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A large, stylized sunburst or fan-like graphic in a lighter shade of purple, positioned on the left side of the cover. It has a dark purple central oval and radiating lines that form a semi-circle.

FROM COMPETENCE TO SELF-EFFICACY

Measuring Student Progress in Translation
Company Simulations

Kalle Konttinen



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Company Simulations

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KALLE KONTTINEN: From Competence to Self-Efficacy: Measuring Student Progress in Translation Company Simulations

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ABSTRACT

This dissertation investigates how the professional abilities of translation students can be monitored in translation company simulation courses. Translation company simulation is a pedagogical approach in which students carry out translation projects in self-organising teams. A broad set of translation production workflow activities is explored from two angles: 1) students' understanding of the activities and 2) theoretical conceptualisations of the abilities required for performing them. For measuring progress, the construct of self-efficacy is proposed to complement the construct of competence. A translation service provision self-efficacy model is designed as a theoretical framework and operationalised as a survey instrument for monitoring student progress.

The dissertation comprises five previously published articles and a thesis summary. The first article presents the simulation course and introduces a multicomponent competence model for identifying students' abilities. The second article explores translation students' understanding of workflow from a competence perspective through content analysis of essays. The third article introduces a meta-level model of revision and post-editing competence and defines their place within the simulation and the translator education curriculum. The fourth article shifts the perspective from competence to self-efficacy and constructs a translation service provision model based on a translation service provision standard and a business process model of a translating organisation. Exploratory and confirmatory factor analysis is used to operationalise the model as a survey scale. The fifth article tests the scale using longitudinal multilevel modelling.

A theoretical contribution is the translation service provision model that organises various business processes and workflow activities into a coherent whole. A methodological result is the translation service provision self-efficacy scale and the method for analysing self-efficacy through multilevel modelling. The findings support that translation company simulations enhance students' self-efficacy in translation management and translation-related tasks. The results may have theoretical and practical implications for the pedagogy of translation company simulations.

KEYWORDS: self-efficacy, competence, translation service provision, workflow, translation company simulation, monitoring student progress

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TIIVISTELMÄ

Tutkin väitöskirjassani, miten kääntämisen opiskelijoiden ammatillisten valmiuksien kehittymistä voidaan seurata käännösyrittäjäsimulaatiokursseilla. Käännösyrittäjäsimulaatio on pedagoginen menetelmä, jossa opiskelijat toteuttavat käännösprojekteja itseorganisoituvissa tiimeissä. Tutkin käännöstuotannon työkulun toimintoja kahdesta näkökulmasta: 1) opiskelijoiden käsitystä toiminnoista ja 2) valmiuksien käsitteellistämistä. Tutkimukseni päättyy ehdottamaan minäpystyvyyttä täydentäväksi vaihtoehdoksi kompetenssiin perustuville mittauksille. Mittausten teoreettiseksi viitekehyyksiä kehitän käännöspalveluiden tuottamisen minäpystyvyyksimallin. Operationalisoin mallin kyselyinstrumentiksi ja testaan käännösyrittäjäsimulaatioissa mallin soveltuvuutta opiskelijoiden edistymisen kuvaamiseen.

Väitöskirja sisältää viisi aiemmin julkaistua artikkelia sekä yhteenvedon. Ensimmäinen artikkeli esittelee simulaatiokurssin ja luo monikomponenttisen kompetenssimallin opiskelijoiden valmiuksien kuvaamiseen. Toinen artikkeli tutkii sisälönanalyysin avulla kääntämisen opiskelijoiden käsityksiä käännösprojektin työkulusta. Kolmas artikkeli esittelee metatason mallin käännöksentarkistuksen ja jälkiehditoinnin kompetenssien kuvaamiseen ja määrittelee näiden toimintojen aseman simulaatiokurssilla sekä kääntäjäkoulutuksen opetus suunnitelmassa. Neljäs artikkeli rakentaa käännöspalvelujen minäpystyvyyksimallin ja operationalisoi sen minäpystyvyyksikyselyksi. Viides artikkeli testaa minäpystyvyyksikyselyä käännösyrittäjäsimulaatioissa.

Väitöskirjan teoreettinen tulos on käännöspalvelujen tarjoamisen malli, joka jäsentää käännösorganisaation erilaiset liiketoimintaprosessit ja työkulun toiminnot yhtenäiseksi kokonaisuudeksi. Menetelmien osalta keskeinen tulos on käännöspalvelujen tarjoamisen minäpystyvyyksikysely sekä menetelmä minäpystyvyyden analysoimiseksi monitasomallinnuksen avulla. Käytännön tulokset viittaavat siihen, että käännösyrittäjäsimulaatiot lisäävät opiskelijoiden alakohtaista minäpystyvyyttä käännösprojektinhallinnassa ja kääntämiseen liittyvissä tehtävissä. Tutkimuksen tuloksia voidaan hyödyntää teoreettisesti ja käytännössä käännösyrittäjäsimulaatioiden pedagogiikassa.

ASIASANAT: minäpystyvyys, kompetenssi, käännöspalvelujen tarjoaminen, työnkulku, käännösyrittäjäsimulaatio, opiskelijoiden edistymisen seuranta

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On the face of it, the self-organising learning environment of translation company simulations appears deliberately chaotic. However, beneath it all, the environment needs the support of a solid conceptual framework. It was this need for conceptual clarity that was the primary motivation for my dissertation project. I am greatly indebted to my supervisors, Professor Leena Kolehmainen and Dr Leena Salmi, for encouraging me to embark on the dissertation project, and especially for their invaluable support and guidance. In addition, I wish to thank Professor Hanna Risku and Dr Jukka Mäkisalo for their constructive and encouraging comments as

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List of Original Publications

This dissertation is based on the following original publications, which are referred to in the text by their Roman numerals:

- I Konttinen, Kalle, Outi Veivo, Tiina Holopainen & Leena Salmi, (2017). Multilingual Translation Workshop: Developing Professionals in a Simulated Translation Market. *MikaEL*, 10, 150–164.
- II Konttinen, Kalle, Outi Veivo & Pia Salo, (2020). Translation Students' Conceptions of Translation Workflow in a Simulated Translation Company Environment. *The Interpreter and Translator Trainer*, 14(1), 79–94.
- III Konttinen, Kalle, Leena Salmi & Maarit Koponen, (2021). Revision and Post-Editing Competences in Translator Education. In Maarit Koponen, Brian Mossop, Isabelle S. Robert, and Giovanna Scocchera (eds.), *Translation Revision and Post-Editing: Industry Practices and Cognitive Processes*. New York: Routledge, 187–202.
- IV Konttinen, Kalle, (2021). A Self-Efficacy Scale for Measuring Student Progress in Translation Company Simulations. *Across Languages and Cultures*, 22(1), 64–81.
- V Konttinen, Kalle, (2022). Monitoring Student Self-Efficacy in a Translation Company Simulation: A Multilevel Model Approach. *trans-kom*, 15(1), 1–25.

For the co-authored articles, the division of labour is described in a separate appendix.

1 Introduction

As a contribution to translation pedagogy, this dissertation explores a concept for organising a translation course based on a translation company simulation method. It starts with analysing the course's learning content as competence requirements and finally develops a self-efficacy-based survey instrument for monitoring student progress in learning tasks in the translation project workflow.

The dissertation's centrepiece is a collaborative pedagogical development project at the University of Turku, the Master's level course Multilingual Translation Workshop (MTW). Launched for the first time in January 2015, the MTW is a one-year translation company simulation course with two 14-week modules, each worth 10 ECTS. MTWs provide translation students with a learning environment in which they set up a translating organisation and produce translation services in a simulated translation market. The learning objectives of an MTW course go well beyond those of a traditional translation course. First, MTW pedagogy has two focal points: the students' individual development as future translation professionals and the collective improvement of the student companies as translating organisations. Second, the scope of activities targeted in the MTW courses is broader than those of ordinary translation courses. Besides translation, the MTW activities include project management tasks and a wide range of translation-related activities such as revision, post-editing, and proofreading.

The broad scope of the course activities, the collective nature of the participants' effort, and the aspiration to avoid interruptions in the simulation's flow pose challenges for monitoring student progress using the construct of competence. After I explored the potential of the competence construct as the foundation for an instrument for measuring student progress, I chose the construct of self-efficacy as the conceptual frame for the survey instrument. Competence models of translation, revision, post-editing, and project management are essential devices for understanding the underlying requirements of the workflow activities of translation professionals. However, conceptual overlap exists in such models when they are set side-by-side to cover the entire translation workflow. Furthermore, individual competence-based testing cannot capture the collective process in collaborative tasks, and it mainly focuses on the product of the activities instead of the process. As a practical matter in

translation company simulations, individual testing as task-based tests or exams assessed by external evaluators have the potential to disrupt the shared illusion of participating in the daily work of a translating organisation.

My research led to a self-efficacy model for translation service provision as a theoretical framework. This model is then operationalised as a concise survey instrument for determining student progress. Finally, this instrument is tested in a translation company simulation course, providing insight into the effects of translation company simulation pedagogy.

This dissertation may interest researchers and practitioners in translator education, as it proposes a method for monitoring progress in situated, collaborative, and project-based translation courses. Other stakeholders include students in translator education, who may benefit from the pedagogical method of translation company simulation and the feedback they can receive through self-efficacy surveys. From a broader perspective, translation professionals and organisations in the translation industry are also among the stakeholders. Ultimately, the central goal of translation company simulation pedagogy is to help bridge the infamous competence gap between translator education and the translation industry.

Changes in the translation market and renewed production methods and technology have created new kinds of expertise. For example, in contrast to earlier forms of organising translation projects, modern translation service provision routinely involves multiple human agents whose skills combine in collaborative production workflows with the capabilities of others as well as various tools and technologies. In such contexts, translation graduates need well-developed organisational skills and translation-related skills in activities such as revision, post-editing, and proofreading. Translator education needs to accommodate these changes and find efficient and effective solutions for teaching and assessing these tasks.

Methodologically, this dissertation can be seen as action research (Nicodemus & Swabey 2016) within a translation company simulation course. A significant part of the research effort was participating in the course's planning, organisation, implementation, and documentation. However, the dissertation also serves a broader methodological aim, as it develops a quantitative method for the toolbox of learning analytics in translation pedagogy.

One notable feature of this study is the relative absence of the most central activity in translation—translation itself. Instead, the study highlights the tasks surrounding this core activity, as they make up vital aspects of translation service provision in a modern translating organisation. While the activity of translation and the concept of translation competence have rightly received much attention in translation studies and pedagogy, other workflow tasks have been relatively neglected. This study aims to help balance the discussion by providing an overall view of a translating organisation's business processes and production workflow.

1.1 Objectives and scope

Recent developments in translation industry practices and theoretical approaches to translation have consequences for how translation workflow tasks and their underlying requirements are conceptualised in translation pedagogy. Due to changes in the way translation projects are organised and the introduction of new technologies, the constellation of translation production activities has undergone a profound change, a “reconfiguration of the translation space” (Pym 2013: 487). In translator education, these changes are reflected in, among other things, a shift of focus from training translators to training translation service providers (Biel 2011).

As for the changes in theoretical approaches, Risku (2010) lays out some of the consequences that findings in situated and embodied cognition have for research in translation studies. Developments especially relevant for this study include the new role of situation, the new role of tools and environment, environment as an object of study, real-life translation as an object of study, and the new role of cooperation.

Taking into account these changes, this dissertation investigates theoretical constructs, such as competence and self-efficacy. It also combines various qualitative and quantitative methods to serve the overall aim of designing and testing an instrument for monitoring student progress in learning to take care of tasks within the provision of translation service¹.

Specifically, the following research questions were explored²:

- RQ1: Which abilities are relevant objects of measurement in translation company simulations?
- RQ2: How can these abilities and their underlying requirements be described and modelled?
- RQ3: How can changes in mastering these abilities be measured?
- RQ4: What do measurements of self-efficacy tell about translation company simulations?

1 The term ‘provision of translation service’ is used here in a broad sense that covers all activities in the translation workflow, including pre-production processes and activities, the production process, and post-production processes (ISO 17100 2015).

2 The terms ‘ability’ or ‘capability’ are used in this research as umbrella terms to designate the knowledge and skills possessed by translation students or translation professionals that are required to perform tasks in the domain of translation service provision. This is to avoid terminological overlap with the concept of competence as an object of research. In this research design, ‘competence’ is used as a hyponym of ‘ability’. For measuring progress, ‘self-efficacy’ is used as a parallel concept to ‘competence’ and as a hyponym of ‘ability’.

The first two research questions, RQ1 and RQ2, address some of the consequences of the changing landscape of translation theory and translation practice for the repertoire of relevant skills in translator education. The following two research questions, RQ3 and RQ4, address the methodological challenge of developing and testing an adequate method to monitor student progress in a learning environment that simulates translation practice.

More broadly, the research questions can be summed up as *what to measure* and *how to measure*. RQ1 and RQ2 explore the range of workflow activities to be measured and investigate how they can be modelled. RQ3 attempts to develop a suitable measure to gauge the capabilities. Finally, when addressing RQ4, the answer to RQ3 is put to a practical test in a translation company simulation course, developing the measuring instrument further.

1.2 Research process and dissertation structure

The dissertation comprises five previously published articles and this thesis summary. While there is bound to be some overlap in how the individual articles cover each research question, **Table 1** presents an overview of the research questions that are most pertinent to each article.

Table 1. Overview of the research questions and goals.

Article	RQ1	RQ2	RQ3	RQ4	Goal
I	X	X			Present the pedagogical concept of MTW, define a set of relevant competences, and make a first attempt at using a self-assessment instrument for gauging student progress.
II	X	X		X	Identify translation service provision activities in the business process of a translation company. Examine how one aspect of translation service provision competence—students' understanding of translation workflow—develops during the MTW.
III		X			Based on a conceptual analysis of competence models, define the place of revision and post-editing activities in a translator education curriculum and the syllabus of a translation company simulation course.
IV		X	X		Develop a concise survey scale of translation service provision self-efficacy to monitor student progress in a translation company simulation course.
V			X	X	Present and test a multilevel modelling method for analysing the change in students' self-efficacy during a translation company simulation.

Article I sets the stage by presenting an overall view of a full-year course that applies simulated translation company pedagogy. It also introduces a preliminary multicomponent competence model for identifying critical skills developed during the course. Finally, it presents a first attempt at a self-assessment survey that measures student progress in these areas.

The following two articles, Article II and Article III, take up the concept of competence from different angles and chart the landscape of translation service provision activities. Article II explores the development of translation students' workflow conceptions in the simulated translation company learning environment. Article III focuses on two critical activities in the workflow of translation service provision, revision and post-editing, and—after reviewing previous work on teaching revision and post-editing as well as models of revision and post-editing competence—introduces a meta-level model of revision and post-editing competence. Utilising the model, it then places the activities within the framework of a translator education curriculum and highlights the specific role of translation company simulation courses in developing students' competences in revision and post-editing.

Article IV and Article V return to measuring student progress, a topic introduced in Article I. Article IV constructs a model for translation service provision based on the translation service provision standard ISO 17100 and a business process model for translation service provision. Turning from competence to self-efficacy and utilising both exploratory and confirmatory factor analysis, it operationalises the model as a concise self-efficacy scale for diagnosing students' learning needs and measuring progress. Finally, Article V tests the self-efficacy scale that comprises the two professional subdomains of managing and carrying out translation projects, complementing it with a general self-efficacy subscale. In a statistical analysis that employs the method of longitudinal multilevel modelling, the students' self-efficacy trajectories in the two professional subdomains are contrasted with their general self-efficacy.

2 Theoretical Background

For a more extensive view on the theoretical background than was possible within the limited scope of the articles, this chapter discusses three theory-related topics in more detail:

1. the position of the translation company simulation approach within translation pedagogy, its conceptual roots and pedagogical principles;
2. models of translation workflow and the relationship between workflow concepts and workflow conceptions;
3. the constructs of competence and self-efficacy as frameworks for measuring students' ability to perform translation workflow tasks.

The discussion of the first topic in Section 2.1 lays out the theoretical and methodological commitments of the translation company simulation approach. The second topic discussion in Section 2.2 explores the conceptual dynamic between translation industry phenomena and workflow models used in pedagogical contexts. Finally, in Section 2.3, a discussion of the constructs of competence and self-efficacy delves into questions about defining the underlying competence requirements of workflow activities and choosing suitable measures for gauging learning outcomes.

2.1 The place of translation company simulations within translation pedagogy

While translation company simulation pedagogy has roots in the 1980s and 1990s, this method has only recently become a relatively common approach—as evidenced by a steady stream of publications on the topic, for example, Olvera-Lobo et al. (2008), Schäffner (2012), Krüger & Serrano Piqueras (2015), Buyschaert et al. (2018), Kerremans & van Egdom (2018), Kiraly et al. (2018), and Zappatore (2020). Some of the earliest initiatives include Tradutech at the University of Rennes 2 (Gouadec 1992, 2003), the Skills Lab at the Maastricht School of Translation and Interpreting (Thelen 2006), and the Professional Approach for Translator Training at the Universidad de Granada (Olvera-Lobo et al. 2005).

The collaborative project-based translation pedagogy advocated by Kiraly (2000, 2005) prepared the ground for a broader interest in translation company simulations. This pedagogy promotes learner-centred, collaborative and project-based teaching methods and presents a conceptual background for authentic experiential learning (Kiraly 2016). Joint initiatives by university translator education programmes, professional language service associations and language services also supported the introduction of translation company simulation pedagogy into the mainstream of translation pedagogy. Examples of these initiatives include cooperation projects such as OPTIMALE (2013) and OTCT (2016) and networks such as the EMT, the European Masters in Translation (European Commission 2017; for a critical overview of the participating 67 programmes, see Torres-Simón & Pym 2019), and the INSTB, the International Network of Simulated Translation Bureaus (Thelen 2006; Buyschaert et al. 2017). Ciobanu (2018) presents a valuable survey of collaborative project-based learning approaches widely used at the EMT network member universities. Many of the best practices addressed in the overview are part of the repertoire in translation company simulations.

Translation company simulation pedagogy is not a unified field. Local contexts vary, and so do pedagogical solutions. There are differences in the degrees of authenticity in client briefs, depth of simulation, learner autonomy, or the simulations' length and the number of projects. Some simulations integrate visiting translation professionals as guest speakers, instructors, or assessors. Some are supervised by one teacher, while others include several teachers representing various language pairs. Some courses are conducted in the classroom or a computer lab, while others take place partly or entirely online. However, the definition by Kerremans & van Egdom (2018: 292) applies to most contexts. According to them, translation company simulations are “fictitious enterprises in which translation students learn to work in small teams on (authentic) translation projects obtained from real (or fictitious) clients”.

As for their pedagogical approach, translation company simulations are experiential, learner-centred, situated, collaborative, and project-based. In the classification of pedagogical approaches by Abdel Latif (2020), translation company simulations can be categorised as profession-oriented training. They may include professional awareness training with invited translation professionals who share their work and career experiences. However, they are also experiential situated learning training and simulated situated learning training, where “learners are exposed to real-life and/or highly simulated work environments and tasks” (González-Davies & Enríquez-Raído 2016: 1). Finally, in Abdel Latif's (2020: 25) classification, translation company simulations are project-based learning training, as they represent a structural approach which is implemented over a long time and which depends on engaging students in pursuing solutions to problems.

In the framework of Kelly's (2014: 43–57) classification of major approaches to translator training, translation company simulations share features with three of her categories. First, with profession-based learner-centred approaches, such as Nord's (1991), they share the aspiration to simulate professional practice in a learner-centred learning environment and an emphasis on the need to carry out a proper analysis of the translation task. Second, with the situational approach by Vienne (1994) and Gouadec (2003), translation company simulations share an aspiration towards realism in how translation projects are set up and carried out in the learning environment. Third, with the socioconstructive approach proposed by Kiraly (2000), translation company simulations have in common a strong emphasis on the collaborative nature of the learning effort and the use of realistic or genuine translation projects as vehicles for learning.

Another way of situating translation company simulation pedagogy is to place it under the heading authentic experiential learning (Kiraly 2016; Massey 2019). Authentic experiential learning can occur in extra-curricular contexts, such as mentoring or work placements, or as intra-curricular learning that may comprise project work and various kinds of simulated translation company experience.

The central tenets and commitments of translation company simulation pedagogy include situatedness and some form of epistemological constructivism. In the following, they are discussed in order to sketch out the conceptual grounding of translation company simulations.

2.1.1 Situated translation and situated learning

Situatedness is a central concept in the translation company simulation approach. In translation pedagogy, the roots of the concept can be traced back to two sources: on the one hand, functionalist, profession-oriented approaches to situated translation, and on the other, the research orientation 'situated cognition' (Risku 2002) and "the associated didactic approach of situated learning" (Risku 2016a: 13). Situated cognition considers human beings as agents who are interdependent in their physical and psychological context and stresses the importance of the social environment, language, and artefacts in explaining cognition (Risku 2002: 523; Calvo 2015). Both situated translation and situated learning are relevant for translation company simulation pedagogy. The situated translation concept captures the dynamic of the client-oriented collaborative translation operation at the heart of translation company simulations. The concept of situated learning (González-Davies & Enríquez-Raído 2016), on the other hand, expresses the significance of the social and physical context in learning a profession.

Risku (2002) traces the origin of situated translation to functionalist approaches to translation (see, for example, Reiss & Vermeer 1984; Holz-Mänttari 1984). She

distinguishes four general trends in situated translation: 1) epistemological relativism, 2) an interest in translation as a dynamic process, 3) a shift of focus on real-world professional translation which enables intercultural communication, and 4) a more prominent role of target situation, original situation, and translatory situation.

In epistemological relativism, there are no inherent, unchangeable meanings for the translator to decipher and reproduce. Instead, translation is understood as a dynamic text production process. As persons and texts are viewed within a framework of action, and the participating agents have their own intentions, establish their own goals, and define the functions for the texts they engage with, the focus can shift from linguistic comparisons to real-world professional translation. In this view, translators are conceptualised as decision-makers and intercultural communication experts. Importantly, when the emphasis moves from a supposedly isolated original text to the target situation, original situation, and translatory situation, translation can be seen as a “unique, one-off process rooted in specific situations and cultures” (Risku 2002: 524).

In translation company simulations, the social context of a translation project is anchored in the client’s brief, which is established in a negotiation between the client and the student company’s project manager. In line with functionalist approaches to translation, the translation process is guided by the brief and the intended use of the text in the target situation.

Situated learning is defined by González-Davies & Enríquez-Raído (2016: 1) as a “context-dependent approach to translator and interpreter training under which learners are exposed to real-life and/or highly simulated work environments and tasks”. Such an approach enhances the learners’ capacity to think and act like professionals. In situated learning, “learning is dependent on authentic situations in which learners can assume a legitimate role and are thus integrated socially into the situation and the cooperation” (Risku 2016a: 16). As Varney (2009: 30) emphasises, learning “does not take place in a void and to situate the learning experience in an overtly social environment is to recreate for the learner an environment which parallels the world outside the classroom”.

Situated learning takes place in a process of “legitimate peripheral participation” (Lave & Wenger 1991: 29) where learners participate in communities of practitioners and gradually move towards full participation in the sociocultural practices of a community. In translation company simulations, the teachers play the practitioners’ role, based on their experience in the translation profession, supported by visiting translation professionals and representatives of language service providers. However, no community of practitioners is simply about people. It is also about the principles, practices, and artefacts of the community. Thus, for successful simulations, translation pedagogy must create learning environments that present students with meaningful goals, incentives and constraints and must allow them to operate in social

structures that resemble real-world translation teams and translating organisations. To a degree, such learning environments need to be pre-planned and pre-structured, while the activities in the environment are self-organising and emergent so that there is room for the participants to experiment and innovate.

A differentiation must be made regarding the authenticity of the learning environment. While extra-curricular work placements and internships are situated in real-life working contexts, such as in-house positions in translating organisations or the role of a freelance translator, pedagogical translation company simulations take place within the wider context of an academic learning environment. Because of the two-fold situatedness of the learning environment, there will be an element of fictionality in the environment that seeks to recreate the professional world. While a simulation imitates the real world of work, it is also a constructed learning environment where the achieved degree of authenticity is a means for learning, and pedagogical and academic institutional considerations also play a role. For example, in the schedules of the translating organisation, time needs to be set aside for instruction, support, and reflection. In addition, it is necessary to narrow down the activities in the simulation environment so that they do not interfere with the students' other academic work. In such a constructed learning environment, pedagogically relevant translation briefs are created as fiction and not as authentic commissions (see, for example, Krenzler-Behm 2013, 2017).

2.1.2 Principles of situated learning in translation company simulations

Risku (2016a) proposes seven principles for situated learning as a didactic concept: construction of knowledge, application in a social action-context, collaboration, self-organisation, use of shared artefacts, appropriate feedback, and reflection. This section discusses these principles and reviews how they can be applied in translation company simulation pedagogy, and especially in the pedagogy of the Multilingual Translation Workshop at the University of Turku.

Construction of knowledge: knowledge is actively constructed by the students and not prescribed by the teacher (Risku 2016a: 18). This principle aligns with constructivism as an epistemology of knowing that rejects the idea that knowledge is passively received. Instead, learning is seen as active creation of knowledge by the learner. In pedagogical literature, constructivist positions come in many flavours, including cognitive constructivism and social constructivism. While cognitive constructivism stresses individual knowledge construction processes and mental models, social constructivists focus on learning as a social, dialogical, and collaborative process (Tynjälä 1999: 364). It is thus reasonable that social constructivist positions are prevalent in approaches that focus on collaborative project-based learning. A

position based on social constructivism suits a pedagogical approach built around translation company simulation particularly well, because here a significant part of learning occurs in student companies, out of the reach of teacher control.

In translation company simulations, working-life practice and structures are accepted as tentative models that guide the learning activities, while the focus is on helping students develop flexible mental models for good working practices. Through experimentation and innovation, the students find solutions that may or may not be similar to those prevalent in the translation industry.

Application in a social action context: the object of education is not only that learners absorb information but also that they learn to use it in interactions with an organisational environment (Risku 2016a: 16). In translation company simulations, the business processes of the student company create an organisational environment, a social structure with which the students interact. Such business processes include creating a business plan, developing and updating systems and artefacts for pricing, negotiating with clients, managing data, communicating within the organisation, ensuring and documenting compliance with the ISO 17110 standard for translation service provision, and innovating solutions for the translation market. Learning occurs as the students co-create the organisational environment and navigate within it.

Collaboration: learning takes place as participation in a social community (Risku 2016a: 18). This is a fundamental tenet in social constructivism. According to Varney (2009: 28), the notion of collaborative learning

marks a clear departure from the idea that learning occurs exclusively inside the brain of the learner and locates the process more specifically in the intersubjective interaction which takes place between participants (instructors and learners) in the learning event.

In translation company simulations, individual activities gain their meaning in the context of collaboration in a translating organisation. In effect, the students are essential elements in each other's learning environment.

Self-organisation: knowledge is created in the actors; learning is based on and integrated into learners' existing knowledge and experience (Risku 2016a: 16). González-Davies (2004) and González-Davies & Enríquez-Raído (2016) distinguish between three main approaches to teaching that represent a gradual shift from teacher-controlled to student-controlled sessions: the transmissionist, the transactional, and the transformationist approach. The transmissionist approach represents a traditional product-oriented and teacher-centred learning context, while the transactional approach provides for group work and interaction where the teacher is still in control of learning. Finally, the transformationist approach is a student and learning-centred

context that focuses on collaborative study and exploration of the translation process where the teacher acts as a guide.

A learner-centred approach is a natural concomitant of the tenet of self-organisation, and a large part of the activities in translation company simulations are only loosely guided, if at all, by the teachers. Thus, while the learning environment's parameters are planned and structured in advance by teachers, the activities of individual students and student companies within this learning environment are self-organising and emergent. Translation company simulation pedagogy can thus be characterised as a transformationist approach.

Expositions of collaborative project-based approaches often include a critique of transmissionist teacher-centred instruction (see, for example, Kiraly 2001, 2003; Varney 2009; Baumgarten et al. 2010; Rico 2017). Nevertheless, in translation company simulations, some teacher-centred instruction can be considered beneficial—and more efficient than self-organised learning—such as when a new set of technical skills or principles is needed for a task.

Shared artefacts: artefacts, the products of cognitive activities, such as texts, instruments and other aids like technological applications, can speed up and extend the learning process (Risku 2016a: 17). According to Risku (2014: 341),

artefacts are not just restricted to modern information and communication software and tools, but also include all the material and immaterial objects we use to avoid having to try to store and process all the relevant information we need in the brain.

In translation company simulations, such artefacts include texts to be translated, translation memories, terminology lists, translation management systems, CAT tools, documents on the principles of the work process—for example, the ISO 17100 standard—and instructions on the use of tools.

Appropriate feedback: informed action knowledge can only be formed through subsequent feedback (Risku 2016a: 17). In their study of collaborative feedback flows in authentic translation project work, Massey & Brändli (2016: 195) find that

classroom and group interactions [were not deemed] especially effective in the context of experiential collaborative project work. Useful feedback, and presumably learning, seems to be happening elsewhere – in online forums and bilateral written and oral exchanges rather than ‘classic’ multilateral or teacher-moderated learning settings.

However, they conclude that the role of feedback by teachers becomes more pronounced once the project is finished, and “more ‘traditional’ authority and power

relations are asserted when summative assessment is involved” (Massey & Brändli 2016: 196).

Translation company simulations include several forms of feedback through various channels. After each project, feedback is given by teachers on client communication and the quality of the delivered product. Additionally, surveys on student company climate are conducted and relayed back to the students. Finally, peer feedback is also used to assess students’ performance in their roles in the translation service provision workflow.

Reflection: metacognitive activities, reflections on one’s cognitive processes are essential characteristics of a translation professional’s expertise (Risku 2016a: 19–20). They are also an important means of acquiring such expertise (Pietrzak 2019). In translation company simulations, team discussions with a teacher who takes on the role of a human resources consultant are one way to facilitate reflection. In addition, many tasks in connection with developing the student company and documenting its goals, resources, and workflow practices in a business plan or an operations manual provide incentives and opportunities for reflection in the student teams.

2.2 Modelling workflow for translation company simulations

The Workflow Management Coalition (1999) defines workflow as “[t]he automation of a business process, in whole or part, during which documents, information or tasks are passed from one participant to another for action, according to a set of procedural rules”. As this definition of workflow is geared towards planning information systems, it focuses on automation. However, as the aim in translation company simulations is to improve students’ capability to organise work and participate in organised work processes, the focus in this study is on human input. With the implementation of translation management systems and machine translation in translation workflows, a combination of human labour and some form of artificial intelligence has become commonplace. Writing on Business Process Management, van der Aalst (2013: 1) points out that it has a broader perspective on workflows than Workflow Management. In addition to process automation and process analysis, Business Process Management deals with operations management and work organisation. The term ‘workflow’ is used here in this broader sense of organisation of work: A workflow consists of activities, or tasks. The Workflow Management Coalition (Workflow Management Coalition 1999: 13) defines activity as a “description of a piece of work that forms one logical step within a process. An activity can be a manual activity, which does not support computer automation, or a workflow (automated) activity [. . .]”. In this dissertation, the terms ‘activity’ and ‘task’ are used interchangeably.

One might expect it to be relatively straightforward to identify procedures and principles specific to translation industry workflows and then present them as models for the student companies to emulate. However, defining the learning content for workflow structure presents three dilemmas: First, which criteria should be used to select the workflow model, as there is no monolithic and unchanging translation industry? Instead, various organisations and independent agents work in different locations, occupy different positions in the translation market, and, consequently, employ diverse practices (Foedisch 2017: 26).

Second, how does one access reliable information about prevalent translation industry practices? Translation industry surveys, for example, by the organisations ELIA, EMT, EUATC, FIT Europe, GALA, and LIND-Web (ELIA et al. 2020), indicate some competences that are deemed necessary for a translation professional. However, such reports mainly describe general trends in the industry and do not focus on the details of translation company structure and production procedures. Recent advances in translation workplace research (Risku et al. 2020: 38–39) on “work organisation and routines; cooperation and social dynamics; cognitive, organisational and physical ergonomics; and the use and implications of (collaborative) technology in the workplace” provide valuable data for planning translation company simulations. Significant contributions, from several different perspectives, include Mertin (2006), Kuznik & Verd (2010), Karamanis et al. (2011), Doherty et al. (2012), Drugan (2013), Risku et al. (2013a), Risku (2016b), Kuznik (2016), Foedisch (2017), Massey (2018), Risku et al. (2019), and Rodríguez de Céspedes (2020). In addition, although not empirically based, Hofmann (2012) provides an excellent overall view of a translating organisation’s business processes. Gouadec (2007) offers a detailed account of the translation workflow. Finally, from an even broader perspective, Shaw & Holland (2010) present a comprehensive overview of the architecture of business processes within and between independent firms that support the management and delivery of translation services. All of the above sources are valuable in providing the necessary background for understanding translation workflow. However, translation industry consensus documents, namely, standards of translation service provision, may offer the conceptual tools best suited to help student companies adapt their workflow process to translation industry practices. One such standard is the ISO 17100 Translation services – Requirements for translation services (ISO 17100 2015).

2.2.1 Concepts and conceptions of workflow

Even after arriving at a suitable workflow model, a dilemma remains. How far should current translation industry practice be used as a restrictive model for the student companies? While including translation provision standards in translator education

as models is a warranted practice, it is good to keep in mind that the ISO 17100 standard is structured along the linear translate–edit–proofread (TEP) workflow. The TEP model comprises the phases of project planning—with the sub-processes scope definition, requirements development, and file preparation—translation, editing, and integration of translated text into files (Dunne 2011: 169; see also Jiménez-Crespo 2017: 62–63; Kelly et al. 2011; Kockaert & Makoushina 2008). While the bulk of translation work is done in conventional TEP workflows, there is an ongoing search in the translation industry for novel ways of organising translation workflows. Such new models integrate, for example, crowdsourcing and machine translation (see Jiménez-Crespo 2017: 62–63; Morera Mesa 2014). Garcia (2009, 2012) points to the possibility that the TEP model may be rendered obsolete due to developments in MT and crowdsourcing. It is possible, for example, that “non-serial models of translation, with more flexible, ongoing processes where translation is embedded in production, such as in Agile localization projects” (Drugan 2013: 80) will be preferred instead. Drugan (2013: 105–106) also points out that due to the impact of new technology, even the traditional TEP model is often significantly expanded to include additional quality assurance procedures.

Any significant move in the translation industry away from the TEP model towards other kinds of quality models, for example, bottom-up approaches that “question basic assumptions about necessary or desirable levels of translation quality and adopt new strategies to providing it” (Drugan 2013: 160; see also Rodríguez de Céspedes 2019), would affect the status of the ISO 171000 standard as a consensus model. The potential for changes in workflow models highlights the need to view the challenge to enhance students’ understanding of translation workflow broader: It does not consist of mere acquisition of the conventional TEP style translation process map but includes the ability to adapt the map to new contexts. This is in line with the constructivist epistemology discussed in the previous section. While consensus models of translation workflows are a good starting point, there should be room for experimentation and innovation in the student companies that could bring about new ways to organise translation work.

A constructivist or social constructivist pedagogy that discards the notion of one correct way of doing things may be best suited to giving room for such flexibility in thinking. In this vein, this dissertation distinguishes between a shared understanding of a concept on the one hand and an individual’s conception, their personal and therefore variable understanding of a concept, on the other (see, for example, Entwistle & Peterson 2004: 408 and Lalumera 2014).

As a parallel to the collective concept of translation workflow, the term workflow conception refers to a mental model held by an individual of a generic translation workflow. Workflow conceptions consist of declarative and procedural knowledge, and they can be expected to inform translation service provision processes.

Declarative knowledge refers to knowledge about workflow models and the different stages and tasks of the translation workflow. Procedural knowledge refers to the process “where the declarative knowledge of the domain, what is known about the task, is converted into production rules, which are like conditional (if-then) statements that specify what problem resolution methods should be applied when certain patterns of events are recognised in a task” (Shreve 2006: 35). Workflow conceptions can be framed as part of project management competence or as part of the organisational competence of a translation professional.

One of the tasks of translation company simulation pedagogy can then be seen as guiding translation students’ workflow conceptions towards a shared understanding—a concept of translation workflow—that approximates the currently established workflow concept within the translation industry. However, it would not be reasonable to assume that there is only one correct and unchanging workflow concept of which individual workflow conceptions are naïve variations. Instead, the assumption here is that in the translation industry, as in any specialist field of knowledge, competing consensus concepts represent the current expertise in the field but are subject to change over time. For this study, the industry-standard ISO 17100, which has been influenced by major players in the translation industry, is used as one concept of translation workflow, the current consensus model.

2.2.2 Task role, activity, and workflow

The workflow activities necessary for translation production are typically bundled into task roles. The roles are occupied by professionals who interact with each other and rely on various artefacts and technological devices. Increasingly, the devices depend on algorithms and data, for example, in machine translation engines and partially automated translation management systems. Together, these elements constitute a translating organisation or a network (Risku et al. 2013b; Risku 2016b). The concepts of activity and workflow help describe what takes place in this complex network of actions and identify elements that can be used to monitor student progress.

The concept of activity is used here in the sociotechnical sense it has in Business Process Management. To better understand the relationships between different domains of activity that are customarily defined through roles such as translator, reviser, and project manager, it may be helpful to relate the concepts of activity and workflow to the concepts of mental act and situational event, introduced by Toury (2012).

Activity was defined above as a piece of work that forms one logical step within a process. Chesterman (2013: 156) elaborates on Toury’s conceptualisation and

proposes that “a translation act begins when the translator starts to read the source text and ends when the translator decides to take no further action in revising the translation”. There are three critical differences between the concepts of act and activity. First, the concept of act refers to mental phenomena, the cognitive process that occurs within an individual. Activity, again, is viewed from the outside and is not defined as a mental phenomenon. An activity is identified by the procedural rules of the workflow and recognised through its external features and its results. It will have a mental and a social aspect if the agent carrying out the activity is human, but not if the agent is an algorithm. Second, as a piece of work that constitutes one logical step within a process, the scope of an individual activity will—depending on the purpose of the analysis—be narrower than that envisioned for the translation act by Chesterman. For example, in a standard workflow, translation and revision would count as two separate—though interconnected—activities. Depending on the granularity of the analysis, the translation step can be divided into two or more activities, for example, terminology search, translation, and translator’s check. Third, the translation activity and the revision activity would be carried out by two or more separate people taking different workflow roles.

As for the translation event that encloses the translation act, in Chesterman’s definition, it begins when the translator accepts the job and ends with the payment of the bill. Here the concept of a translation event defines a comparable period as the concept of workflow, from the first client contact to the project’s closing. Chesterman (2013: 156) notes that “[a] translation event normally involves other actors too [...], who also perform relevant cognitive acts”.

The definition of the translation act reflects an “individualistic concept of ‘the’ translator” (Risku et al. 2013b: 153). This individualistic concept is also inherent in many competence models, as they focus on a generic ideal of a translating or revising individual’s mental ability. While such models are valuable in the research tradition of process studies of translation, revision, and post-editing, they are less suited to account for the collective effort in workflow activities where several human agents, aided by algorithms and artefacts, cooperate and collaborate. The following section reviews the contribution of competence models for monitoring student progress in translation company simulations and presents the construct of self-efficacy as a useful complement to competence.

2.3 What to measure and how to do it?

Robinson et al. (2016: 338) describe the challenges and opportunities involved in assessing project-based cooperative and collaborative learning in a learning environment that simulates a translation workplace. In such environments, product-oriented assessment, where the translated text is “considered the only evidence of successful

learning”, cannot address the “complex nature of the process that leads to the production of a final translation”. Moreover, “the challenge of assessing the process is much more demanding since [the] attention [of] assessors needs to focus on far less tangible factors”. As a solution, they offer competence-based peer assessment and self-assessment. In their “tightly structured” two-week translation project, self-assessment and peer assessment rely on clearly defined criterion descriptors for each assessed aspect.

As the MTW simulation at the University of Turku is considerably longer than two weeks—spanning an entire academic year—only loosely structured and based on the principle of student self-organisation, it takes a versatile approach to assessment. Both self-assessment and peer assessment of the kind described in Robinson et al. (2016) are used, and the end products of translation projects are assessed by the teachers. Still, as the end products are the results of a long chain of cooperative and collaborative input, their quality is seen to reflect primarily the quality of the students’ translation company operation, not the effort by individual students. In this dissertation, the focus turns to a method that complements the assessment methods listed above: a survey-based self-efficacy measure for monitoring student progress.

As discussed in Section 2.2.1, the workflow concept applied in the MTW follows the traditional TEP process as laid out in the ISO 17100. The scope and steps in a standard workflow already suggest a tentative answer to the research question *What to measure?* In short, it is not merely the act of translating that is identified as an object of interest when monitoring student progress. In addition to translation, a whole range of production and management activities involved in producing translations is included as well, for example, project management, revision, post-editing, and proofreading.

As for the second question—*How to measure?*—the subsequent task is to conceptualise the individual measurement objects. The next sections weigh two complementary conceptualisations of ability: the competence construct and the self-efficacy construct.

Competence is a widely discussed topic within translation studies. Besides questions of the nature, content, and source of translation competence (Presas 2007), the relationship of competence models to developments in the translation market is a recurring subject in debates on competence (see, for example, Kearns 2008; Hu 2018). The concept of competence is also fundamental to process-oriented research focused on explaining the translation processes of individual human translators (Göpferich & Jääskeläinen 2009), although some approaches frame the same or

similar phenomena as expertise³. Importantly for this dissertation, the competence concept is also a central device for planning and organising translator education curricula (Kelly 2014; for a critical view on modular curriculum structures based on competences, see Kiraly & Hofmann 2016), or even a policy device to influence curricular structures in member institutions of a network of translator education programmes, as is the case in the European Master’s in Translation network (Pym 2008; Chodkiewicz & Curie-Sklodowska 2012; Torres-Simón & Pym 2019).

When utilised for monitoring student progress in translation company simulations, the use of the competence construct entails a number of conceptual, methodological and practical problems. Theoretical issues include the narrow scope of activities covered by individual competence models, conceptual overlap between models that cover sequential activities in the workflow, and conceptual stagnation in the face of changing translation industry practices. Methodological issues include problems with the operationalisation of competence models into the survey format. Finally, practical issues include the intrusiveness of competence-based testing in the flow of ongoing translation company simulations. Section 2.3.1.2 lays out these issues, grouping them as problems of scope, overlap, stagnation, operationalisation, and practical implementation.

³ Due to the central status of the competence construct in translation pedagogy as a tool for describing pedagogical outcomes, this dissertation opts for the term competence. Competence and expertise are sometimes used as synonyms (Tiselius & Hild 2017: 405). Still, in cognitively oriented translation process studies, expertise is usually associated with “consistently superior performance” that is developed through “deliberate practice” (Shreve 2006: 28) over a significant period of time. As the subjects in this study are preparing for a career in translation, one of the necessary conditions for expertise—accumulation of extensive experience—cannot be satisfied in the time frame of this study. According to Shreve (2002: 154), “[t]ranslation expertise studies as a potential research area grapples, at least partly, with what happens *after* graduation from translation school”. Tiselius and Hild (2017: 405) frame competence as a prerequisite for expertise and expertise as “the supreme expression of such competence”. In contrast, Shreve et al. (2018: 37) argue that it is time to reconsider the need for the notion of competence and “that it is possible to subsume the most important aspects of competence models within expertise theory”. In a relatively recent development, Muñoz Martín (2014) proposes a situated construct of expertise that includes five overlapping and interacting dimensions: knowledge, adaptive psychophysiological traits, regulatory skills, problem-solving skills, and self-concept. Interestingly, the dimension of self-concept also includes self-efficacy as one of three sub-dimensions. In a further situated cognition approach, Risku & Schlager (2022) analyse ethnographic data from translating organisations and argue for a multidimensional understanding of translation expertise. They point to the socially constructed nature of expertise and identify differences in the use of the concept in translation process research and the translation industry. In a similar vein, Angelone & Marín (2019: 136) identify a “noticeable disconnect” between expertise as conceptualised within the translation process research community and as conceptualised among project managers and professional translators.

Faced with these challenges, I felt it necessary to seek alternative ways to keep track of student progress. Could students' perception of their ability to perform specific tasks be used to monitor progress in translation company simulations? The method for measuring progress through self-efficacy surveys has the distinct advantage of being an instrument that causes minimal disruption in the flow of a translation company simulation. Thus, one of the strong suites of self-efficacy monitoring is its practicality. Self-efficacy surveys are quick and easy to conduct. They can be dressed as part of company-internal human resources activities, and they do not require external evaluation. Once the parameters are set, their analysis is relatively straightforward. Additionally, as a self-efficacy belief can relate directly to a workflow activity, instead of a mental act represented by a competence model, thorny problems of operationalisation can be bypassed. The items in a self-efficacy survey can be worded flexibly so that they relate to activities in the workflow. As long as the items are relevant to the experience of the respondent—and refer to a coherent model of translation service provision workflow—they can be worded in such a way that problems of conceptual overlap and stagnation can be avoided.

After a review of the competence construct, in Section 2.3.2, self-efficacy is offered as a measure that complements the competence construct when gauging learning outcomes in translation company simulations. From the discussion, it will become clear that I am not suggesting self-efficacy measurements as a replacement for external evaluations of a person's competence. However, the self-efficacy construct opens a view into subjective aspects of an individual's ability to perform tasks. In this way, it can provide valuable information not freely accessible to external evaluations of competence.

2.3.1 The competence construct

In the Recommendation of the European Parliament and of the Council on the establishment of the European Qualifications Framework for lifelong learning (European Communities 2008: 11), competence is defined as “the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development”. This definition of competence is also applied in the European Master's in Translation Competence Framework (European Commission 2017).

The competence concept comes in many shapes and forms; for a wide-ranging historical review of competence concepts in education and in translation studies, see, for example, Martínez Carrasco (2017). In this dissertation, the concept is understood in accordance with the above European Qualifications Framework definition and along the lines of the concept's use in the PACTE project. In the PACTE project, translation competence is defined as “the underlying system of knowledge, abilities

and attitudes required to be able to translate” (Hurtado Albir 2017: 320). In the categorisation of competence models by Lesznyák (2007: 179), such models are prerequisite models, as they try “to identify more or less independent psychological components that are prerequisites for individual procedures in translation, and in fact, the translation process itself”. Focusing on two critical aspects of the above definitions—competence as a psychological prerequisite and competence as proven ability—competence is here understood as a set of mental prerequisites for successful action, verifiable through the results of the process or any relevant perceivable features in the process.

2.3.1.1 Competence models and model categories

Within translation studies, most discussions of competence concern translation competence. Although mentions of and proposals for revision competence, post-editing competence, and even project management competence have started to appear, such models are largely fashioned along the lines of translation competence models. Insightful reviews of the concept of translation competence in translation studies, with useful categorisations, include Pym (2003), Lesznyák (2007), Herold (2010), Risku (2016c), Massey (2017), and Di Mango (2018).

Competence models focusing on individual activity domains that constitute translation workflow include, in the case of translation, the PACTE model (Hurtado Albir 2017) and the Transcomp model (Göpferich 2008). For revision, a competence model was presented by Robert et al. (2017), for post-editing by Rico & Torrejón (2012) and for project management by Plaza-Lara (2018, 2021). In Pym’s (2003: 481) classification of competence models, all are multicomponent models, as they involve “sets of skills that are linguistic, cultural, technological and professional”.

More comprehensive multicomponent models that cover complete workflows in professional translation service provision can be found as well, for example, in the ISO 17100 standard (ISO 17100 2015) and the European Master’s in Translation Competence Framework (EMT Expert Group 2009; European Commission 2017). While the scope in these overarching models is broader—besides translation, they include, for example, project management, revision, and proofreading—their conceptual structure is less strict than that of the activity-specific models.

In addition to the category of multicomponent models mentioned above, Pym (2003) proposes three other types of competence models: first, translation competence as “a summation of linguistic competencies”. The second type is competence “as no such thing”, reflecting either a preference for a different terminology or—more importantly—using competence simply as a “cover term and a summative concept for the overall performance ability which seems to be so difficult to define” (Adab & Schäffner 2000: x). In the latter category, according to Pym (2003: 481),

competence becomes “a question of market demands, given to extreme historical and social change”. Finally, there is Pym’s category competence as “just one thing”, a supercompetence represented, for example, by a minimalist definition that defines “translating and nothing but translating” (Pym 2003: 488–489):

The ability to generate a series of more than one viable target text (TT1, TT2 ... TTn) for a pertinent source text (ST);

The ability to select only one viable TT from this series, quickly and with justified confidence.

The strength of a minimalist definition of translation lies in its simplicity and flexibility. However, as will be seen in next section, the abstract nature of the definition comes with a cost.

2.3.1.2 Scope, conceptual overlap, and flexibility in competence models

Compared to the scope of abilities developed in a traditional translation course with a focus on students’ role as translators, the scope developed in a translation company simulation is expansive. The aim is to train translation service providers who can take diverse roles in a translating organisation’s production system, primarily in its translation service provision workflow. Consequently, an instrument for measuring progress in such a course needs to cover a broad spectrum of activities.

Models that define translation competence as a summation of linguistic competences are too narrow for this purpose. Similarly, abstract minimalist definitions of competence as ‘just one thing’, for example, Pym’s definition of translation as the ability to generate and select viable target texts, also fail to capture the level of detail and the wide range of phenomena in the translation workflow. It can be argued that the task of the entire translating organisation when carrying out the translation service provision workflow is to operate along the lines envisaged by Pym’s minimalist definition: to create and select elements of target text. However, the problem with such a minimalist notion is that it cannot be operationalised in any meaningful way for measuring individual student progress in a translation company simulation.

Pym’s category ‘competence as no such thing’, regarded as an empty category by Lesznyák (2007), would appear to have some potential to cover a wide scope of activities if it is understood as a “cover term and a summative concept for overall performance ability” (Adab & Schäffner 2000: x). Regarding the competences of a translator, Plaza-Lara (2016: 9) comments that

[...] it is impossible to systematise all of the sub-competences a translator should have. Professional profiles vary continuously depending on the job, the country, the company, etc. We can establish categories that can cover different sub-competences, but an exact list of all of those sub-competences is almost impossible.

Despite the positive aspects of defining competence as an umbrella concept for any abilities a translation professional might need, the open-endedness of such a competence model would present difficulties for a stable operationalisation of the concept.

Multicomponent competence models, the fourth category in Pym's classification, are able to accommodate a range of subcompetences within a stable structure and thus offer a promising avenue for defining prerequisites of successful participation in the translation workflow. However, as they are initially designed for a specific activity domain, two or more competence models would need to be set side-by-side or, alternatively, expanded, so that the resulting comprehensive model would cover a range of workflow activities. Either solution would be likely to lead to conceptual and practical problems, for example, conceptual overlap or blurred boundaries of subcompetences, problems of defining the identity of individual workflow activities, and thus potential instability of the competence model.

When combining or expanding multicomponent competence models for individual activity domains, it becomes apparent that they include shared subcompetences, especially in the case of translation, revision and proofreading but also between translation-related activities and project management. In addition, the boundaries between individual subcompetences required for neighbouring or similar activities are difficult to define. Some multicomponent models of revision (Robert et al. 2017) and project management (Plaza-Lara 2018) expressly borrow subcompetences from multicomponent models of translation. Then the distinguishing feature of each activity domain is its specific mix of subcompetences, together with some subcompetences that are unique to them. Such a wide variety with different combinations of subcompetences presents difficulties for operationalising the competence models in a context where all workflow activities are present.

To be useful as frameworks for repeated measurements of students' capabilities within one course but also over the span of several years as a benchmark for course development, competence models would need to be relatively stable. However, they should also be flexible enough to reflect any relevant changes in the translation market and the practices of the translation industry. This puts the models in a bind: On the one hand, Pym (2003: 481) criticises multicomponential models for the propensity to always be "one or two steps behind market demands", but on the other hand, he appears to criticise conceptualisations that understand competence, possibly under some other term, as "a question of market demands, given to extreme historical

change”. Possibly as a sign of the limits to designing a competence model that would cover all relevant aspects of a translation course, after presenting his minimalist model of translation competence, Pym (2003: 494) includes in his course syllabus a list of skills that are “not happily seen as part of translation competence”.

One way to fill in the gaps left by stringently defined competence models could be to include so-called generic or transferable competences. Soft skills, transferable competences, or generic competences, such as “time management, communication skills, giving and receiving constructive criticism, teamwork, reflecting on one’s own knowledge, strengths and weaknesses” (Schäffner 2012; see also Kelly 2007; Peverati 2013), have been proposed as complements to specific competences. Such generic competences can be seen as vital in ensuring seamless cooperation between the agents in the workflow. In any case, developing students’ generic competences is crucial for enhancing their employability. However, it is not always clear whether such generic competences should be understood as distinct from domain-specific competences. For example, a perceived communication gap between the task roles of a translator and a reviser has led to the enhancement of competence models of translation and revision by including additional components such as interpersonal subcompetence, defined by Kelly (2014: 84; see also Robert et al. 2017; Künzli 2006) as the

[a]bility to work with other professionals involved in translation process (translators, revisers, documentary researchers, terminologists, project managers, layout specialists), and other actors (clients, initiators, authors, users, subject area experts).

Another critical topic associated with interaction challenges is work at the man-machine interface in the translation service provision workflow. A customary solution in competence models to bridge the gap between human agents and algorithms and artefacts is to include an instrumental subcompetence (Hurtado Albir 2017) or a tools and research competence (Göpferich 2009), defined by Hurtado Albir (2017: 40) as

[p]redominantly procedural knowledge related to the use of documentation resources and information and communication technologies applied to translation and translation technologies: dictionaries of all kinds, encyclopaedias, grammars, style books, parallel texts, electronic corpora, search engines, assisted translation software, machine translation software, terminology database management software, post-editing software, etc.

As can be seen from this wide-ranging definition, instrumental subcompetence covers just about anything a translator may need in the course of translating. As separate competence models for revision (Robert et al. 2017; Scocchera 2019) and post-editing (Rico & Torrejón 2012) also include their own sets of instrumental competences, with a partly overlapping but slightly different selection of tools, it will be apparent that the field of subcompetences is becoming crowded. As a result, it will be difficult to decide which subcompetences to monitor and how to identify them.

The inclusion of generic competences into domain-specific competence models thus leads to increasing complexities, when, for example, the competence models for two neighbouring activities may both include an interpersonal subcompetence or an instrumental subcompetence. For the present task of developing ways to monitor student progress in translation company simulations, such complexity presents additional difficulties.

Finally, as a practical problem, there would be challenges in operationalising the competence model in the survey format, as many of the abstract individual conceptual elements in the models, for example, strategic subcompetence, would not be immediately identifiable by the respondent. In addition, while it is possible to design instruments for self-assessment of competence, the nature of the competence construct as an objective or intersubjective measure calls for external assessment of competence. In translation company simulations, such external assessment could easily disrupt the flow of the simulation.

In summary, the concept of competence entails conceptual, methodological and practical problems if used for monitoring student progress in the context of translation company simulations. To bypass these problems when designing a survey instrument for monitoring student progress, in this dissertation, the construct of self-efficacy is used instead. The following section presents the self-efficacy construct and highlights its benefits as a measure for student progress in translation company simulations.

2.3.2 The self-efficacy construct

The concept of self-efficacy, defined as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (Bandura 1997: 3), was first introduced in Bandura’s Social Cognitive Theory. Social Cognitive Theory is a theory of learning that posits that learning occurs in a social context where “behavior, cognitive and other personal factors, and environmental influences all operate interactively as determinants of each other” (Bandura 1986: 23). The view that learning occurs in a social context as an interaction between person, environment and behaviour agrees with the central tenets of translation company simulation

pedagogy discussed above. Learning is situated. Further, it can be studied not only by analysing performance but by tapping into cognitive and other personal factors.

As self-efficacy is a concept that refers to the psychology of human agents who participate in the production of translations, within translation studies, it belongs to the field of translation psychology. Referring to Holmes (1988) and Jääskeläinen (2012), Bolaños-Medina (2016) describes translation psychology within translation studies as

the subdiscipline [...] that addresses the study of translators as complex individuals functioning as a whole. This perspective thus embraces the underlying emotional, cognitive, behavioural and social factors at play; but it also takes into account their interaction with the translators' professional environment and with other agents participating in the translation process, from both an objective standpoint and as perceived by the translators themselves.

The concept of self-efficacy first made its way into translation studies in the early 2000s through research on interpreting. In one of the earliest mentions of self-efficacy in translation studies, Jiménez Ivars & Pinazo Calatayud (2001) listed self-efficacy as one of the “coping strategies” in managing stress and anxiety in interpreting and, citing Wood et al. (2000: 431), defined it as “the belief in one’s capability to execute required actions and produce outcomes for a defined task”. Self-efficacy can be conceptualised as a kind of skill or competence that can be acquired or enhanced (Atkinson 2012). In models of translation competence, self-efficacy—or related concepts, such as self-confidence, self-concept, and self-esteem, discussed below—can be grouped under the rubric “psychophysiological competence and cognitive and attitudinal resources” (Haro-Soler 2017: 132), either as a subcompetence of its own or as a psychophysiological component. In this study, however, self-efficacy is used as a concept that is separate from competence. Rather than a competence, self-efficacy is understood to be a person’s evaluation of the potential of their specific competences in more or less circumscribed contexts. In other words, a person’s competences—or their potential—are objects of their self-efficacy beliefs.

The construct of self-efficacy presents an alternative to the competence construct when measuring student progress. It should be noted from the start that the claim here is not, for example, that high self-efficacy automatically equals high performance and low self-efficacy is accompanied by low performance. Nor is self-efficacy an immediate reflection of the level of competence. The object of a self-efficacy belief is not simply a specific competence but rather what one can do with that competence in a situated context: “Perceived self-efficacy is not a measure of the skills one has but a belief about what one can do under different sets of conditions with whatever skills one possesses” (Bandura 1997: 37). The self-efficacy construct is

viewed here as a valuable complement to the competence construct, as it carries information both about competence and psychological phenomena not captured by the concept of competence. The exact relationships between competence, self-efficacy and performance are an empirical matter to be studied separately for each context.

Importantly, self-efficacy is conceptually related to personal agency as its core features include intentionality, forethought, self-reactiveness, and self-reflectiveness (Bandura 2001). It is precisely the connection of self-efficacy with agency that lends the self-efficacy construct a potential that goes beyond that of the competence construct: expectations of personal efficacy can influence a person's decisions on whether to commit themselves to an activity, the level of effort they spend, and their persistence when facing adversity. Thus, self-efficacy beliefs may have real-world consequences (Bandura 1997: 61):

Belief in one's learning efficacy activates and sustains the effort and thought needed for skill development. Conversely, self-inefficacious thinking retards development of the very subskills upon which more complex performances depend.

In short, similar levels of competence within a person at different times, or between persons, may lead to different results, depending on the level of self-efficacy (Bandura 1997: 37).

The sources of self-efficacy include enactive mastery experiences, vicarious experiences provided by social models, verbal persuasion and allied types of social influences, as well as physiological and affective states (Bandura 1997: 80–115). In the context of translator education, Haro-Soler (2018: 384–388) identifies pedagogical approaches, teaching practices, and resources that can positively influence translation students' self-efficacy: situated learning in contexts that simulate professional practice; student-centred learning; collaborative learning; a collegial relationship between teachers and students; regular, constructive and well-structured personal feedback; and opportunities to learn from peers, and from alumni who already work as translation professionals.

2.3.2.1 Perceived competence: self-confidence, self-concept, self-esteem, and self-efficacy

Self-efficacy can be understood as perceived competence, and as such, it is related to other theoretical constructs that rely on the concept of competence, for example, self-concept and self-esteem (Schunk & Pajares 2005: 88–89). Hughes et al. (2011: 278) understand self-efficacy and self-concept to “differ in the extent to which competence contributes to their composition”. While they associate self-efficacy

primarily with cognitive perceptions of competence, self-concept is understood to combine affective and competency perceptions.

As a primarily cognitive assessment of one's capability to perform a task, self-efficacy differs from the construct of self-esteem as well, as self-efficacy is concerned with judgements of personal capability, while self-esteem is concerned with self-worth (Bandura 1997: 11). Finally, according to Rowbotham & Schmitz (2013: 2)

[s]elf-confidence is the degree to which an individual believes that he or she will be successful but does not define the abilities or skills that this belief is about.

The principal difference between the constructs of self-confidence and self-efficacy can thus be seen in their generality: in a self-efficacy belief, the scope of the object is narrower and more contextualised than in self-confidence.

Another way of conceptualising perceived competence can be found in Self-determination Theory which "constitutes a broad framework for the analysis of human motivation, personality, and optimal functioning" (Núñez & Bolaños-Medina 2018: 287). Here competence is understood as a general construct and is not related to domain-specific competence in the same way as the competence concept used in translation studies.

Thinking about self-assessed, domain-specific competence, one sees that the difference between self-efficacy and self-assessed competence is one of theoretical background and context. As for the wording of survey items, it is not clear that a self-assessed domain-specific competence item would be much different from a self-efficacy item if the context of using the competence is specified. However, differing theoretical frameworks in the background of the statements would guide their interpretation in different directions.

Finally, another aspect of the self-efficacy concept is collective efficacy. Bandura (1997: 476) defines perceived collective efficacy as "a group's shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainments". While collective efficacy was not used as a measure in this dissertation, it could, for example, be used to monitor the development of the student companies and evaluate their significance as unique learning environments in the broader context of the translation company simulation.

2.3.2.2 Measuring self-efficacy: scale items and the response scale

Bandura (2006) presents a standard step-by-step procedure for developing domain-specific self-efficacy scales. Self-efficacy beliefs vary in a number of dimensions. According to Bandura (1997: 42–44), critical dimensions that need to be taken into

account when designing self-efficacy scales for questionnaires include the generality (the generalisability or transferability of the belief across tasks and situations), level, or magnitude (task difficulty), and strength of self-efficacy (respondent's certainty of successful performance).

As for *generality*, in Bandura's standard procedure, personal efficacy measures need to be tailored to specific domains of functioning. The items used for measurement rely on a solid conceptual analysis of the domain, the capabilities it calls upon and the situations in which the capabilities may be applied. Bandura (1997: 49) distinguishes between three degrees of generality, from particular to global:

- efficacy in a particular performance under specific conditions;
- efficacy in a class of performances within the same activity domain under a class of conditions that share common properties;
- efficacy in unspecified activities performed in unspecified conditions.

In addition to domain-specific self-efficacy, various measures of general self-efficacy have been proposed, for example, by Schwarzer & Jerusalem (1995) and Chen et al. (2001). As general self-efficacy refers to a wide range of situations, Haro-Soler & Kiraly (2019: 261) equate it with the concept of self-confidence.

The *level*, or magnitude, of self-efficacy reflects the difficulty of the particular task that is envisioned. Thus, for determining the level of self-efficacy, scale items need to represent gradations of difficulty in the task demands.

The *strength* of self-efficacy represents the subjective certainty of successfully performing a task with a particular level of difficulty. Importantly, “[t]he stronger the sense of personal efficacy, [...] the greater the perseverance and the higher the likelihood that the chosen activity will be performed successfully” (Bandura 1997: 43).

Bandura's recommended wording of self-efficacy items is the expression ‘can do’, and the recommended format for the response scale is the use of either a 100-point scale ranging in 10-unit intervals from 0 (‘Cannot do’) to complete assurance, 100 (‘Certain can do’), or a similar scale from 0 to 10 (Bandura 1997: 43–44).

2.3.2.3 Sources of disparity between self-efficacy beliefs and performance

The relationship between self-efficacy and performance is not straightforward, and according to Bandura (1997: 61), some conditions may create a disparity between efficacy belief and action. Notably, a self-efficacy measure should target factors that genuinely exert influence on the behaviour of interest, and both the self-efficacy belief and the behaviour of interest should tap into similar capabilities. Models of competence are valuable tools for establishing and documenting such connections.

According to Bandura (1997: 63–64), faulty self-efficacy assessments may be caused by violations of the efficacy belief system’s multidimensionality, such as when global self-efficacy measures are used or when decisive self-efficacy factors are neglected. Further, inaccuracies in the measurement of behaviour due to extraneous situational fluctuations, transient psychological states, and imperfect scoring of performance may limit how self-efficacy measures correlate with performance measures. Another source of discrepancy may be the ambiguity of task demands: “If one does not know what demands must be fulfilled in a given endeavour, one cannot accurately judge whether one has the requisite abilities to perform the task” (Bandura 1997: 64).

In short, the calibration of the elicited self-efficacy beliefs to the actual demands of the activities is crucial for the accuracy of self-efficacy measures. As self-efficacy beliefs and competences change over time due to new experiences, “the relation between efficacy beliefs and action is revealed most accurately when they are measured in close temporal proximity” (Bandura 1997: 67). In addition, potential consequences of misjudgement affect self-efficacy assessments: “When things matter, accurate self-appraisals serve as valuable guides for action” (Bandura 1997: 68). Disincentives and performance constraints also have an impact on the relationship between self-efficacy and performance: “[D]iscrepancies arise from disincentives to act upon one’s beliefs of efficiency. Finally, efficacy beliefs will not be expressed in corresponding action if people lack the necessary apparatus or resources to perform the activities adequately” (Bandura 1997: 68).

3 Data and Methods

This chapter describes the data and methods used in this dissertation as well as the ethical issues in its empirical studies. A mixed-method approach (O'Brien & Saldanha 2014; Meister 2018) was adopted to experiment with ways to measure student progress. Thus, the empirical investigations rely on both qualitative and quantitative data and methods. At various stages of the research process, the research design included pre-post measurement of self-evaluations of competence (Article I), content analysis of student essays (Article II), conceptual analysis of competence models (Article III), exploratory and confirmatory factor analysis of self-efficacy survey data (Article IV), and longitudinal multilevel modelling of self-efficacy survey data (Article V). While the data and methods (**Table 2**) in the empirical studies differ, the individual studies form a continuum where either students' actual capabilities in the domain of translation service provision are studied as competence or their perception of the capabilities is studied as self-efficacy. As each of the articles used different methods and data, they are presented separately for each study.

Table 2. Overview of research data and methods.

	Data	Method
Article I	Survey responses on self-assessed competence by 25 MTW translation students at the beginning and 21 students at the end of the first 14-week module of the MTW	Quantitative pre-post comparison of survey-based self-evaluations of competences
Article II	Essays of 250 to 500 words on translation process workflow by 20 students in a one-year-long MTW (14 + 14 weeks of active study) at the beginning and at the end of the MTW	Content analysis of essays
Article III	Theoretical models of revision competence and post-editing competence (Künzli 2006; Rico & Torrejón 2012; Pym 2013; Robert et al. 2017; Scocchera 2019; Mossop 2020)	Conceptual analysis of competence models, leading to a meta-level model of revision and post-editing competence and a description of the place of revision and post-editing training in the translator education curriculum and the MTW at the University of Turku

Article IV	Survey responses on self-efficacy for translation workflow tasks by students in a translation company simulation course; from eight translator education programmes in the INSTB network; 191 responses before and 189 after the simulation course	Exploratory and confirmatory factor analysis
Article V	Survey responses on general self-efficacy and self-efficacy for project management and translation-related tasks by 23 students in a one-year-long MTW (14 + 14 weeks of active study) at five points in time	Longitudinal multilevel modelling

3.1 Issues of research ethics in the empirical studies of the dissertation

As the data in the four empirical studies in the dissertation, Articles I-II and IV-V, come from human participants, some questions of research ethics arise. They can be grouped around the issues of voluntary participation and informed consent, anonymity, use of research data and its usefulness for the participants, relevance of collected data, and presentation of data and results.

Empirical data from human participants of translation company simulation courses were collected in Article I, Article II, Article IV, and Article V. Participation in all these studies was voluntary, and informed consent was obtained from the participants. For Article I, Article IV, and Article V the data were collected using an online survey questionnaire. Participation in the empirical studies for Article I and Article IV was fully anonymous, as all the respondents in the translation company simulation courses were sent the same weblink to the questionnaire and no identifying information was collected from them. This full anonymity had the drawback that the participants' responses at different time points could not be paired. In Article V the respondents were sent personal weblinks by e-mail, so that it was possible to pair their responses at different time points. After connecting the responses of individual respondents at the different time points, the responses were anonymised for analysis by replacing the identifying information by an arbitrary code number. When collecting the essays for Article II, they were first identified by the student's name but then anonymised for analysis by replacing the names with an arbitrary code.

As for the usefulness of the research for the participants, answering the surveys may have helped the students to build awareness of their own competences and self-efficacy. The preliminary results of each analysis were shared and discussed with the respondents at the end of each course by presenting general trends in the group. Importantly, the responses to the surveys and the students' essays were not used for course assessment. Thus, the research effort was clearly separated from the teaching of the course.

As for the relevance of the collected data, only a minimal amount of personal information was collected. In hindsight, the information on the age and sex of the participants that was collected in Article IV and Article V was not directly relevant for the analysis, while it may be useful for contextualising the self-efficacy data. On the other hand, more detailed data on, for example, work experience or academic performance could have been useful if tested as predictors in the multilevel models.

In all the empirical studies, the data and the results were presented with a focus on general trends, and data for specific individuals were not discussed. In the interest of reproducibility of research, the anonymised raw data for Article IV and Article V were published in a repository.

3.2 Article I: Survey-based self-evaluation of competences

This section describes the methodology and data of the empirical study reported in Article I. While the primary objective in Article I was to present an overall view of the Multilingual Translation Workshop at the University of Turku and situate it within the larger framework of translation company simulation pedagogy, it included an empirical study that examined whether there was a change in various categories of students' self-assessed competence during the MTW course.

The survey method was used for data collection. The self-evaluation questionnaire included items derived from an ad hoc model of professional competences and the MTW course objectives. The organising principle of the model was the context in which the competences were used, resulting in the following categories: translation competence, defined along the lines of the minimalistic model of competence by Pym (2003: 489); translator competence, defined as the ability to participate in various communities of professionals and the ability to use tools and technologies for translation (Kiraly 2000: 13–14); transferable competence (Calvo 2011; Schäffner 2012; Peverati 2013); and entrepreneurial competence (Vandepitte 2009: 122–125).

The survey questionnaire included 41 statements about various types of translation-related knowledge, skills and attitudes. The items were operationalised as statements on two dimensions of knowledge, conceptualised as declarative knowledge (I know how to...) and procedural knowledge, or skill (I am able to...). The respondents were asked to react to the statements on a five-point Likert scale (Do you agree with this statement? 1 = not at all – 5 = completely).

The respondents completed the survey three times during the 14 weeks of the first MTW course module: in the first week at the beginning of January, in the 9th week in March and the 14th week in April. The data were collected anonymously in an online questionnaire. Due to a design flaw in the questionnaire, the responses by

individual respondents at different time points were not paired. Of the 28 students participating in the MTW, 25 students completed the questionnaire at the beginning of the course and 21 students at the end of the course.

For the analysis, the items were grouped into five categories: 1) task roles in a translation organisation (14 items), 2) IT tools (6 items), 3) business communication (5 items), 4) project management and organisation (13 items), and 5) entrepreneurship (3 items).

Statistical pre-post analysis of the means in each category was performed to compare the self-assessment ratings at the beginning and end of the MTW. The pre-post means were compared using the Mann-Whitney-Wilcoxon test, which assumes that the observations in each group are independent. As the responses in the pre-post groups came from the same respondents, the independence assumption was not met. Therefore, the Mann-Whitney-Wilcoxon test should not have been used to determine the significance of the differences.

A second statistical analysis was performed to find whether previous work experience could explain differences in the competence ratings. The respondents were asked to indicate the length of their work experience in translation and to describe the nature of this work experience. The correlations between the length of work experience and the ratings given to the 41 statements were analysed.

In summary, the value of the statistical analysis in the pre-post test design is questionable. Further, while three measurements were taken, a pre-post test can use only two measurements and thus cannot trace the trajectory of change. In Article V (see below), steps were taken to correct these problems: the individual responses of each respondent were paired, and a longitudinal multilevel modelling approach capable of tracing the trajectory of change was used instead of a pre-post design.

A number of the survey items designed for Article I served later as prototypes for the survey items used in Article IV and were then modified as self-efficacy items. All in all, the empirical study in Article I is to be considered preparatory work for the later studies.

3.3 Article II: Content analysis of essays

This section describes the methodology and data of the empirical study reported in Article II that examined changes in students' declarative knowledge about translation project workflow during the MTW course. The students' workflow conceptions were compared against the translation industry workflow concept using their verbal accounts of a translation project workflow. The data were collected as short essays on translation process, written at the beginning and end of the one-year-long course. Submitting the essays was required to enter and finish the course but they were not

used for course assessment. Only the essays of students who completed the whole course cycle were included in the analysis, resulting in 20 essay pairs.

The students were instructed to write essays of 250 to 500 words in Finnish, the native language of the students, at home within a two-week time frame. They were asked to answer the following questions:

What kind of roles are there in a translation organisation? What kinds of tasks are connected with these roles?

What kind of steps are there in the work process of a translation organisation when a client gives it a translation assignment? How can these steps be simplified or made more efficient?

The method of content analysis (O'Brien & Saldanha 2014: 189–191) was used to compare the content in the student essays to task descriptors based on the ISO 17100 standard to determine to what extent the essays reflected the workflow stages and tasks defined in the standard. This procedure made it possible to compare the verbalisations of individual translation workflow conceptions to the verbalisation of a collective translation workflow concept. As the pre-MTW essays and the post-MTW essays were analysed using the same principles, it was possible to detect any changes in the students' workflow conceptions and gain insight into what kind of workflow conception profiles emerged in the simulated translation company learning environment.

The qualitative data analysis software NVivo was used in the analysis. The ISO 17100 standard was used to design a coding frame, and the content of each essay was compared to the frame. Any mention of a specific task in each essay was coded as representing the corresponding task in the standard. The sequencing of the tasks in the essays was not taken into account.

Three researchers conducted the coding. A set of principles was agreed upon to ensure coding reliability. Each mention of a workflow task was coded once, at the most detailed level possible. Mentions of different tasks were coded only if they were specific enough. This meant that text sequences were coded as mentions of identifiable workflow tasks only if more than half of the conceptual features of the standard's task description were present. Each essay was double-coded by two of the three researchers independently of each other. Inter-coder reliability was ensured by having an equal part of each coder's work overlap with the other coders' work. The double codings were compared, adjustments were discussed, and finally, the definite codings were confirmed.

The essay codings were quantified and then analysed using quantitative methods. A collective workflow concept of the student group was formed as an aggregate of

the individual conceptions, and the change in this collective concept was measured as the difference in pre- vs post-MTW values. The statistical significance of the change in the collective workflow concept was evaluated using the Related-Samples Wilcoxon Signed Rank Test. In a more granular analysis for the main stages pre-production, production and post-production, the total number of task mentions were aggregated from the task mentions in their respective subcategories.

The conception profiles that emerged in the student group were also examined. To identify groupings of task mentions that could provide clues to diverging conception profiles, the change in task mentions was analysed in more detail (**Figure 1**, in Section 4.2.1). The 24 workflow tasks were plotted on a coordinate system based on task mention values before the MTW (x-axis) and after the MTW (y-axis). Clusters of tasks with 1) high pre- and post-MTW values, 2) low pre-MTW and high post-MTW values, and 3) low pre- and post-MTW values could be identified.

To quantify the change in conception profiles, workflow task mentions in each of the clusters were calculated for each student. Grouping the students according to the number of mentions in each task cluster, it was possible to identify groups of students that had a different understanding of translation workflow. Based on the functions of the tasks in the translation process, two workflow conception profiles, were identified, one of them with two sub-profiles. The profiles were named after the roles with which the tasks in each cluster are most closely associated in the translation process: 1) translation specialist, 2) project manager (execution), and 3) project manager (administration). The groups are not mutually exclusive, and it is also possible that a student is not placed in any of these groups.

In sum, the qualitative methodology developed for the study proved to be suitable for describing change in workflow conceptions, for defining work-flow conception profiles, and for identifying the workflow conception type of individual students. However, as the analysis proved to be very work-intensive and requires at least two assessors to be reliable, it was considered better suited for research projects than monitoring progress in translation company simulations. As the survey method was considered more suitable for continuous monitoring of change, in Article IV and Article V quantitative analysis of questionnaire data was used instead.

3.4 Article III: Conceptual analysis of competence models

This section describes the methodological aspects of Article III. The article includes a conceptual analysis of competence models to identify a basis for organising training for revision and post-editing in a translator education curriculum. In contrast to the other articles in the dissertation, the research design in this one does not involve empirical data. Instead, a range of competence models for revision and post-editing

was subjected to a conceptual analysis of the commonalities and differences in revision and post-editing, in order to provide a solid basis for distributing the learning content over the curriculum.

According to Furner (2004: 233), conceptual analysis

is a technique that treats concepts as classes of objects, events, properties, or relationships. The technique involves precisely defining the meaning of a given concept by identifying and specifying the conditions under which any entity or phenomenon is (or could be) classified under the concept in question.

In a classification of methods of conceptual analysis by Kosterec (2016), the specific method used in Article III can be characterised as reductive concept analysis. Reductive concept analysis studies the relation between two conceptual networks and investigates whether a model is reducible to another model. In this case, models of revision and post-editing competence were reduced into a common meta-level model that was developed to point out the commonalities and differences in both activities.

The models studied include the revision competence model presented by Robert et al. (2017), the revision competence model by Scocchera (2017, 2019), the skills or competences needed in revision described by Künzli (2006) and Mossop (2020), as well as the competences needed for post-editing listed by Rico & Torrejón (2012), and Pym's (2013) list of 10 skills needed in the "Machine Translation age", which combines MT and TM skills.

Leaving aside the subcompetences that the models share with translation, the subcompetences specifically related to revision and post-editing were reduced into three meta-level categories:

- strategic subcompetences related to the revision or post-editing process;
- interpersonal, psychophysiological or attitudinal subcompetences; and
- instrumental or tools subcompetences related to the use of translation technology.

These categories were then used to identify aspects of revision and post-editing competence that were common to both activities, those specific to revision, and those specific to post-editing.

The analysis of competence models in Article III informed the methodology used in Article IV and Article V insofar as it highlighted the overlap in competence models for individual workflow activities, as discussed in Section 2.3.1.2. As a result, the

decision was made to use the construct of self-efficacy instead of competence as the conceptual basis for survey development.

3.5 Article IV: Design of a survey scale

This section describes the methodology and the data in the empirical study reported in Article IV. The study designed a concise scale of translation service provision self-efficacy to diagnose learning needs and monitor student progress in pedagogical translation company simulations. First, a model of translation service provision activities based on the translation service provision standard ISO 17100 and a business process model of translation service was constructed and operationalized as a draft scale. The draft scale was then tested in an international survey (n = 380) conducted in connection with translation company simulation courses of the INSTB network⁴, with the MTW as one of the participants. Exploratory factor analysis (EFA) was used to identify dimensions and adequate items for a concise scale that comprises two four-item subscales: a project management self-efficacy subscale and a translation-production self-efficacy subscale. The scale was validated through confirmatory factor analysis (CFA). In factor analysis, correlations among observed variables are used to identify underlying factors expected to influence the behaviour of the variables.

Hinkin (1998: 106) outlines the following steps for developing a scale for measuring abstract constructs: 1) item generation, 2) questionnaire administration, 3) initial item reduction, 4) confirmatory factor analysis, 5) convergent/discriminatory validity, and 6) replication. In Article IV, the first four steps that were carried out established content validity, internal consistency reliability of the scale, and a certain degree of construct validity (Hinkin 1998: 115).

3.5.1 The draft scale

For the preliminary scale, 27 items considered relevant for pedagogical translation company simulations were generated based on the categories and activities in the model of translation service provision. A number of the questionnaire items tested in Article I were modified as self-efficacy items and used in the preliminary scale. To ensure face validity, the sense that every question on a survey is related to the construct of interest (Mellinger & Hanson 2017: 29), some adjustments and additions

⁴ International Network of Simulated Translation Bureaus; <http://www.instb.eu>. The participating translator education programmes included KU Leuven / Campus Antwerp, University of Lille, Universiteit Gent, University of Exeter, University of Turku, Swansea University, Vrije Universiteit Brussel, and Zuyd Hogeschool.

were made based on the expertise of a group of translation teachers and scholars in the INSTB network⁵.

The items were positively-worded, short statements of the respondent's ability to carry out a specific task. As the scale was tested in an international survey, the items were formulated in English, one of the working languages in all INSTB translation company simulations. Domain-specific terminology of translation service provision was used as the scale is aimed for a population with some degree of familiarity with the domain.

A 5-point Likert-type response scale was used for the self-efficacy statements, with an "I don't know" option as the lowest category on a horizontal scale.

3.5.2 The survey data

The data were collected as part of a survey on soft skills and translation-specific professional skills by members of the INSTB network. The survey was conducted in the autumn term 2017, spring term 2018, and spring term 2019 using the online survey tool Webropol. Apart from some background information items, the questionnaire consisted of 100 Likert-type items, with 73 items on transferable skills and 27 items on work skills. Only the work skills items were used in Article IV.

The questionnaire was administered to students in eight universities, both before and after translation company simulation courses. All in all, 416 responses were collected. After cleaning the data for careless responses (Meade & Craig 2012) and removing multivariate outliers based on Mahalanobis Distance (Tinsley & Brown 2000: 13), 380 responses were retained for the analysis.

The median age of the respondents was 22 years. The level of study for 27% was the fourth year of BA studies, for 56% the first year of MA studies, for 11% the second year of MA studies, and for 6% a level higher than the third year of BA studies but not specified. The sample represents a population of translation students in the final years of translator education taking part in a translation company simulation course. The inclusion of responses from the same persons both before and after a translation company simulation created a sample where one half was only somewhat familiar with the processes of translation service provision, while the other half had some practical experience in the domain.

⁵ The items were initially developed in the MTW at the University of Turku based on the questionnaire tested in Article I. Some items were later added or modified based on the expertise of Maria Fernandez-Parra, Koen Kerremans, Rudy Looock, Sonia Vandepitte, Gys-Walt van Egdom, and Iulianna van der Lek-Ciudin. The INSTB data are used in this dissertation with their kind permission. Some of the items and part of the data were reported in van Egdom et al. (2020).

To avoid overfitting the confirmatory factor analysis model by using the same data for both exploratory factor analysis and CFA, the data set was randomly split into an EFA set with 285 responses and a CFA set with 95 responses, with an approximately even distribution of pre and post responses. In factor analysis, the absolute number of observations and the observation-to-item ratio are essential concerns. While recommendations for adequate sample size vary (Hinkin 1998), the sample sizes in the study exceed most suggestions. As a rule of thumb, item-to-response ratios of 1:10 have been suggested as adequate (Osborne & Costello 2004). With 27 items in the EFA, a minimum of 270 responses were needed to fulfil this requirement. As for the CFA, the sample size of 95 responses exceeded the recommendation, as the number of items in the model remained below ten.

3.5.3 Exploratory factor analysis

After initial testing of EFA with standard estimators such as maximum likelihood and principal axis factoring on Pearson correlations in SPSS Statistics 25 software, the decision was made to analyse the ordinal categorical data using polychoric correlations (Baglin 2014: 2) and robust Diagonally Weighted Least Squares (RDWLS), an extraction method less sensitive to distortion due to multivariate non-normality than maximum likelihood (Yang-Wallentin et al. 2010). Direct oblimin rotation was used to allow the subscales to correlate. The EFA was conducted using the software FACTOR (Baglin 2014; Ferrando & Lorenzo-Seva 2017).

The Kaiser's eigenvalue > 1.0 criterion pointed to a four-factor solution, while a parallel analysis based on minimum rank factor analysis (Timmerman and Lorenzo-Seva 2011) suggested two as the optimal number of factors. The feasibility of the two-factor solution was supported by a scree plot with a pronounced inflexion point at the second factor. Both factor structures were analysed, starting with the four-factor solution. While a coherent interpretation based on the model of translation service provision self-efficacy could be found for the four-factor solution, the two-factor solution was analysed next, as the aim was to develop a concise scale with only a few items.

The two-factor solution was generated using the same settings as the four-factor solution. To reduce the number of items in the scale, a high cut-off point was chosen for the factor loadings. A theoretically feasible interpretation based on the model of translation service provision self-efficacy could be found for the two-factor solution. The two-factor solution was also coherent with the results of the four-factor solution. Finally, the two-factor solution was chosen, as it was more concise.

The internal consistency of the concise scale was tested by calculating Cronbach's coefficient alpha for the total scale and its subscales, and the values were

above the level of the minimum acceptable values discussed in Mellinger & Hanson (2017).

3.5.4 Confirmatory factor analysis

The CFA was conducted with lavaan version 0.6-4 (Rosseel 2012). For ordinal data, lavaan employs the WLSMV estimator that uses “diagonally weighted least squares (DWLS) to estimate the model parameters, but it will use the full weight matrix to compute robust standard errors, and a mean- and variance-adjusted test statistic” (Rosseel 2019: 29). The estimation method is suited for ordinal data and robust to violation of multivariate normality (Bryant & Jöreskog 2016).

The fit of the scale was assessed using Chi-square and the absolute and relative fit indices CFI, TLI, RMSEA, SRMR, and WRMR. With many of the goodness-of-fit measures already at acceptable levels, the fit of the concise model was considered reasonably good. However, based on modification indices, the model could be further improved by setting the unique variances between some items to covary. The modifications were consistent with the model of translation service provision.

3.6 Article V: Longitudinal multilevel modelling of self-efficacy responses

This section describes the methodology and data in the empirical study reported in Article V. The aim of the study was to use the concise self-efficacy scale developed in Article IV for measuring changes in translation students’ self-efficacy in a pedagogical translation company simulation. In a statistical analysis carried out with a longitudinal multilevel modelling method, the trajectories of the students’ self-efficacy in the two subdomains of managing and carrying out translation projects were contrasted with the students’ general self-efficacy.

3.6.1 The survey data

The data for the study were collected during a one-year-long MTW course at the University of Turku. In the spring term and autumn term 2020, on five occasions, the students were asked to respond to a questionnaire with 19 self-efficacy statements. The data were collected using the online survey tool Webropol, with the consent of the respondents. The participants were informed that the data would be treated anonymously and not used for determining course grades.

The items were answered on a 10-point Likert-type scale ranging from 1 (I strongly disagree) to 10 (I strongly agree). The statements were available both in English and Finnish. A separate “I don’t know” option was included to be used when

the meaning of the statement was not apparent to the respondent. In the statistical analysis, responses with “I don’t know” were treated as missing data.

Of the 26 course participants, 24 students took part in the survey at least two times. Altogether, 23 students responded to the survey at the beginning of the course, providing a baseline of their initial general self-efficacy. The responses of these 23 students were included in the statistical analysis. The median age of the respondents was 27 years. The age of the oldest respondent was 52, and the age of the youngest participant was 23. There were three male and 20 female respondents.

The resulting data set consists of 110 valid responses on general self-efficacy, 107 valid responses on project management self-efficacy, and 109 valid responses on translation-related self-efficacy, by 23 students at two or more time points.

3.6.2 The measures

General self-efficacy, project management self-efficacy, and translation-related self-efficacy were used as measures in the study. The mean scores of the subscale items were used to aggregate the measures. The internal reliability of the subscales was analysed with Cronbach’s alpha statistic.

The Generalized Self-Efficacy Scale by Schwarzer & Jerusalem (1995) was used as a measure of general self-efficacy. The project management subscale developed in Article IV was used to measure project management self-efficacy. As a departure from the concise model reported in Article IV, an additional item on post-editing was included in the translation-related self-efficacy subscale, and five items were used to measure translation-related self-efficacy. As documented in Article III, post-editing was considered to have gained an established status as a translation-related skill in the translator education programme at the University of Turku and in the MTW.

To model growth in the above three dependent variables, the square root of the variable TIME, centred at the beginning of the MTW, was used as the independent variable. This transformation of the time variable corrects nonlinearity in longitudinal data (see, for example, Singer & Willett 2003: 207–212). When presenting the final results in a graph, TIME was transformed back to its original form by taking a square of TIME, rendering a slightly curved trajectory.

A dichotomous independent variable for initial general self-efficacy (coded as INITGESE) was constructed by dividing the 23 responses on general self-efficacy at time point 0 into two groups, using the median (6.6) as the cut-off point. The 11 responses below the median were labelled Low INITGESE and assigned the value 0, while the 12 responses at or above the median were labelled High INITGESE and assigned the value 1. INITGESE was used as an individual-related time-invariant

variable and only for modelling project management self-efficacy and translation-related self-efficacy.

3.6.3 Longitudinal multilevel modelling

Longitudinal multilevel modelling (MLM) was used to analyse the change in the self-efficacy categories. These models are hierarchical, with two or more nested levels, and measurements are nested within individuals. For discussions of the method and instructions on its use, see, for example, Singer & Willett (2003) and West et al. (2014).

The study used a “step-up strategy” for model building (West et al. 2014: 40), starting with an unconditional means-only level-1 model, adding a slope to arrive at an unconditional growth model, and, for the domain-specific models, finally introducing the time-invariant variable INITGESE as a level-2 condition. While the primary interest lay in the fixed effects that describe average trajectories, random effects were studied to gauge the amount of individual variation around the trajectories.

The modelling steps were conducted using the SPSS Statistics 27 software and the R package nlme (Pinheiro et al. 2020), with maximum-likelihood estimation. Intra-class correlations, which describe the proportion of the between-individuals variance of the total variance, were calculated for the unconditional means models in each self-efficacy category. Finally, a comparison of three goodness-of-fit statistics (see, for example, Singer & Willett 2003), Deviance, the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) was used to evaluate the fit of the models.

4 Results

This chapter brings together the main results of the dissertation. The principal findings in the articles are presented in the following four sections named after the research questions introduced in Section 1.1. The results summarised in Section 4.1 (RQ1) and Section 4.2 (RQ2) lay the ground for answering the question *What to measure?* Next, Section 4.3 (RQ3) offers an answer to the question *How to measure?*, while Section 4.4 (RQ4) provides a description of the pedagogical impact of a translation company simulation course as reflected in students' domain-specific and general self-efficacy.

In sum, RQ1 identifies the objects of measurement, RQ2 models the objects, RQ3 measures them, and RQ4 applies the methods developed in the dissertation to describing change in self-efficacy in a translation company simulation.

4.1 RQ1: Which abilities are relevant objects of measurement in translation company simulations?

Article I lays out the context of the investigations in this dissertation and presents the principles and practices of translation company simulation pedagogy. Within this framework, it introduces two central concepts that help to structure the studies in the subsequent articles and to define relevant objects of measurement: the concept of a translating organisation as the setting of business processes in translation production and the concept of translation workflow as the central organising principle of translation projects.

As a preliminary answer to RQ1, Article I offers an expansive view of the objectives and objects of a translation company simulation, both regarding the abilities that are developed and the agents that are conceptualised as targets of pedagogical measures. The concept of professional roles and roles in the translation workflow is used to define relevant objects to develop and measure in a translation company simulation. The relevant roles are identified as leader, manager, translator, terminologist, reviewer, proofreader, and IT support. While the pedagogical focus in traditional translator education lies primarily on the translation ability of an individual translator, a translation company simulation thus targets a whole range of roles and tasks within a translating organisation. Translation company

simulations also maintain a dual focus on the agents in the simulation, as the aim is to develop both the abilities of individual students and the capabilities of the student companies.

To identify a set of relevant abilities to be developed and measured in translation company simulations, Article I presents four different contexts as central:

- the translation process of the individual translator;
- the production process of a translation team;
- the business process of the translation service organisation; and
- the generic workplace context of dealing with tasks, people, teams, and organisations.

These contexts are then used to answer RQ2 by building an ad hoc competence model (Section 4.2.2).

Article II brings together two central concepts introduced in Article I as it conceptualises the production process of a translation team as translation project workflow, which is one of the business processes of a translating organisation. It introduces the concept of activity, or task, to identify objects of measurement in translation company simulations—for example, individual tasks in the translation project workflow. Building on the concept of traditional TEP workflow, it introduces the ISO 17100 standard as a blueprint for the translation workflow in translation company simulations.

The ISO 17100 standard offers three major ways to identify relevant objects in the translation workflow: by task role (project manager, translator, reviser, reviewer, proofreader), by production stage (pre-production, production, and post-production), and by activity (translation, check, revision, review, proofreading, and final verification and release). All three points of view are utilised in the model of translation service provision presented in Section 4.2.2.

In sum, relevant objects of measurement in translation company simulations include the workflow tasks translation, revision, proofreading, post-editing, and project management. Additionally, some tasks associated with company-wide business processes can also be considered relevant. Such tasks include strategic tasks associated with leading the organisation and financial tasks, as well as support tasks such as terminology work and tasks associated with translation technology.

4.2 RQ2: How can the abilities and their underlying requirements be described and modelled?

While it was not possible to cover the whole broad span of workflow activities and describe their underlying requirements within the scope of this dissertation, the

findings of the content analysis in Article II illustrate one aspect of the complex structure underlying project management competence: declarative knowledge about translation project workflow. On the other hand, the findings of the conceptual analysis in Article III provide a meta-level model that captures relevant features in revision and post-editing and, importantly, illustrates the conceptual overlap in competence models that describe the activities. Together, the findings in Article II and Article III illustrate some practical and conceptual difficulties in using the concept of competence for monitoring student progress in translation company simulations. As a result, the focus was shifted from the concept of competence to the concept of self-efficacy. Finally, the model of translation service provision self-efficacy in Article IV provides a general framework for understanding translation activities and roles in service provision and translation production workflow in the context of the business processes of a translating organisation.

4.2.1 Describing declarative knowledge about workflow

Article II develops a method for describing translation workflow conceptions and provides empirical insight into students' declarative knowledge of translation workflow. Knowledge about workflow is a critical component in project management competence but also a prerequisite for any translation professional's ability to function effectively within a translating organisation.

Article II presents empirical findings on two aspects of students' workflow conceptions. First, it describes the collective workflow conception of the whole student group in a pre-post comparison, based on the students' descriptions of translation workflow before and after a translation company simulation. The quantitative results showed that the students' awareness of activities in all three main workflow stages increased during the MTW.

Second, Article II identifies two workflow conception profiles that reflect, on the one hand, a student's focus on translation-related tasks, and on the other hand, a focus on tasks relevant for the project manager role. The profiles were named a 'translation specialist conception' and a 'project manager conception'. The project manager conception was further divided into two sub-profiles, one that focused solely on execution tasks and one that also included administrative tasks. **Figure 1** shows workflow task clusters based on pre- and post-MTW mention values: 1) high pre- and post-MTW values (cluster 1), 2) low pre-MTW and high post-MTW values (cluster 2), and 3) low pre- and post-MTW values (cluster 3). The codes and activity designations in the figure refer to the ISO 17100 standard. The tasks in cluster 1 form the core of workflow conceptions in the MTW student group: before the MTW, the tasks in cluster 1 were mentioned by 85% of the students, and after the MTW, they were mentioned by all students. One explanation for the apparent

centrality of these workflow activities is that they are tasks with which any agent in the translation process is likely to be involved, either as a translation professional or as a project manager. Thus, the activities in cluster 1 also belong to the task profile of a project manager, but this task profile also includes the tasks in the clusters 2 and 3.

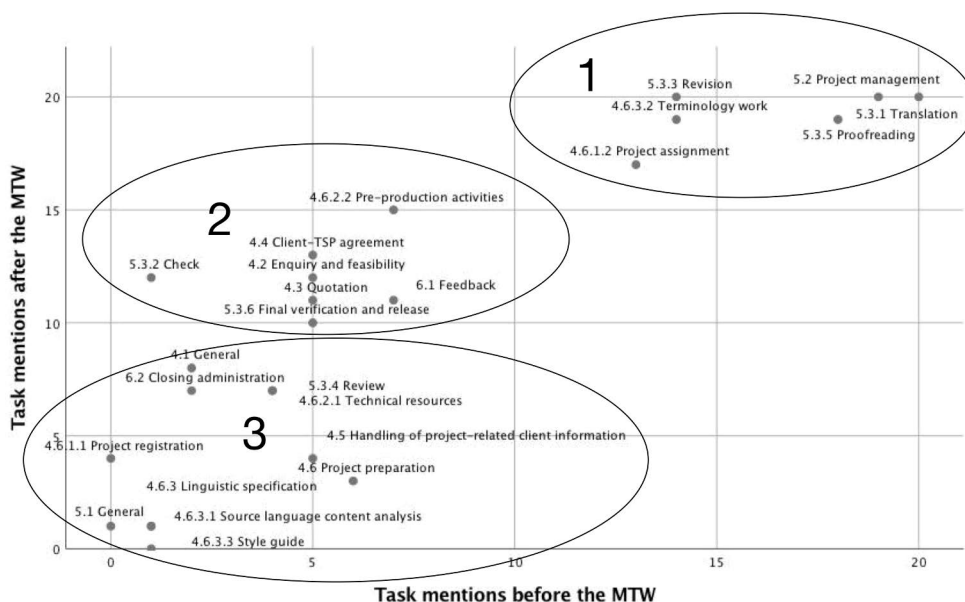


Figure 1. Workflow task clusters based on pre- and post-MTW mention values.

The results indicated that after the MTW all students could be associated with the translation specialist workflow conception profile. In addition to this specialist profile, a number of students developed another workflow conception profile that included tasks that are relevant to the work of a project manager.

4.2.2 Modelling conceptual overlap in competence models

Through conceptual analysis, Article III investigates the relationships between revision competence and post-editing competence. It also places some of the abilities addressed in translation company simulations into the broader context of a translator education curriculum.

To investigate the underlying requirements for the ability to revise translations and the ability to post-edit machine translation output, Article III creates a meta-level model of revision and post-editing competence for the purposes of syllabus and curriculum design. It identifies categories that accommodate the commonalities and

specific features of revision and post-editing competence: strategic subcompetences; interpersonal, attitudinal or psychophysiological subcompetences; and instrumental subcompetences.

In the category of strategic subcompetences, the subcompetences of detecting, identifying and evaluating errors—and the search for information to be able to make these decisions—are identified as subcompetences that are common to both revision and post-editing. As for the specific subcompetences that separate the activities of revision and post-editing, revision is understood to rely on knowledge about revision and aspects of the profession as well as knowledge of typical human translation errors. Post-editing, again, is seen to rely on knowledge about machine translation systems and their capabilities and knowledge about typical errors in machine translation output.

In the category of interpersonal, attitudinal or psychophysiological subcompetences, both revision and post-editing are understood to be characterised by a revising frame of mind as opposed to retranslating. On the other hand, revision and post-editing are seen to differ in their approach to corrections. While revision is characterised by communication with the translator and justification of corrections and feedback, one of the defining features of post-editing in this respect is the need to apply the abstract principles of a required post-editing level.

Finally, in the category of instrumental subcompetences, the ability to use appropriate CAT tools is seen as common to both revision and post-editing. As for the differences, while there are some revision-specific tools that a reviser needs to master, post-editing potentially includes a wider set of technological skills that range from the use of tools specific to machine translation and post-editing to tool management and maintenance, application of controlled language, pre-editing, and even programming.

In sum, conceptual overlap was identified in all three categories of the meta-level model for revision and post-editing competence models. Additionally, with further technological advances in MT technology, it was considered likely that the actual textual operations in translation, revision, and post-editing will increasingly resemble each other, bringing the competence models for the activities ever closer together.

4.2.3 Modelling competence and self-efficacy

Based on four relevant contexts in translation company simulation—individual translation process, team production process, business process of the translation organisation, and generic workplace context—Article I presents a model of the competences that translation students are likely to need when entering the translation profession:

- translation competence;
- translator competence;
- entrepreneurial competence; and
- transferable competences.

This categorisation of competences served as the foundation for a survey questionnaire that reflects, on the one hand, the structure of translation workflow, and on the other hand, the contexts where the abilities are used. For the competences, two types of knowledge were considered relevant: declarative knowledge and procedural knowledge. These aspects were reflected in the wording of the statements in the questionnaire: “I know how to”, to elicit responses on declarative knowledge and “I am able to”, to elicit responses on procedural knowledge.

Article IV returns to the topic of identifying the objects to measure and designs a model of translation service provision activities based on the translation service provision standard ISO 17100 and a business process model of translation service (**Figure 2**). The model is an abstract description of the production system, the production process, and the operating agents. It is a conglomerate of three distinct perspectives: a functional representation of the translating organisation as a system, a linear representation of the activities in the workflow of a translation project, and a task-role based representation of the agents and activities in the translation service provision process.

The model consists of three vertical layers that represent the systemic categories of strategic and operational processes, core processes, and support processes. The layer of strategic processes includes strategic and operative planning and financial controlling. The layer of core processes is divided horizontally into the three sequential stages of pre-production activities, translation production activities, and post-production activities, supplemented with a general category that comprises activities taking place during all three stages. The arrow-formed shape of the core processes signifies the linearity of translation processes, as opposed to the cyclical nature of strategic and support processes. Finally, the layer of support processes consists of terminology tasks and technology-related tasks.

A comparison of the models in Articles I and IV reveals some crucial differences. The model of competence in Article I has a primary focus on the individual

translation professional, while the model in Article IV combines the view of the individual professional with a comprehensive view of the translating organisation. A second critical difference between the models in Article I and Article IV lies in the theoretical framework that is applied to define the object of measurement. The model in Article I is conceptualised as competence, while the model designed in Article IV is conceptualised as self-efficacy.

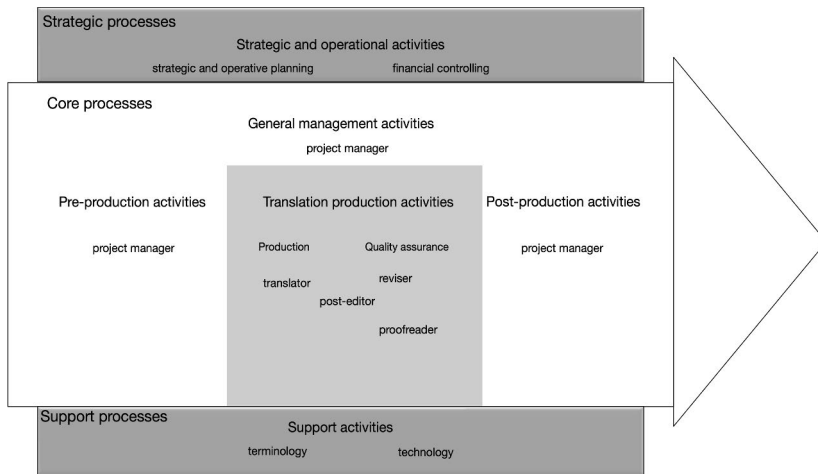


Figure 2. A model of translation service provision. Modified from Article IV.

The decision to shift the conceptual framework of the study from competence to self-efficacy was influenced by the empirical investigation of competences in Article II and the conceptual analysis of competence models in Article III. While competence testing by external evaluators remains an important part of translator education in general, in the context of translation company simulations it entails some practical and conceptual problems. As a practical problem, task-based external testing of competence is a time-consuming exercise likely to interrupt the flow of the simulation. As a conceptual problem, multicomponent competence models focus on individual workflow activities and are likely to include subcompetences that are shared with other competence models for neighbouring activities in the workflow. This conceptual overlap implies problems for the operationalisation of task-based tests that focus on more than one workflow activity. Finally, as an added conceptual problem for separate competence models for each workflow activity, continuing advances in MT technology and improvements in the user interfaces of digital translation environments have already brought—and will continue to bring—translation, revision, and post-editing ever closer together when seen as actual textual operations

4.3 RQ3: How can changes in mastering the abilities be measured?

As one of the results of this dissertation, Article II presented a method for describing change in students' declarative knowledge about translation workflow. However, content analysis of students' essays requires a time-consuming process of qualitative analysis and—to be reliable—two or more assessors. As a method, it was considered too cumbersome and narrow in scope to be used to monitor student progress in translation company simulations.

Article IV set out to design a survey-based method for quickly and unintrusively measuring student progress. To avoid methodological problems connected with self-assessment of competence, the concept of self-efficacy was introduced as a complementary measure. In a manner not accessible to external evaluations of competence, self-efficacy opens a view into subjective aspects of an individual's capability to perform tasks. As a practical tool, a concise scale of translation service provision self-efficacy was developed using exploratory and confirmatory factor analysis.

The concise model for measuring translation provision self-efficacy (**Figure 3**) comprises two complementary dimensions, or subdomains of translation service provision—translation management and translation production—and eight survey items. Four indicator variables manifest translation management self-efficacy (PM): a comprehensive understanding of the operations of a translating organization (STRATOP1), ability to lead (STRATOP2), ability to manage translation projects (CORGEN1), and ability to keep account of finances (CORPOS2). Translation production self-efficacy (TR) is measured through the indicator variables translation (CORPRO1), revision (CORPRO3), proofreading (CORPRO4), and quality assessment (CORPRO5).

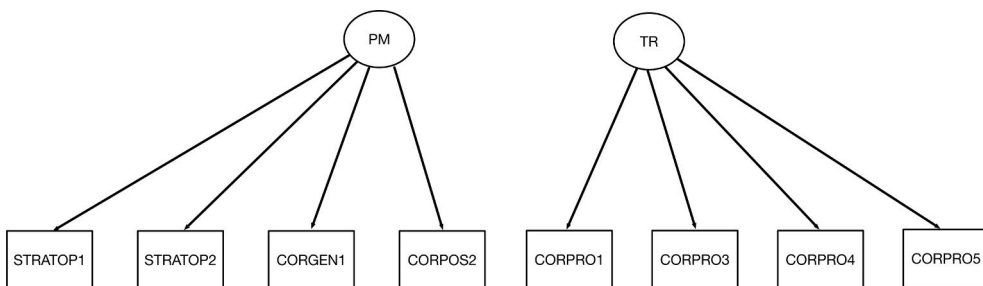


Figure 3. Concise model for measuring translation provision self-efficacy. Modified from Article IV.

The statements used to elicit responses for these variables in a questionnaire are the following:

- STRATOP1: I would be able to set up a translation organization (e.g., a translation company/ department).
- STRATOP2: I am able to lead a translation organization (e.g., a translation company/department).
- CORGEN1: I am able to work as a project manager in translation projects.
- CORPOS2: I am able to keep account of the receivables and payables of a translation company.
- CORPRO1: I am able to work as a translator in a translation project.
- CORPRO3: I am able to revise translations in a translation project.
- CORPRO4: I am able to work as a proofreader in a translation project.
- CORPRO5: I am able to assess the quality of a translated text.

Article V tested the survey-based method for monitoring self-efficacy and complemented it with an analysis method that utilises longitudinal multilevel modelling. Article V identified and attempted to remedy some potential issues in the concise survey instrument developed in Article IV. Supported by the view of post-editing as a central translation-related activity with a strong presence in the MTW and in the translator education curriculum at the University of Turku, as presented in Article III, an item on post-editing was included in the survey instrument. In addition, as a potential ceiling effect for the item CORPRO1 was suspected in Article IV, the response scale of the survey was expanded to include ten steps. Finally, the response option “I don’t know” was treated as missing data instead of indication of low self-efficacy.

While the other changes to the scale were considered successful, the potential ceiling effect for CORPRO1 appeared to persist in the data of Article V. Although it would be preferable to keep the self-efficacy scale as concise as possible, it may be necessary to adjust the magnitude (task difficulty) and generality of the translation-related subscale by adding translation-related items that represent different grades of difficulty and levels of specificity.

In the analysis, the results for the concise scale of domain-specific self-efficacy were contrasted with the results of a scale for general self-efficacy. The comparison showed that the domain-specific measures for translation-related self-efficacy and project management self-efficacy are able to tap into more detailed information about students’ development than a global self-efficacy measure. While a global self-efficacy measure would be more versatile and convenient to use as there is no need

to tailor it to fit a specific context, it cannot replace domain-specific self-efficacy measures.

In sum, the survey method that is specifically tailored for translation company simulations was found to be better suited to monitoring student progress than the method based on content analysis of students' essays. Further, domain-specific self-efficacy scales were found to be more sensitive for describing student progress than a general self-efficacy scale.

4.4 RQ4: What do measurements of self-efficacy tell about the effects of translation company simulations?

In Article II, a pre-post analysis of students' workflow conceptions—an element in their project management and translation professional competence—showed a progression in the overall workflow concept of the student group from an initial rudimentary concept with few workflow task mentions towards a more detailed concept that is closer to the translation industry concept represented by the ISO 17100. The result can be seen as an indication that simulated translation company pedagogy may help bridge the competence gap between academia and the translation industry.

In Article V, a statistical analysis of students' self-efficacy was carried out using longitudinal multilevel modelling methods to describe the trajectories of the students' self-efficacy in project management and translation-related tasks. The students' self-efficacy in these two subdomains was then contrasted with their general self-efficacy (**Figure 4**).

The students' general self-efficacy, project management self-efficacy, and translation-related self-efficacy increased during the MTW. As the study did not use an experimental research design with a control group, no claims can be made of a direct causal relationship between the MTW experience and self-efficacy development.

General self-efficacy (GE SE) experienced the smallest growth. This was to be expected, as a person's general self-efficacy is continuously put to the test in everyday situations and is thus a relatively stable quality. While this result suggests that exposure to translation company simulation pedagogy may have some potential to raise the level of general self-efficacy, an interesting result in itself, the most valuable use of the general self-efficacy measure is as a baseline for comparisons with the domain-specific self-efficacy categories. If domain-specific self-efficacy grows at a faster rate than general self-efficacy, it can be assumed that at least a part of this improvement is associated with the MTW experience (the other part being due to the impact of other courses in the programme, working-life experience, or other influences).

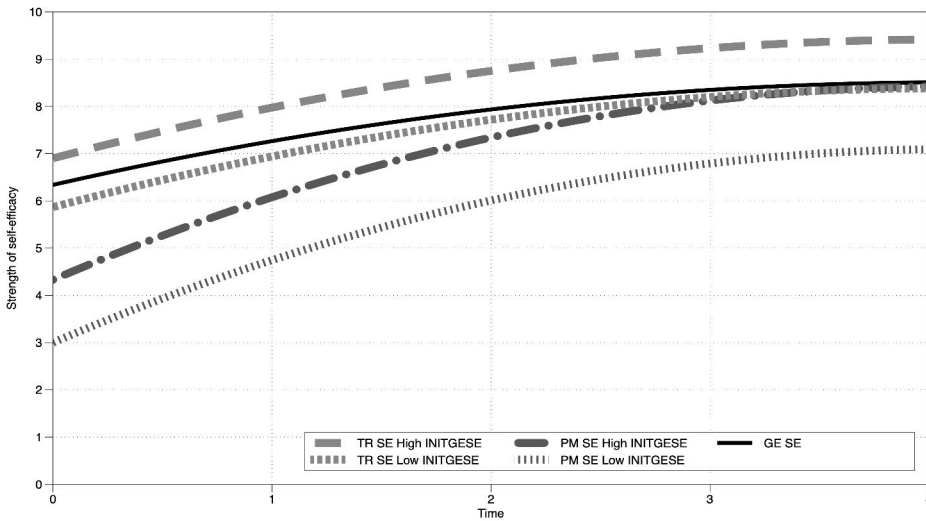


Figure 4. Change trajectories of self-efficacy in the categories general self-efficacy, project management self-efficacy, and translation-related self-efficacy. Modified from Article V.

Translation-related self-efficacy (TR SE) reached the highest level of all three self-efficacy categories. While the students’ familiarity from earlier courses with the domain of translation-related activities explains the relatively high initial level, the results show that even this high level can rise during the MTW. Self-efficacy for project management (PM SE), the domain that the students were likely to be least familiar with at the beginning of the MTW, showed the most considerable improvement. This suggests that MTW pedagogy can successfully introduce students to project management tasks and enhance their self-efficacy in this domain.

A higher level of initial general self-efficacy (High INITGESE) was associated with a higher initial level of project management self-efficacy and translation-related self-efficacy. This result supports the assumption that a higher level of general self-efficacy enhances one’s assessment of the likelihood of success regardless of domain. On the other hand, no significant relationship was found between the initial level of general self-efficacy and the growth rate in either of the domain-specific self-efficacy categories.

5 Discussion

This final chapter of the dissertation discusses the study's theoretical, methodological and practical contributions and limitations. Based on this evaluation, Section 5.3 suggests some ideas for future directions of research.

This dissertation aimed to develop a method for monitoring student progress in translation company simulations. It addressed the following research questions:

- RQ1: Which abilities are relevant objects of measurement in translation company simulations?
- RQ2: How can these abilities and their underlying requirements be described and modelled?
- RQ3: How can changes in mastering these abilities be measured?
- RQ4: What do measurements of self-efficacy tell about the effects of translation company simulations?

The research questions RQ1 and RQ2 that relate primarily to theoretical matters are discussed in Section 5.1. The study's central research question, RQ3, relates to methodology. Section 5.2 evaluates the contribution to RQ3 and also addresses RQ4, which highlights the practical contribution of translation company simulation pedagogy. The limitations of the study are addressed together with the discussion of the contributions.

5.1 Theoretical contribution

Much of the theoretical contribution of this dissertation culminates in the model of translation service provision (**Figure 2**) presented in Article IV. The model combines a business process model of translation company operations and a translation workflow model of the linear production process in a translation project, summarising the answer to RQ1. With the model as a foundation, this dissertation makes four theoretical contributions: First, it helps expand the customary view on activities that are considered relevant objects of learning in translation courses. Second, it widens the view on the agents in translation pedagogy to embrace both the individual student and the collective translating organisation operated by the students. Third, in

addressing RQ2, it challenges—supported by the results of conceptual analysis of competence models in Article III—the structure of multicomponent competence models for individual translation workflow activities by highlighting commonalities between the underlying subcompetences in the competence models for revision and post-editing. Fourth, as part of the answer to RQ3, it proposes the construct of self-efficacy as a complement to the construct of competence when measuring student progress in translation company simulations.

The model of translation service provision manifests an overarching view on activities that are relevant learning objectives and thus objects of measurement in translation company simulation courses. Traditional translation courses normally restrict their scope to the act of translating and define their learning objectives from the perspective of an individual translator. In contrast, the model presented here answers RQ1 by introducing a theoretical framework in which the range of activities spans the whole translation workflow. The framework also includes tasks that are necessary for the overall operation of the translating organisation.

The translation company simulation pedagogy advocated here embraces the “translator studies” approach sketched by Chesterman (2009; see also O'Brien & Saldanha 2014: 150), where the focus is more on the translator and less on translations as texts. However, translation company simulations lay stress on both the development of individual students and their collective endeavour. Such an approach can draw on research on the sociology of the translating process that “has to do with the study of the phases of the translation event: translation practices and working procedures, quality control procedures and the revision process, co-operation in team translation, multiple drafting, relations with other agents including the client, and the like” (Chesterman 2009: 17; see also Risku et al. 2013b: 170). However, the expanded view on workflow that is adopted here challenges the individualistic focus inherent in competence models representing the cognitive activities of an individual translation professional, thus joining the critique of the concept of *the* translator formulated by Risku (2014: 340–341). This widening of the scope highlights the limits of a narrowly-defined translator studies approach that is interested primarily in the dyadic relationships between an individual translator and the other participants of the translation event.

The wide-reaching scope of tasks in the workflow of a translation project and in the business processes of a translating organisation has interesting implications for the modelling of the underlying competence requirements for individual activities, a topic that falls under RQ2. When the activities are integrated as a sequentially arranged set of workflow tasks, conceptual boundaries between competence models representing the individual tasks become blurred. When comparing the underlying competence requirements of the activities, as was done in Article III for revision and post-editing, it becomes evident that the competence models share some

subcompetences. As a result, the uniqueness of the models as independent representations of task demands can be challenged. This is especially true for the activities translation, revision, and post-editing when they are performed in digital environments. On a practical level, a translation task in a CAT tool may include segments translated from scratch, segments revised from TM matches, and segments of MT output that are post-edited, thus combining three competences in an activity performed by one translation professional and blurring the traditional distinction between machine translation, post-editing, revision, and translation (see, for example, Bundgaard et al. 2016; Christensen et al. 2017; Robert 2018; Balashov 2020). Seen as textual operations, there may not be much difference between the activities, and on the level of mental operations, the textual operations are likely to tap into similar subcompetences.

While the most eye-catching commonalities in the underlying competence requirements are likely to be found between translation, revision, and post-editing, some shared subcompetences may be found elsewhere, too—for example, between translation-related tasks and project management tasks. All participants in a translation project will need declarative knowledge about the translation workflow to be able to understand their role in the cooperation. Nevertheless, the empirical results in Article II and Article IV suggest that in the minds of the students, as reflected by both their declarative knowledge and their self-efficacy beliefs, there is a relatively clear demarcation between translation-related tasks, on the one hand, and project management tasks, on the other. Thus, in the minds of students, the task profiles of a project-management professional and translation professional remain separate. Further competence-oriented studies that analyse the individual subcompetences associated with each task profile are needed to establish to what extent the difference between the profiles is a question of perception rather than based on real differences in the underlying requirements of the tasks.

The conceptual overlap in the multicomponent competence models suggested that the foundation provided by a set of domain-specific competence models covering a wider span of the workflow may not provide a solid basis for a comprehensive instrument that measures student progress. Based on its broad scope, the EMT Competence Framework (European Commission 2017), which incorporates the key competence areas and skills required of future translation graduates, could provide a comprehensive alternative to a combination of separate competence models. The EMT Competence Framework covers all significant activities that need to be attended to in a translating organisation and in the workflow of a translation project. However, as the framework is structured along loosely defined competence areas, it lacks a clear conceptual structure that would link the individual competences. In addition, the framework is not straightforward to operationalise, as the wording in the descriptions of individual competence items is relatively abstract, making it

potentially difficult for respondents to connect the items to their actual abilities and envision how they would perform in specific situations.

To avoid the pitfalls of the competence concept outlined above, the construct of self-efficacy was used instead to design an instrument for measuring student progress in translation workflow tasks. The choice of self-efficacy as a measure does not imply that competence models for individual workflow activities would not be useful in translation research, only that the narrow scope of individual models and the conceptual overlap between models for different activities make them less suitable for comprehensive measurements in translation company simulation pedagogy. What is more, even if there were a competence model with a unified conceptual structure that covers the whole translation workflow, the operationalisation of the model in the context of a translation company simulation would face some practical challenges. While it is possible to perform self-assessments of competence, the competence construct is best used as an objective or intersubjective measure. Thus, competence should preferably be assessed by external evaluators using a task-based testing regimen. Such task-based testing relies on a set of pre-defined criteria and a well-defined conceptual model. However, task-based testing by external evaluators is likely to disrupt the flow of a translation company simulation that relies on the fiction that the students are working in an actual translation company and carrying out real translation projects.

There is an interesting dynamic between the constructs of self-efficacy and competence, as competences—such as the respondents understand them in their own specific context—are objects of self-efficacy beliefs. The situated framing of competences in the self-efficacy framework means that they are not understood as abstract concepts but as actual abilities of the respondent, without immediate recourse to a theoretical model of competence. In this respect, the monitoring of ability in a pedagogical environment differs from empirical research on competence, which relies on well-defined conceptual structures. In short, while competence assessments are primarily anchored to a conceptual model that relates to a theory of the functioning of a translation professional's mind, self-efficacy assessments are anchored to both a set of specific situated activities, as the respondent understands them, and a conceptual model representing the relevant features of a similar set of activities in working-life contexts. Thus, in this dissertation, self-efficacy is primarily defined based on the respondents' understanding of the activities in their own situational context. However, to have some degree of generalisability of results of self-efficacy data, the self-efficacy survey response for an activity is also tied to a theoretical model that accommodates the activity.

One further theoretically interesting and potentially useful aspect of the self-efficacy construct is its adaptability for measuring collective efficacy. If student companies are considered as agents, it would be reasonable to evaluate their collective

efficacy. The results of such analyses may prove useful, for example, when planning pedagogical interventions and evaluating the role of student companies as unique learning environments. Nevertheless, due to limitations of scope, collective efficacy was not studied in this dissertation.

5.2 Methodological contribution

The methodological contribution of this dissertation is twofold. First, in a mixed-method approach, it combines several qualitative and quantitative methods to explore various aspects of competence and self-efficacy in translation company simulation pedagogy. Some of these methods are used relatively seldom in research on translation pedagogy: pre-post comparison of self-assessed competence, content analysis of student essays, conceptual analysis of competence models, exploratory and confirmatory factor analysis, and longitudinal multilevel modelling. Second, as an answer to RQ3, the dissertation develops a quantitative survey-based method for monitoring and analysing both the progress of individual students and of student groups through the construct of translation service provision self-efficacy.

The following two sections evaluate the mixed-method approach and the design process of the survey-based monitoring tool. When discussing the survey instrument, special attention is paid to assessing the methods of factor analysis and longitudinal multilevel modelling, as they were instrumental in designing the tool.

5.2.1 Assessment of the mixed-method approach

When I combined different methods of empirical analysis, there was a progression from a simple quantitative pre-post comparison of self-assessed competence through qualitative deep dives into some relatively narrow aspects of competence and the structure of competence models. The progression culminated in using quantitative factor analytic methods of scale development and, finally, quantitative longitudinal modelling to trace the trajectories of change in students' self-efficacy beliefs.

Greene et al. (1989) identify the following five purposes for a mixed-method approach: triangulation, complementarity, development, initiation, and expansion. In the research design of this dissertation, the mixed-method approach mainly served the purpose of development, defined as “the sequential use of qualitative and quantitative methods, where the first method is used to help inform the development of the second” (Greene et al. 1989: 260).

Thus, the preliminary quantitative survey in Article I served as a prototype for the quantitative survey design in Article IV, and the survey questionnaire of Article IV was used in Article V for a longitudinal modelling study. Further, the qualitative

content analysis study in Article II and the conceptual analysis in Article III supported the decisions made in scale design in Article IV.

Apart from the development purpose, the mixed-method setup also served the purpose of complementarity, although the results in this respect remain tentative. According to Greene et al. (1989: 258),

[i]n a complementarity mixed-method study, qualitative and quantitative methods are used to measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon.

Some form of complementarity can be observed in the connection between the results of the empirical studies in Article II and Article IV. While Article IV was a methodological study that designed a survey instrument, its results from exploratory factor analysis reveal something about how translation students view the requirements and the relative difficulty of various translation service provision tasks. Their responses to the self-efficacy statements reflect their confidence in performing project management and translation-related tasks. The factor analysis identified two separate dimensions in the translation service provision activities: project management self-efficacy and translation-related self-efficacy. Interestingly, the qualitative analysis of student essays on translation workflow in Article II uncovered a comparable distinction between students' competence profiles based on their knowledge about translation workflow. While the workflow conception of some students mainly covered knowledge about translation-related workflow steps—that is, activities that are central from a translation professionals' viewpoint—others seemed to perceive the workflow from the perspective of a project manager: as a combination of project management and translation-related activities. Thus, groups with high and low levels of self-efficacy for project management tasks were identified in the quantitative survey study, and groups of students with high and low levels of project management declarative competence were identified in the qualitative study of essay data. As a caveat, it should be noted, however, that the respondents in the studies came from different cohorts of translation company simulation courses. Additionally, the data for Article II came from only one translator education programme, while the data for Article IV came from several programmes. Based on these results alone, it is impossible to claim empirical proof of a connection between competence and self-efficacy. However, supposing that there are similarities in self-efficacy and declarative competence between the cohorts, based on a similar educational background, the potentially isomorphic relationship between the self-efficacy results and the competence-based results gives rise to an interesting perspective for future studies on the relationship between self-efficacy and competence.

5.2.2 Assessment of the scale design and testing process

The primary methodological contribution of the dissertation is the concise scale of translation service provision self-efficacy that was designed in Article IV employing exploratory and confirmatory factor analysis and tested in Article V using longitudinal multilevel modelling.

By using the scale, it is possible to monitor students' level of self-efficacy in two subdomains of translation service provision: in project management and in translation-related activities such as translation, post-editing, revision, proofreading, and translation quality assessment. As the scale consists of only eight or nine items, depending on the decision whether to include post-editing in the scale, it is a light-weight instrument that can be answered in a few minutes as part of the students' work in their simulated translation companies. Thanks to its concise form, the scale can be easily combined with other research instruments, as was done in Article V, where a general self-efficacy scale was included in the survey.

While the process of scale design and testing can be considered successful, some methodological issues in the design process and potential weaknesses in the scale must be acknowledged as limitations in this study. They include issues with the consistency and balancing of the data that were used for the factor analyses and some indications of a potential ceiling effect in one survey item for the activity 'translation' in Article IV and in Article V.

In the scale design, some compromises were made regarding the consistency and balancing of the data to attain a data set that was large enough for both exploratory and confirmatory factor analysis. To avoid overfitting the CFA model by using the same data for both EFA and CFA, the data set needed to be randomly split into two parts, with as even a number of pre- and post-responses as possible. Such a large-scale data set could only be acquired in an international study that included translator education programmes with a translation company simulation course. As the data were collected in connection with a study on interpersonal skills by members of the INSTB network, the responses came from a population with experience of a translator education curriculum and a translation company simulation course. Through the participating programmes' membership in the INSTB network and—for many programmes—membership in the EMT network, it can be assumed that there was a degree of similarity in the curricula and the simulation course syllabus that rendered the respondents' study background comparable. Nevertheless, it is likely that there were differences regarding the depth of the respondents' practical experience with some relatively new developments in the field of translation, for example, in the integration of post-editing in the courses preceding the translation company simulation. Such differences may have affected the results in the factor analysis for the post-editing item that was dropped from the scale in Article IV, despite it being close to the cut-off point. The post-editing item was

included in the scale in Article V, as the translation students at the University of Turku, the population in the study, were known to have some in-depth practical experience with post-editing tasks.

As for the balancing of the data, the reliability of the results in the factor analyses may have been affected by the slightly imbalanced design of the data sets collected before and after a translation company simulation. To attain pre-post data sets that were similar in size, some responses were included where the respondent had answered only one of the surveys. Thus, while the number of pre- and post-responses was roughly the same, not all pre-post responses came from the same respondents. However, as no pre-post comparisons were made, this was not deemed a problem. For scale development, it was considered important to simulate the use case where the survey was administered at the beginning and the end of the translation company simulation. For this purpose, it was considered necessary to create a sample where one half of the respondents were only somewhat familiar with the processes of translation service provision, while the other half already had some practical experience in the domain.

For the item on the activity of translation, a potential ceiling effect was suspected in the empirical analysis for both Article IV and Article V. In Article IV, a five-point scale was used to measure self-efficacy. To remedy the problem with the ceiling effect, in Article V the scale was widened to span from 1 to 10. Nevertheless, there was some indication that the problem with the ceiling effect persisted, possibly because the level of students' experience with translation is much higher than their experience with the other activities in the translation workflow. As a next step in avoiding ceiling effects, as recommended by Bandura (2006), it may be advisable to add gradations of difficulty in the wording of the items when measuring self-efficacy for translation and translation-related tasks, even if it means that the activity will then need to be measured using more than one item.

Despite the potential weaknesses in the data set and the lack of gradation of difficulty in the translation-related items, the scale of translation service provision self-efficacy can already in its present form be seen as a functioning research instrument. It can be further developed by testing it with different sets of data and adding items that create gradations of difficulty, especially for activities that are likely to reach the ceiling of the scale during the one-year-long translation company simulation. Scale development should be understood as an ongoing process where the scale is adapted to reflect changes in the educational background of the population, for example, due to changes in the curriculum. Already in Article V this was evidenced by the need to add post-editing to the scale. Far from being an unchanging abstract model, the scale is to be understood in relation to the studied population.

In Article V, the final scale was tested using longitudinal multilevel modelling. Compared to pre-post analysis, the method used in Article I, longitudinal multilevel

modelling allows tracing trajectories of change in the respondents' self-efficacy. While comparing the group means at two time points can only show if there has been a significant change in self-efficacy between these two time points, longitudinal multilevel modelling provides more possibilities for the analysis, as the number of time points is unlimited. In addition, the multilevel modelling method makes it possible to study the factors that influence change. For example, it is possible to include predictors that can be used to test various hypotheses. Such hypotheses can concern, for example, the influence of general self-efficacy on domain-specific self-efficacy, as was done in Article V, or the influence of student companies as learning environments.

One of the benefits of the multilevel modelling method is its robustness regarding missing observations. When using survey instruments for longitudinal studies, all respondents often do not answer the survey every time it is administered. As MLM does not require a fully balanced design, the reliability of the study is not affected by this.

The empirical results in Article V were encouraging as they show that students' self-efficacy in all domain-specific activities improved during the one-year-long course. To put this result in perspective, it should be noted that the study in Article V had no experimental design. As such, the results cannot be used for ascribing causality to the translation company simulation experience.

In summary, the research question RQ3 was successfully answered by designing the translation service provision self-efficacy scale and testing it in a translation company simulation. The answer to RQ4 indicated that translation company simulation pedagogy has potential to improve students' self-efficacy, not only with respect to their domain-specific activities but also their general self-efficacy.

5.3 Recommendations for further research

While the principal research objective—the development of the monitoring instrument—was accomplished, intriguing aspects of the supporting research questions were only touched on to the degree necessary to advance the study towards the primary goal. The following recommendations for further studies include some research ideas that spring from the explorations conducted in Article II and Article III. Further, the methodology developed in Article IV and Article V for describing and analysing trajectories of change in students' self-efficacy provides a novel research instrument that may have interesting uses, for example in studies that delve into the connections between self-efficacy and competence.

The first research recommendation relates to the challenges that translation company simulations face when accounting for changes in translation industry practices. Relevant changes in the translation industry need to be reflected in the principles and

practices that are upheld in the learning environments; additionally, the artefacts used in these learning environments need to be designed accordingly.

The workflows of translating organisations and networks are already often run in part by human labour and in part by automatic technological processes, and “the final product is the result both of translation decisions made by a machine based on bottom up sources and decisions made by professional practitioners (top down)” (Rodríguez de Céspedes 2019: 110). The proportions of human labour and automatic output are likely to shift in future in favour of more automated solutions.

Practically-oriented research in the field of translation company simulation pedagogy could investigate how students’ ability to innovate and organise new ways of producing translations can be improved. Future translation professionals need to be able to adapt to new ways of producing translations but also to be able to lead organisations and networks that are making the changes.

The second research recommendation relates to the conceptual and practical commonalities and differences in project management competence and translation-related competence. Are project-management activities and translation-related activities two separate domains of competence as the empirical results in Article II and the results on project management self-efficacy and translation-related self-efficacy in Article IV and Article V seem to suggest?

The third research recommendation relates to the conceptual and empirical relationship between self-efficacy and competence. Articles IV and V developed a method for studying changes in the level of students’ self-efficacy using factor analysis and longitudinal multilevel modelling. Combined with methods that operationalise models of competence, the methodology developed here could be used to explore the relationship between self-efficacy and competence.

The fourth research recommendation relates to the role of motivation for developing abilities in the domain of project management. In Article II, the results regarding workflow conception profiles suggested that participation in the translation processes of a simulated translation company may lead to two kinds of workflow conception profiles, each with their core tasks. Why do some students stay with the translation specialist workflow conception profile while some students add to this profile the conception profile of the project manager? What is the role of motivation for the development of competence and self-efficacy in the domain of project management?

Finally, *the fifth research recommendation* relates to the role of collective efficacy in translation company simulation pedagogy. Much of the learning in translation company simulations takes place in the student companies where the students function as each other’s partners in learning and even teach each other skills they may have or acquire during the course. The construct of collective efficacy could be

used to explore the differences between the student companies as learning environments and providers of translation services.

Abbreviations

CAT	computer-aided translation
CFA	confirmatory factor analysis
EFA	exploratory factor analysis
EMT	European Master's in Translation
INSTB	International Network of Simulated Translation Bureaus
MLM	Multilevel modelling
MT	machine translation
MTW	Multilingual Translation Workshop
TEP	translate-edit-proofread workflow
TM	translation memory

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Author's Contributions and Division of Labour in Co-Authored Articles

This appendix describes my contributions and the division of labour during collaborative work carried out as part of this dissertation project. The respective co-authors have approved the descriptions of the co-authored articles.

Article I

- Design of the article's main idea and structure, together with Leena Salmi, Outi Veivo, and Tiina Holopainen
- Writing the first version of the article
- Drafting the competence structure for Section 3.2 Competences in the MTW
- Drafting the questions of the article's competence questionnaire, in collaboration with Outi Veivo
- Analysing the results of the article's competence questionnaire, in collaboration with Outi Veivo

Principal responsibilities for writing individual sections in Article I

- 1 Bridging the competence gap through working life simulation
- 2 The University of Turku Multilingual Translation Workshop
- 3 Outlining the MTW pedagogy and its outcomes
- 3.1 Precursors of the MTW pedagogy

All four authors contributed to the finalisation of the article, and their principal contributions are as follows:

- Leena Salmi's primary responsibility: 3.2 Competences in the MTW
- Outi Veivo's principal responsibility: 4 Development of translator and entrepreneurial competences in the MTW

- Tiina Holopainen's principal responsibility: 5 Empowering students, balancing interests.

Article II

- Design of the main idea of the article and its structure, together with Outi Veivo and Pia Salo
- Writing the first version of the article
- Drafting the guiding questions for the essays used as material for the article, in collaboration with Outi Veivo
- Selecting the framework used for coding the article's material and creating the coding frame in NVivo software
- Organising and editing the data into a codable format
- Coding the material in NVivo, in collaboration with Outi Veivo and Pia Salo
- Analysing the data, in collaboration with Outi Veivo and Pia Salo
- Interpretation of results, in collaboration with Outi Veivo

Principal responsibilities for writing individual sections in Article II

- Introduction
- Materials and method
- Results, in collaboration with Outi Veivo
- Discussion and conclusion

Outi Veivo edited the text before finalisation. All three authors contributed to the finalisation of the article.

Article III

All three authors worked together to design the main idea and structure of the article, and Kalle Konttinen wrote the first version of the article.

Principal responsibilities for writing individual sections in Article III

- Introduction
- 1 Teaching of revision and post-editing: previous work, in collaboration with Leena Salmi and Maarit Koponen

- 2 Revision and post-editing competences, in collaboration with Leena Salmi
- 3 Placing revision and post-editing training in the translation curriculum, in collaboration with Maarit Koponen
- 4 Conclusion

All three authors contributed to the finalisation of the article.



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