers, institutional investors etc. will become less valuable and less profitable^[4], and have the risk of going bankrupt. [Business mechanisms-strong]

Jorg also explains business mechanisms in his literature review entitled, 'The importance of implementation of E-commerce in SMEs'. Jorg's literature review explains a number of ways that ecommerce can save costs, including the following:

... companies can create more efficient cost structures by eliminating different processes and channels through their supply chain and it will save cost for the customer as well (Chen, Pan, & Ouyang, 2013). This can lead to a decreased selling price of the product or service provided which lead to a competitive advantage. [Business mechanisms-strong]

4.5 Conclusions and Discussion

This study provides insight into the appearance of conceptual understanding in undergraduate writing. We used a typical writing task conducted by international business students in higher professional education to illustrate six components of conceptual understanding in students' literature reviews (global context, local context, business practices, practice instances, business concepts and business mechanisms). Results suggest three key findings.

Firstly, conceptual understanding in the literature reviews appeared to be broad rather than deep. It could be considered broad because the literature reviews show evidence of conceptual understanding for all six components. However, while conceptual understanding in the literature reviews could be considered broad, it did not appear particularly deep. With the exception of business practices, more than half the scores for each component are negligible or weak. Conceptual understanding of business practices appeared somewhat

deeper than the other components, possibly because students focused their literature reviews on ways to improve business practices at the companies they were researching.

Secondly, different patterns of conceptual understanding appeared to emerge between and within students' literature reviews. For instance, literature reviews with the highest overall scores, by Finn, Gauri and Halie, appeared to have deep conceptual understanding of different components: business practices in Finn's literature review, practice instances in Gauri's literature review, and business concepts in Halie's literature review. Those of Cees and Dini provide an example of different patterns of conceptual understanding within students' literature reviews. For instance, Cees and Dini's literature reviews appear to show moderate conceptual understanding of local context, but for practice instances, conceptual understanding appears to be moderate in Cees' literature review and negligible in Dini's.

Thirdly, there appeared to be different ways in which conceptual understanding manifested in the literature reviews. For instance, Ivo's writing suggests negligible conceptual understanding of global context while Gauri's writing suggests negligible conceptual understanding of local context. Yet while Ivo refers to global circumstances with the word, 'multinational', Gauri uses no words that refer to local circumstances. Similarly, both Abel and Bjorn's writing suggest moderate conceptual understanding of global context. Yet while Abel describes world circumstances, such as initiatives 'to limit carbon emissions', Bjorn provides facts, such as 'growth of Chinese companies in the Fortune Global 500 list also increased six fold over the past ten years'. One further example of differences in conceptual understanding appearance is Ivo and Jorg's literature reviews. Both suggest strong conceptual understanding of business mechanisms. Yet they do this differently. For instance, to explain how things work, Ivo writes, 'What ... does to ... is that ... due to ...' while Jorg writes, 'This can ... which lead[s] to ...' The depth of conceptual understanding conveyed is similar but the words are different.

4.6 Implications

By investigating the appearance of conceptual understanding in undergraduate writing, this study can help inform teaching and assessment practices. That conceptual understanding in undergraduate writing was found to be broad rather than deep suggests potential for teachers

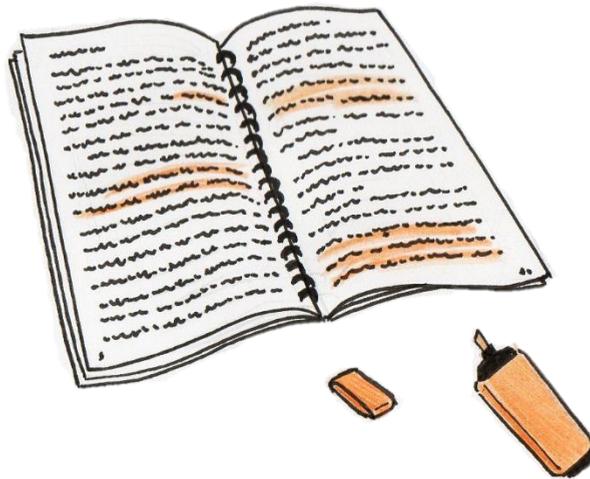
to help stimulate students' conceptual understanding development by identifying areas of deficiency. The rubric developed in this dissertation could be used for this purpose.

The findings that conceptual understanding in undergraduate writing differs widely between students and manifests in different ways suggest that students could benefit from an adaptive curricular approach. An adaptive curricular approach can take account of diverse learning needs for developing and explicating conceptual understanding, which need to be addressed because conceptual understanding in undergraduate writing requires a number of aptitudes. Besides, for instance, writing skill (Langer & Applebee, 1987; Scardamalia & Bereiter, 1991), previous knowledge (Krathwohl, 2002) and critical reflection (Hart, 1998), the depth of conceptual understanding appearing in undergraduate writing also depends on factors such as the level to which students understand the reading material that they are writing about (Marton & Säljö, 2005). It is our hope that this study will provoke further interest in and research of academic writing assignments as a means for communicating conceptual understanding in higher professional education.

Chapter 5

Identifying Changes in International Business

Undergraduates' Conceptual Understanding⁴



⁴ This chapter is based on: Ashley, S., Schaap, H., & De Bruijn, E. (2020). *Identifying changes in international business undergraduates' conceptual understanding*. Manuscript submitted for publication.

Author contributions: Sue Ashley is the first author of this article. The second and third authors are Harmen Schaap and Elly de Bruijn, Sue Ashley's PhD supervisors. The authors collaborated on the design of the study. Sue Ashley collected and analysed data, and wrote the article. The supervisors discussed and advised on theory, checked data analysis quality, helped formulate conclusions, and reviewed and revised the manuscript.

Abstract

Higher professional education aims to prepare students for their professional lives in practice, for which students will need conceptual understanding. Conceptual understanding requires a synthesis of relevant facts, theories and practices. To help determine undergraduate learning needs, the study presented in this chapter explores what types of change take place in the extent of students' conceptual understanding during a bachelor course. Forty-four international business majors in the Netherlands wrote essays at the beginning and end of a final-year course. A rubric was used to grade the essays on six components of conceptual understanding using a 5-point scale. While the overall extent of students' conceptual understanding appeared to increase during the course, results indicated five types of change, which are regressive, minor, modest, substantial and major. The most significant increases in conceptual understanding appeared to relate to knowledge that was specific or theoretical. Results also indicated that individual students' conceptual understanding changed in different ways, with improvements in some components of conceptual understanding and deterioration in others. Suggestions are made to account for the different types of conceptual understanding change, possible implications are given for teaching practice, and recommendations are made for further research.

Keywords: conceptual understanding, development, higher professional education, international business, essays, international education

5.1 Introduction

Higher professional education aims to prepare students for their professional lives in practice (Elvira et al., 2017). Therefore, students need to develop conceptual understanding, since it allows them to perform adequately in the 'complex professional world', where problems tend to be ill structured and tangled, with intertwining goals and interconnecting elements (Spiro et al., 2007). Graduates with conceptual understanding are able to consider the numerous, interconnected aspects of problems (Entwistle, 2000). For instance, in international business, a company aiming to appease shareholders with increasing growth and profitability will be looking at ways to increase revenue and decrease costs. Yet strategies to increase revenue – like improved customer service or a more environmentally-friendly image – will most likely increase costs since more customer service staff may be needed to expedite complaints handling or more investment in green manufacturing may be needed to minimise pollution. Since every action shaped to meet a goal must be balanced against consequences with the potential to impede that goal or create other problems, conceptual understanding is essential for deciding business strategy.

Because practitioners need conceptual understanding to perform complex task analysis typical of an ill-structured domain like international business, teachers need to align students' learning activities with conceptual understanding development (Biggs, 2012). However, to develop effective curricula, it is first necessary to establish what students' conceptual understanding development looks like. Undergraduate programmes typically comprise various courses during which teachers strive to provide their students with curricular activities that will successfully stimulate knowledge transformation and help students develop conceptual understanding. To decide which activities work best, teachers need insight into the extent of their students' conceptual understanding development. Therefore, the aim of this study is to explore what types of change take place in the extent of students' conceptual understanding during an undergraduate course. We are interested in investigating quantitative and qualitative development, and finding out whether some components develop more than others do.

5.2 Conceptual Understanding

Conceptual understanding means knowing concepts and knowing how they connect to one another ‘to form a novel, coherent whole’ (Krathwohl, 2002, p. 215). Knowing how each concept connects to the *novel, coherent whole* enables knowledge application in situations not encountered before (Newton, 2012; Van Oers, 1998b). By untangling and piecing together the numerous interrelated elements of a problem, professionals with conceptual understanding can create meaning, and so can form novel and creative solutions to the complex problems typical of professional life (Heusdens et al., 2016; Neubert et al., 2015; Weurlander et al., 2016).

For international business education, we found from the first study, as presented in Chapter 2, that conceptual understanding is a synthesis of knowledge encompassing six components: global context, local context, business practices, practice instances, business concepts and business mechanisms. So that they can become globally competent managers, international business graduates require conceptual understanding of the global context (Kedia & Englis, 2011a). Similarly, conceptual understanding of a setting (local context) and an actual company (practice instances) are needed because conceptual understanding is context dependent: it requires actual situations (Van Oers, 1998a). Likewise, conceptual understanding requires general, context-free knowledge because it enables knowledge transfer (Ausubel et al., 1978; Davydov, 1988; Mayer, 1992). For conceptual understanding of international business, this type of knowledge includes conceptual understanding of different types of knowledge, including what companies do (business practices), theories (business concepts), and how theoretical processes work (business mechanisms).

5.3 Method

5.3.1 Design

To identify change in the extent of undergraduates’ conceptual understanding, international business students wrote essays at the beginning and end of an undergraduate research course. The aim of this longitudinal study was to see what students’ conceptual understanding of

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their proposed research looked like at the end of the course compared to the beginning so that different types of change could be identified.

5.3.2 Context

This study involved international business students in the final stages of a Bachelor of Business Administration programme designed to prepare them for professional careers. Students were following a preparatory graduation research course from September until December 2014 that the first author had been developing and teaching for 20 years. In the first semester of the fourth year, this English-taught course helped international business students synthesise domain knowledge from theory and practice in preparation for graduation research at an international company in the final semester. During the course, the students spent 8 weeks researching and writing a 1,000-word literature review as a rationale for a research proposal, and then spent 8 weeks researching and writing a 1,000-word research plan on their individual research topic. In their previous study years, the students had completed a 3-month internship at an international company, and studied at an international partner university for one or two semesters.

5.3.3 Participants

Participants comprised 44 international business students following an undergraduate course to develop conceptual understanding of an individual graduation research project. The mean age at the beginning of the course was 23.2 years ($SD = 2.9$), 26 were male (59%) and 33 were Dutch (75%). Non-Dutch participants were from Bulgaria, Burundi, Denmark, Greece, Iraq, Netherlands Antilles (2), Pakistan, Russia, Taiwan and Turkey.

5.3.4 Procedure

To explore how conceptual understanding changed, informed consent was obtained from students, who then wrote an essay at the beginning of the course (Week 1) and a second essay at the end of the teaching part of the course (Week 15). Essays accentuate reasoning (Flower & Hayes, 1981), so this makes them suitable for showing students' conceptual understanding (Kellogg & Whiteford, 2009).

Between writing the first and second essays, students attended ten 90-minute classes once a week. Half way through the course, they wrote and got feedback on one 1,000-word literature review for course assessment (Week 8). For about 20 minutes of each class, students were instructed in various aspects of writing a research proposal (due in Week 20). This was done to help them find literature, write a literature review, define a research problem and design applied research. As part of assessment during this period, students completed 10 homework assignments designed to help them write their proposal. About 70 minutes of each class involved peer and teacher feedback. In groups of three or four, students read and asked questions about each other's literature reviews, problem definitions or research designs. With students' permission, the teacher projected individual assignments on the whiteboard in order to point out good practices, call attention to common errors, or elicit suggestions that would help students progress further.

So that the essays would elicit conceptual understanding rather than knowledge reproduction, the writing task needed to be authentic and meaningful (Alonso-Tapia, 2002; Brown et al., 2014; Rivard, 1994). An authentic writing task for international business students would be one that reflects the complexity of the international business domain (Datar et al., 2011). A meaningful and relevant writing task for students would be one that contributes to assessment. To meet these criteria, the writing task set for students when writing the essays was to 'explain clearly and in as much detail as you can the business area you are interested in researching for your graduation project at an international company'.

Students wrote the essays on school computers during class. Before students began writing, the first author took 5 minutes to go through written instructions supplied to each student on how to write the essay. Students were permitted to use spelling and grammar, thesaurus and translation functions in MS Word. However, they were not permitted to use Internet, books or notes. Students had a maximum of 1 hour to write their essays; they were permitted to finish early if they felt they had nothing more to write. They then emailed their essays to the first author. On average, students wrote about the same number of words for the first essay ($M = 497$, $SD = 168$) and second essay ($M = 502$, $SD = 139$). However, they spent significantly more minutes on the first essay ($M = 48.2$, $SD = 10.5$) than on the second essay ($M = 40.5$, $SD = 10.5$), $t_{43} = 4.095$, $p < .001$.

5.3.5 Data Analysis

The 88 essays of the 44 students who participated were randomly numbered to conceal who wrote them and whether they had been written at the beginning or end of the course. With input from the second and third authors, the first author used a previously developed and validated rubric to assign scores for each essay.

The rubric distinguished extent of conceptual understanding for six components (i.e., global context, local context, business practices, practice instances, business concepts and business mechanisms) using a 5-point scoring scale ranging from negligible (1), weak (2), moderate (3) and strong (4) to extraordinary (5) (see Table 3.3). Global context and local context related to characteristics of the global and local circumstances. Business practices looked at the methods, procedures and rules that companies follow to meet their objectives. Practice instances covered what particular companies are doing. Business concepts and business mechanisms were about terms and theories, and how processes work. Trivial or false information scored negligible, implications or lists of information scored weak, description of essential features scored moderate, objective, factual reasoning scored strong, and evidence of exploration signifying out-of-box thinking scored extraordinary.

To ensure reliable results for this study, all three authors met several times to discuss and interpret results. Further, inter-rater reliability tests in our second study, as presented in Chapter 3, between judgements of the first author and a research assistant involving a similar, previous cohort using the same instrumentation had showed good agreement for the six components of conceptual understanding in 12 essays (72 values), $\kappa_w = .67$ ($p < .001$), 95% CI (.55, .79).

To compare the extent of conceptual understanding shown in the essays, scores were checked for statistically significant differences. To compare differences between tests, Wilcoxon signed-rank test, a non-parametric test, was used because one-sample Kolmogorov-Smirnov tests indicated that score distributions were not normal for the essays at the beginning or end of the course for total scores ($p < .01$) or component scores ($p < .001$). To compare differences within tests, paired sample t-tests were used to test differences between the component scores within each essay.

To explore different ways conceptual understanding changed between the first and second essays, we analysed content by grouping cases according to the extent that their total essay scores changed compared to the mean. Cases whose total score change was two standard deviations below the mean ($M - 2 SD$) scored less for the second essay than the first. Most cases whose total scores changed one standard deviation below the mean ($M - 1 SD$) scored slightly higher on the second essay than the first. Similarly, groups of cases whose total scores changed one ($M + 1 SD$), two ($M + 2 SD$) or three standard deviations above the mean ($M + 3 SD$) had progressively higher scores on the second essay compared to the first. These five types of conceptual understanding change are described here as regressive, minor, modest, substantial and major.

To illustrate conceptual understanding change among international business undergraduates, two cases were chosen to represent each of the five types of quantitative change described above. To show the different ways that conceptual understanding changed between essays, cases were chosen to illustrate the most even and uneven changes in component scores for each of the five types. To protect students' identities, fictional names have been given for students, and companies, an island and a factory in the data. Italics indicate the fictional names used for the companies, island and factory. Grammar and spelling that the students used have not been changed.

5.4 Results

5.4.1 Extent of Conceptual Understanding Change at the Group Level

Between the first and second essay, the mean total score for conceptual understanding increased from 8.73 to 12.02. The standard deviation increased from 1.63 to 3.54. According to the Wilcoxon signed rank test, significantly more conceptual understanding was shown in the second essay ($Mdn = 11$) than the first ($Mdn = 9$), $z = -4.88$, $p < .001$, $r = -.52$.

For the first essay, business concepts scored significantly higher than all other components of conceptual understanding. For the second essay, business concepts scored significantly higher than all other components except practice instances, and practice instances scored significantly higher than all other components except business concepts (Table 5.1).

Table 5.1

Conceptual Understanding Component Scores and Standard Deviations per Essay

Components of conceptual understanding	First essay ^a		Second essay ^b	
	M	SD	M	SD
Global context	1.3	0.5	1.4	0.8
Local context	1.3	0.5	1.8 ^{bc}	1.1
Business practices	1.6 ^a	0.7	1.8	1.0
Practice instances	1.2	0.7	2.6 ^{bc}	1.5
Business concepts	2.0 ^a	0.5	2.6 ^{bc}	0.9
Business mechanisms	1.3	0.4	1.9 ^{bc}	0.9

Note: 1–negligible, 2–weak, 3–moderate, 4–strong and 5–extraordinary

^a For the first essay, business practices outscored global context ($p = .022$), practice instances ($p = .011$) and business mechanisms ($p = .001$). Business concepts outscored all other components ($p < .001$).

^b For the second essay, local context outscored global context ($p = .031$). Practice instances outscored global context ($p < .001$), local context ($p = .003$), business practices ($p = .002$) and business mechanisms ($p = .005$). Business concepts outscored global context ($p < .001$), local context ($p = .001$), business practices ($p < .001$) and business mechanisms ($p < .001$). Business mechanisms outscored global context ($p = .009$).

^c Second essay scores were significantly higher than first essay scores for local context ($z = -2.78$, $p = .006$, $r = -.29$), practice instances ($z = -4.58$, $p < .001$, $r = -.49$), business concepts ($z = -3.03$, $p = .002$, $r = -.32$) and business mechanisms ($z = -3.40$, $p = .001$, $r = -.36$), but not for global context ($p = .781$) or business practices ($p = .318$).

Table 5.1 further shows that four components of conceptual understanding scored significantly higher for the second essay than the first. Exceptions were global context and business practices.

Total essay scores changed between -2 and +14 points ($M = 3.30$, $SD = 3.83$). For five types of change, Table 5.2 indicates how total scores of conceptual understanding changed and for how many students.

Table 5.2

Distribution of Conceptual Understanding Change Types Among Students

Change type	Range	Total score change			Number of students	
		Minimum	Maximum	M	$n = 44$	(100%)
Regressive	$M - 2\ SD$	-2	-1	-1.4	5	(11%)
Minor	$M - 1\ SD$	0	3	1.5	23	(52%)
Modest	$M + 1\ SD$	4	7	5.1	10	(23%)
Substantial	$M + 2\ SD$	8	9	8.5	2	(5%)
Major	$M + 3\ SD$	11	14	12.3	4	(9%)

5.4.2 Extent of Conceptual Understanding Change at the Student Level

Table 5.3 presents cases that represent each type of conceptual understanding change. The text below further explains these cases.

Table 5.3

Cases of Conceptual Understanding per Change Type

Change type	Student	Total score		
		First essay	Second essay	Difference
Regressive	Alf	10	8	-2
	Bea	12	11	-1
Minor	Chen	6	9	3
	Fenna	11	14	3
Modest	Hasan	8	14	6
	Jamie	12	17	5
Substantial	Kasim	8	16	8
	Len	7	16	9
Major	Magda	7	19	12
	Ravi	7	21	14

5.4.2.1 Regressive Change: The Cases of Alf and Bea. Both Alf's essays were on foreign investment but the different scores between his essays suggested regressive conceptual understanding change because his second essay scored lower than his first overall. Alf's second essay scored negligible (1 point) for global context and business practices, while his first essay had scored weak (2 points) for these two components. Unlike his second essay, Alf's first essay had referred to the global context ('products that have a positive influence on the world's environment', 'investing in low wage countries', 'governmental bodies') and business practices ('companies here that have developed greenhouses that recycle the emissions coming from the energy needed to power the greenhouses').

Bea's second essay also scored lower than her first, suggesting regressive conceptual understanding change overall. Global context, local context and business practices scores decreased 1 point from weak to negligible. However, unlike Alf's case, Bea's second essay scored more for one component, indicating positive conceptual understanding change of practice instances. In her first essay, on global expansion of companies, Bea described specific company activity like why they expand internationally ('*DutchStores* needs to keep

Identifying Changes in International Business Undergraduates' Conceptual Understanding on growing and with over 300 stores in the Netherlands it was time') and how they adapt to new markets ('*BeverageCo* when they went to china ... had to weaken their coffee by adding water and expand their store sizes to be able to host a lot of people at the same time'). Her first essay therefore scored moderate (3 points) for practice instances. In contrast, Bea's second essay scored extraordinary (5 points) for practice instances. In her second essay about pricing model strategies *IoECorp* could use for its Internet of Everything (IoE) products, she explained how *IoECorp* was reorganising 'to sell ... ideas not things', explained why selling ideas could be a problem ('because it very complicated to convince a finance manager to sign off on something that he does not receive the full benefit from') and explored possible solutions 'to convince a potential customer' to pay for such products, e.g., by showcasing 'cases from the past' and demonstrating 'potential financing schemes'.

5.4.2.2 Minor Change: The Cases of Chen and Fenna. Chen's essay scores suggested minor conceptual understanding change overall. Scores increased 1 point for three components of conceptual understanding. Both essays were about the marketing of fashion brands like *CoatBrand*. However, while Chen's first essay scored negligible for all components, his second essay showed weak conceptual understanding of business practices ('businesses are also using the social media to create a greater competitor advantages'), practice instances (e.g., '*CoatBrand* is very active in social media platforms such as Facebook, Twitter and Instagram'), and business concepts (e.g., 'social media platforms').

Fenna's essay scores also suggested minor conceptual understanding change overall. However, the minor total score change between essays resulted from a combination of positive and negative component score changes. Fenna's second essay, about *EntTerTain*'s expansion plans into India, scored 1 point lower for global context, business practices and business concepts than her first essay, which was about logistics needs 'for manufacturing companies who have to the potential to grow in to international companies'. However, her second essay scored 4 points higher for local context and 2 points higher for practice instances. Local context scored extraordinary because she explored various facts about India in relation to *EntTerTain*'s expansion plans there, for instance that there were [in 2013] '150 million internet users', and that 'online shopping is becoming increasingly popular which will allow users to get more familiar with purchasing online'. Practice instances scored

moderate because she described *EntTerTain* in terms of ‘the largest internet subscription service’ set on expansion ‘to other areas of the world to increase the number of subscribers’.

5.4.2.3 Modest Change: The Cases of Hasan and Jamie. Hasan’s second essay scored 6 points more than his first, signifying modest conceptual understanding change. Scores for global context and business mechanisms increased 1 point from negligible to weak. The main score increase was 4 extra points for practice instances. Hasan’s first essay, on ‘strategies for niche products on how they can enter other countries’ scored negligible for practice instances, but his second essay, on ‘warehousing logistics from the US towards the EU’, scored extraordinary. In it, Hasan considered various aspects of *EquipCorp*’s business problem, from its lack of ‘warehouses within the EU [resulting] in long and unreliable delivery time’ to its lack of ‘a ERP system which might have benefited the company with a better overview of their current stock’.

Total score differences between Jamie’s first and second essays also signified modest change. Her second essay (‘How should *US-Stores* change its strategy to be more successful with its expansion in South America?’) scored 5 points more than her first essay, (‘supply chain management’). The main change was 4 extra points for practice instances, whose score increased from negligible to extraordinary. Jamie’s second essay included such explanations as how *US-Stores* should adapt to the market (‘stores should be adjusted to the demand of South American customers’ and how they should ‘differentiate themselves’ (‘as *US-Stores* is relatively new in this market, they are unable to compete only on price level’). Jamie’s second essay also scored 1 point more for global context, 2 points more for local context and 1 point more for business concepts. However, her business practices score decreased from strong (4 points) to negligible. Her first essay explained how companies could manage supply chains to reduce costs, for instance by ‘making part of their products themselves or ordering the products from other companies’, or through ‘inventory management’. Her second essay did not show conceptual understanding of this component.

5.4.2.4 Substantial Change: The Cases of Kasim and Len. Kasim and Len, whose second essays respectively scored 8 and 9 more points than their first, wrote the only cases that fitted the substantial change type. Kasim’s essays were both about Islamic banking, but his second essay focused on a particular bank, *IBank*, while his first essay was about ‘economic growth in the United Arab Emirates’. Scores on Kasim’s second essay increased

by 1 point for business practices, practice instances and business concepts. For business mechanisms, his score increased 2 points, from negligible to moderate. In his second essay, Kasim described how 'risk sharing ability and diversified portfolio[s]' can provide 'the opportunity to expand and keep on being profitable' by protecting 'customers safety during economic downturns'. Similarly, Kasim's second essay score for global context increased 3 points from negligible to strong. In it, he explained that there was 'great growth potential for Islamic Finance' since Islamic banks 'performed better during the economic crisis ... due to their risk sharing ability and diversified portfolio[s]'.

Len's second essay scores increased by 3 points for business practices, business concepts and business mechanisms. Both Len's essays were on 'Cooperate social responsibility (CSR)'. Both scored negligible for global context, local context and practice instances. However, Len's second essay scored strong for business practices. For instance, he explained 'a lost opportunity' for companies who 'are most of the time not aware what kind of impact CSR can have within their company' because 'you could use CSR to create multiple positive affects internally'. Len's second essay scored extraordinary for business concepts as he explored the importance of such effects, including 'employee perception', 'employee motivation' and 'employee commitment'. Len's second essay scored strong for business mechanisms because he explained theoretical processes, for instance that 'CSR is a good way to increase employee motivation by showing them your company is giving back to the community' because 'by having CSR practices and let them participate in them, they have the feeling of being part of something special'.

5.4.2.5 Major Change: The Cases of Magda and Ravi. Conceptual understanding change between Magda's essays was major. Magda's second essay scored 1 to 3 points higher than her first for all six components of conceptual understanding. Magda's first essay, entitled 'Incentives to promote Green Technology' scored weak for conceptual understanding of business concepts and negligible for all other components. Her second essay, which started with the question, 'How should *A-Brand* implement green technology in its '*ABC* factory in Vietnam?' was the only essay of the major change type to show conceptual understanding of global context. It scored moderate because Magda described her research problem in terms of the global context, referring to how *A-Brand*, 'the world's largest supplier of [products supplied]' and 'the world's leading manufacturer of [products supplied]', was 'currently

faced with some problems such as, rising costs of manufacturing and rapid pace of innovation'. Other 2 to 3 point score increases were for business practices, practice instances and business concepts, which all scored strong in her second essay. For example, Magda explained for practice instances that '*A-Brand* means to lower down company's production costs, reduce its waste and energy input to ensure company's profitable growth' by providing concrete information about the company: 'For example over the course of past two years, [*A-Brand*] has cut down the number of its factories from [number supplied] to [number supplied]'

Conceptual understanding change between Ravi's essays was also major. While neither one of Ravi's essays showed conceptual understanding of global context, his second essay scored 2 to 4 points higher than his first for all other components. Ravi's first essay was entitled 'Sustainable and renewable energy on the Island of *X*' and the only score above negligible was for a weak conceptual understanding of local context: he referred to 'an oil refinery [which] provided a minuscule amount of jobs for the economy, harming the people and the environment'. In contrast, Ravi's second essay was on pricing strategies *GymFit* could implement 'in order to optimise their customer retention'. His second essay showed strong conceptual understanding of local context, business practices and business concepts. For instance, he explained how important good pricing strategies were for *GymFit* in terms of local market conditions: 'over [number given] commercial fitness gyms and only 1 cross fit gym, [which] all are using competitive pricing of anywhere between [amounts given] a month for a 1 year subscription'. For practice instances, Ravi's second essay scored extraordinary. In it, he explored how *GymFit*, 'a startup company ... is entering an already existing market but caters to a niche within that market', and 'which pricing method would be best for *GymFit*'.

5.5 Discussion

With the aim to explore the extent of conceptual understanding change that takes place during an undergraduate course, this study identified types of change in conceptual understanding shown in students' essays. Comparisons of essays written by international business students

Identifying Changes in International Business Undergraduates' Conceptual Understanding at the beginning and end of a final-year course on research skills indicated significant change in the extent of the students' conceptual understanding.

As might be expected, overall conceptual understanding appeared to increase during the course. However, quantitative analysis suggested five types of conceptual understanding change: regressive, minor, modest, substantial and major. So, while most conceptual understanding change appeared to be positive, some students' essays indicated more conceptual understanding improvement than others did, and some none at all.

The most significant increases in conceptual understanding overall appeared to relate to knowledge that was specific (local context and practice instances) or theoretical (business concepts and business mechanisms). That conceptual understanding of practice instances appeared to increase significantly might be assumed logical because students were researching specific problems occurring at specific companies, and conceptual understanding requires knowledge to be contextualised, meaning that knowledge should be embedded in a particular context (Van Oers, 1998a). This can at least in part be because a context helps students perceive learning activities as meaningful and relevant, which in turn helps them become actively engaged in learning and develop conceptual understanding (Newton, 2012). Yet it is interesting that conceptual understanding of local context, business concepts and business mechanisms also appeared to increase significantly. Possibly, these increases were consequential effects of the increased conceptual understanding of practice instances. For instance, cases suggesting major conceptual understanding change like Magda and Ravi also suggested substantial and major change in conceptual understanding of practice instances. If conceptual understanding can be considered as context-dependent, then it could make sense that specific, concrete knowledge assists overall conceptual understanding. Possibly, this finding suggests that a specific, concrete context could be very important for effective learning in higher professional education. Possibly, specific, concrete cases might have much more effect on conceptual understanding than general, abstract theory.

That conceptual understanding of global context and business practices appeared not to increase was unexpected. Given that the programme the students in this study were following was meant to be initiating them into the concepts and practices of the international business domain, we had expected that conceptual understanding of global context and business practices would increase. For international business education, not only the local

context but also the global context is an important part of conceptual understanding (Kedia & Englis, 2011a). Similarly, general, context-free knowledge about what businesses do is important for conceptual understanding of international business because it enables knowledge transfer (Mayer, 1992). That conceptual understanding of global context did not appear to undergo positive change in this study could suggest that many students might find it difficult to contextualise knowledge within the framework of their chosen discipline, and that teachers might need to make more effort to assist students to contextualise knowledge in a global setting. That conceptual understanding of business practices appeared not to develop might suggest that many students lack work process knowledge needed to explain how companies operate. Whether the curriculum could be adjusted to accommodate a possible deficiency in this area could be the topic of further research.

Beyond the quantitative changes in conceptual understanding at the group level, we also found it useful to look at the different ways that conceptual understanding appeared to change at the student level. From this perspective, students' overall conceptual understanding change appeared to take different paths.

That students' conceptual understanding appeared to change in different ways suggests that conceptual understanding development might not necessarily take a linear path. It appears that the path of change is more likely to be indirect and dynamic, with improvements showing in some areas at the expense of deterioration in others. For instance, while Jamie's second essay appeared to show much less conceptual understanding of business practices than her first essay, where she had explained how companies manage supply chains, her second essay appeared to show much more conceptual understanding of practice instances, because she explored *US-Stores'* business activities.

For conceptual understanding of an international business problem, students need to synthesise knowledge so that they can clearly see the problem in its entirety (Krathwohl, 2002). Possibly, this process towards synthesised knowledge might be likened to the process of knowledge encapsulation, which Chase and Simon (1973) concluded in their study on chess players is a major factor that distinguishes experts and novices. Chase and Simon explain that while experts and novices are both subject to the same short-term memory restrictions, experts encapsulate knowledge fragments in consolidated 'chunks', while novices tend to think in isolated, loose concepts. If the path from novice to expert can be

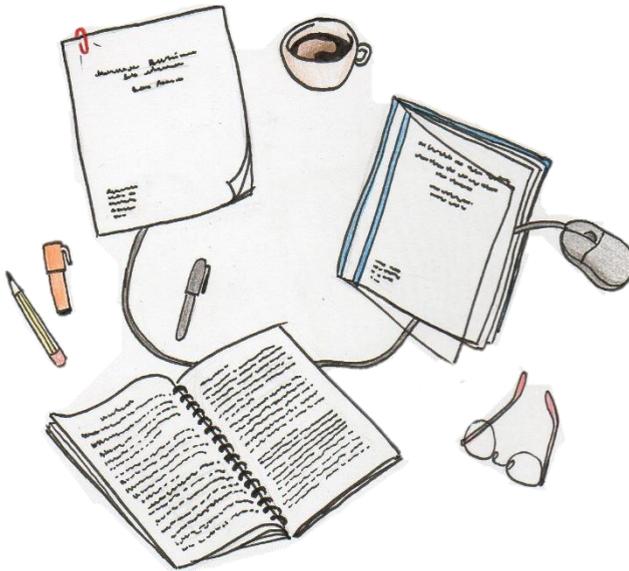
likened to the path towards conceptual understanding, then the integration of knowledge into meaningful chunks that are needed for expertise might be likened to the synthesis of knowledge that is needed for conceptual understanding.

That students' conceptual understanding appeared to take different paths suggests that the knowledge synthesis needed for conceptual understanding to develop might therefore be seen as a dynamic process of perpetual knowledge integration as meaningful chunks are created. It is unclear why, for instance, the apparent improvement in conceptual understanding of practice instances in Jamie's second essay resulted in the apparent deterioration in conceptual understanding of business practices, but it could be related to the process of knowledge chunking. Possibly, one meaningful chunk of knowledge (how companies manage supply chains) had yielded to another meaningful chunk of knowledge (*US-Stores'* business activities). If this is the case, it might suggest an important role for teachers in helping students develop conceptual understanding. For instance, teachers could trigger students to integrate contextual knowledge by asking questions that will prompt them to recognise inconsistencies and elaborate on prior knowledge (Butler & Winne, 1995), they could fill knowledge gaps (Hattie & Timperley, 2007), and they could stimulate students to look at knowledge in new ways (Chen & Bradshaw, 2007). Further research to investigate the effectiveness of different teaching methods for fostering conceptual understanding development might therefore be beneficial.

This study has shown ways in which international business undergraduates' conceptual understanding can change and develop. While this study did not focus on learning processes, results suggest that the learning processes involved in the development of conceptual understanding might be both varied and dynamic. The learning processes behind conceptual understanding development could also be an interesting topic for future research.

Chapter 6

Exploring Differences Between International Business Undergraduates' Conceptual Understanding⁵



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Abstract

Higher education providers need to deliver graduates with the conceptual understanding required for professional life. Conceptual understanding entails a synthesis of relevant facts, theories and practices that influence occupational performance. To help align curricula with individual student differences, the study presented in this chapter investigates differences in international business undergraduates' conceptual understanding with regard to study progress. Seventy-four international business students of a bachelor's programme in the Netherlands participated. Students were presented with a complex business problem. They then wrote essays in which they explicated their conceptual understanding of the case. Using a rubric, six components of conceptual understanding were graded on a 5-point scale ranging from negligible to extraordinary. Results indicated three types of conceptual understanding: *limited*, *developing* and *extensive*. Their relationship with study progress was nonlinear, indicating that effects other than curriculum may account for differences between students. Suggestions are made to account for differences, and recommendations are made regarding curriculum development.

Keywords: higher education, conceptual understanding, international business undergraduates, cross-sectional study, international education

6.1 Introduction

Higher education providers need to deliver graduates with the conceptual understanding required for the rising trend towards non-routine, interactive tasks (Neubert et al., 2015). Professionals face a complex environment featuring ongoing global change, instant communications and continual technological advancements. To deal with the complex problems inherent in this fast-changing, information-saturated environment, professionals must continually adapt, prioritise and innovate. With the reasoning that comes with conceptual understanding, professionals can analyse and apply relevant strategies (Collins et al., 1989). With the *out-of-the-box thinking* that comes with conceptual understanding, they can innovate and develop new strategies (Andrews & Higson, 2008). With conceptual understanding, it is possible for professionals to achieve a holistic rather than isolated approach to problem solving. This is desirable because a holistic view adds value to the organisation as a whole rather than to detached components of the business system.

For professionals to see problems holistically, they need to know how concepts connect to each other 'to form a novel, coherent whole' (Krathwohl, 2002, p, 215). In a study of differences between experienced professionals and post-graduate business students, Dew and colleagues (2009) found differences between post-graduate business students and experts in the way they tended to view problems: the post-graduates tended to see them more as isolated incidents rather than holistically. By knowing how concepts relate to each other and how they relate to tasks, professionals can apply knowledge quickly and adequately in situations they have not encountered before (Newton, 2012; Van Oers, 1998b).

To prepare graduates for professional life, educators need to stimulate students' development of conceptual understanding. To help align curricula with the demands of professional practice, educators need to know how much conceptual understanding their students have as they progress through the curriculum. Since the extent of international business undergraduates' conceptual understanding is unclear, one first step is to answer the question: *What differences can be identified between international business undergraduates' conceptual understanding with regard to study progress?* With the goal of providing information that could help align curricula with educational and professional demands, the study presented in this chapter investigates different types of conceptual understanding

between international business undergraduates and how they relate to study progress. The following two sections address literature on conceptual understanding of international business and its expected relationship to study progress. Further sections on method, results and discussion follow.

6.2 Conceptual Understanding of International Business

International business professionals work in a broad range of occupations, industries and locations. A graduate might become a financial manager, sales director or investment advisor; involved in banking, manufacturing or government health; working in rural Spain, small-town USA or urban China. International business professionals need conceptual understanding so that they can achieve a holistic view in the ubiquitous range of situations in which they might find themselves. Conceptual understanding can provide a holistic view because it entails a comprehensive overview of relevant facts, theories and practices (Entwistle, 2000; Harteis & Billett, 2013).

As presented in Chapter 2, in the first study to define conceptual understanding for use in international business education, we found that general taxonomies of educational objectives were inadequate for this purpose. Taxonomies including those by Bloom, Engelhart, Furst, Hill and Krathwohl (1956), Krathwohl (2002), Romiszowski (1981) and Shulman (2002) did not specify the rich domain knowledge that international business professionals need for conceptual understanding in different contexts. Possibly, general taxonomies are more useful for assessing a process like critical thinking rather than a learning outcome like conceptual understanding. Like conceptual understanding, critical thinking involves reasoning and multiple perspectives (Willingham, 2008). However, unlike critical thinking, conceptual understanding in a domain like international business also requires domain-specific knowledge (Harteis & Billett, 2013).

Conceptual understanding goes beyond skill. It requires a specific approach to knowledge. It requires general knowledge, such as that of the global context, business practices and business concepts, because the context-free nature of general knowledge enables knowledge transfer in the professional field and so facilitates conceptual understanding in different situations (Ausubel et al., 1978; Davydov, 1988; Mayer, 1992).

Similarly, conceptual understanding requires specific knowledge, such as that of the local context, actual practice instances and workings of business mechanisms in particular situations, because specific knowledge enables knowledge contextualisation without which conceptual understanding cannot occur (Billett, 2001). Both concrete knowledge and abstract knowledge are also important for conceptual understanding because they enable international business professionals to apply abstract knowledge to and derive abstract knowledge from concrete situations (Ausubel et al., 1978; Davydov, 1988; Mayer, 1992).

Conceptual understanding requires general, specific, concrete and abstract knowledge, but it also involves more than conceptual knowledge of isolated facts and theories, or understanding of how systems work. Conceptual understanding requires a synthesis of knowledge. The synthesis of general, specific, concrete and abstract knowledge enables the conceptual understanding professionals need to perform adequately in occupational practice. Figure 6.1 provides examples of general, specific, concrete and abstract knowledge relevant for conceptual understanding of international business.

Figure 6.1

Six Components of International Business Conceptual Understanding with Examples

	Concrete	Abstract
General	Global context <ul style="list-style-type: none"> • Global trade agreements • Market growth rates 	Business concepts <ul style="list-style-type: none"> • The price mechanism • Return on investment
	Business practices <ul style="list-style-type: none"> • How companies cut costs • How companies generate revenue 	
Specific	Local context <ul style="list-style-type: none"> • Local government regulations • Local labour skills 	Business mechanisms <ul style="list-style-type: none"> • How product scarcity affected prices in a particular market • How salary changes will affect an exchange rate
	Practice instances <ul style="list-style-type: none"> • What a company's financial position looks like • A company's outsourcing strategies 	

6.3 Conceptual Understanding and Study Progress

This study hypothesises that the extent of conceptual understanding displayed by undergraduates of international business will differ significantly. We expect that undergraduates' conceptual understanding of international business in higher education will depend on students' progress within the curriculum.

In the beginning stage of learning, whether it occurs through lectures, reading or work-place learning, undergraduates encounter innumerable facts about their domain of study. For many students, conceptual understanding at this stage can be limited because they merely take on and reproduce isolated facts and concepts without comprehending how they relate to each other as a complex whole (White, 2007). We therefore expect that students in the beginning stage of the international business curriculum are most likely to replicate facts, theories and practices, indicating limited conceptual understanding.

For conceptual understanding to develop, undergraduates need to internalise knowledge relating to their domain of study so that they can incorporate new knowledge in their own mental schemes (Schaap et al., 2009). When knowledge is internalised, students have the capacity to develop conceptual understanding because the internalised knowledge enables them to transform their mental schemes as they relate new knowledge to what they already know (Entwistle, 2000). Moreover, the cognitive activity involved in repeatedly retrieving and applying new knowledge to old can foster conceptual understanding because it benefits long-term knowledge retention (Roediger III & Butler, 2011).

Students in the middle and end years of the curriculum presumably would have had more opportunity to retrieve and apply knowledge than students in the first year, as well as more need to reason and explain knowledge. Explanation requires reflection, which is important for the development of conceptual understanding (Sparks-Langer et al., 1990). Educators might therefore anticipate that students in the middle and end stages of the curriculum would have deeper conceptual understanding. On the other hand, any number of factors might also influence individual students' development of conceptual understanding, such as their prior knowledge, approaches to learning and motivation (Entwistle, 2010). Therefore, we do not necessarily expect that all students will develop conceptual understanding in a uniform way.

As mentioned earlier, successful professionals in occupational practice need out-of-the-box thinking that enables them to explore alternative viewpoints, make links to other disciplines and consider different possibilities (Andrews & Higson, 2008). However, while we believe undergraduates should aspire towards this level, we do not necessarily expect them to reach it. It is likely that the wide-ranging perspectives typified by this deepest level of conceptual understanding require intuitive expertise resulting from years of practical

Exploring Differences Between International Business Undergraduates' Conceptual Understanding experience (Harteis & Billett, 2013). While we do not expect undergraduates to develop deep enough conceptual understanding to view facts, theories and practices holistically, we do expect that by the middle and end stages of the curriculum, they will be able to describe and explain them.

6.4 Method

To provide material for analysis, we asked international business students to produce essays on a complex business problem. We scored the essays for conceptual understanding using an assessment approach and a rubric developed in previous studies. Exploring differences between undergraduates' conceptual understanding involved two steps. First, we investigated what types of conceptual understanding could be identified. Second, we looked at what relationship the different types of conceptual understanding had with study progress.

6.4.1 Context

Data were collected from students enrolled in a four-year Bachelor of Business Administration programme in the Netherlands. The goal of the programme is to prepare students for professional occupations in international business, enabling them to apply conceptual understanding to professional practice (Sijben et al., 2017). To graduate, students must earn 60 credits in the foundation year and 180 credits in the three-year main phase. The foundation year covers principles of international business theory. The main phase includes advanced principles of international business, international business projects to enhance integrated learning, one or two semesters of study at a partner university abroad to acquire international experience, and two internships at international companies to develop professional skills and knowledge. The first, half-semester internship is usually at the end of the second year. The second, semester internship, during which students conduct graduation research, is usually at the end of the fourth year. However, many students experience study delays due to reasons such as exam failure or difficulty arranging international internships. Therefore, not all students follow the four-year programme at the same pace or in the same order.

6.4.2 Participants

Participants comprised 74 higher-education undergraduates of international business. Forty-four (60%) were male. The mean age was 21.2 years ($SD = 2.4$). Fifty-six were Dutch (76%). The rest were Afghan, British, Bulgarian (2), Chinese (3), French, German (3), Ghanaian, Irish, Lithuanian, Peruvian, Polish, Swiss and Vietnamese.

Participants were recruited from three stages of the four-year curriculum. First-year students ($n = 32$) had completed an introductory semester covering business administration, economics and law, finance and managerial accounting, and marketing. Middle-year students ($n = 23$) had followed at least three semesters of international business studies and completed international business projects as part of their coursework. Final-year students ($n = 19$) had followed at least five semesters of international business studies, completed international business projects, and passed the half-semester internship.

6.4.3 Instrumentation

Analysis of students' conceptual understanding involved a complex business problem, an essay method and a rubric. The essay method and rubric were developed and validated in our second study, as presented in Chapter 3.

6.4.3.1 Complex Business Problem. After consulting with two other international business lecturers, the first author created a complex business problem based on a current event. The problem was about the current Dutch retail crisis. It included two short articles and a table of information about the Dutch retail industry translated from recent publications of the Dutch newspaper, *NRC Handelsblad*. The articles were entitled, 'The perilous middle: Why many Dutch retail chains don't make it' and, 'Not just V&D: Many stores are doing worse than ever'. The table included figures about successful foreign and unsuccessful Dutch retail chains operating in the Netherlands. Students were prompted to explain important factors, required knowledge, and the dilemmas faced by the retail chains struggling to survive. Students were prompted to write from the perspective of a newly appointed Chief Executive Officer to the Board of 'a medium-sized Dutch retail chain' that had been trading for over 50 years.

The business problem was expected to reveal differences in conceptual understanding between students adequately because all students were expected to be familiar with this topic. The ongoing bankruptcies of Dutch retail companies had been widely discussed in news media and lectures, and encountered by students in their everyday lives when shopping. The reality of the topic, the significance of the topic for international business and the personal experience of the topic made the problem real, relevant and meaningful for students, which was expected to stimulate engagement (Brown et al., 2014; Gulikers et al., 2008). The problem was also considered suitable for revealing conceptual understanding because its complexity required students to describe, explain and explore perspectives, and to apply and construct different types of knowledge (Alonso-Tapia, 2002).

6.4.3.2 Essay Method. The communication method chosen to reveal conceptual understanding of international business was essays. Essays are a suitable approach for revealing conceptual understanding of international business because they are a detailed communication approach that emphasises reasoning (Flower & Hayes, 1981). To reveal conceptual understanding, a complex communication approach that emphasises reasoning is required (Allen & Tanner, 2006; Kellogg & Whiteford, 2009). As presented in Chapter 3, we concluded in our second study involving 132 international business undergraduates, on essays, concept maps and combinations of the two, that essays are a suitable approach for revealing conceptual understanding of international business because they have the potential to differentiate between negligible, weak, moderate, strong and extraordinary conceptual understanding.

6.4.3.3 Rubric. Rubrics are proven tools for assessing complex learning outcomes like conceptual understanding (Allen & Tanner, 2006; Reddy & Andrade, 2010). Therefore, a rubric was used to score conceptual understanding of international business in the essays. To score the extent of conceptual understanding for the six components we identified for international business (Figure 6.1), the rubric describes five possible degrees of conceptual understanding encapsulating conceptual understanding development. The degrees represent weak to moderate conceptual understanding, typified by the reproduction of isolated facts and concepts (White, 2007); strong conceptual understanding, typified by reflection and explanation (Sparks-Langer et al., 1990); and extraordinary conceptual understanding, typified by out-of-the-box thinking (Andrews & Higson, 2008) (Table 6.1).

Table 6.1

Extent of International Business Conceptual Understanding

Degrees	Description	Example
Negligible	Omits or trivialises	Uses the words <i>trade</i> and <i>exports</i>
Weak	Lists relevant facts	Implies that global trade conditions are important for a company's export growth
Moderate	Defines essential elements	Describes effects of global trade conditions on a company's export growth
Strong	Supports claims with logical reasoning	Uses evidence to explain how global trade conditions are affecting a company's export growth
Extraordinary	Explores alternative viewpoints	Examines various scenarios for stimulating export growth for current global trade conditions

The rubric was developed and validated in the first two studies, as presented in Chapter 2 and Chapter 3. Inter-rater reliability was established in the second study, as presented in Chapter 3, where the first author and a research assistant judged similar writing. For the six components of conceptual understanding, scores of conceptual understanding in 12 essays (72 values) using the rubric had shown good agreement, $\kappa_w = .67$ ($p < .001$), 95% CI (.55, .79).

6.4.4 Procedure

Data collection took place in a range of first, second, third and fourth-year classes halfway through the second semester of 2014-2015. With permission from lecturers and students, who both viewed participation in this study as a worthwhile and meaningful curricular activity, the first author presented students in each class with a three-page handout about the current Dutch retail crisis, which contained facts and statistics about the financial health of various Dutch and foreign retail chains in the Netherlands. The first author spent 10 min explaining the business problem and giving instructions on writing essays about the problem. Under supervision of the first author, students used school computers to explain how they would advise management on the business problem presented. To assist with their writing, students could use proofing and language tools on the computer. They could refer to the handout, but could not use reference books or the internet. Students had one hour to write their essays. They then emailed their essays to the first author. The first author randomly numbered the essays to anonymise authorship.

With input from the second and third authors to ensure analytical quality, the first author used the rubric to score six components of conceptual understanding in each essay. Each component of conceptual understanding was scored 1 (negligible), 2 (weak), 3 (moderate), 4 (strong) or 5 (extraordinary), depending on relevance for international business, and depending on the extent to which the component had been detailed, described, explained and discussed. Excerpts from students' writing containing details, descriptions, explanations and discussions illustrating conceptual understanding of international business were cut and pasted from the essays for further analysis.

6.4.5 Data Analysis

To determine different types of conceptual understanding between undergraduates, essay scores were analysed in two steps. These steps involved latent class analysis (LCA) and one-way analysis of variance (ANOVA).

LCA is a statistical technique that is useful for placing individuals in homogenous groups based on observable variables (Porcu & Giambona, 2017). LCA was used to identify discrete types of conceptual understanding based on students' essay scores for the six components of conceptual understanding. One-way ANOVA were used to investigate significant differences between component scores for each type. Since ANOVA assumes homogeneity of variance within groups, Levene's test of equality was used to check this. Where Levene's test proved statistically significant, meaning that homogeneity of variance could not be assumed, Games-Howell post hoc procedures were used because they consider unequal group variances. Otherwise, the Bonferroni correction was used to reduce statistical error from multiple tests.

The relationship between different types of conceptual understanding and study progress was identified in quantitative and qualitative ways. Firstly, we used one-way ANOVA tests in the manner described above to show significant differences between each type of conceptual understanding regarding how many first year and main phase credits students had achieved. Secondly, we chose excerpts from two essays written by students in different stages of the curriculum, whose component scores most closely matched the average

component scores of each type of conceptual understanding. Pseudonyms were used to protect the students' identities.

6.5 Results

Quantitative analyses were used to identify differences between undergraduates with regard to types of conceptual understanding. Quantitative and qualitative analyses were used to identify how these types related to study progress.

6.5.1 Types of Conceptual Understanding

Using latent class analysis, the extent of conceptual understanding in essays was classified as three distinct types: *limited*, *developing* and *extensive*. The first type is described here as limited because the scores of essays belonging to this type were low for all components, which indicated little knowledge of facts, theories and practices. The second type is described here as developing because all component scores for essays of this type were higher than the limited type, which indicated a superior grasp of facts, theories and practices. The third type of conceptual understanding is described here as extensive because scores of essays belonging to this type indicated a wide-ranging perspective, and a capacity for logical reasoning and knowledge application. Table 6.2 provides the mean scores and standard deviations for the three types.

Table 6.2

*Scores of Conceptual Understanding per Type**

Components of conceptual understanding	Conceptual understanding types					
	Limited		Developing		Extensive	
	(<i>n</i> = 50)		(<i>n</i> = 16)		(<i>n</i> = 8)	
	M	SD	M	SD	M	SD
Global context	1.1	.4	1.5	0.6	2.6	1.5
Local context	1.9	.8	2.4	0.5	3.9 ^{bc}	1.2
Business practices	1.2	.5	2.1 ^a	1.2	4.0 ^{bc}	0.8
Practice instances	1.1	.4	2.3 ^a	1.3	3.1 ^b	1.7
Business concepts	1.7	.5	3.4 ^a	0.9	4.3 ^{bc}	0.5
Business mechanisms	1.3	.5	2.8 ^a	0.9	3.9 ^{bc}	0.6

^a Limited and developing mean scores vary significantly for business practices ($p = .022$), practice instances ($p = .005$), business concepts ($p < .001$) and business mechanisms ($p < .001$).

^b Limited and extensive mean scores vary significantly for local context ($p < .001$), business practices ($p < .001$), practice instances ($p = .033$), business concepts ($p < .001$) and business mechanisms ($p < .001$).

^c Developing and extensive mean scores vary significantly for local context ($p < .001$), business practices ($p < .001$), business concepts ($p = .020$) and business mechanisms ($p < .001$).

* Levene's test proved statistically significant for all components except local context ($p = .641$) and business mechanisms ($p = .059$). For these two components, the Bonferroni correction was used. For other components, Games-Howell post hoc procedures were used.

6.5.2 Relationship between Types of Conceptual Understanding and Study Progress

For each type of conceptual understanding identified, Table 6.3 shows the average number of first year and main phase credits earned by students whose essays belonged to that type. It shows that while students of essays classified limited had the fewest credits, students whose essays were classified extensive had fewer credits than students whose essays were classified developing.

Table 6.3

*Study Progress Differences Between Types of Conceptual Understanding**

Credits	Types of conceptual of understanding					
	Limited		Developing		Extensive	
	M	SD	M	SD	M	SD
First year	28	20	53 ^a	15	52 ^b	15
Main phase	17	35	50 ^a	39	34	27

Group mean scores vary significantly between

^a Limited and developing groups for first year ($p < .001$) and main phase credits ($p = .005$).

^b Limited and extensive groups for first year credits ($p = .006$).

* Levene's test proved statistically significant for first year credits ($p = .013$) but not for main phase credits ($p = .767$), so Games-Howell post hoc procedures were used for first year credits and the Bonferroni correction was used for the main phase credits.

To illustrate differences between conceptual understanding types and study progress, analysis of six essays follows. Each of the three identified types of conceptual understanding is illustrated by excerpts from two essays written by students in different stages of the curriculum. These essays' component scores most closely reflect the average component scores for each type.

6.5.2.1 Limited Conceptual Understanding. Amy, a first-year student who had passed half the courses she had taken in the first semester (15 credits), wrote one of the essays with conceptual understanding classified limited. Conceptual understanding of local context

was weak because she implied local business problems: ‘many Dutch companies are facing bankruptcy because of major competitors and the economical [*sic*] crisis’. Conceptual understanding of business concepts was also weak because she included business terms like: ‘long-term sustainability’, ‘market strategy’, ‘supply’, ‘demand’, and ‘customer service’. However, conceptual understanding of other components was negligible.

Another essay of this type was by Ad, a student in the third year who had passed all first year courses (60 credits) and about 72% of the main phase courses he had taken so far (65 credits). Like Amy’s essay, Ad’s essay also displayed weak conceptual understanding of the local context and business concepts. For local context, he alluded to the local problem, but without detail: ‘Many Dutch retail chains are facing bankruptcy. Dutch companies such as Mexx, Schoenenreus and Free Record Shop were well known in the past, but went bankrupt under a lot of different circumstances.’ Regarding business concepts, he included terms such as ‘bankruptcy’, ‘customer base’, ‘strategic decisions’, ‘exclusive [products]’, and ‘strategic plan’. Similar to Amy’s essay, conceptual understanding of other components was negligible.

6.5.2.2 Developing Conceptual Understanding. A typical essay typifying conceptual understanding described as developing was by Bao, a third-year student with 60 first year and 60 main phase credits. Bao’s essay showed negligible conceptual understanding of practice instances because she did not write anything about actual companies, and weak conceptual understanding of global context because she referred to global conditions such as ‘international clothing chain stores’ and ‘fashion trends’. For other components, conceptual understanding was moderate. For instance, regarding local context, she described how ‘more and more international clothing chain stores entering into Netherlands’ were gaining local market share. Regarding general business practice, she described how when ‘stores update their stock very quickly and often, there will always be something new or different that attracts customers’. Regarding business concepts, she wrote how ‘unique selling point’ could be defined as ‘good material/ quality, Fairtrade with good design etc.’ Regarding business mechanisms, she pointed out that ‘good use of social media’ could lead to improved ‘brand image’.

Ben was a first-year student who had so far passed all his courses (30 credits). Ben’s essay was also classified by LCA as developing. In Ben’s essay, conceptual understanding

Exploring Differences Between International Business Undergraduates' Conceptual Understanding of business practices was negligible but his essay showed moderate conceptual understanding of practice instances because he described what actual companies were doing:

Foreign competitors include: Zara, Vera Moda, H&M, Pull&Bear, etc. For the past few years they have been opening more and more stores. The main reason they are able to grow at the cost of our company and many other Dutch clothing retailers. Is that they are slightly cheaper and their fashion is more appealing to our customers. ... The Dutch store Bijenkorf anticipated successfully by reducing their stores from 12 to 7 and focusing solely on exclusive brands. This way they made themselves more exclusive and attractive.

Ben's essay also showed moderate conceptual of local context because he described what was happening, for instance: 'The crisis has hit almost every household in the Netherlands. As a result households do not see their income rise and save on food, clothing and household items.' For other components, conceptual understanding scored weak. He alluded to the global context (e.g. 'foreign competitors', 'foreign competition'), referred to business concepts (e.g. '[customer] needs and wants', 'production cost'), and indicated business mechanisms (e.g. 'ways to lower production cost to eventually lower our prices').

6.5.2.3 Extensive Conceptual Understanding. Essays typifying extensive conceptual understanding scored higher than the other two types for all components of conceptual understanding. Cain, a second year with 55 first year and 20 main phase credits, wrote one essay of this type. For most components, his essay showed strong conceptual understanding; for practice instances, it showed extraordinary conceptual understanding. Cain explained the importance for the company to 'take precautions' in light of the global context ('rapid expansion of foreign companies to the Dutch market', 'almost no borders', 'globalization is growing') and local context ('foreign stores are getting more and more of a foothold into the Dutch market'). He explained that business practices were contributing to the problem: 'the companies that realise that the globalization is happening get stronger ... and the companies that hold to their old believes [*sic*] are getting [*sic*] bankrupt'. He explored practice instances, including that of an online shop that had not adapted to changing market conditions in time:

A good example of this is the Free Record Shop. When the e-shopping race just started, they had a really big opportunity to enter this market without any

competition. But instead they stayed with their traditional ways and kept selling from stores. Now they are out of the race and Bol.com is leading the race of e-shopping.

In his essay, Cain explained the importance of several business concepts, including ‘loyalty program’, a concept that might allow the company to ‘hold a sustainable position [in] the current market or even gain market share’:

... we should create a loyalty program that focusses on our current customers. For example if one of our customer refers our web shop to one of their friends, they will get a discount. And according to the buying behavior of their friend, this discount will increase. This will help spread ... the reach of our market. ... By adding the loyalty and referral program ..., the web shop will get a lot more attention.

Finally, Cain’s essay explained how ‘not adapting to the environment and keeping with the traditional way of doing business’ can lead to bankruptcy because this was what has been happening to ‘the Dutch companies who are getting bankrupt at a fast [pace]’.

Another essay classified extensive was written by first-year Claud, who like Amy had only achieved 15 credits. It scored negligible for practice instances because he did not refer to any. For global context, it scored weak because he merely alluded to its existence with words like ‘the economic crisis’ and ‘foreign brands’. However, Claud’s essay showed strong conceptual understanding of other components because it contained explanations regarding the business problem. For local context, he explained the local problem (‘medium sized retail chains are in a very bad position’) and its causes (‘foreign brands are taking over the market and more domestic chains have been going bankrupt’). For business practices, he explained what companies have to do (‘shift their idea of existing in the economy’) and why (‘the landscape is changing and in order to survive change is a necessity’). For business concepts, he supported the importance for the problem of concepts like ‘brand awareness’:

It is important for a customer to get a connection with a company and its brands, often this connection is made when customers enter a store and feels it [*sic*] atmosphere. Therefor [*sic*] it is relevant to have stores.

For business mechanisms, he explained how, for instance, 'the rise of the internet and internet sales' has contributed to brand awareness by giving 'the consumer ... awareness of all the brands that exist on the market' so that 'they can specifically choose which one best suit [*sic*] their needs'.

6.6 Conclusions and Discussion

With the goal of providing information that could help align curricula with educational and professional demands, this study set out to investigate differences in conceptual understanding between international business undergraduates with regard to study progress. To reveal differences that could help clarify the extent of undergraduates' conceptual understanding, international business students at various stages of an undergraduate curriculum wrote an essay on the then current Dutch retail crisis.

6.6.1 Differences Within Types of Conceptual Understanding

The results indicated three types of conceptual understanding, representing limited, developing and extensive conceptual understanding. Scores for six components of conceptual understanding (global context, local context, business practices, practice instances, business concepts and business mechanisms) were highest for the extensive type of conceptual understanding and lowest for the limited type. However, not all essays of the same type scored the same for all components of conceptual understanding. For instance, not all essays showing extensive conceptual understanding had high global context scores. Some explained its importance, but others barely mentioned it at all. Conceptual understanding of global context helps provide a holistic view of an international business problem, and a holistic view is required for conceptual understanding (Entwistle, 2000; Harteis & Billett, 2013; Krathwohl, 2002). That conceptual understanding of global context appeared to develop less than other components among the students was probably to be expected given that even post-graduate business students have been found to view problems less holistically than expert practitioners (Dew et al., 2009).

6.6.2 Nonlinear Relationship between Conceptual Understanding and Study Progress

Another expected result of this research was that the students of essays classified with limited conceptual understanding had made the least study progress overall in terms of credits earned. Students in the first stage of higher education can be expected merely to repeat isolated pieces of information, which typifies limited conceptual understanding (White, 2007). Results indeed indicated that the students with the fewest credits tended to reproduce disjointed facts about the business problem provided.

However, it was unexpected that the overall relationship between conceptual understanding type and study progress appeared to be nonlinear, because the students in this study were at different stages of the same programme, and because courses and teaching were similar for all students. Although we had anticipated that differences between students other than progress in the curriculum probably affect conceptual understanding development, we had not expected the extent of differences between students with similar study progress that the results suggest. While we identified a relationship between conceptual understanding and study progress for students showing limited conceptual understanding, students whose study progress had been expected to warrant developing or extensive conceptual understanding also wrote essays that showed limited conceptual understanding. Similarly, essays showing developing or extensive conceptual understanding included those written by students whose lack of study progress had been expected to warrant limited conceptual understanding. Although all students had similar opportunities to acquire knowledge, practise skills and experience professional practice as they progressed through the curriculum, the effect of these activities did not necessarily seem to result in deeper conceptual understanding.

Possibly, differences in previous and extra-curricular knowledge and experience, such as prior education or part-time work, contributed to differences between the students' conceptual understanding at different stages of the curriculum. Such factors can affect conceptual understanding development (Kuh et al., 2008; Rienties et al., 2012). However, other differences between the students might have also contributed. Conceptual understanding development requires a deep approach to learning, which involves a search for meaning as opposed to the collection and retention of fragmented facts (Biggs, 2012; Entwistle, 2000). Part of a deep approach to learning involves deliberate practice to improve

Exploring Differences Between International Business Undergraduates' Conceptual Understanding performance, which requires cognitive effort rather than automated performance (Ericsson, 2008; Roediger III & Butler, 2011). While curriculum activities such as workplace learning can affect conceptual understanding development (Harteis & Billett, 2013), their effect can depend on students' 'maturity', 'personal skills' and 'subject knowledge' (Mansfield, 2011, p. 951). Such differences between students might help explain differences in conceptual understanding at different stages of the curriculum.

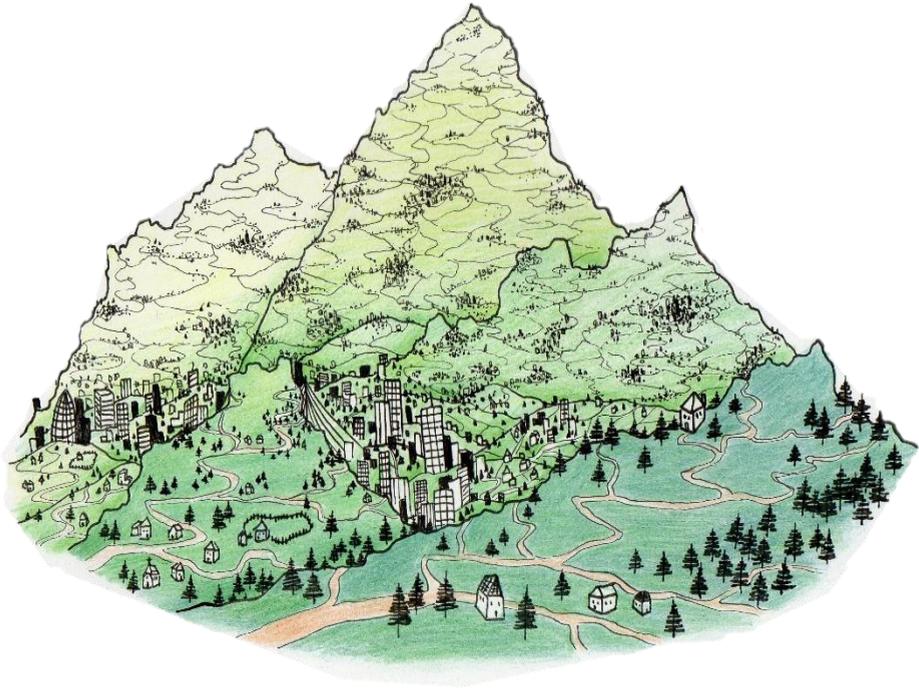
Related to the result that the relationship between conceptual understanding type and study progress appeared to be nonlinear, another unexpected result was that the students whose essays suggested extensive conceptual understanding tended to have less study progress in terms of credits earned than the students whose essays suggested developing conceptual understanding. This result points to a possibility that the curriculum the students were following did not necessarily provide a powerful learning environment adequately conducive to conceptual understanding development. Knowledge presented in rich and powerful learning environments, including lectures, meaningful literature, class discussion, workplace learning and practical projects can stimulate conceptual understanding development by provoking students to make connections, explain and create meaning (Entwistle, 2005; Entwistle & Entwistle, 2005; Newton, 2012; White, 2007). However, undergraduates nearest graduation can be the ones who feel least inclined to exert themselves on low-stakes tests that do not produce credits (Liu et al., 2012; Roohr et al., 2017). One limitation of this study is that we used a cross-sectional study design because it allows data collection at one point in time. A longitudinal study with repeated measurements of the same group of students might help eliminate possible cohort effects and help clarify the extent of nonlinearity between conceptual understanding and study progress suggested by this study.

6.6.3 Implications for Curriculum Development

By identifying differences between international business undergraduates' conceptual understanding, this study may provide educators with a new way to consider students' knowledge needs. That there appeared to be differences within types of conceptual understanding suggests that even students who might seem to have similar levels of conceptual understanding could have considerably different learning needs. For instance,

even among the students in this study whose conceptual understanding was classified extensive, few appeared to have a strong grasp of global context, and while some appeared to have a strong grasp of theoretical knowledge such as business concepts, others appeared to have instead a strong grasp of practical knowledge such as business practices. Coupled with our finding that the relationship between conceptual understanding and study progress appears to be nonlinear, the results of this study in general suggest that individual students follow different paths of conceptual understanding development.

With timely support, skilled teachers can provide scaffolding that can help students develop conceptual understanding (Van de Pol et al., 2010; Van de Pol et al., 2014). We therefore conclude that an effective curriculum requires a differentiated approach in which teachers need to determine the nature of each student's conceptual understanding so that they can diagnose favourable learning opportunities for individual students. However, the development of the intuitive expertise needed for deep conceptual understanding typified by out-of-the-box thinking requires demanding practical tasks (Andrews & Higson, 2008; Harteis & Billett, 2013). Undergraduates who already display extensive conceptual understanding, who are already capable of reflection and explanation, might reap further benefit from rich learning experiences closely aligned to real-life professional practice.



Chapter 7

General Conclusions and Discussion

7.1 Key Findings

International Business is a multidisciplinary study programme in which students must acquire a variety of knowledge relating to disciplines such as marketing, finance, logistics, languages, intercultural management and communication. To perform adequately in professional practice, international business undergraduates need conceptual understanding that enables them to view problems as an integrated whole. Since educators lack knowledge about the nature of conceptual understanding among undergraduates in higher professional education, the purpose of this dissertation was to investigate how conceptual understanding for ill-structured domains like international business can be defined and measured, how it appears and changes, and how it differs between students.

Five central questions guided the research for this dissertation: (1) ‘How can conceptual understanding for teaching in international business be defined?’ (2) ‘How can conceptual understanding of international business be revealed?’ (3) ‘How does conceptual understanding appear in students’ writing?’ (4) ‘What types of change take place in the extent of students’ conceptual understanding during an undergraduate course?’ and (5) ‘What differences can be identified between international business undergraduates’ conceptual understanding with regard to study progress?’

The five distinctive studies that were carried out to answer these five central questions resulted in five key findings. Firstly, it was concluded that conceptual understanding of international business could be defined in terms of six knowledge components, which could each potentially be assessed on a five-point scale representing progressively deeper

conceptual understanding, namely: the global and local contexts, general and specific business practices, and theoretical business concepts and mechanisms. Secondly, it was concluded that essays could be used to reveal conceptual understanding adequately in international business undergraduates' writing. Thirdly, it was concluded that conceptual understanding in students' writing appeared to be broad rather than deep, with different patterns of conceptual understanding emerging between students' writing, and with different ways in which conceptual understanding manifested. Fourthly, it was concluded that changes in conceptual understanding during courses and programmes differ significantly between students. Fifthly, it was concluded that there is a nonlinear relationship between conceptual understanding and study progress.

The following section offers interpretations of the key findings. Further sections provide implications for education, acknowledge research limitations and make suggestions for further research, and deliver closing remarks about the scientific and practical contribution of this dissertation.

7.2 General Conclusions

The key findings of this dissertation result in three general conclusions about conceptual understanding in higher professional education. These conclusions regard the nature of conceptual understanding with relation to knowledge synthesis, the development process of students' conceptual understanding, and patterns of conceptual understanding among international business undergraduates.

7.2.1 Conceptual Understanding as Knowledge Synthesis

Key findings of this dissertation suggest that the development of conceptual understanding of international business entails knowledge synthesis. As established in Chapter 2, and further supported by results from Chapters 3 to 6, conceptual understanding of international business comprises six components of conceptual understanding representing six essential aspects of domain knowledge. Knowledge synthesis means that knowledge is linked to form an integrated whole that is greater than the sum of its parts (Krauthwohl, 2002).

The six components of conceptual understanding appear to relate to one potential knowledge whole because all the components of conceptual understanding are situated on the same two continuums of abstract/concrete and general/specific knowledge. Seen in this way, each component is connected to every other component and therefore contributes to the integrated whole that is conceptual understanding. For instance, both business practices and practice instances represent concrete knowledge, the difference being that the former is general and the latter specific. Business practices represents generalisations about what companies do, and practice instances represents specific cases of business practices. Another example is business concepts and business practices, which both represent general knowledge, but while the former is abstract, the latter is concrete. Here, business concepts theorises about company behaviour, while business practices represents examples of business procedures. So, although components were scored separately in the studies, they were all connected and provided insight into conceptual understanding by considering different aspects of the knowledge synthesis.

Insight into the nature of knowledge synthesis might also be inferred from the key finding that changes in conceptual understanding differ significantly between students. Differences between students' conceptual understanding infer that there are multiple positions of conceptual understanding that can be occupied along the two continuums of knowledge: from abstract to concrete, and from general to specific. It is postulated that synthesis takes place as students' focus switches back and forth between the two ends of each spectrum. For instance, switching between the abstract and concrete might be considered to occur when students consider the significance of theory (business concepts) for practice (practice instances) and vice versa, i.e., when they theorise about practice. Switching between the general and specific might be considered to occur when students provide examples of business practices or generalise about practice instances based on what particular companies are doing. More complicated switching between continuums of knowledge might also take place. For instance, global context and local context differ on two continuums: global context sits on opposite ends of both the abstract/concrete and general/specific continuums compared to local context. The process of synthesis in this case would therefore be more complex, since the switching entailed is potentially more complicated.

Seen in the light of synthesis occurring through switching along continuums, the process of knowledge synthesis might be explained as an ongoing snowball effect of conceptualisation and contextualisation (Heusdens, 2018). Conceptualisation has the potential to influence conceptual understanding because it involves relating concepts to each other to form an integrated whole; contextualisation has the potential to influence conceptual understanding because it provides insight into how the meaning of a particular concept can change depending on the situation (Heusdens et al., 2016; Heusdens et al., 2019). In other words, the process of knowledge synthesis affecting conceptual understanding might be explained as a constant switching between different types of theories, practices and contexts.

If knowledge synthesis takes place to produce conceptual understanding, then knowledge synthesis might be seen as a process whereby components are combined and conceptual understanding is the resulting outcome. However, results from Chapter 5 and Chapter 6 also suggest that conceptual understanding can change, which means that conceptual understanding itself might also be viewed as a process. Results from Chapter 2 support this notion because they suggest that conceptual understanding can be seen as a learning process in which continually deeper conceptual understanding is achieved as a consequence of repeated spiralling through levels linked to different characteristics. Lower levels might start, for instance, with conceptual understanding characterised by loosely connected facts devoid of theory, and cycle towards higher levels characterised by increasingly more meaningful connections between generalisations and specifics, concretisations and abstractions.

7.2.2 Development Process of Conceptual Understanding in Higher Professional Education

Another general conclusion regarding the key findings of this dissertation relates to the way in which conceptual understanding appears to develop among students in higher professional education. Two studies investigated conceptual understanding change. Chapter 5 assessed the same students from the senior year of the curriculum twice within a 14-week period, and Chapter 6 assessed students from different years in the curriculum at the same time. Chapter 5 suggested overall deepening of conceptual understanding between the first and second

essays, and Chapter 6 suggested overall deepening of conceptual understanding between first year and main phase students. However, both studies found that the way different students' conceptual understanding changed was not uniform. Results suggest that during the curriculum or even during a short course, individuals develop conceptual understanding of different components at different rates and in different ways. The second general conclusion of this dissertation is that development of conceptual understanding takes different paths.

One consequence of different paths towards conceptual understanding is that conceptual understanding between students is likely to differ at various stages of conceptual understanding development. Possibly, on the path towards extensive conceptual understanding, it might be useful to describe students' conceptual understanding in terms of how concrete or abstract, and general or specific it is. As established in Chapter 2, and further supported by results from Chapters 3 to 6, conceptual understanding requires general, specific, concrete and abstract knowledge. Both general and specific knowledge are required to allow knowledge transfer needed for conceptual understanding (Ausubel et al., 1978; Billett, 2001; Davydov, 1988; Mayer, 1992). Abstract and concrete knowledge are required for conceptual understanding because they enable one to develop theories to explain and improve practice (Ausubel et al., 1978; Davydov, 1988; Mayer, 1992).

For instance, business practices and practice instances represent concrete knowledge, providing information about *what* and *who*. If a student scores high for these components, their conceptual understanding might be considered concrete. Similarly, business concepts and business mechanisms represent abstract knowledge, providing information about *why* and *how*. So students' conceptual understanding might be considered abstract if they score high for these components. Likewise, a high score for global context or local context, providing information on *when* or *where*, might be considered to represent conceptual understanding that is, respectively, *general* or *specific*.

7.2.3 Patterns of Conceptual Understanding Among International Business

Undergraduates

A third general conclusion regarding the key findings of this dissertation suggests that the conceptual understanding of the students who took part in these studies was broad rather than

deep. Results suggest that the writing of most students who participated in these studies tended to suggest shallow conceptual understanding of the six components identified in this dissertation.

This conclusion provides some support for findings from previous studies that have cast doubt on the extent to which graduates from higher professional education have the conceptual understanding required for entry-level professional practice. For instance, Arum and Roksa (2011a, 2011b; Roksa & Arum, 2015) have suggested that, concerning critical thinking at least, development stagnates in the second year of tertiary education. In a different vein, Van Rossum and Hamer (2010) have also suggested that students' learning stagnates during higher professional education. They claim that most students fail to cross the threshold from a level of understanding enabling them to select and reproduce relevant facts to a level of understanding that enables them to construct meaning and use knowledge flexibly. Their research also provides support for the notion that students in higher professional education do not achieve sufficient conceptual understanding to function adequately when confronted with the global complexity faced by professionals in the 21st century.

Further support for the conclusion that the extent of conceptual understanding attained in undergraduate programmes is insufficient relates to the breadth of domain knowledge apparent from results in this dissertation. While results suggest that conceptual understanding tended to be broad rather than deep, they also show that one particular component scored consistently lower than the rest: global context. For example, both local and global context scored low on the Chapter 4 literature reviews, and global context was also the lowest scoring component of conceptual understanding in the Study 5 essays, with no significant difference between essays written at the beginning and end of the undergraduate research course. Moreover, global context was the lowest scoring component of conceptual understanding in the Study 6 essays, with no significant difference between essays classified as having limited, developing or extensive conceptual understanding.

All international business is affected by global circumstances (Kedia & Englis, 2011a; Milhauser & Rahschulte, 2010; Vos, 2013). In fact, many things that affect our lives operate across borders: from employment to education, from arts to sports, and from communication to transportation. Many events affect the world as a whole: climate change, natural disasters, political crises, and health. Yet results suggest that even senior undergraduates majoring in

international business are not incorporating such knowledge in their conceptual understanding. It could be that the students found the global context to be too abstract to explain in their literature reviews and essays. Compared to the local context, for instance, global context has a much less physical presence. It must be inferred from facts rather than tasted or seen. This quality could make it difficult for students to grasp. On the other hand, the Chapter 6 study task confronted students with facts about the global situation, that Dutch retail bankruptcies were high in the face of stiff foreign competition. Even here, most essays of the types classified with developing and extensive conceptual understanding showed weak conceptual understanding of global context.

7.3 Implications for Higher Professional Education

Key findings of this research suggest several challenges for higher professional education. Firstly, that conceptual understanding involves knowledge synthesis suggests that a potential strategy for fostering conceptual understanding might be feedback prompts that are aligned with knowledge synthesis development. Secondly, that development of students' conceptual understanding appears to take different paths suggests a need for adaptive instructional strategies that consider students' different learning needs. Thirdly, that conceptual understanding appears to be broad rather than deep suggests that undergraduates in higher professional education may have difficulty with analytical and problem solving abilities specified by the EU Qualifications Framework (European Higher Education Area, 2018). The implication is that students' conceptual understanding development could need prioritisation.

One affordance tool that could be valuable to help meet these demands is the rubric developed for this dissertation to assess conceptual understanding. Teachers could use it to diagnose individual students' conceptual understanding. For instance, they could check which of the six components each student has covered in a piece of writing, and to what depth of conceptual understanding each component has been shown. They could then present students with written feedback based on the rubric, possibly marking in the text where students could provide more depth (e.g., reasoning) or breadth (e.g., consideration of global context). Teachers might also use the rubric orally, for instance asking students to list key

characteristics of the local context, define business concepts, explain economic phenomena, or explore alternative viewpoints on organisational behaviour. Other affordances of the rubric might be as a stimulus for class discussion, a prompt for writing assignments, a formative assessment tool for peer feedback, or a scoring rubric for summative assessment.

7.4 Limitations and Further Research

That the definition of conceptual understanding was developed and validated by a team of experts is one strength of the research in this dissertation. The subsequent usefulness of the rubric for assessing conceptual understanding and the meaningful tasks developed to prompt conceptual understanding in undergraduates' writing indicate content and ecological validity. That interrater reliability was established for assessing different types of writing with the rubric also suggests that the rubric has pedagogical affordances. This research was, however, subject to potential limitations.

Communicating conceptual understanding takes concentrated effort because ideas have to be linked and organised coherently (Bangert-Drowns et al., 2004; Kellogg et al., 2013). Attempts were made to ensure that students who participated in this research would take the effort to communicate conceptual understanding. For example, for the Chapter 3, Chapter 4 and Chapter 5 studies, the concept maps, essays and literature reviews were connected to course assessment, so it was expected that students would do their best to explicate conceptual understanding. Moreover, results provided evidence of extraordinary conceptual understanding of different components in the Chapter 4 literature reviews, major conceptual understanding change between some Chapter 5 essays, and extensive conceptual understanding in some Chapter 6 essays.

Yet the extent to which the students felt compelled to explicate conceptual understanding is not clear. The effort students took would depend on the urgency they saw in the writing they were asked to do. Explicating conceptual understanding in writing takes effort (Galbraith, 2015; Klein & Boscolo, 2016). Students would need to see value in the writing to take the effort (De Simone et al., 2001). The results suggest that at least some students were motivated to take the effort because there was writing in every study that showed evidence of extensive conceptual understanding. However, further research could

shed light on the extent to which motivation affected how much conceptual understanding was revealed. For instance, students could be interviewed to gain insight into their experiences of explicating conceptual understanding in their writing.

Another potential limitation of this research was the communication method used to elicit students' conceptual understanding. For example, for the studies presented in Chapters 3 to 5, students were asked to 'explain as clearly and in as much detail as you can the business area you are interested in researching for your graduation project at an international company,' and in Chapter 6, to 'explain important factors, required knowledge, and the dilemmas faced by the retail chains struggling to survive'. These tasks were expected to elicit conceptual understanding because they were considered meaningful and challenging (Scouller, 1998; Struyven et al., 2005), and because they required reasoning, facts and details. For the Chapter 4 literature reviews and Chapter 5 essays, for instance, students had many weeks to gather information, and for the Chapter 6 essays, they were provided with the facts and details that they needed.

Yet each study required students to write. Writing has the potential to reveal conceptual understanding (Galbraith, 2015; Klein & Boscolo, 2016). However, students can find writing difficult and demanding (Bereiter & Scardamalia, 1987; Duijnhouwer, 2010; Duijnhouwer et al., 2012; Langer & Applebee, 1987). Therefore, it could be useful to explore students' conceptual understanding in different media other than writing. Further research could investigate, for instance, students' conceptual understanding using oral question prompts. Oral question prompts might help students verbalise conceptual understanding by, for instance, correcting facts, clearing up confusions between ideas, or stimulating new content (Butler & Winne, 1995; Ge & Land, 2003; Hattie & Timperley, 2007; Narciss, 2008).

7.5 Closing Remarks

The scientific contribution of this dissertation is a deepened understanding of conceptual understanding as an underlying competence for professional practice, with particular relevance for ill-structured domains. General conclusions suggest that development of conceptual understanding entails knowledge synthesis, that students' paths of conceptual understanding development vary, and that conceptual understanding among undergraduates

seems to be broad rather than deep. These conclusions shed new light on the role of knowledge in higher professional education. Further, the global relevance of international business makes this research not only relevant scientifically but also relevant socially. With ever-increasing globalisation, international business is a discipline of crucial importance for cultures, companies, governments and economies around the world.

This dissertation provides practical relevance because conceptual understanding is a potentially important focus for higher professional education. Preparing graduates for ill-structured domains like international business, where graduates need to function in a rapidly changing global economy, can present challenges for teachers (Aggarwal & Goodell, 2011; Milhauser & Rahschulte, 2010). Through development of an assessment tool and strategies for assessing and stimulating students' conceptual understanding, the outcomes of this dissertation can help align teaching with the needs of ill-structured disciplines in general and the international business professions in particular.

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Summary

In response to heavy demand for suitably educated international business professionals, Dutch universities of applied sciences began introducing English-taught Bachelor of Business Administration (BBA) degree programmes in the 1990s. The main purpose of these programmes is to prepare students for increasingly complex professional practice. The complexity of international business means that this domain can be considered what is called *ill structured*, meaning that it is a professional domain with conflicting goals, fluid parameters, unclear conditions and multiple possible solutions. In an ill-structured professional domain, one cannot expect that tasks will be routine nor that the same strategies will work in different situations.

Competence needed for adequate performance in professional practice depends among other things on the extent to which a professional integrates different types of knowledge. Yet, integrating different types of knowledge is no easy task for international business students. For instance, as international business professionals, students must make continual strategic decisions about how to operate in the ever-changing global marketplace while all the time operating under a high degree of complexity and uncertainty. One contributing factor to the complexity and uncertainty is that parts of the international business arena in which professionals operate are not visible. Therefore, students must be able to grasp such abstract concepts as *market forces* or such general principles as *supply and demand*. This abstract dimension to the ill-structured international business domain is one reason why conceptual understanding is important for application of different types of knowledge.

For effective application in professional practice, understanding needs to be *real* understanding of concepts because this makes knowledge usable. Yet the complexity of an ill-structured professional domain makes real understanding practically impossible. Subsequently, the idea of conceptual understanding can be considered suitable to describe the cohesive overview that students need when confronted with the complex problems typical of an ill-structured professional domain.

This dissertation postulates that conceptual understanding has potential as a useful concept for investigation of how international business students learn in an ill-structured professional domain. The aim of this dissertation is to investigate the concept *conceptual understanding* in this professional domain, how it can be measured, what it looks like, how it changes, and in what ways it differs between students. The dissertation comprises five empirical studies for which data collection took place at a university of applied sciences in the Netherlands.

The aim of Chapter 2 is to answer the following research question: ‘How can conceptual understanding for teaching in international business be defined?’ This study takes an exploratory research approach to identify and validate key knowledge components and characteristics of conceptual understanding relevant for teaching international business in higher professional education. Three rounds of validation sessions involved two independent focus groups comprising nine international business experts with backgrounds in scholarly research, higher professional education and international business practice.

In Round 1, Panel 1 met to compare the criteria they had used to assess conceptual understanding in essays and concept maps produced by international business students. The authors used the outcome of this meeting to modify an initial representation of conceptual understanding that they had based on extant literature. Panel 1 then met again to discuss the improved definition of conceptual understanding. They identified four levels to represent increasing depth of conceptual understanding: (1) factual description, (2) evaluation, (3) explanation and (4) integrated thinking characterised by meaningful connections between theories and practices, context-specific knowledge and out-of-the-box thinking.

In Round 2, Panel 2 met to discuss characteristics of a further improved definition of conceptual understanding based on the outcome of Panel 1’s second meeting. They proposed five characteristics: (1) levels representing a cumulative hierarchy of knowledge, (2) out-of-the-box integrated thinking, (3) objective reasoning, (4) flexibility to move between general and specific knowledge and between abstract and concrete knowledge and (5) knowledge specific to international business.

In Round 3, Panel 1 and Panel 2 met to discuss the operationalised definition of conceptual understanding. They concluded that global and local contexts must be considered, along with four types of knowledge: general concrete, specific concrete, general abstract and

specific abstract. They also proposed five levels of conceptual understanding: *negligible*, *weak*, *moderate*, *strong* and *extraordinary*. Through an iterative process, the authors used both data from this meeting as well as prior research to develop the final definition of conceptual understanding.

Chapter 2 concludes that students' conceptual understanding of international business can be defined in terms of knowledge components and professional characteristics. Six knowledge components can be assessed on a five-point scale representing progressively deeper conceptual understanding, namely: the global and local contexts, general and specific business practices, and theoretical business concepts and mechanisms. Characteristics include factual knowledge, explanation and out-of-the-box thinking.

Chapter 3 addresses the second research question, 'How can conceptual understanding of international business be revealed?' For this study, a quantitative approach was used to compare essays and concept maps with each other.

To determine which method most adequately reveals conceptual understanding, 132 senior international business undergraduates were randomly assigned to four conditions: essay, essay after concept map, concept map, or concept map after essay. A rubric was developed to assess the five levels and six knowledge components of conceptual understanding.

Results suggest essays are the most adequate approach for revealing conceptual understanding of international business. Essays produced the widest spread of scores, and differentiated best between high and low scores. Concept maps revealed fewer facts and less reasoning than essays. Essays written after concept maps were less effective than essays alone, possibly since students perceived these essays as redundant.

Inter-rater reliability tests based on two researchers' assessments and a concurrent validity test based on comparison to academic performance further helped to establish the rubric's reliability and validity. Besides the rubric for assessing conceptual understanding in essays and concept maps, this study provides suitable tools to reveal conceptual understanding in further research in the form of a task (Chapter 4 and Chapter 5) and a communication method (Chapter 5 and Chapter 6).

Chapter 4 investigates undergraduate writing assignments to answer the research question, 'How does conceptual understanding appear in students' writing?' Data for Chapter

4 were collected from 44 senior international business undergraduates. The students were asked to write literature reviews for course assessment.

The literature reviews were analysed to illustrate what conceptual understanding looks like in writing assignments that are used in higher professional education. The literature reviews were assessed with the rubric from Chapter 3.

Chapter 4 concludes that conceptual understanding in the literature reviews appeared to be broad rather than deep, that different patterns of conceptual understanding appeared to emerge between and within students' literature reviews, and that conceptual understanding in the literature reviews appeared to manifest in different ways. These results suggest potential for teachers to stimulate students' conceptual understanding through an adaptive curricular approach.

Chapter 5 reports on a longitudinal study that was carried out to answer the following research question: 'What types of change take place in the extent of students' conceptual understanding during an undergraduate course?' The 44 students involved wrote essays at the beginning and end of a 14-week senior undergraduate course during which students were preparing for an individual graduation research project. The aim of this study was to identify conceptual understanding change that can take place during an undergraduate course. The rubric from Chapter 3 was used to assess 88 essays produced by students. Analysis was both quantitative and qualitative. Mean score changes for the six knowledge components of conceptual understanding described in Chapter 2 were compared statistically so that the essays could be grouped.

In this study, the most significant increases in conceptual understanding appear to relate to knowledge that is specific or theoretical. Results also indicate that individual students' conceptual understanding changes in different ways, with increases in some knowledge components of conceptual understanding and decreases in other components.

While conceptual understanding appeared to increase during the course for most students, quantitative analysis suggests five types of conceptual understanding change for individual students: *regressive*, *minor*, *modest*, *substantial* and *major*. The most significant increases in conceptual understanding overall appeared to relate to knowledge that is specific (local context and practice instances) or theoretical (business concepts and business mechanisms).

Chapter 5 concludes that changes in conceptual understanding during courses and programmes differ significantly between students. Conceptual understanding change among students appears to take different paths. This could be due to the way knowledge synthesis takes place and suggests an important role for teachers in helping students develop conceptual understanding.

Chapter 6 explores differences that can be identified between international business undergraduates' conceptual understanding with regard to study progress. For this research, 74 international business students at the beginning, middle and end of an undergraduate programme wrote essays on the same topic.

The essays were assessed for the six knowledge components of conceptual understanding that were defined in Chapter 2 using the rubric from Chapter 3. Latent Class Analysis was used to classify differences between students in the extent of their conceptual understanding. One-way ANOVA tests were used to analyse the relationship between types of conceptual understanding and study progress.

Results indicate three types of conceptual understanding: *limited*, *developing* and *extensive*. Their relationship with study progress is found to be nonlinear, indicating that effects other than curriculum may account for individual differences between students. Individual differences between students' conceptual understand suggest potential implications for the importance of scaffolding and for a differentiated approach to help students to develop conceptual understanding.

Key findings of this dissertation result in three general conclusions about conceptual understanding of international business students. These conclusions regard the nature of conceptual understanding with relation to knowledge synthesis, to the development process of students' conceptual understanding, and to types of conceptual understanding development among international business undergraduates.

The first general conclusion is that the development of conceptual understanding of international business students involves a process of knowledge synthesis, whereby different types of knowledge are linked to form an integrated whole. Students' conceptual understanding can differ on an individual level from abstract to concrete, and from general to specific. It is postulated that development of conceptual understanding takes place when students can think both abstract and concrete, as well as general and specific.

Knowledge synthesis is seen as a process whereby different types of knowledge are combined and whereby conceptual understanding is the (provisional) outcome. However, results from Chapter 5 and Chapter 6 also suggest that conceptual understanding can change over time and per context. Results from Chapter 2 support this notion because they suggest that the development of conceptual understanding can be seen as a learning process in which continually deeper conceptual understanding is achieved as a consequence of repeated spiralling between theory and practice.

The second general conclusion of this dissertation is that development of conceptual understanding manifests itself differently among students. Students appear to develop conceptual understanding of different types of knowledge at different rates and in different ways.

The third general conclusion of this dissertation suggests that conceptual understanding of the students researched tended to develop in breadth rather than depth because average scores for the six knowledge components were typically low. That global context scored consistently lower than the other components also suggests that senior undergraduates majoring in international business appear not to incorporate such knowledge explicitly in their conceptual understanding, despite there being explicit attention paid to global economic conditions in the curriculum.

General conclusions of this dissertation imply several challenges for stimulating the development of conceptual understanding in higher professional education. Firstly, that the development of conceptual understanding involves knowledge synthesis suggests that feedback prompts aligned with knowledge synthesis development might have potential for fostering conceptual understanding. Secondly, that development of students' conceptual understanding appears to take different paths suggests a need for adaptive instructional strategies that consider students' different learning needs. Thirdly, that conceptual understanding appears to develop in breadth rather than depth suggests that students' conceptual understanding can benefit from an educational focus on stimulating students' analytical and problem solving skills.

The developed rubric can be used to monitor and assess conceptual understanding and its development. Teachers might use the rubric for class discussions, as a prompt for writing assignments, as a formative assessment tool for peer feedback, or for summative assessment.

This dissertation makes a scientific contribution to defining the concept *conceptual understanding*, how it can be measured, and how it manifests in different contexts and over time. In addition, this dissertation provides practical relevance through the developed rubric and strategies for assessing and stimulating students' conceptual understanding. Through application of the rubric, teachers can get insight into their students' conceptual understanding, and align their professional practice with ill-structured disciplines in general and with the needs of international business students in particular.

Samenvatting [Summary in Dutch]

Naar aanleiding van de grote vraag naar goed opgeleide *international business professionals* zijn Nederlandse hogescholen in de jaren negentig begonnen met de introductie van Engelstalige Bachelor of Business Administration (BBA) programma's. Het belangrijkste doel van deze programma's is om studenten voor te bereiden op een steeds complexer wordende beroepspraktijk. De complexiteit van het internationale bedrijfsleven betekent dat het domein kan worden beschouwd als *ill-structured*, namelijk een beroepsdomein met tegenstrijdige doelen, soepele parameters, onduidelijke omstandigheden en meerdere mogelijke oplossingen. In een ill-structured beroepsdomein kan er niet verwacht worden dat er routinematige taken zullen zijn en dat dezelfde strategieën in verschillende situaties zullen werken.

De bekwaamheid die nodig is voor professioneel handelen in een complexe beroepspraktijk hangt onder andere af van de mate waarop een professional verschillende typen kennis integreert. Het integreren van verschillende typen kennis is echter geen gemakkelijke opgave voor international business studenten. Als international business professionals moeten studenten bijvoorbeeld voortdurend strategische beslissingen nemen over hoe ze moeten handelen op de steeds veranderende wereldmarkt, terwijl ze ook voortdurend handelen onder een hoge mate van complexiteit en onzekerheid. Dit komt onder andere omdat delen van de international business omgeving waarin ze handelen niet zichtbaar zijn. Studenten moeten daarom in staat zijn abstracte concepten als *marktwerking* of algemene principes als *vraag en aanbod* te begrijpen en eigen te maken. Deze abstracte dimensie van het ill-structured internationale bedrijfsleven is één van de redenen waarom *conceptual understanding* (conceptueel begrip) nodig is voor toepassing van verschillende typen kennis.

Om bekwaam te kunnen handelen in de beroepspraktijk betekent begrip het *echt* begrijpen van concepten omdat dit kennis bruikbaar maakt. Maar door de complexiteit van een ill-structured beroepsdomein is het echte begrip praktisch onmogelijk. Echter kan het

idee van ‘conceptual understanding’ helpen bij het beschrijven van het samenhangende overzicht dat studenten nodig hebben wanneer ze worden geconfronteerd met complexe problemen die typerend zijn voor een ill-structured beroepsdomein.

Dit proefschrift stelt dat conceptual understanding de potentie heeft om een bruikbaar concept te zijn voor onderzoek naar hoe international business studenten leren in een ill-structured beroepsdomein. Het doel van dit proefschrift is om het begrip *conceptual understanding* in dit beroepsdomein te onderzoeken, hoe het kan worden gemeten, hoe het eruit ziet, hoe het verandert en hoe het verschilt tussen studenten. Het proefschrift bestaat uit vijf empirische onderzoeken waarbij de dataverzameling heeft plaatsgevonden op één hogeschool in Nederland.

Het doel van hoofdstuk 2 is om de volgende onderzoeksvraag te beantwoorden: 'Hoe kan conceptual understanding voor international business worden gedefinieerd?' De studie gebruikt een exploratieve onderzoeksbenadering om de belangrijkste kenniscomponenten en kenmerken van conceptual understanding die relevant zijn voor het onderwijzen van international business in het hbo te identificeren en te valideren. Bij drie validatiesessies waren twee onafhankelijke focusgroepen betrokken, bestaande uit negen international business experts met achtergronden in wetenschappelijk onderzoek, hbo en het internationale bedrijfsleven.

In ronde 1 kwam panel 1 bijeen om de criteria te vergelijken die ze hadden gebruikt om conceptual understanding te beoordelen in essays en *concept maps* gemaakt door international business studenten. De auteurs gebruikten het resultaat van deze bijeenkomst om een eerste voorstelling van conceptual understanding te wijzigen die ze hadden gebaseerd op bestaande literatuur. Panel 1 kwam vervolgens opnieuw bijeen om de verbeterde definitie van conceptual understanding te bespreken. Zij identificeerden vier niveaus die een toenemend conceptual understanding vertegenwoordigen: (1) feitelijke beschrijving, (2) evaluatie, (3) verklaring en (4) geïntegreerd denken, gekenmerkt door betekenisvolle verbanden tussen theorieën en praktijken, contextspecifieke kennis en *out-of-the-box* denken.

In ronde 2 kwam panel 2 bijeen om de kenmerken te bespreken van een steeds verbeterde definitie van conceptual understanding op basis van de uitkomst van de tweede bijeenkomst van panel 1. Zij stelden vijf kenmerken voor: (1) niveaus die een cumulatieve kennishierarchie vertegenwoordigen, (2) out-of-the-box geïntegreerd denken, (3) objectieve

redenering, (4) flexibiliteit om te schakelen tussen algemene en specifieke kennis en tussen abstracte en concrete kennis en (5) kennis die specifiek is voor het internationale bedrijfsleven.

In ronde 3 kwamen panel 1 en panel 2 bijeen om de geoperationaliseerde definitie van conceptual understanding te bespreken. Zij concludeerden dat er moet worden gekeken naar globale en lokale contexten, samen met vier soorten kennis: algemeen-concreet, specifiek-concreet, algemeen-abstract en specifiek-abstract. Ook stelden zij vijf niveaus van conceptual understanding voor: *verwaarloosbaar*, *zwak*, *matig*, *sterk* en *buitengewoon*. De auteurs gebruikten zowel gegevens van deze bijeenkomst als eerder onderzoek om iteratief de omschrijving van conceptual understanding verder te ontwikkelen.

Hoofdstuk 2 concludeert dat conceptual understanding van international business studenten kan worden gedefinieerd in termen van kenniscomponenten en beroepskenmerken. Zes kenniscomponenten kunnen worden beoordeeld op een vijfpuntsschaal die een steeds diepere conceptual understanding vertegenwoordigt, namelijk: de globale en lokale contexten, algemene en specifieke bedrijfspraktijken en theoretische bedrijfsconcepten en mechanismen. Kenmerken zijn onder meer feitenkennis, verklaren en out-of-the-box denken.

In hoofdstuk 3 stond de volgende onderzoeksvraag centraal: ‘Hoe kan conceptual understanding van international business worden gemeten?’ Hiervoor is een kwantitatieve benadering gebruikt om essays en concept maps met elkaar te vergelijken.

Om te bepalen welke methode conceptual understanding het beste zichtbaar maakt, werden 132 laatstejaars hbo-studenten international business willekeurig toegewezen aan vier condities: essay, essay na concept map, concept map of concept map na essay. Een rubric is ontwikkeld om de vijf niveaus en zes kenniscomponenten van conceptual understanding te beoordelen.

De resultaten laten zien dat essays de meest geschikte methode zijn om conceptual understanding van international business te meten. Essays laten de breedste spreiding van scores zien en differentiëren het beste tussen hoge en lage scores. Concept maps brengen minder feiten en redeneringen aan het licht dan essays. Essays geschreven na concept maps zijn minder effectief dan essays alleen, wellicht omdat studenten deze essays als overbodig beschouwden.

Interbeoordelaarsbetrouwbaarheidstests, gebaseerd op twee beoordelingen van onderzoekers en een gelijktijdige validiteitstest gebaseerd op een vergelijking met academische prestaties, hebben verder bijgedragen tot het vaststellen van de betrouwbaarheid en validiteit van de rubric. Naast de rubric voor het beoordelen van conceptueel understanding in essays en concept maps biedt deze studie geschikte instrumenten om conceptueel understanding in vervolgonderzoek te bestuderen in de vorm van een taak (hoofdstuk 4 en hoofdstuk 5) en een communicatiemethode (hoofdstuk 5 en hoofdstuk 6).

Hoofdstuk 4 richt zich op schrijfp opdrachten van hbo-studenten om de onderzoeksvraag te beantwoorden: 'Hoe manifesteert conceptueel understanding in het schrijven van studenten?' De gegevens voor hoofdstuk 4 werden verzameld van 44 laatstejaars hbo-studenten international business. De studenten werden gevraagd literatuurreviews te schrijven voor een cursusbeoordeling.

De literatuurreviews zijn geanalyseerd om te achterhalen hoe conceptueel understanding zich uit in het soort schrijfp opdrachten die gebruikelijk zijn in het hbo. De literatuurreviews zijn beoordeeld met de rubric uit hoofdstuk 3.

Er kan geconcludeerd worden dat conceptueel understanding in de literatuurreviews eerder breed dan diepgaand leek, dat er verschillende patronen van conceptueel understanding tussen en binnen de literatuurreviews van studenten leken te zijn en dat conceptueel understanding in de literatuurreviews op verschillende manieren tot uiting kwam. Deze resultaten laten zien dat docenten conceptueel understanding van studenten kunnen stimuleren door een adaptieve leerplanaanpak.

Hoofdstuk 5 beschrijft een longitudinaal onderzoek dat werd uitgevoerd om de volgende onderzoeksvraag te beantwoorden: 'Welke typen veranderingen vinden plaats in de mate van conceptueel understanding van studenten tijdens een hbo-cursus?' De 44 betrokken studenten schreven essays aan het begin en einde van een 14-weken durende hbo-cursus waarin studenten zich voorbereidden op een individueel afstudeeronderzoek. Het doel van deze studie is om veranderingen in conceptueel understanding te identificeren die tijdens een hbo-cursus kunnen plaatsvinden. De rubric uit hoofdstuk 3 is gebruikt om 88 essays van studenten te analyseren. De analyse was zowel kwantitatief als kwalitatief van aard. De gemiddelde scoreveranderingen voor de zes kenniscomponenten van conceptueel

understanding zoals beschreven in hoofdstuk 2 werden statistisch vergeleken, zodat de essays gegroepeerd konden worden.

De meest significante toenames in conceptueel understanding blijken betrekking te hebben op kennis die specifiek of theoretisch is. De resultaten geven ook aan dat conceptueel understanding van individuele studenten op verschillende manieren verandert met een toename in sommige kenniscomponenten van conceptueel understanding en een afname in andere componenten.

Hoewel het conceptueel understanding tijdens de cursus toe lijkt te nemen op groepsniveau, suggereert kwantitatieve analyse vijf typen verandering van conceptueel understanding op individueel niveau: *regressief*, *minor*, *bescheiden*, *substantieel* en *major*. De meest significante toenames in conceptueel understanding blijken in het algemeen betrekking te hebben op kennis die specifiek is (lokale context en praktijkvoorbeelden) of theoretisch (bedrijfsconcepten en bedrijfsmechanismen).

Hoofdstuk 5 concludeert dat veranderingen in conceptueel understanding tijdens cursussen en programma's aanzienlijk verschillen tussen studenten. Verandering van conceptueel understanding bij studenten lijkt op verschillende manieren te gaan. Dit kan liggen aan de manier waarop kennissynthese plaatsvindt en suggereert een belangrijke rol voor docenten bij het helpen van studenten in het ontwikkelen van conceptueel understanding.

Hoofdstuk 6 beschrijft een onderzoek naar welke verschillen er kunnen worden geïdentificeerd tussen conceptueel understanding van hbo-studenten international business met betrekking tot studievoortgang. Voor dit onderzoek schreven 74 international business studenten aan het begin, midden en einde van een hbo-programma essays over hetzelfde onderwerp.

De essays werden beoordeeld voor de zes kenniscomponenten van conceptueel understanding zoals gedefinieerd in hoofdstuk 2 met behulp van de rubric uit hoofdstuk 3. Latente klassenanalyses werden gebruikt om verschillen tussen studenten te classificeren in de mate van hun conceptueel understanding. Variantieanalyses werden gebruikt om de relatie tussen typen conceptueel understanding en studievoortgang te analyseren.

De resultaten wijzen op drie soorten conceptueel understanding: *beperkt*, *ontwikkeland* en *uitgebreid*. Hun relatie met de studievoortgang is niet-lineair, wat aangeeft dat andere factoren dan het curriculum de individuele verschillen tussen studenten kunnen verklaren.

Individuele verschillen tussen het conceptueel understanding van studenten suggereren mogelijke implicaties voor het belang van scaffolding en voor een gedifferentieerde aanpak om studenten te helpen conceptueel understanding te ontwikkelen.

De belangrijkste bevindingen van dit proefschrift leiden tot drie algemene conclusies over conceptueel understanding van international business studenten. Deze conclusies hebben betrekking op de aard van conceptueel understanding in relatie tot kennissynthese, op het ontwikkelingsproces van conceptueel understanding van studenten, en ten slotte op soorten ontwikkeling van conceptueel understanding bij hbo-studenten international business.

De eerste algemene conclusie is dat de ontwikkeling van conceptueel understanding van international business studenten het proces van kennissynthese omvat, waarbij verschillende typen kennis worden gekoppeld tot een geïntegreerd geheel. Conceptueel understanding van studenten kan op individueel niveau verschillen in mate van abstract naar concreet en van algemeen naar specifiek. Er wordt verondersteld dat de ontwikkeling van conceptueel understanding plaatsvindt wanneer studenten zowel abstract en concreet als algemeen en specifiek kunnen denken.

Kennissynthese wordt gezien als een proces waarbij verschillende typen kennis worden gecombineerd en waarbij conceptueel understanding het (voorlopige) resultaat is. Resultaten uit hoofdstuk 5 en hoofdstuk 6 suggereren echter ook dat conceptueel understanding in tijd en per context kan veranderen. Resultaten uit hoofdstuk 2 ondersteunen dit idee omdat ze suggereren dat de ontwikkeling van conceptueel understanding kan worden gezien als een leerproces waarbij een steeds diepere conceptueel understanding wordt bereikt als gevolg van het continue pendelen tussen theorie en praktijk.

De tweede algemene conclusie van dit proefschrift is dat de ontwikkeling van conceptueel understanding zich tussen studenten verschillend manifesteert. Studenten lijken conceptueel understanding van verschillende typen kennis op verschillende tempo's en op verschillende manieren te ontwikkelen.

De derde algemene conclusie van dit proefschrift suggereert dat conceptueel understanding van de onderzochte studenten zich eerder in de breedte neigt te ontwikkelen dan diepgaand, want de gemiddelde scores voor de zes kenniscomponenten waren doorgaans laag. Dat global context consistent lager scoorde dan de andere elementen suggereert ook dat laatstejaars hbo-studenten international business dergelijke kennis niet expliciet lijken op te

nemen in hun conceptual understanding, ondanks dat er in het curriculum expliciete aandacht is voor wereldwijde economische omstandigheden.

Algemene conclusies uit dit proefschrift geven verschillende implicaties voor het stimuleren van de ontwikkeling van conceptual understanding in het hbo. Ten eerste, de ontwikkeling van conceptual understanding omvat kennissynthese en geeft hiermee aan dat *feedback prompts*, die afgestemd zijn op de ontwikkeling van kennissynthese, conceptual understanding kunnen bevorderen. Een tweede implicatie is dat de ontwikkeling van conceptual understanding van studenten verschillende wegen lijkt te volgen en suggereert hiermee een behoefte aan adaptieve instructiestrategieën die rekening houden met de verschillende leerbehoeften van studenten. Ten derde, ontwikkelt conceptual understanding zich eerder in de breedte dan diepgaand, wat suggereert dat er baat kan zijn bij een focus op het stimuleren van analytische en probleemoplossende vaardigheden bij studenten.

De ontwikkelde rubric kan ingezet worden om conceptual understanding en de ontwikkeling daarvan te monitoren en te beoordelen. Docenten kunnen de rubric gebruiken als tool voor klassendiscussies, als een prompt voor het schrijven van opdrachten, als een formatieve beoordelingstoel voor peerfeedback, of als een summatieve beoordeling.

Dit proefschrift levert een wetenschappelijke bijdrage aan het definiëren van het begrip *conceptual understanding*, hoe het kan worden gemeten, en hoe het zich manifesteert in de tijd en in verschillende contexten. Daarnaast biedt dit proefschrift praktische relevantie met de ontwikkelde rubric en strategieën voor het beoordelen en stimuleren van het conceptual understanding van studenten. Een praktische toepassing van de rubric stelt docenten in staat om conceptual understanding van hun studenten inzichtelijk te maken en om hun professionele handelen af te stemmen op ill-structured disciplines in het algemeen en op de behoeften van international business studenten in het bijzonder.

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About the Author

Sue Ashley grew up in Melbourne, Australia. She was born there in 1964 and graduated from Mentone Girls' Grammar School, in one of Melbourne's bayside suburbs, in 1982. During her undergraduate studies in Brisbane, Sue took a gap year to experience life outside Australia for the first time. In 1985, Sue worked for the Australian Government Department of Sport, Recreation and Tourism as an attendant in the Australian Pavilion at Expo '85, the International Exposition in Tsukuba Science City, Japan.

After graduating from Griffith University in 1986 with a Bachelor of Arts majoring in Economics, Japanese and History, Sue completed a Diploma in Education at The University of Queensland in 1987. After a year teaching Economics and Japanese at Queensland's Miami State High School, Sue returned to Japan in the beginning of 1989, where she spent a year in Tokyo teaching English to Japanese people of assorted ages and occupations.

In 1990, Sue embarked on a year of world travel, which began in south-east Asia, included a railway journey from Beijing to Amsterdam via Moscow and East Berlin, and culminated in a return journey from Europe to Australia. During these travels, Sue met a Dutchman, Thijs, and came to the Netherlands to settle with him in Amsterdam.

For five years, Sue taught Business English to numerous international business professionals at various international business companies in and around Amsterdam. Since 1994, Sue has worked at the HU University of Applied Sciences Utrecht lecturing in a range of subjects, from Business Communication and Argumentation, to Economics and Research Skills. While working at the HU, Sue completed a Master of Arts in Education and a Postgraduate Certificate in Social Sciences Research Methods through The Open University (United Kingdom).

In 2010, Sue joined the HU Vocational Education Research Group (Lectoraat Beroepsonderwijs) to work on a PhD research proposal. She received a HU PhD voucher one year later. While working on her PhD, Sue continued to lecture Research Skills, and also

became an active member of the European Association for Research on Learning and Instruction (EARLI) and the Netherlands Educational Research Association (VOR).

Sue's research and teaching interests overlap. Primarily, she is focused on how to stimulate her students' development of conceptual understanding in preparation for their careers in international business.

Sue and her partner Thijs recently celebrated 30 years together. They enjoy their version of happily ever after on the banks of the Amstel River with their two beautiful children, Teresa and Tim.



Higher professional education aims to prepare graduates for the complexity of professional practices. The development of conceptual understanding is important to deal adequately with this complexity, especially in an unstructured professional domain such as international business. This dissertation investigates the definition of conceptual understanding in this professional domain, how it can be measured, what it looks like, how it changes, and in what ways it differs between students. It comprises five empirical studies conducted within one university of applied sciences in the Netherlands. Students' conceptual understanding of international business can be defined in terms of knowledge components and professional characteristics that have to do with global and local contexts, general and specific business practices and theoretical concepts. Essays are found useful for measuring conceptual understanding, and the studies also show that the appearance and development of conceptual understanding differ from student to student. This dissertation leads to three general conclusions. The first is that the development of conceptual understanding of international business students involves knowledge synthesis, involving integration of different knowledge types. The second general conclusion is that students develop conceptual understanding in different ways. The third suggests that students' conceptual understanding develops in breadth rather than depth. These general conclusions pose several challenges for teaching with regard to stimulating the development of conceptual understanding of students in higher professional education. This dissertation provides a practical tool for teachers in the form of a rubric to provide insight into students' conceptual understanding and to align their professional practice accordingly.

