THESIS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

Realising internationalisation at home in engineering education

Teacher and student perspectives on intercultural group work

BECKY BERGMAN

Department of Communication and Learning in Science

CHALMERS UNIVERSITY OF TECHNOLOGY

Gothenburg, Sweden 2026

Realising internationalisation at home in engineering education
Teacher and student perspectives on intercultural group work

BECKY BERGMAN
ISBN 978-91-8103-420-2

Acknowledgements, dedications, and similar personal statements in this thesis, reflect the author's own views.

Doktorsavhandlingar vid Chalmers tekniska högskola
Ny serie nr 5877
ISSN 0346-718X
https://doi.org/10.63959/chalmers.dt/ 10.63959/chalmers.dt/5877

Department of Communication and Learning in Science
Chalmers University of Technology
SE-412 96 Gothenburg
Sweden
Telephone + 46 (0)31-772 1000

Cover:
Intercultural group work (picture by Jenny Palm)

Printed by Chalmers Digitaltryck
Gothenburg, Sweden 2026

REALISING INTERNATIONALISATION AT HOME IN ENGINEERING EDUCATION

Teacher and student perspectives on intercultural group work

BECKY BERGMAN
Department of Communication and Learning in Science
Chalmers University of Technology

Abstract
Universities are increasingly adopting strategies to realise internationalisation at home. These strategies include ensuring that all students develop international awareness and intercultural competence, regardless of their ability to participate in physical mobility. This shift reflects a recognition that intercultural competence is essential for working life and that underutilised international opportunities exist within domestic campuses, for instance through collaborative projects that bring together local and international students. Engineering education has some of the highest proportions of international students, yet research suggests that engineering educators are comparatively reluctant to engage with internationalisation at home.

This thesis, containing four articles, investigates the ways in which intercultural pair and group work can contribute to fulfilling the internationalisation goals in engineering education. Intercultural pair and group work involve students from different cultural backgrounds working together on set tasks where they can find collaboration challenging on a personal and professional level. The thesis takes a qualitative, multilevel approach, and explores both student and teacher perspectives. Using an integration model which highlights both human and structural factors, the research spans individual experiences, classroom practices, and wider institutional structures.

This research offers three key contributions to internationalisation at home and engineering education in a European context. Firstly, I suggest a multilevel approach to operationalising intercultural group work, taking into account all levels from classroom to national goals. Secondly, I highlight the teacher's important dual role as both structuring the context (and being influenced by it) and facilitating human relationships. Thirdly, I propose a move beyond a binary approach of "home" and "international" students towards a more integrated, reflective, and context-sensitive understanding of identity, experience and belonging.
Overall, I argue that intercultural group work can meaningfully support internationalisation at home when embedded within relevant pedagogical and institutional frameworks.

Keywords: Internationalisation at Home, engineering education, intercultural group work, intercultural competence, integration model, student perspective, teacher perspective, multilevel approach, qualitative

Appended papers

This thesis is based on the work contained in the following papers:

Paper 1 Bergman, B., Negretti, R., & Apelgren, B. M. (2023). Individual experiences of intercultural group work in engineering education over time: beyond 'home' and 'international' labels. *European Journal of Engineering Education*, 48(1), 143-156

I conceived the idea and design in conjunction with the course manager. I carried out the data collection independently and I wrote the drafts of the paper. I did the data analysis with input from my co-authors. Data interpretation and revisions for drafts were discussed between all authors.

Paper 2 Bergman, B., Negretti, R., Spencer-Oatey, H., & Stöhr, C. (2024). Integrating home and international students in HE: Academic and social effects of pair work PBL assignments online. *Journal of studies in international education*, *28*(2), 240-258.

I conceived the idea and design. I carried out the data collection independently and I wrote the drafts of the paper. I did the data analysis with input from RN and HSO. Data interpretation and revisions for different drafts were discussed with RN and HSO. Statistical analyses were done with help from CS.

Paper 3 Bergman, B., Van Maele, J., Spencer-Oatey, H., & Negretti, R. (2025). Teacher experience of intercultural group work in higher education: a scoping review. *Nordic Journal of Comparative and International Education (NJCIE)*, *9*(2).

I conceived the idea and design. I carried out the data collection independently and I wrote the drafts of the paper. Data analysis was done first with JVM to identify the dataset and then checked later by RN and HSO. Data interpretation and revisions for different drafts were discussed between all authors.

Paper 4 Bergman, B., Spencer-Oatey, H. & Van Maele, J. (*In Review*). Planning intercultural group work in engineering education: the importance of a multilevel approach. Submitted to the *European Journal of Engineering Education*

JVM and I conceived the idea and design. I carried out the data collection independently and I wrote the drafts of the paper. I did the data analysis with input from HSO and JVM. Data interpretation and revisions for different drafts were discussed between all authors.

Other relevant contributions

Bergman, B. & Norman, A. (2019) Making the culturally diverse classroom work: Activities for successful groups [Conference workshop] In *Proceedings of the 47th European Society for Engineering Education (SEFI) Conference 2019, Budapest, Hungary*

Bergman, B. (2019) Teaching Academic Writing in EAP Book review of Bitchener, J., Storch, N., Wette, R. (Eds) in Teaching Writing for academic purposes to multilingual students. Instructional approaches *ESP Today 7 (1)*

Kjellberg, M., O'Connell, M., Bergman, B., Stöhr, C., Larsson, J. (2023) Teachers' Reflections On Their Experiences Teaching Interdisciplinary Project-Based Courses**.** In *Proceedings of the 51st European Society for Engineering Education (SEFI) Conference 2023, Dublin, Ireland*

Van Maele, J., Bergman, B., Direito, I., Murzi, H. (2023) How diverse are global perspectives on Diversity, Equity, and Inclusion in engineering education? [Conference workshop] In *Proceedings of the 51st European Society for Engineering Education (SEFI) Conference 2023, Dublin, Ireland*

Bergman, B., Van Maele, J. (2023) Preparing Teachers for Culturally Diverse Engineering Classrooms: Sharing Experiences and Activities [Conference workshop] In *Proceedings of the 51st European Society for Engineering Education (SEFI) Conference 2023, Dublin, Ireland*

Bergman, B., Rijk, K., Van Maele, J., Ventura-Medina, E, Vonk, C., (2024) Exploring DEI in teacher professional development in Engineering Education: what, how and why? In *Proceedings of the 52nd European Society for Engineering Education (SEFI) Conference 2024, Lausanne, Switzerland*

Murzi, H., Direito, I., Bergman, B., Van Maele, J., (2024) How do engineering education societies engage with DEI concepts? A preliminary theoretical analysis of formal DEI statements [Paper presentation] In *Proceedings of the 52nd European Society for Engineering Education (SEFI) Conference 2024, Lausanne, Switzerland*

Abbreviations used

Term	Full name
COIL	Collaborative Online International Learning
IaH	Internationalisation at home
IGW	Intercultural group work
ICC	Intercultural competence
IoC	Internationalisation of the Curriculum
IoCaH	Internationalisation of the Curriculum at Home
PBL	Problem-based learning
STEM	Science, technology, engineering and mathematics

Acknowledgements

"I took the one less travelled by, and that has made all the difference" (Robert Frost)

It takes a village to produce a PhD thesis, and I want to take the opportunity to thank the many people who have formed the mosaic of this long journey, in different roles at different times, in both a structural and also a very human way!

First and foremost, my deepest gratitude to my amazing supervisors, Raffaella Negretti and Helen Spencer-Oatey, who have steadfastly stood by me all the way. Raffaella, thanks for the encouraging words, the insightful comments and always having a plan! Helen, what I will miss most from this process is the regular meetings with you! It's been an honour to work with such a legend in the field and your tireless support has been a constant reassurance and inspiration. An enormous thank you as well to my licentiate discussant and co-author for papers 3 and 4, Jan Van Maele. You always provide a new perspective in such an insightful and thoughtful way – I'm so grateful for our time and activities together, not least kayaking on the lake! A final thanks to Britt-Marie Apelgren, my first supervisor, for starting me on the journey.

Then there are my colleagues at DLC and CLS. I just name a few of you here, but there are so many of you, past and present, who have contributed with ideas, inspiration and help along the way! Intercultural group work at its finest! Thanks Magnus for making it possible to do this at all (and the final proofreading) and Andreas and Calle for continued support. Thanks to my DLC colleagues for simply being wonderful in every way - you deserve publicake deluxe for your patience in this process! Tusen tack, Helena, the incredible party fixer! Thanks also to our PhD and postdoc writing groups for support and fun, from informal gatherings with afterworks to writing retreats with saunas and cake! And finally, a huge thank you to the support network at CLS, from librarians to administration to communications advice, who constantly go out their way to make sure things run smoothly!

Formal and more informal groups have provided invaluable insight along the way into the world of internationalisation in all its forms and I'll just select a few. My project colleagues from the STINT project – thank you Hans for leading us with your guiding wisdom. My Chalmers colleagues in the internationalisation group with Mikael's tireless energy. International colleagues in the SEFI SIG for DEI. The CUL group at pedagogen at the start of this process. And a big shout out to our FiNT gang, so much fun working with you guys! En

stor kram till dig, Lucie – du är bäst! Finally, the friends I've made in Sweden and elsewhere when engaging in discussions, presentations and workshops around topics of IGW, diversity and inclusion.

Next, I wish to thank the teachers and students who have been such an important part of this work and given their time and insights in interviews and in other ways. Your stories have inspired and touched me and this work would not exist without you. Particular thanks to Lena Peterson who has been there all the way through.

Finally, and most importantly, the most human side. Dearest friends, thank you for being there! My intercultural gang for love and laughter! Åsa for Sandboy times! Ruth for shared agonies - we made it! My fantastic family spread across Sweden, the UK and the world – thank you for starting my intercultural journey! Sunny, o wisest of dogs! And Rikard, Seb and Hanna – now words fail me. You are my safe harbour, my anchor, my home, my world, my everything. I love you to infinity – and beyond!

Becky Bergman, Göteborg, 9 May 2026

Table of Contents

1. Introduction

Internationalisation has served a central role in university strategies for some time, fuelled in part by popular university rankings such as QS World University and Times Higher Education. At the same time, universities are increasingly embracing a concept known as Internationalisation at Home (IaH)[1] (Beelen & Jones, 2015; Marinoni & Pina Cardona, 2024). In a recent global survey of over 700 universities, 75% of respondents in over 100 countries expressed an increased interest in IaH since the pandemic (Marinoni & Pina Cardona, 2024). This concept highlights the growing realisation that 1) all students need international awareness and intercultural competence 2) not all students are able to travel and 3) there are many international possibilities on campus that can be utilized in a better way to prepare students for the international workplace (De Wit et al., 2015; Leask, 2015; SOU 2018 :78).

One way of realising IaH is intercultural group work (IGW), the main focus of this thesis, defined as an approach where "three or more students from different cultural or national backgrounds work together on set tasks" (Poort et al., 2019, p.218). Article two in this thesis also investigates intercultural pair work, where two students work together under the parameters of the definition above. Though the definition of IGW could include both IGW between students at the same university and IGW between students at different universities (so-called COIL[2] projects), this thesis focuses on the experiences of students and teachers meeting at the same university.

While group work as a pedagogical tool has been used for decades in higher education (Riebe et al., 2016) and particularly within engineering education (Kimpton & Maynard, 2024; Mercier et al., 2023), IGW has been discussed more recently. Working in groups in these constellations is often motivated as preparation for the global workplace where both international communication and group work are common (Jiang et al., 2023; Li, 2024). IGW is claimed to offer personal, interpersonal, interactional and conceptual benefits through, for example, gaining new ideas and solutions, new friendships, increased self-awareness, and change of attitudes (Poort et al., 2019; Reissner-Roubicek &

[1] Also called Internationalisation of the Curriculum (IoC) or a combination of the two (Internationalisation of the Curriculum at Home (IoCaH)

[2] COIL stands for Collaborative Online International Learning

Spencer-Oatey, 2021). My research investigates these benefits from a student and teacher perspective in articles one and four.

At the same time, in both group work and IGW, students are challenged on a personal and professional level by factors beyond content knowledge. As regards group work, questions around work division, communication, social loafing and groupthink have long been grappled with (Mercier et al., 2023). As regards IGW, these issues can be increased when there are increased differences in academic backgrounds and cultural expectations (Gregersen-Hermans et al., 2021; Jiang et al., 2023; Reissner-Roubicek & Spencer-Oatey, 2021; Tange, 2020), potentially leading to misunderstandings and stress (Spencer-Oatey & Dauber, 2017; Strauss & Young, 2011; Turner, 2009). These challenges are explored from a student perspective in articles one and two.

At the heart of both IGW and IaH is intercultural competence (ICC). Whilst there are many definitions of intercultural competence, three core elements are knowledge (cognitive), attitudes (affective) and behaviour (skills) (Deardorff, 2006; Spencer-Oatey & Franklin, 2009). Internationally, intercultural competence has been included in PISA evaluations in schools since 2018, and in Sweden, the goal is for all students in higher education to develop their intercultural competence (SOU 2018:78). Article four in particular explores how this might be realised through IGW.

Discussions around intercultural competence and internationalisation are particularly interesting when it comes to engineering education. As a discipline, engineering education is the field attracting one of the highest numbers of international students (OECD, 2024). In a comparison from 2022, 32% of all mobile students coming to the EU chose STEM [3] related disciplines, compared to the second most popular area, business, administration and law (23%) (OECD, 2024). This difference is even more pronounced in Sweden where 46% of mobile students have chosen STEM subjects, compared to 11% for business and health related disciplines (OECD, 2024). Stakeholders in engineering education (educators, students and professionals) have expressed the importance of both intercultural communication and teamwork as well as connected competencies such as open-mindedness and ICC willingness (Richter et al., 2023) and there have been calls for more research into ICC in engineering education for the last

[3] STEM is a common acronym used for science, technology, engineering and mathematics

20 years (Handford et al., 2018; Johri & Jesiek, 2014). At the same time, relatively little research on IaH has focused on engineering education (Ramstrand et al., 2026; Zou et al., 2023) and some research argues that teachers within engineering education are some of the most reluctant to engage with ideas around IaH (Alexiadou, 2023; Clifford, 2009; Green & Mertova, 2016). This research is explored in articles three and four.

1.1 Aim and research questions

Given the anomaly that engineering education is one of the most internationalised disciplines but the one that has been examined the least in IaH, both educationally and research-wise, this thesis explores the ways in which intercultural group work (IGW) can contribute to goals connected to IaH, taking both a student and teacher perspective. Since group work and international collaboration are key goals for engineering education (ENAEE, 2022), IGW can serve as a basis for wider discussions around the complexity of achieving intercultural competence in the international classroom, and how this might be facilitated for both students and teachers.

Given the purpose outlined above, the main research question investigated in the work presented in this thesis is as follows:

> How is IaH realised in practice through the IGW experiences of students and teachers in engineering education?

The main research question is divided into four sub-questions in line with the four articles:

> RQ1. How is IGW experienced by the students over time?
>
> RQ2. How can intercultural pair work help students' integration, both academically and socially?
>
> RQ3. How is IGW perceived and experienced by teachers and program managers?
>
> RQ4. How are multilevel goals connected to IGW realised in practice?

Table 1.1 highlights which questions the four appended articles discuss. As shown in the table, the first two articles take a student perspective, and the second two articles take a teacher perspective.

Table 1.1: Overview of articles and the research questions (RQ) they examine

Article	Focus area	RQ	Perspective
1	Students' experiences of IGW over time	1	Students
2	Academic and social effects of intercultural pair work in problem-based learning assignments online	2	Students
3	Scoping review of teacher experiences of IGW in higher education	3	Teachers
4	A multilevel approach to teacher planning of IGW	3,4	Teachers

The four articles together offer a holistic, multilevel perspective, ranging from the micro level that examines students' individual experiences, to the macro level that connects to national goals. Following a constructivist paradigm, the four articles focus on IGW within a primarily Swedish context. **Article 1** takes a micro and longitudinal perspective of five engineering students' personal experiences of IGW. **Article 2** examines a broader, classroom perspective following engineering students' reactions, both academically and socially, to intercultural pair work over one engineering course using problem-based learning, **Article 3**, a scoping review, summarizes teacher experiences of IGW in higher education. Finally, **article 4** follows a multilevel approach, examining top-down goals for internationalisation and group work within engineering education and how these are realised and experienced at program and course level at two European universities. The articles as a whole provide a new conceptualisation of IGW while discussing practical implications of its implementation in the engineering education classroom.

1.2 Thesis overview

The thesis is organized as follows:

Chapter 2 Conceptual and theoretical background: an overview of the conceptualisations and theories used in the three key areas of IaH, ICC and IGW connected to the four articles. In particular, the chapter discusses conceptualisations around culture, identity and integration, the latter using an integration framework from Spencer-Oatey and Dauber (2019).

Chapter 3 Methodology and methods: this chapter starts with an overview of the research paradigms used, focusing primarily on a constructivist approach,

inspired by pragmaticism. The chapter goes on to provide a detailed account of the data collection and analysis before examining ethical aspects.

Chapter 4 Summary of appended articles: this chapter provides an overview of the four articles focusing on the results before summarizing the overall key findings of this research, highlighting student and teacher perspectives at an individual, classroom and institutional level.

Chapter 5 Discussion: this chapter follows up the research questions by starting with the conceptual, structural and human insights gained from this research. The chapter then provides some personal reflections and research limitations before speculating on possible directions for future research.

Chapter 6 Conclusion: this chapter returns to the main contributions of the thesis through an infographic summarizing the main concepts of the research.

2. Conceptual and theoretical background

The focus of this thesis is intercultural group work (IGW) in engineering education. In investigating IGW, there are some key concepts to consider which are described in this chapter, visualized below in Figure 2.1 and exemplified in the four appended articles. The first concept is Internationalisation at Home (IaH) where IGW can play an important role in bringing students together through collaborative tasks. The second is intercultural competence (ICC), a key skill to be practised within internationalisation and IGW. At the intersection between these concepts, we find this thesis' main concept of IGW, where both teacher and student perspectives are important aspects to take into account.

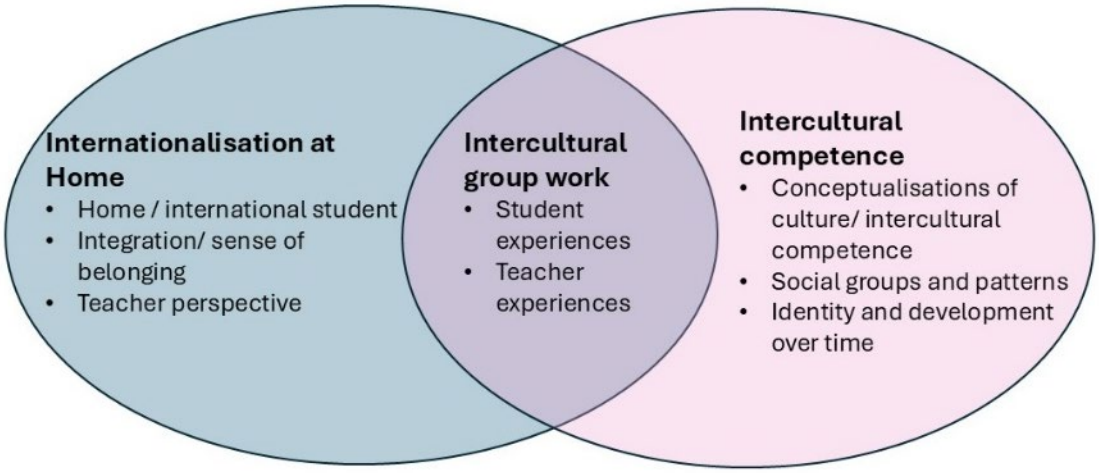

Figure 2.1: Overview of key concepts discussed in chapter 2

Internationalisation at home (IaH) (section 2.1) is an important concept in all four articles. Through an overview of IaH, key elements from the articles are explored such as definitions of home and international students (article 1); realising integration through intercultural group work (article 2); and IaH in practice from the teacher's perspective (articles 3 and 4).

The chapter moves on to discuss intercultural competence (section 2.2). In unpacking some of the complexities around definitions of intercultural and cultural, this section aims to explore elements of identity (article 1), social grouping (articles 1, 2 and 4), patterns and development of cultural awareness over time (article 1).

Finally, the chapter discusses intercultural group work (IGW) as one way to realise IaH and to practise intercultural competence, in particular the affordances and challenges of using this pedagogical tool (articles 1-4, section 2.3). The chapter investigates the teacher perspective in IGW and how teachers play a crucial part structurally in organizing the classroom and working towards the organization's goals as a whole and on a human level, in interacting with the students (articles 3 and 4).

2.1 Internationalisation at Home (IaH): conceptualisations

As a concept, IaH has been around for over twenty years. The term "internationalisation at home" is usually attributed to Bengt Nilsson at Malmö University (Nilsson, 2003) and was coined in a positioning paper written in 2001 for EAIE (Crowther et al., 2000). Initially, the initiative started with the founding of Malmö University where there were a limited number of international partnerships but a multicultural student population (Nilsson, 2003). As a research field, it has grown rapidly, from definitions (Beelen & Jones, 2015; Nilsson, 2003); to practical applications (e.g. ATIAH, 2018; Bulnes & De Louw, 2024; Cozart & Gregersen-Hermans, 2021; Jones & Reffenrath, 2018; Mittelmeier et al., 2022) and finally, critical perspectives (de Wit & Altbach, 2021; Harrison, 2015; Marginson, 2023; Stein, 2019). Still, at the present time, IaH has been interpreted largely as virtual exchange (Marinoni & Pina Cardona, 2024) and in the Swedish context, as giving courses in English (UKÄ, 2025), despite the fact that the term is far more encompassing than this. This section investigates some of the conceptualisations and debates in the field connected to IaH and intercultural group work.

2.1.1 Definitions of internationalisation at home and related terms

With regard to terms and definitions, there are a number of commonly used terms to emphasise a move beyond mobility and an integration of international/intercultural elements into the curriculum. Examples of these are, "internationalisation of the curriculum" (IoC) (Leask, 2009), "internationalisation of higher education" (IoHE) (de Wit et al., 2015) and "comprehensive internationalisation" (Hudzik, 2011). The most commonly used definition today is:

> the purposeful integration of international and intercultural dimensions into the formal and informal curriculum for all students within domestic learning environments (Beelen & Jones 2015, 69)

In this definition, there are some key words that should be emphasised. The first is *purposeful*, implying that the integration should be intentional and planned. The second is *all*, broadening the experiences of internationalisation from the small percentage of students who participate in mobility programs. The third is *domestic*, embracing the international and intercultural possibilities *within* the university and its surroundings.

The most synonymous term to IaH is internationalisation of the curriculum (IoC) and is defined as follows:

> the incorporation of international, intercultural and/or global dimensions into the content of the curriculum as well as the learning outcomes, assessment tasks, teaching methods, and support services of a program of study (Leask, 2009, 209)

Just as in the IaH definition, the use of the word "curriculum" in this definition includes the formal curriculum (the syllabus and activities within the classroom) and the informal curriculum (unassessed activities outside the classroom) (Leask, 2015). Leask (2015) also includes the concept of hidden curriculum to describe unintended and implicit messages sent out to students. Though many elements of the two definitions are similar, IaH focuses specifically on "domestic learning environments" while IoC leaves the possibility of mobility projects open. However, both have been used fairly interchangeably (Bulnes & De Louw, 2024; De Wit & Altbach, 2021; Marinoni & Pina Cardona, 2024). Recently, there have also been arguments, from Leask (2025) amongst others, to combine the two to form the term "Internationalisation of the Curriculum at Home" (IoCaH) (Leask, 2025). In this thesis however, I have chosen to use IaH for the following reasons:

- To emphasise the focus on activities in the domestic environment and within the same university (in contrast to mobility)
- To emphasise the importance of "home" i.e. a sense of belonging and inclusion (discussed further in section 2.1.3)
- In keeping with the Swedish aspects of this project (since IaH has its origins in Sweden and is commonly used and recognised there)

With that said, much of the literature is taken from IoC research and I have treated them as synonymous terms.

To explain what IaH means in practice, Jones and Reiffenrath (2018) outlined key guidelines in an EAIE[4] blog. Amongst their guidelines and in addition to the definition given above, they emphasised that IaH should not be seen as a substitute for international mobility; that it does not necessarily need to involve international students; that it does not have to be held in English and that it should create opportunities for student engagement in the local community. In terms of realising IaH/ IoC in practice, there have been a number of projects for achieving this in recent years, for example, EQUiiP[5] ; TICKET[6]; and ATIAH [7], all EU funded projects to provide practical tools for higher education. IGW has been included as part of those recommendations. For example, both the EQUiiP and TICKET materials include a module on intercultural group dynamics to support teachers. This discussion of the possibilities of IGW to realise IaH is investigated more in section 2.3.

However, even though IaH has been embraced by many universities, concerns and critical voices have also been raised. Internationalisation as a whole has been accused of shifting from cooperation and mutual benefits to competition, revenue and status building involving a small, elite group of students (de Wit & Altbach, 2021; Marginson, 2023; Stein & De Andreotti, 2016). In some ways, IaH addresses some of those issues in its focus on *all* students (de Wit & Altbach, 2021). Still, Stein (2019) highlights some inherent inequalities of the international campus where international students are often expected to pay far higher fees for the same education, yet the curriculum and teaching remain unchanged. She summarises the work of other critical scholars in identifying "the continuation of enduring patterns of Eurocentric knowledge production, exploitative relationships, and inequitable access to resources." (p.3).

The concept of unequal relationships is reflected in work by Harrison (2015) who relates this to IGW. He argues that there are three key issues. Firstly, there can be strong resistance from home students to working with international students. Secondly, access to IaH initiatives can be unevenly distributed. Thirdly, English as lingua franca gives an unfair advantage to those who have English as their first language. In my research, I have highlighted the role that multilevel education goals can have on curriculum choices (article 4). These in

[4] EAIE- European Association for International Education
[5] EQUiiP - https://equiip.eu
[6] TICKET - https://interculturalticket.eu
[7] ATIAH - https://research.ncl.ac.uk/atiah/outputs/

turn might influence access to IaH initiatives. A clear motivation for such an approach in turn leads to more positive student uptake (Poort et al., 2022). As regards language superiority, the language dynamics are somewhat reversed in, for example, a Swedish setting where the local students use English as a second language and some incoming students from countries like India, have used English throughout their education.

2.1.2 "Home" and "international" students

Two terms that are problematised in article one are those of "home" and "international" in describing student experiences. The term "home students" typically refers to students with citizenship in the country they are studying in, which can cover a range of backgrounds from those who have been based there for generations to recent immigrants. "International students" are "those who left their country of origin and moved to another country for the purpose of study" (OECD 2024, 238). "International students" include both EU and non-EU students and students on shorter-term exchanges (e.g. Erasmus) and those studying a full-time program. It is the latter group which is the focus in this thesis, i.e. students who have come to Sweden to study on a master's program. In the Swedish setting, even though EU students dominate in terms of the total numbers of incoming international students, there are more non-EU students, especially from India and China, on the master programs (Erudera, 2026), particularly within STEM.

While administratively, it has been necessary to make this distinction for, for example, fee-paying status, it can be limiting when talking about students' experiences. However, these terms have often been used in the research around IaH and IGW (Lomer & Mittelmeier, 2021). In a literature review of pedagogies with "international" students in the UK, Lomer and Mittelmeier (2021) found that over half of the 49 articles they included referred to "international students" as one homogenous group without giving further details of their cultural, linguistic or educational backgrounds. Spencer-Oatey and Dauber (2017) criticise this "simplistic bi-polar distinction" and point out that the majority of studies on IGW have compared "home" and "international" students "with little or no recognition that there could be considerable variation within each of these categories" (p.222).

One complexity in categorising, not least administratively, is the mobility of students. How should a student born in China, but who has done most of their studies in France be categorized, for example? Or a recent immigrant to the

country, who might not speak that country's language? Or students with dual nationality, one of which being the country in which they are studying, but who has not lived there? The list goes on. Depending on the passport held, length of time spent in the country and other factors, the first student in this case might well be classified as "international" and the second and third as "home" students but these labels give little insight into the complexity of the students' experiences in the classroom (Mendoza et al., 2023). Spencer-Oatey and Dauber (2017) suggest factors such as level of study and prior experience of international contexts as interesting variables to take into account and I have added more factors (article 1) such as previous knowledge, work experience, and intercultural competence skills.

In connection to these categories, the attributes assigned to the groups of "home" and "international" students have been criticised. In the previously mentioned literature review from Lomer and Mittelmeier (2021), they found that a particularly prevalent word used in connection with international students was "lack", as well as descriptions of barriers, challenges and struggles (as opposed to more positive adjectives describing students' potential) (2021:12). They also claim that international students were described as rather passive. In a strongly critical article calling for an end to the use of the term "international student", Merabet (2024) argues that this term indicates a "politically imposed category" leading to unfair treatment where the student is expected to pay more and receives the same or less than a home student.

While acknowledging the issues around using the terms "home" and "international" for students, this thesis continues to do so. This is to emphasise the fact that all students are included in this research and not just home *or* international students. At the same time, throughout my research, I have strived to highlight the complexities contained within these two labels.

2.1.3 Integration and a sense of belonging in higher education: conceptualisations and frameworks

A key goal of IaH and a focus of article two is the idea of purposeful engagement between home and international students (Beelen & Jones, 2015), which can be promoted through IGW. The concepts of "insideness" and "outsideness" (Fougère, 2008), discussed in article one, are strongly tied to a sense of belonging and integration of all students into the international university setting.

Firstly, it is important to define what I mean by integration in my research. The definition used in article two is taken from the Macmillan dictionary (2007):

> the process of becoming a *full* member of a group or society, and becoming involved *completely* in its activities" (my italics).

This definition can be seen in the light of Berry's (2006) definition of integration, in which both groups maintain their culture and identity while forming relationships with others. In the international classroom, this process requires adaptation from both home and international students, rather than one group adapting its activities to the other which would instead be "assimilation" (Berry, 2006). Though Berry's definition refers to society more broadly, I have focused on integration within higher education settings (see section 5.2.2 for further discussion).

Several frameworks have analysed the process of integration within education, and two aspects are stressed. Firstly, integration is important for all students. Research has shown that students who feel part of the university community, feel at home, participate in university activities and/or feel connected to fellow students are more inclined to continue studying and more likely to get higher grades (Glass & Westmont, 2014; Severiens et al., 2006; Spencer-Oatey & Dauber, 2019). Secondly, very broadly speaking, integration generally tends to be more challenging for international students than for home students (Cena et al, 2021; Mendoza et al.,2023; Rienties et al., 2013). This is explored in more detail below.

In terms of challenges, all students encounter strangeness in some way on starting university, but this can happen on many more levels for international students, both within their studies and outside them. Challenges involve physical, social and psychological aspects, from homesickness to differences in academic practices, practical worries about finance, and fear of failure (Cena et al., 2021). Some studies have pointed out that these challenges can be experienced quite differently, depending on nationality background (Merola et al., 2019; Rienties et al., 2013). For example, in Merola et al.'s (2019) research comparing three major groups of international students from India, China and South Korea studying in Anglophone countries, Indian students experienced significantly higher satisfaction levels than the other two groups. It is also important to keep in mind that many students do have positive experiences. One study in Australia, for example, showed that two thirds of international students felt "positive and connected" to their university environment, while a third felt "unconnected and stressed" and about 7% were "distressed and risk-taking" (Russell et al., 2009). Hence, even though an awareness of these possible issues is important, it is

important once again not to make assumptions about an individual student's situation.

While a sense of belonging might be more challenging for international students as a whole, it is crucial for IaH. The British Council (2014) amongst others, point out the benefits of an integrated international campus not only for all individuals in terms of learning and intercultural competence, but from a wider perspective and longer term for the institution and society at large. However, despite the fact that integration is important for *all* students, most existing integration models have either focused only on home *or* international students.

One commonly used integration model in education (focusing on home university students) is a study by Tinto (1975) of student retention, where he divided integration into two categories, academic and social. These categories have been very influential in article two. Though Tinto (1975) does not provide a full definition of "academic" and "social", "academic" seems to include both the normative and structural elements of the domain, for example, expectations of college life (normative) and grading system (structural). "Social" seems to refer to a student's social relationships and interaction while at college, for example in student societies. In that sense, these definitions resonate with Leask's (2015) definitions of formal and informal curriculum. These categories are not exclusive of each other and in fact, one can very much affect the other. For example, devoting the majority of student time to social activities often has a detrimental effect on academic results. Tinto (1975) points out that for a student to be integrated, both these areas need to function, such that a student is performing adequately academically and also mixing sufficiently socially.

Another integration concept that has been influential in my research, besides "academic" and "social", is that of having a multilevel perspective (article 4). This is raised in another integration study, focusing on the intercultural experiences of international students (Gu et al., 2010). As part of the study, they emphasised the key stakeholders at all levels who have an impact, from within the institution (individual, faculty) to national (institutional, sector and national) to supranational (regional, global). In other words, it is not simply the individual student's responsibility to integrate, but there is a greater responsibility connected to surrounding systems which influence this process.

Both of these concepts have influenced the integration framework from Spencer-Oatey and Dauber (2019) which has provided an important framework in my work (articles 2 and 4). Their framework considered integration models from a

number of fields, including education (Tinto, 1975), intercultural communication (Bennett, 1986; Berry, 2006), and organisational studies (Dauber, 2012). From education, they have built on Tinto's model (1975) but have looked to intercultural studies for clearer definitions of integration. From these different fields, the authors suggest a framework for integration pathways in higher education including three levels of integration: individual, community and institutional (see Table 2.1). The individual level in this context refers to the individual student. The community level refers to formal and informal groups, such as the classroom or student societies. The institutional level refers to the whole university. This framework highlights the fact that integration happens both through human *and* structural initiatives.

Table 2.1: Examples of integration pathways for higher education institutions (Spencer-Oatey & Dauber 2019)

Integration level	Integration pathway	
Individual	Human	E.g. mixing with people from different backgrounds
	Structural initiatives and facilitators	E.g. learning about the new educational system
Community	Human	E.g. diverse and welcoming student societies
	Structural initiatives and facilitators	E.g. internationalisation of the curriculum
Institutional	Human	Fostering of values of mutual respect and trust
	Structural initiatives and facilitators	Establishing support units for the diverse needs of students and staff

This framework suggests the ways that formal and informal interaction can be facilitated through structural interventions at different levels. For example, at an institutional level, it might involve staff support for working with diversity. At an individual level, it might include providing new students with information about the educational system.

The framework also suggests the human attitudes and values that are necessary for integration. At the individual student level, this might involve a willingness to mix with different students, while at the community level, it might mean encouraging an openness to all students amongst student societies.

The model highlights the joint responsibility of the students and institution in facilitating integration. Further practical examples from the UK are given in Spencer-Oatey et al. (2014) highlighting various initiatives from rethinking student housing, to writing support, to buddy schemes.

As mentioned, Spencer-Oatey and Dauber's integration framework (2019) has been influential in my own work, particularly when applied to intercultural group work (IGW). Tinto (1997) developed his original model to emphasise the key role that peer groups serve both socially and academically, arguing that peer group contact "served to bridge the academic-social divide that typically plagues student life" (Tinto, 1997, p.610). While article two focuses specifically on how intercultural pair work might bridge these divides using the integration framework, article four uses the categories of human / structural and the levels of individual / community / institution as a lens to explore how IGW can and is realised through these different categories and levels.

2.1.4 Teacher perspectives in IaH

Integrating IaH in the curriculum places teachers at the heart of initiatives to realise IaH in practice (Ambagts-van Rooijen et al., 2024; Beelen, 2019; Leask, 2015) yet particularly as regards IGW, there has been very little research done into teacher experiences (cf.article 3). As regards engineering education, it has been pointed out that there is a need for more research into the role of teachers generally (Cutler & Coso Strong, 2023).

In this thesis, I use the term "teachers" and within that term, I include any person in an academic role who meets students in a classroom situation, including people that might be called academics, faculty, lecturers, program managers, course managers, teaching assistants and educational developers. I also use "teacher" to distinguish from other staff who might come into contact with the students for other tasks such as administration and support but have not been the focus of this research project.

What might be required from a teacher in the international classroom? According to a recent Delphi study by Ambagts-van Rooijen et al. (2024), key foundational competencies are intercultural sensitivity and flexibility. According to the authors, these competencies in turn require design and facilitation competencies, and foundational competencies. The former involves designing an inclusive curriculum, creating a safe learning environment, and facilitating interaction and the latter involves adjusting to and accommodating for different aspects of diversity.

At the same time, returning to the multilevel perspective discussed in section 2.1.3 and article four, teachers work within the broader contexts of institutional, local, national and regional, and global (Leask and Bridge, 2013). Leask (2021) argues that internationalisation is part of the supercomplexity of the world that students are being prepared for. Barnett (2000) argues that this complexity creates a need in the curriculum to move beyond simply *knowing* (for example, discipline-based knowledge) but also to *being,* involving questions of who we are and how we are to live with each other. These skills connect to intercultural competence, discussed further in section 2.2.

Much of the research to date involving teachers in IaH has pointed to challenges. One key issue that is highlighted is lack of teacher engagement (Beelen, 2017; Stohl, 2007) due to a lack of skills, knowledge and negative bias, though Whitsed et al. (2022) have pointed out that the picture is more complex than this, going beyond the teachers themselves to the conditions within the institution. Leask (2015) refers to these conditions as "blockers" and highlights three areas as regards "blockers": cultural blockers, institutional blockers and personal blockers. Cultural blockers concern disciplinary areas, such as the relevance of internationalisation to the content area. Institutional blockers concern how people are organized within the institution and how much support they receive. Personal blockers refer to the mindset of individuals (Leask, 2015). Recent research from the Swedish context (Weissova, 2026) has pointed out that though IaH is a strategy in at least one third of higher education institutions and there is financial support for internationalisation, few institutions provide time or other incentives for teachers to get involved.

One ongoing discussion is how far disciplinary differences play a part in these aspects, particularly cultural and personal blockers. Green and Mertova (2016) identified two types of teachers, transformalists and transactionists. The former group could identify with the concept of IoC and were positive to the impact of international experiences, tending to use active, student-centred pedagogy. The transactionists, on the other hand, had little understanding or interest in the concept and focused on some of the practical aspects such as the economic transactions around international students. They suggest that engineering teachers tended to come into the latter category. Clifford (2009) similarly revealed resistance from teachers in science disciplines who perceived their work as culturally neutral, a view backed up by Alexiadou (2023). Zou et al. (2023) call for more investigations within the STEM area regarding internationalisation. In summary, two main messages emerge, particularly for STEM teachers

working with international classroom.The first is that there is a lack of research into this group's attitudes and experiences. The second is that the existing picture for these teachers appears to be rather negative showing a lack of interest and motivation in getting involved in IaH.

As regards the first point, my scoping review of teacher experiences with intercultural group work carried out for article three, found that in fact, engineering was the most commonly represented discipline in this regard, though the total number of articles found was low. As regards the second point, article four found that teachers were connecting with broader university and national goals regarding internationalisation when planning IGW in their courses and programs.

In other words, the picture emerging from my research on the teacher perspective shows a higher engagement amongst STEM teachers than has been presented so far, at least in certain areas. Kahn (2010) observed that "people engage when they feel that, on balance it matters to do so" (as cited in Whitsed et al., 2022). Whitsed et al. (2022) go on to highlight three key questions from Kahn in engaging teachers, namely 1) Does it matter? 2) Is it possible? and 3) Are we led? They conclude that while the blockers have been highlighted for teacher engagement, the enablers have received much less attention. Attention is also needed for the broader picture beyond the classroom environment, including the broader institutional goals and the teacher's role within that. This is a perspective that article four has addressed through a broader multilevel perspective from international to course level as regards STEM teachers planning IGW.

2.2 Conceptualisations around culture and intercultural competence

One concept which is central in internationalisation, IaH and IGW, is that of culture and intercultural competence (ICC) (Deardorff & Jones, 2022; Leask, 2015). According to the latest report from the International Association of Universities (IAU), "increased global, international and intercultural knowledge, skills and competences for both students and staff" is the second most important benefit that universities perceive at global level (after "enhanced international cooperation and capacity building") (Marinoni & Pina Cardona, 2024, p. 16). In Sweden, a white paper on internationalisation from 2018 stated as one key objective, that all students studying at Swedish universities should have developed intercultural competence (SOU 2018: 78 p. 14). This goal of intercultural competence is seen as vital for students to function fully in a global society (SOU 2018: 78 p.18).

However, even though the concept of "intercultural" is so central to the international classroom, it has been difficult to define, recognise and measure (Borghetti, 2017; Hermans, 2016; Zotzmann, 2015). The term "intercultural competence" (ICC) dates back to at least the 1970s (Spitzberg & Changnon, 2009) where they identified over 300 terms used in five different types of models to describe ICC. Despite this variety, all models, however, agree that three core aspects of ICC are knowledge (cognitive), attitudes (affective) and behaviour (skills) (Spencer-Oatey & Franklin, 2009). I have not analysed the *extent* to which students achieve ICC in my own research, but conceptualisations around ICC are essential to consider when discussing IGW since they are so central in considering how IGW might be used in the classroom. These aspects are developed further in section 2.3.

One of the most commonly used models, the pyramid model (Deardorff, 2006), defines these three areas in the following way. Knowledge includes cultural self-awareness, culture-specific information and sociolinguistic awareness. Core attitudes are respect, openness, curiosity and discovery. Key skills are listening, observing, interpreting, analysing, evaluating and relating. These three areas in turn lead to desired internal outcomes of adaptability, flexibility, empathy and ethnorelative views. Finally, desired external outcomes are behaving and communicating effectively and appropriately.

A fundamental concept when considering ICC is the definition of culture (see articles 1 and 4 for further discussion around definitions). There are over 160 definitions of culture (Kroeber & Kluckhohn, 1952), showing the complexity of this term. This thesis uses as its basis a definition from Spencer-Oatey and Kádár (2021) (shown below). I have chosen this definition since it includes elements core to the current debate around culture. They state that culture is:

> a complex set of meaning systems that consists of *patterns* of traditions, beliefs, values, schemas, norms and symbols, that are shared to varying degrees by interacting members of a *social group* and that influence (but do not determine) each member's behaviour and his /her interpretations of the "meaning" of other people's behaviour (p.4, my italics).

Two concepts are italicized in the quotation above: patterns and social group. These concepts are elaborated on further in the following section.

2.2.1 Social group and patterns

"Social group" has, within intercultural communication, often been interpreted as nationality or ethnic groups, that is, the group that an individual is born into. However, Spencer-Oatey and Kádár (2021) and others (notably Chao & Moon, 2005 and Holliday, 1999) point out that though membership in social groups might happen through birth, it can also happen through circumstance, and these circumstances change as we go through life in a dynamic process. In Chao and Moon's cultural mosaic framework (2005) for example, they include the following categories:

- demographic (physical characteristics e.g. age, gender);
- geographic factors (natural or man-made physical features of a region e.g. being from an urban or rural area);
- associative (formal and informal groups e.g. family, profession, religion).

Social groups might be large (as in a nationality group) or small (as in a project group) or anything in between. Individuals are members of multiple groups, and these groups influence an individual's socialisation patterns and behaviour in complex ways. Taking my research and the students as an example of these social groups, one social group they belong to might be their nationality group, for example, whereas another might be their study discipline.

"Patterns", referred to in the definition above, include aspects such as values and norms shared (to a greater or lesser extent) within the social group. Typically, national cultural values have been focused on within intercultural research, comparing nationalities with each other and highlighting differences. There have been different possible realisations of these classifications. One of the earliest and possibly most influential was Geert Hofstede et al. (2010) who, back in 1970s, created five dimensions of country-level cultural variation (later extended to six dimensions), based on a survey done of IBM employees worldwide. The five dimensions are individualism – collectivism; high and low power distance; masculinity – femininity; high and low uncertainty avoidance; and long and short-term orientation.

In more recent years, categorising people and interpreting their behaviour according to country-level dimensions in this way has been criticised as potentially leading to essentialising and simplifying interpretations of complex behaviour (Handford et al., 2019; Holliday et al., 2010). Handford et al. (2019) urge a "culture-as-construct" approach in the context of engineering education

by considering other social groups and patterns than national/ ethnic ones and looking beyond differences to also embracing similarities. Amadasi and Holliday (2017) for example, refer to this process of finding similarities as "threads" or connections and that through finding threads, individuals can come together.

An example of this process of finding similarities is shown in article two where the students are working in intercultural pairs. One of the Indian students described the shared interest that he and his Brazilian partner had in cars where:

> we used to meet up and we used to just do the task for about 10, 15 minutes and then he just used to talk about the car stuff for 45 minutes. That was a lot of fun. (P4, interview) (article 2, p. 250).

In this example, it is the shared interest in cars which serves to build a connection between the two students and support their interaction.

If culture is based on membership in different social groups, "intercultural communication" (literally communication between members from different cultures) could be interpreted very broadly. As Holliday describes, "the *cultural* that we encounter every day is always, in effect, *intercultural*" (2019, ix, his italics) since most people we meet will be a member of a different social group to ourselves in some way, whether it is their profession, religious background, political alliances and so on. In this thesis, intercultural communication is defined according to the following definition of an intercultural situation:

> one in which the cultural distance between the participants is significant enough to have an effect on interaction / communication that is noticeable to at least one of the parties. (Spencer-Oatey & Franklin, 2009, p.3).

"Noticeable" in this sense has been explained by Hoffman and Verdooren (2018) as "an experience of strangeness" in interactions - that is, when someone from another group does something which is unknown or unexpected in some way. Shaules (2015) calls this an "Oz moment" from Dorothy's reactions in the film "The Wizard of Oz" when she arrives in the magical Kingdom of Oz. This experience of strangeness might be reacted to by both in the interaction, or just one of the participants. It is also subjective, as shown in a much-used quotation by Anais Nin "we see things not as they are but as we are" (in Hoffman & Verdooren, 2018, p.69); that is, an event or exchange which is strange to one person is not strange to another.

The strangeness can be experienced as both positive and negative (Hoffman & Verdooren, 2018). People seek strangeness by travelling or putting themselves into new learning situations in various ways. In those situations, the strangeness can be experienced as fascinating, intriguing, exhilarating and enriching. At the same time, strangeness can be experienced as negative, seen as a threat and can lead to intercultural miscommunication, especially if we feel as though we have no control over the situation.

The negative side of strangeness has been explored through concepts such as in-group/ out-group (Tajfel, 1982), othering (Holliday et al., 2010) and in worse cases, racism and prejudice. In Tajfel's social identity theory, people are part of "in-groups" where they feel that they belong, and there are "out-groups" whom they do not identify with and do not experience any belonging to (cf. article 1 for discussions around "insideness" and "outsideness" in IGW). Therefore, "othering" can take place ("we" versus "they") where the out-group is construed as fundamentally different to the in-group and reduced to less than what they are (Holliday, 2019), for example with statements like "they do not understand work like we do" or "they are less polite than we are".

In my research, this feeling of strangeness is clearly shown at times in some of the encounters between the home (Swedish) students and the international students. Typically, the strangeness involves reactions to different engineering backgrounds, ways of working and use of tools which are seen as more or less effective. In articles one and two, most of the home students have already studied at the technical university for three years and therefore can be said to belong to their own "in-group" where they share a knowledge of the requirements of the courses and the tools that tend to be used. In some cases, they have attributed negative characteristics towards international students who have not understood how these processes work. In that sense, the home students have "expert power" (French & Raven, 1959) in their knowledge around expectations and processes.

One example of this expert power shown in article two connects to the knowledge around mathematical software, Matlab, that the home students have used throughout their education, and which is new to some of the international students. When an assignment relies on knowledge of Matlab, these differences come to the fore. The home students have the "expert power" and can be frustrated with an international partner who does not.

Though "in-groups" and "out-groups" are presented as inevitable, IGW can be a way to overcome some of the perceived barriers. Pettigrew's work on intergroup

contact theory (1998) showed that belonging to different groups can be changed. His theory described four processes in order to change perceptions of in/out-groups. The first is learning about the outgroup where contact with them can improve our image of them. The second is changing behaviour through repeated contact. The third is generating affective ties through friendship and empathy. The final process is ingroup reappraisal involving looking at one's own group in a different light. These processes take time which educational structures do not always allow for. The next section discusses the time factor in more detail.

2.2.2 Identity and development over time

Identity awareness and development are key components of intercultural awareness and need time to develop (Deardorff, 2006; Masgoret & Ward, 2006; Spencer-Oatey & Franklin, 2009). One theory of identity construction by Fougère (2008) is used in article one where he emphasises three key aspects: 1) the need for a sense of belonging 2) the opportunity to question and learn about one's identity 3) the possibility of development and change. In these aspects, he uses the metaphors of insideness/ outsideness, place and space, and in-between spaces to conceptualise people's intercultural journeys. "Insideness" and "outsideness" typically represent the person's own feelings of belonging to different situations and places. "Place" indicates the familiar whereas "space" symbolizes the new and different. "In-between" or "third" spaces indicate spaces where an individual can be both the same and different to those they interact with, and the group takes on its own culture which is separate from the individual group members.

This process of identity construction is followed closely in the longitudinal study in article one where the article explores five students' experiences in IGW and their sense of "insideness" or "outsideness" in relation to the group, both at the start and over time. One student in particular highlights his experiences of personal growth in the following way:

> I felt that this opportunity in my life was the fact of me as a little bird just jumping out of the nest and learning to fly by myself. (article 1, p. 10)

This student demonstrates the three aspects highlighted by Fougère (2008). Firstly, the student experienced a sense of belonging in the group he was part of. Secondly, the quotation above vividly demonstrates his personal development and change. Finally, another quotation illustrates the questioning of his own identity:

> The other day I was having this thought that if I look myself at the mirror…I think that I have changed in so many ways, I wouldn't be able to recognise myself. (interview 3) (article 1, p.10).

In this example, group work was one way to take this journey. In the next section (2.3), the affordances and challenges of IGW are explored further and its role in practising intercultural competence.

2.3 Intercultural group work (IGW)

Returning to the main research question, "How is internationalisation at home (IaH) realised in practice through the intercultural group work experiences of students and teachers in engineering education?" (section 1.1), IGW lies at the heart of this thesis (Figure 2.1). Research on IaH has highlighted IGW as one promising way to achieve IaH in practice (cf. section 2.1.1, Cozart & Gregersen-Hermans, 2021; Mittelmeier et al., 2022) while warning for the challenges involved. IGW is particularly interesting in relation to engineering education which has been portrayed as being rather reluctant to engage with IaH (cf. section 2.1.4) yet where group work features prominently (cf. article 3; Mercier et al., 2023). This section provides an overview of the literature within IGW and highlights the teacher perspective, a perspective which has been neglected (cf. articles 3 and 4).

IGW has been defined as:

> a collaborative approach to learning in which three or more students from different cultural or national backgrounds work together on set tasks, in or outside the classroom (Poort et al., 2019, p.219).

The literature on IGW has tended to interpret "different cultural or national backgrounds" as students from different nationality groups, which has also been the case in my own research. At the same time, in my own research and others (cf. article 1; Li, 2024), membership of other cultural groups, as discussed in section 2.2.1, have played an important role (see articles 1 and 4).

The term "intercultural group work" has many synonyms in the literature, such as "multicultural", "culturally mixed", "mixed national" and "cross-cultural"[8].

[8] I searched Scopus for the relative frequency of use of these terms using the collocation of one of these terms paired with "group work" OR "groupwork" OR "teamwork" in the

However, “intercultural group work” is used here for two reasons. The first is the connection to intercultural competence, which is often given as one rationale for undertaking IGW. The second is to highlight the *interaction* between the different cultures, rather than just having students from different cultures in the group.

Initially, the literature was dominated by researchers based in Anglophone contexts (e.g. UK: De Vita, 2002; Peacock & Harrison, 2009; Spencer-Oatey & Dauber, 2017; Australia: Denson & Zhang, 2010; Kimmel & Volet, 2010; Volet & Ang, 2012; Canada: Reid & Garson, 2017). However, in recent years, there have been increasing numbers of studies from other national contexts, particularly the Netherlands (Gregersen-Hermans et al., 2021; Li, 2024; Poort, 2022) and Denmark (Jiang et al., 2023; Tange, 2020). Over time, themes have also developed. The earlier literature, broadly speaking, focused on student challenges when working in multinational groups concerning aspects such as language proficiency, stereotyping and homophily. Later literature has had a broader agenda encompassing areas such as the influence of teacher interventions (Gregersen-Hermans et al, 2021; Li, 2024; Tange, 2020;) and other aspects of culture such as disciplinary cultures (Li, 2024).

In connection with the integration framework (Spencer-Oatey & Dauber, 2019) mentioned earlier, IGW is a good example of how structural and human elements come together. Group work is a pedagogical tool to *structure* a way of working in the classroom and the hope is that on a *human* level, students will collaborate and interact within their groups, though this can be challenging (Leask, 2009; Tange, 2020).

This thesis has approached the key research question about IGW in engineering education given at the start of this section with four sub-questions (see section 1.1). Table 2.2 below shows how these sub-questions connects to the research questions in each of the four articles:

---

abstract, title or keywords. “Intercultural” (40 hits) and “multicultural” (62 hits) are the most commonly used terms

Table 2.2: Connection between articles, main research questions and article research questions

Article	Main research questions for thesis	Research questions from articles
1	How is IGW experienced by the students over time?	1. What are the individual students' experiences in IGW? 2. Which factors affect individual students' experiences of IGW? 3. How do these experiences change over time?
2	How can intercultural pair work help students' integration, both academically and socially?	4. Which factors *helped* and *hindered* home and international students' integration into their study environment when working in intercultural pair work?
3	How is IGW perceived and experienced by teachers and program managers?	5. What empirical research has been carried out into teachers' perspectives and experiences of IGW in higher education? 6. What does the empirical research reveal about these perspectives and experiences?
4	How are multilevel goals connected to IGW realised in practice?	7. What are the formulated outcomes and purposes of IGW at multiple levels, from European to classroom level? 8. To what extent does teachers' planning of IGW align with the outcomes and purposes at multiple levels?

The first four questions focus on the student experience, and the next four questions focus on the teacher experience. These perspectives are explored further in the following sections.

2.3.1 Student experiences in IGW

As mentioned above, intercultural group work can be seen as one way to bring groups of diverse students together in the classroom and offers several affordances in doing so. It is important to keep in mind that context is important when considering affordances and challenges. Tange (2020) points out a more nuanced picture where aspects such as the type of group work, the role of the teacher, and the type of assessment all play a part in the student experiences, and

article four highlights the role of context when considering a multilevel perspective of IGW.

In terms of affordances, connecting to the aspects of knowledge, skills, and attitudes mentioned in connection with ICC (section 2.2), IGW has been described as developing these aspects. In a recent literature review of IGW in engineering education, Jiang et al. (2023) claim that IGW can enhance *knowledge* through intercultural understanding and cognitive growth; *skills* through developing students' competence development for the workplace; and *attitudes* like openness, respect, and belonging. In this review, the largest number of articles focused on competence development which is in line with my own findings from article four. As regards competence development, aspects such as improved collaborative, teamwork, communication, and professional skills were particularly highlighted.

Further advantages of IGW are summed up in Reissner-Roubicek and Spencer-Oatey's literature review (2021). They list the following areas:

- personal (gaining self-awareness and better learning practices)
- interpersonal (changing attitudes and making friendships)
- interactional (learning how to work with others)
- conceptual (gaining new ideas and solutions)

These areas could apply to any kind of group work, whether students are from the same nationality or different nationalities. However, in IGW, many of these aspects can become intensified. For example, in terms of new ideas and learning practices, some studies have emphasised the skills and cognitive benefits of having students with diverse backgrounds (Curşeu & Pluut, 2013; Poort et al., 2019) which was a help in problem solving, for example (Denson & Zhang, 2010). In terms of attitudes, studies have commented on the benefits of learning about and respecting diversity and getting an international outlook (Denson & Zhang, 2010; Montgomery, 2009; Poort et al., 2019). When well-managed, IGW encourages active engagement and meaningful interaction among culturally diverse peers (article 1; Mercier et al., 2023). Some studies have also identified IGW as enjoyable and valuable to students, particularly in preparation for their future working life (Montgomery, 2009; Peacock & Harrison, 2009; Poort et al., 2019). Overall, IGW has the potential to provide both home and international students with crucial personal, academic and professional experience.

However, IGW presents added challenges that extend beyond those of general group work which, in the literature, have tended to be more in focus than the advantages. While issues like lack of communication, collaboration, leadership, and motivation can be common in all group work (Mercier et al., 2023), they are often intensified in IGW due to increased differences in academic backgrounds and cultural expectations (Gregersen-Hermans et al., 2021; Jiang et al., 2023; Reissner-Roubicek & Spencer-Oatey, 2021; Tange, 2020). For example, concerning communication, language barriers have been mentioned as one of the main issues in IGW, including unequal English proficiency and varied communication styles (Jiang et al., 2023; Spencer-Oatey & Dauber, 2017). As regards collaboration, students have tended to self-select into culturally homogenous groups (Harrison & Peacock, 2010; Moore & Hampton, 2015; Summers & Volet, 2008; Tange, 2020; Volet & Ang, 2012) and students experience stress when working with peers perceived as culturally unfamiliar, which can hinder group performance (Strauss & Young, 2011; Turner, 2009).

This picture has more recently been challenged from non–Anglophone environments, not least in my own research. For example, language proficiency has not been highlighted as a major issue (article 2; Poort et al., 2022). In addition, several studies have shown that negative student perceptions of IGW can be reversed through showing the affordances of this way of working (Li et al., 2023; Poort et al., 2023) and that initial perceived costs of IGW faded and benefits were longer lasting (Poort et al., 2019). Another of Poort et al.'s (2022) studies into over 1000 students found trust to be a significant factor in engagement in IGW and found that cultural diversity also promoted engagement.

Though student experiences of IGW have been more widely researched, this is not the case with teacher experiences of IGW.

2.3.2 Teacher experiences in IGW

Returning to the integration framework (Table 2.1), the teacher role is important both in a *structural* sense and a *human* sense. In terms of *structure*, teachers are central to designing and facilitating IGW within the course and classroom setting which includes designing content, forming groups, and supporting and assessing the groups. At the same time, teachers are part of a larger structural context. Leask and Bridge (2013) for example, in their framework for internationalisation of the curriculum, include the disciplines within the broader contexts of institution, local, national and regional, and global, also discussed in article four.

These other contexts might place demands on the teacher in terms of the curricula and how the course fits into program and institutional goals as a whole.

On a *human* level, teachers interact with and have the possibility to promote interaction amongst the students. One significant theme emerging in article three was that of interaction, between teacher and student, between students and between teachers and how to facilitate this interaction successfully. Interaction is vital to ensuring the success of IGW (Leask, 2009; Li et al., 2023; Tange, 2020). Leask (2009), for example, argues that:

> simply requiring home and international students to work together in groups on tasks, without adequate preparation or support, will not lead to meaningful and valued interaction between the two groups or support internationalisation of the curriculum. (p. 211)

At the same time, teachers' experiences in IGW have not been explored extensively in research. The literature review undertaken in article three found relatively little published on teacher experiences in IGW (10 articles with this perspective in focus and a further 16 where there was indirect data). However, interestingly, the majority of studies were from engineering education, particularly concerning virtual group work and the discipline area of software engineering. These findings suggest that while teacher interest in internationalisation within engineering education has been portrayed as problematic, the area of IGW seems to be interesting for at least some engineering educators.

As regards structural concerns, one aspect shown to be lacking in article three was the context beyond the course and classroom i.e. the broader institutional context. Article four worked on addressing this gap in the literature with a multilevel focus on planning IGW with a focus on group forming and the teacher perspective. The article is summarised in Figure 2.2 below (taken from the article):

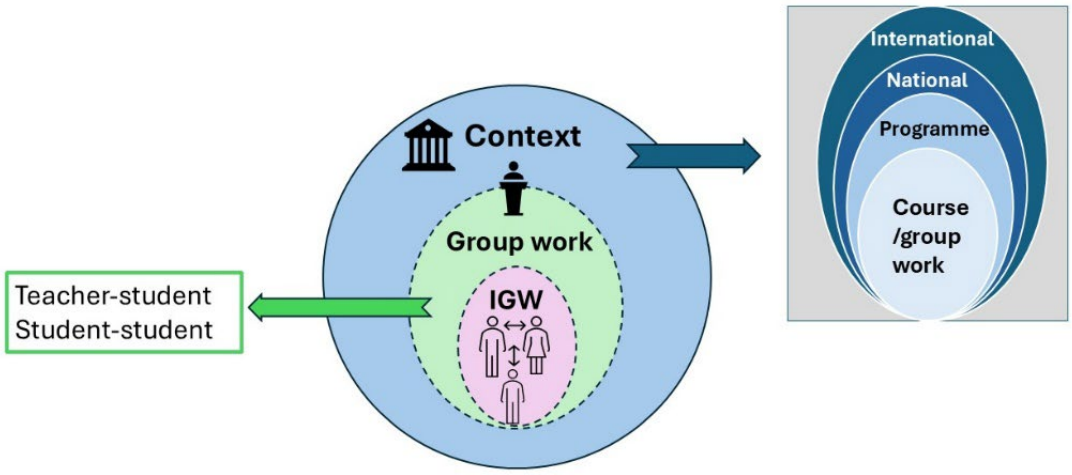

Figure 2.2: Conceptual framework showing the relation between intercultural group work and the context

The figure illustrates the role of teacher (represented in black) in combining structural and human elements of IGW. In the figure, the teacher straddles the structural, multilevel aspects in the outer circle and the human interaction happening in the group work in the inner circles. Structurally, the levels start from course/ group level in the inner circle and include all levels to national and international, mirroring Leask and Bridge (2013). The article argues that the broader context does have an impact on teacher planning of IGW in terms of purpose, facilitation and assessment but at the same time, the teacher's own purpose for the IGW plays a significant part as well.

2.4 Concluding thoughts

In conclusion, in order to address the question of how IaH can be realised in practice through IGW experiences, this chapter has outlined the conceptual and theoretical foundations of the thesis, focusing on the key concepts of *Internationalisation at Home (IaH)*, *intercultural competence (ICC)*, and *intercultural group work (IGW)*. Through an examination of these three interconnected areas through the literature, the following gaps have been briefly summarised below:

1) **Lack of research within engineering education**: though IaH in higher education has been researched fairly extensively, the field of engineering education has been lacking in the literature (Ramstrand et al., 2026; Zou et al., 2023).

2) **Few studies outside the Anglophone setting**: until recently, the Anglophone setting has dominated in many IGW studies where, for example, communication dynamics might differ from non-Anglophone settings (Harrison, 2015).

3) **Lack of teacher perspectives**: the majority of the IGW literature has focused on the student perspective (article 3), thus it remains unclear how teachers experience IGW despite the fact that they are key to making IGW work in practice (Ambagts-van Rooijen et al., 2024; Beelen, 2019; Leask, 2015). Furthermore, the existing research in the area focuses on virtual group work rather than between students on the same campus (article 3).

4) **Lack of a broader perspective**: current IGW research has tended to focus at the classroom and course level therefore missing the possible influences beyond the classroom (Leask & Bridge, 2013). Moreover, few studies have taken a longitudinal perspective.

5) **Binary approach to home and international students:** many studies have tended to discuss trends and characteristics according to home and international students as though they are two homogenous groups (Spencer-Oatey & Dauber, 2017).

6) **Lack of theorising within the IGW literature**: research has tended to focus on empirical findings and the practical implications thereof. A more conceptual, theoretical approach has been missing.

Therefore, my research contributes in the following ways:

a) **Engineering education and teacher perspective**: Articles one, two and four focus on engineering education, both in a Swedish (articles 1 and 2) and a European setting (article 4). The earlier articles focus on the student perspective and the latter articles on the teacher perspective.

b) **Multilevel, holistic perspective**: article four approached IGW from a bottom-up and top-down perspective, looking at teachers' experiences in the light of institutional, national and international goals and expectations.

c) **Mosaic, longitudinal view of identity and belonging**: articles one and two move beyond a binary approach to IGW and embrace other aspects of identity and belonging across the student experience. Article one investigates critical incidents that change perceptions of belonging over time.

d) **Conceptualising IGW**: article four provides a conceptual framework of the role of the teacher, inspired by an integration framework (Spencer-Oatey & Dauber, 2019). This framework emphasises the key contributions of both human and a structural perspective.

This contribution is explained further in the article summaries (chapter four) and analysed in the discussion (chapter five).

3. Methodology and methods

This chapter provides an overview of the methods I have used in my research, as reflected in the four articles. First, a reminder of the main research question:

> How is IaH realised in practice through the IGW experiences of students and teachers in engineering education?

This question emphasises the *experiences* of both students and teachers within IGW taking part in group work at the same university. To capture these lived-in experiences, which aligns with a constructivist epistemology, I have chosen qualitative approaches as the main method of data collection. This is in order to be able to understand and explore their experiences in more depth, particularly in articles one and four. Overall, this has been reflected in a pragmatic approach meaning that in each study, the research questions have determined the exact method and strategies used.

First, I will outline my research philosophy, influenced primarily by paradigms within intercultural communication research and connected to my own positionality. Then I will describe my data collection and analysis before exploring ethical aspects of my research.

3.1 Research paradigms used in my research

One key question to determine the choice of research paradigm is what the research is aimed at (Feilzer, 2010). In my case, the answer lies in my interest in capturing the rich experiences of both students and teachers working with IGW. In the case of students, I wanted to look beyond the labels of "home" and "international" already reflected in the literature and in the case of teachers, little was published in this area. In order to reflect this complexity, I have tended to adopt a constructivist paradigm in line with the cultural mosaic framework (Chao & Moon, 2005).

In the constructivist paradigm, culture and intercultural differences are seen as socially constructed and the understanding of culture is seen as subjective (Zhu, 2016). The constructivist paradigm assumes:

> a relativist ontology (there are multiple realities), a subjectivist epistemology (knower and respondent co-create understandings), and a naturalistic (in the natural world) set of methodological procedures. (Denzin & Lincoln, 2018, p. 57)

In terms of multiple realities, constructivism acknowledges different perceptions depending on who is viewing and what is viewed, in other words, that subjectivities matter. This approach acknowledges co-created understandings, both between interviewer and interviewee but also in other meetings, for example, between students in my case. Constructivism also requires more open-ended questioning, to allow the participants to construct their own version of a situation (Creswell & Creswell, 2018). Some researchers have also referred to social constructionism to emphasise the group element of knowledge acquired through human interaction as opposed to that acquired through a more individual perspective (cf. Crotty, 1998). While this group element is important in my research, I have followed the intercultural literature (Holliday, 1999; Zhu, 2016) and not distinguished between constructionism and constructivism. Since subjectivities matter, my own positionality is important to outline, which I do in section 3.2 below.

The earlier, and still very influential, research in intercultural communication tended to be more positivist in nature. This might entail, for example, cultural norms being identified and seen as measurable; generalising cultural patterns; comparing national cultural groups; and using cultural values to explain behavioural patterns (Zhu, 2016). Researchers in this area include Hofstede et al. (2010), and Trompenaars and Hampden-Turner (2011). Similarly, conceptualisations of "home" and "international" students in the internationalisation at home literature have also leaned towards generalised patterns of behaviour (Lomer & Mittelmeier, 2021). This is a perspective that I have problematised in my research.

More recently, intercultural communication research has moved towards more of a critical perspective. Intercultural communication researchers such as Dervin (2014) and internationalisation researchers such as Marginson (2023) and Stein (2019) have positioned themselves more within this paradigm where macro contexts (historical, social and political) play a more central role in understanding some of the power and ideological dynamics behind cultural differences. This paradigm has not featured strongly in my own work, but I have tried to remain aware of the power dynamics at play in analyses.

Throughout my research, I have taken a broadly pragmatic stance. This is an approach closely connected to mixed method research (used in article 2), where "the research question, not the paradigm or purpose, should dictate the methods and strategies used" (Tashakkori et al., 2015, p.622). Creswell and Plano Clark

(2011) describe the pragmatic approach as problem-centred, pluralistic and real-world practice oriented. According to Feilzer (2010), pragmatism:

> sidesteps the contentious issues of truth and reality, accepts, philosophically, that there are singular and multiple realities that are open to empirical inquiry and orients itself to solving practical problems in the "real world" (p.8).

Feilzer (2010) refers in this quote to the debates that have existed for many years around affordances and issues with qualitative and quantitative research, hence the reason that pragmaticism has been so closely connected with mixed method research (Creswell & Plano Clark, 2011; Johnson & Onwuegbuzie, 2004).

In my research, a pragmatic stance has meant changing approaches according to the study, as shown in Table 3.1 below. Articles one and four aimed to explore students' and teachers' experiences and attitudes towards intercultural group work and therefore I took a constructivist approach using semi-structured interviews with a relatively small number of participants. Article three similarly took a constructivist approach in a scoping review. This review aimed to describe the empirical research which had been carried out into teachers' experiences of IGW and analyse some of the insights from this, involving initially an exploratory approach followed by an analysis. Article two, on the other hand, aimed to identify factors connected to students' integration when working in intercultural pairs and thus a broader range of data was necessary. This involved a mixed method approach, in this case a convergent parallel design (Creswell & Plano Clark, 2011) where two different methods, quantitative and qualitative, were combined to triangulate results about a single topic in order to be able to describe trends in the data. Table 3.1 illustrates this in more detail.

Table 3.1: Overview of methods in the four articles

Article	Research questions	Methods of data collection & analysis	Objects of enquiry
1	1. What are the individual students' experiences in IGW? 2. Which factors affect individual students' experiences of IGW? 3. How do these experiences change over time?	Longitudinal interview study Qualitative content analysis	5 mixed nationality students on one computer science program
2	1. Which factors helped and hindered home and international students' integration into their study environment when working in intercultural pair work? 2. How did the online set up affect the students' integration?	Longitudinal structured diary study + end of course interviews Descriptive quantitative analysis Qualitative content analysis	Whole class of 64 mixed nationality students studying mechanical engineering
3	1. What empirical research has been carried out into teachers' perspectives and experiences of IGW in higher education? 2. What does the empirical research reveal about these perspectives and experiences?	Scoping review Qualitative content analysis	36 articles
4	1. What are the formulated outcomes and purposes of IGW at multiple levels, from European to classroom level? 2. To what extent does teachers' planning of IGW align with the outcomes and purposes identified at multiple levels?	Interviews and official documents Qualitative content analysis	Documentation on learning outcomes 12 teachers at 2 European universities Survey to over 200 students (not analysed in the thesis)

The objects of enquiry are described further in section 3.4 Data Collection.

3.2 Positionality

In the constructivist paradigm, all perspectives, including the researcher's own, play a part in planning the study and interpreting and constructing the results (Creswell & Creswell, 2018; Denzin & Lincoln, 2018; Mann, 2011). It is therefore important to outline my own positionality, both more broadly in relation to the research as a whole and more specifically in relation to the data collection and analysis.

In terms of the choice of topic, my own background and role is relevant. I moved to Sweden from the UK over 25 years ago. I have worked with international students in various roles for over 30 years in six countries on four continents, and for 25 years, at my current university, working with engineering students from many different backgrounds. At the present time, I work as a lecturer in intercultural communication, primarily with master's students and faculty. My work has undoubtedly led to my interest in this topic, since it has a direct impact on the work that I do and the people I meet on a daily basis. Likewise, I have some sympathy for the role of the 'outsider' and adapting to an unfamiliar environment, having been through this process many times myself.

In terms of the data collection for articles one, two and four, my role at the university was very valuable in recruiting student and teacher candidates for the studies. The students involved in the data collection for articles one and two were taking engineering courses where I was involved on a small scale, providing some input in terms of a workshop on intercultural communication. However, I was neither involved in grading nor in any kind of assessment on these courses. Some of the teachers for article four were teachers that I was working with or have worked with. This involvement can be seen from two perspectives.

On the one hand, I hold a position of power (as any lecturer does) and this, combined with the fact that I was holding intercultural communication workshops, might well influence participation and responses. For example, it might affect how willing participants were to volunteer for the study and how much they were prepared to share. It probably made it easier to recruit participants, but it also might inhibit critical responses. Due to the workshops, they were aware of my own positionality and had started to think around these issues.

On the other hand, this emic position provided some valuable insights. My experience at the university and on those courses meant that I was familiar with the environment and contexts the students were working within. This familiarity

in turn provided insider information on the challenges they face, albeit from a lecturer perspective (and with the risk that familiarity leads to assumptions). These deeper insights are in line with the constructivist approach, in interpreting a specific context.

Given the possible ethical concerns, however, with recruitment of participants, it was even more important that ethical principles were followed throughout, in both the collection and analysis of data, and in relation to the involvement of the co-authors to my articles. This process is explained in the next two sections.

3.3 Data collection

In choosing a method to capture the complexity of IGW and gain insight into both teacher and student experiences, qualitative methods played an important role. In particular, interviews were a part of the data collection in articles one, two and four. At the same time, a key consideration was to achieve both breadth and depth within the data. Accordingly, the main data collected for article two was from weekly student diaries, a method that is less commonly used within the field of intercultural group work. In addition, the scoping review in article three served to provide an overview of the current situation concerning research into teacher experiences.

3.3.1 Interviews

Interviews are the backbone of qualitative research and used extensively within intercultural research (Bryman, 2016) and this also applied to my own research (articles 1,2,4). The advantages of interviews are that they can capture the participant experience in a fuller way. The participant can present their perspective, the data is rich and nuanced, and it is possible for the researcher to follow up on interesting areas (Brinkmann & Kvale, 2015).

In articles one and four, I used semi-structured interviews, where questions were prepared to guide the interview but there was freedom within the format to ask follow-up questions and develop further interesting paths and stories (Edwards & Holland, 2013). Having this protocol meant that it was possible to compare interviews since they followed the same format but at the same time, I could reap the benefits of hearing the stories that the participants wanted to share. In both articles, I also took a longitudinal approach, where participants were interviewed over a period of time to follow their changes and progression, which is less common within intercultural group work research.

The interviews conducted for article two differed from this format. These interviews took place after the end of the course and involved stimulated recall (Sanchez & Grimshaw, 2019) connected to documents the students had prepared in class. The main focus was a summary of the student's weekly diary comments which I had prepared prior to the interview, but I also brought the results of a "cultural star" where the student had described their background as a class exercise. The documents served as a stimulus for the students to recall events to facilitate our discussion. This process can counteract one of the issues of interviews in that when participants are recounting their experiences retrospectively, there can be question marks over the reliability of the information which has been filtered through time and other experiences since then (Creswell & Creswell, 2018).

In terms of selection of participants, this happened purposively for all the studies (Bernard, 2013). For article one, it was important to be able to interview both Swedish and international students and therefore certain students were approached by the course teacher and asked if they could volunteer. In article two, selection depended on two criteria: students who were studying full-time for the whole master's program and those who had filled in all diary entries during the course. All students who fulfilled both criteria were mailed and asked to participate in an interview, which resulted in eight interviews out of a possible 31. In article four, teachers were selected at the two universities who had used IGW in their courses and taught in equivalent disciplines. All participants were interviewed in English which was not the first language for any participant. This was for two reasons: mostly it was the only shared language we had and the context we were working within used English as lingua franca.

Despite the advantages of interviews for data collection, as explained above, they nevertheless have their limitations. Firstly, the number of participants is relatively low in order to be able to process the data. Though there is some discussion around an ideal saturation point for interviews (Edwards & Holland, 2013), the fact remains that a relatively small group are interviewed and their stories are not necessarily very representative of the group as a whole. Since the interviews are conducted with volunteers, the rationale for participants to volunteer might be questioned. For example, in the case of student interviews, those who are struggling with their IGW, are probably more reluctant to volunteer. This needs to be considered when interpreting results.

Secondly, related to the student interviews, there are also potential power issues at stake when a student is talking to a researcher (and in my case, a lecturer on the course) which might affect how students present themselves and convey information (Mann, 2011). This topic is addressed more thoroughly in section 3.5.1 under ethical aspects.

Given the first limitation concerning the number of participants, in the second article, I therefore widened the data collection to include student diaries from one whole student group to gain broader and more representative insights.

3.3.2 Diaries

The diary-interview method was already used in the 1970s by Zimmerman and Wieder (1977). Diaries produced for research purposes (rather than a private diary) are known as solicited diaries, defined as:

> records of researched phenomena, produced under researchers' guidance, based on events or recorded at regular intervals, which records in essence participants' perceptions and reflections on their experiences. (Cao & Henderson, 2021, p.4).

Diaries can range from highly structured (more quantitative) to unstructured (more qualitative); be event-based or interval-based over varying lengths of time and produced in various formats from computer written to audio, video and photo.

For article two, 64 students filled in a diary on a weekly basis, over a period of eight weeks (the duration of their course) where they responded to fixed prompts connected to a Likert scale but also commented on their responses within the three categories of academic, social and pair work. The diaries were accessed using Microsoft forms with a link that only I and the students had access to. I then followed up the diary data collection at the end of the course with interviews with eight students, as described above. This data collection method was inspired by Beaven (2012) who used a similar method to follow the experiences of Erasmus students.

As mentioned, one reason for using solicited diaries in combination with interviews was to get a broader range of student voices. Other advantages were as follows:

- Triangulation: the diaries (both the Likert scale prompts and the comments) and the interviews provided a way to get multiple insights into the student perspective
- Less intrusive than interviews: since the students were filling in the diary in their own time and space, there was less risk of researcher influence on their responses
- Encouraged self-reflection: the action of filling in the diary on a weekly basis, encouraged the students to reflect on their processes (Cao & Henderson, 2021).

Typical challenges of diary studies are participation fatigue where the data quality can deteriorate over time as a result of a decline in student motivation (Mittelmeier et al., 2021). More seriously, the usual ethical concerns of anonymity can be challenged at times if students report particularly personal data. In my case, this was not so much the case in the diaries but the follow-up interviews. These situations are discussed further in section 3.5. Participation fatigue, while also a challenge in this data collection, was still manageable due to the relatively short length of time of data collection and the small amount of text that the participants were required to produce. The diary was also included as part of the students' weekly tasks in the course which ensured continued participation, although it poses some issues from an ethics perspective (discussed further in section 3.5).

3.3.3 Contextualisation: other forms of data collection

In order to provide a fuller and deeper understanding of the context, particularly the role and function of the IGW in the course, other forms of data collection were carried out which were not directly used in the analysis. These are listed below and commented on briefly afterwards:

- Class observations (articles 1,2,4)
- Access to the course learning platform including course materials, assignments and student activity (articles 1 and 2)
- Interviews with the course managers (article 2)
- Documentation connected to the course: course overviews, more detailed course descriptions, course assessments and course evaluation (articles 1,2,4. In article 4, the course description was part of the analysis)

Class observations took place at least once in the articles described above: once in each of the courses in articles one and two at the start of the courses and once in the Belgian context towards the end of the course. In the latter case, this was connected to feasibility. Observations took place on campus apart from article two, where they took place online due to the pandemic. The purpose of the observations was threefold: to observe the setting of the course; to gain awareness of how activities were presented and performed in reality, and to gain a sense of interaction between the teacher and students. I presented myself to the students and my reason for being there. In all cases, I strived to be as unobtrusive as possible by sitting at the back of the classroom and avoiding contact. Online, I kept my camera off. During the observations, I kept notes pertaining to the three purposes listed above.

An interview with the course manager for article two was arranged at the start of the course to gain a clearer understanding of the course description, the student group and how they planned to run the course given those two parameters. It was particularly interesting to hear how the course manager adapted the teaching at short notice to an online context in the pandemic. For article one, I had been involved in the course for some years already so was more familiar with the two parameters described.

As concerns documentation, this was an important part of the data collection for article four where the course descriptions were analysed for the learning outcomes. Otherwise, the documentation served to provide a fuller picture of the course and the function and assessment of the IGW within it.

3.3.4 Research settings

There were different settings in articles one and two (the student perspective) compared to article four (the teacher perspective). Articles one and two were based on a Swedish perspective whereas articles three and four looked beyond Sweden.

In articles one and two, when investigating the student perspective, the data was collected from master's students at a medium-sized technical university in Sweden (approximately 11,000 students with over 2,000 students at master's level). Sweden is an interesting setting for research on IGW. It is a non-Anglophone environment where English is used as second or other language, which is in contrast to much of the IGW research which comes from Anglophone settings. With that said, it is a highly internationalised environment with high levels of language proficiency in international tests (Malmström & Pecorari,

2021). At the technical university mentioned, both the teacher and student groups are also highly international, from master's level and upwards, and English is often the norm for formal and informal discussions, despite the fact that Swedish is the official language of the university.

At the technical university focused on in this research, at master's level, two thirds of the full-time students were Swedish and one third, international. Of the international students, over 80 countries were represented though at the time of the data collection, the largest group was from India (approximately one third of the international students) with Chinese students in second place (approximately 15 percent). The ratio of Swedish to international students and the nationalities represented varies considerably from program to program (there are over 45 master programs offered). Students on short term exchanges such as Erasmus students were not included in the data collection, though they are a significant group (about 500 students per year) and tend to study at master's level, since the bachelor programs are predominantly held in Swedish. A master program in Sweden takes two years to complete (in line with many universities in Europe).

These statistics were affected during 2020-2022, due to the Covid-19 pandemic, when the data was collected for the second article. The pandemic had two consequences. The first was that the numbers dropped, both in terms of number of students but also in number of countries represented. For example, the number of Indian students dropped from over 330 starting in autumn 2019 to 176 starting in autumn 2021. The second consequence was that education moved from being on campus to being online in March 2020. This meant that some students, particularly the international ones, studied from their home countries due to visa restrictions in the pandemic. The situation in Sweden, however, was that it was still possible to meet in small groups, so some students met on campus for group work activities.

In article four for the teacher data, the Swedish technical university was included once again but with the addition of a large, multi-campus university in Belgium. While the study focused on one Belgian campus offering engineering degrees with an international profile for comparison purposes, the Belgian context as regards language use is quite different to the Swedish context. Whereas English is the lingua franca in the Swedish setting from master's level and upwards, at the Belgian campus, there are two parallel degree programs given, one in English and one in Dutch (from bachelor's onwards). This means that Flemish students tend to take the Dutch speaking track and the international students tended to

take the English-speaking track. However, the students can end up in the same courses from time to time, and then English is the language used, as was the case with article four. It was interesting to note that the majority of teachers I interviewed in the Swedish context were non-Swedish whereas it was the opposite way round in the Belgian context, where the majority of teachers were Belgian. While this was not investigated in my research due to low numbers, it would be interesting to pursue further the ways in which these factors might also affect classroom interaction.

3.3.5 Scoping review

Article three differed from the other articles methodologically in that it was a scoping review. The decision to carry out a scoping review was taken at a time when I decided to change perspectives in my research from a student to a teacher perspective due to an emerging sense that little was published on the teacher perspective in IGW, compared to the student perspective. When undertaking a literature review, there is typically a choice to be made between two types of review:, a scoping review and a systematic review (Arksey & O'Malley, 2005; Grant & Booth, 2009; Munn et al., 2018). The former is used to explore a topic and address a broad question whereas the latter is more common to answer a more well-defined question and address the quality of the included studies (Arksey & O'Malley, 2005). In the case of article three, one of the main research questions concerned the type and amount of empirical research that had been carried out into teachers' perspectives and experiences of IGW. Since this question is broad, a scoping review was deemed to be more appropriate.

Both types of review involve following a set process using guidelines provided by the PRISMA 2020 statement (McGowan et al., 2020). I used the five steps described by Arksey and O'Malley (2005), as shown in article three, from initially identifying the research question to selecting literature using clear criteria and finally collating the results thematically. This process involved some key decisions such as formulating the search string, identifying the inclusion and exclusion criteria and deciding on the databases to use. Each of these decisions need to be taken with care since it will make a large difference to the results found and the reliability of the results. Accordingly, I consulted librarians and referred to other related literature studies for guidance.

Two dilemmas arose when establishing the inclusion criteria for the review: the type of literature to be included and the choice of publication language. Regarding the former, both scholarly books and online sources were identified

that addressed research on teachers and IGW. However, in line with decisions made collaboratively with my co-authors, the review was restricted to peer-reviewed journal articles. This decision was based on the assumption that journal articles typically undergo a formal peer-review process, which is not consistently the case for other forms of extended literature, such as books or web-based publications.

With respect to language, the initial search strategy involved the use of English search terms applied to titles and/or abstracts in any language, based on the assumption that publications in other languages frequently provide an English abstract. This approach resulted in the identification of three potentially relevant publications in languages other than English. Nevertheless, it proved difficult to assess the quality of these articles and to determine whether they met the remaining inclusion criteria. Consequently, the decision was made to limit the review to articles published in English, a choice that aligns with methodological practices commonly adopted in literature reviews within this research field.

3.4 Data analysis

Since the data collected in this research was predominantly qualitative, the data analysis in the four articles was mainly carried out using qualitative content analysis (QCA) (Cho & Lee, 2014; Miles et al., 2014; Schreier, 2012), as shown in Table 3.1. This approach is therefore the main focus in this section.

3.4.1 Qualitative content analysis as used in the articles

QCA is similar in some respects to grounded theory (Charmaz, 2014) in that both involve a systematic coding process of the data. The difference, though, is that in QCA, the end goal is not generating a theory but finding themes from the categories (Cho & Lee, 2014). In my research, these themes then led to a revisiting of theories, using an abductive approach (Moscoso, 2019; Timmermans & Tavory, 2012). An abductive approach is a creative, inferential process using theories and empirical data to generate plausible hypotheses. What is important to emphasise is the constant movement back and forth during the process, where the data categories are compared with the theory to ensure that the interpretation reflects the data as accurately as possible (Lindgren et al., 2020).

In the systemic coding of the data, I used Yin's (2016) analytic process of assembling, dissembling, reassembling and interpreting. In short, this process involved compiling the data in NVivo (assembling), and producing initial coding based on the questions asked and on topics that emerged from the data

(dissembling). These topics were discussed in a debriefing between the authors which led to grouping the codes into themes (reassembling). Finally, interpretation took place through an abductive process of examining the themes in the light of relevant theories. It is important to emphasise the iterative nature of this process and that it takes place over a period of time.

Since I used a similar process in all four articles, I will describe the process in more detail for the first article and more briefly for the subsequent articles. In article one, the data consisted of the 15 interview transcripts. First, I transcribed the data through listening to the audio recordings and writing the script, keeping as closely as possible to the spoken word but not observing non-verbal signs such as pauses (Bryman, 2016). Then, the transcripts were cleaned of any personal or identifying data. At the same time, I kept analytical memos of my impressions when transcribing regarding emerging themes and highlighted interesting quotes in the transcripts themselves. The cleaned transcripts were uploaded into the qualitative data analysis software, NVivo 12 Pro. In NVivo, initial coding was produced for each transcript based around the interview questions (dissembling) (Saldaña, 2011). During this process, topics emerged from the data, such as "individual contributions to the project group", "strategies for working in a team" and "thoughts on working in a culturally diverse team". A particular focus was their discussion of positive aspects and challenges of working in diverse teams, both in general and in their own group. These topics were discussed in a number of debriefings with other researchers, primarily the co-authors, which led to grouping the codes into themes (reassembling). These themes highlighted issues around "insideness" / "outsideness" which led to an abductive process of examining the themes in the light of Fougère's (2008) spatial metaphors for identity construction (interpretation). In this process, I constantly compared the theory with the coding and transcripts in order to represent the students' voices in the most representative and trustworthy way, using my co-authors for peer debriefing (confirmability). Other theories were explored in the process, such as Bhabha 's third space (1994) and Kramsch and Uryu's hybridity theory (2012).

Article four contained similar data to article one, that is interview transcripts. This time the transcripts were digitally generated using Microsoft Word's inbuilt transcription tool before checking and cleaning and NVivo 14 used for the analysis. Once the transcripts were coded and emerging themes were discussed between the co-authors, the codes were analysed abductively through the lens of existing research on IGW to identify categories, drawing inspiration from Jiang

et al. (2023), article 3, and Riebe et al. (2016) and keeping the research questions in mind.

In article two, the qualitative data consisted of diary comments and eight interview transcripts. First the diary comments were compiled in NVivo and coded comment by comment, according to the categories of experiences of the academic, social and pair work. Then the transcripts of the interviews were used for abductive interpretations of the diary data. This triangulation of the data involved comparing diary comments with interview comments made on a similar topic such as "high workload" to provide additional depth and richness to the responses. Since the emerging themes related to processes of integration in academia, the integration model from Tinto (1975) and framework from Spencer-Oatey and Dauber (2019) were used as lenses to interpret the data.

In article three, the data consisted of the articles in the scoping review. These were uploaded in NVivo and the coding focused on the parts of the articles discussing the teacher experience of IGW. This resulted in three overarching categories: planning, implementing, and reflecting.

3.4.2 Ensuring trustworthiness

QCA is commonly used within qualitative research as a way to represent the richness and complexity of the material (Miles et al., 2014). In my case, it provided an opportunity to explore the data without preconceived notions and without trying to fit the data into a prescribed model. In that way, I was able to focus on the students and teachers' voices and the concerns most pertinent to them in the initial stages of the analysis.

A common criticism of QCA is its subjective nature, yet this is core to a constructivist paradigm. Different people will highlight different aspects and the researcher is a participant in the process. However, it is important to ensure trustworthiness. In this research, I considered aspects of credibility, transferability, dependability and confirmability (Ahmed, 2024; Guba, 1981), as described below.

In terms of credibility, there was prolonged engagement with the material ensuring a deep understanding, as well as triangulation with the data. Additional data were collected, such as observations, course material and evaluations to provide extra depth and context, as described in section 3.3.3. For transferability, the context has been described in as much detail as possible as well as a description of the sampling strategies. In terms of dependability, an audit trail

was kept of decisions made. For confirmability, peer debriefing was engaged in with the co-authors as well as other colleagues. This involved coding with multiple researchers, iterative discussions of the data and checking relevant theories (Schreier, 2012). In this way, we were able to build a representative picture of the participants' experiences, in particular, through taking time over the repeated iterations of the abductive process.

3.5 Ethical aspects

Given the potential personal and sensitive nature of this research and data collection, ethical aspects were extremely important to plan for and take into account in this research. At the core, are the fundamental tenets given in the Swedish guide to the Ethical Review of Research on Humans (Görman, Swedish Ethical Review Authority[9], 2023) such that:

- Research must have respect for the value of human beings
- Human rights and fundamental freedoms must always be considered
- Human welfare should be given precedence over the needs of society and science (p.13)

This section will be organised according to sections from the Ethical Review, which is also common practice in qualitative research. It should be noted that I applied for ethical approval to the Swedish Ethical Review Authority, but the decision was that this approval was not necessary since the research was not deemed to contain sensitive personal data. Thus, while I had a data management plan and carried out the research according to the areas described below, no further action was deemed necessary.

3.5.1 Recruitment and selection of research participants

For the recruitment of both students and teachers, finding participants that fit our requirements for the different studies was more important than the number of participants. As regards interviews, as mentioned in section 3.2, I was already in contact with the student participants through my interventions and in these courses, students were invited for an interview after being given information about the project. Students were thus free to make that decision themselves, but this also meant some compromises on my part. For example, in article two, I would have liked a mixture of Swedish and international students to interview, but only international students volunteered. In article one, the main teacher of

[9] In Swedish, Etikprövningsmyndigheten

the course encouraged students to participate in order to get a mixture of backgrounds, but at all times, it was made clear to the students that this was their choice and that they could withdraw at any time. Students were given a small incentive to participate in the form of a gift voucher for the university shop.

As regards the diary data, students completed the diary as a class assignment but were asked to give their consent to be able to use the data (see section 3.6.2). Those students who did not give their consent had their diaries withdrawn from the data analysis.

Recruiting teachers was less sensitive due to a different power dynamic. For article four, I approached teachers in the Swedish context and a fellow researcher recruited teachers in the Belgian context. It was still important, however, that the teachers received information about the project and gave their consent as detailed in section 3.5.2.

There were deemed to be no risks, physical or otherwise, to any of the participants in taking part in this project. In conducting semi-structured interviews with open-ended responses, there is always the risk that participants will share sensitive information. For example, the interviews for article two were held during the pandemic and some students had emotional reactions when retelling their experiences of the course. In these cases, I stopped the interview recording and reassured the student that the information would not be used in the research. I also directed the students to pastoral care to get support.

3.5.2 Information and consent

As explained in the previous section, all participants in the data collections for articles one, two and four were given information about the project, according to the requirements of the Ethical Review Act (section 16). This included the overall plan for the research; the purpose of the research; the methods that would be used; who the principal investigator was; that participation in the research was voluntary; that the research participant had the right to discontinue their participation at any time and how the data would be managed.

This information was given in the form of a consent sheet which the participant then signed and dated before taking part in the study. These consent forms were retained and the participant was able to keep a copy if they wished.

3.5.3 Management, archiving and disposal of personal data

The data was managed according to GDPR rules and those of the ethical review guide. This meant in practice that the following safeguards were observed:

- Pseudonymisation
- Storage of the data on my computer—password protected—where I was the only one with access
- Retaining the data for a limited time period

The research data, including transcripts and the diaries, were saved on my computer using pseudonyms and a key to the pseudonyms kept in another folder.

Observing anonymity was the biggest challenge of these three. With a small number of participants, such as in articles one and four, there is a delicate balance between being transparent about the data collected and at the same time, protecting identities. For example, in article one, while I gave the nationalities of four of the five students, I used a continent for one of the students (South America) since the university has relatively few students from this continent and giving the country would make the student potentially identifiable. Similarly, if the participants named other people in the interviews, these names were also changed or removed.

In conclusion, a constructivist-pragmatic approach to the research led to predominantly qualitative data collection and analysis. The next section contains more detail about how this was realised in each of the four articles.

4. Summary of appended articles

The focus of this chapter is to summarise the four published articles appended at the end of the thesis, and in doing so, highlight the key findings and how these relate to the conceptual and theoretical background outlined in chapter 2. The four articles discuss different perspectives and experiences of intercultural group work (IGW) in engineering education as one way of achieving goals related to internationalisation at home (IaH). The articles as a whole aim to address various gaps in the IGW literature, particularly the lack of research: 1) from engineering education 2) outside the Anglophone context; 3) around the teacher perspective and 4) beyond the classroom.

As shown in Figure 4.1 below, articles one and two focus on the student perspective, first on an individual level and then at the classroom level. Articles three and four focus on the teacher perspective in IGW, first through a literature review and then an empirical study of teachers' experiences at two universities.

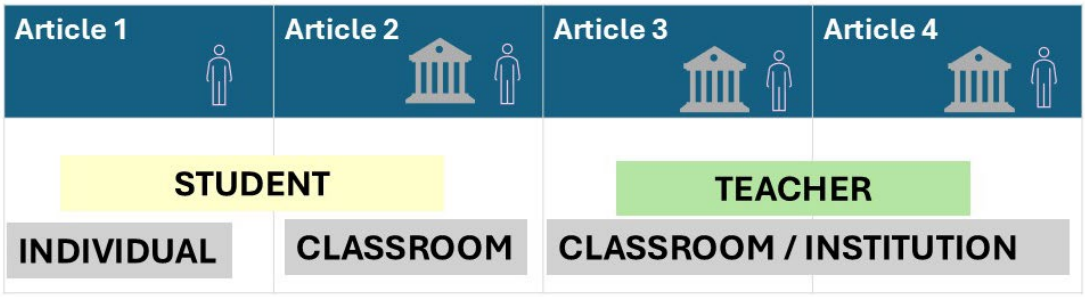

Figure 4.1: Summary of four articles highlighting the student and teacher focus

These elements are explained in more detail in the summaries of the individual articles below.

4.1 Article 1: Individual experiences of intercultural group work in engineering education over time: Beyond "home" and "international" labels

The first article was conceived and written at a time when conceptualisations of student experiences in IGW were often framed in terms of binary "home" or "domestic" student experiences versus "international" student experiences, despite the vast differences within these two groups of students. Another tendency in the literature was to frame culture in a more essentialist way, in terms of "culture-as-given" (Handford et al., 2019). Furthermore, few longitudinal studies were carried out, despite the fact that research shows that students

engaged in IGW need more time for the group to form and function (Poort et al., 2018).

The article reports on a qualitative, longitudinal study that followed five engineering students (two home and three international), working in different intercultural groups in the same course at a Swedish technical university. The study used the cultural mosaic framework (Chao & Moon, 2005) where other aspects of the students' identities were taken into account than just nationality, such as their work, education and travel experience. These students were interviewed over a period of a year, and the study followed their experiences of insideness /outsideness in their groups. The following research questions were explored:

RQ1. What are the individual students' experiences in IGW?
RQ2. Which factors affect individual students' experiences of IGW?
RQ3. How do these experiences change over time?

In order to capture this fluidity, this study used conceptual metaphors from Fougère (2008), as outlined in section 2.2.2, to understand identity construction; insideness/ outsideness; place and space; and in-between spaces. In the five-month compulsory computer science course, the students worked in teacher-formed groups of five or six students and were given open-ended problems connected to industry to solve. The groups were formed based mainly on mixing nationalities, prioritizing project choice, and facilitating scheduling. The grading of the course was based solely on the group work, for which the students were graded both individually and as a group. The student profiles are summarised in Table 4.1.

The results for *research questions 1 and 2* focused on the students' sense of belonging and positioning at the start of the group work. Initially, in terms of positioning, all the students described themselves as "insiders" in their groups, though along a continuum. The descriptions below are in order of their own perceptions of identity positioning, starting with the students who felt more of an "insider" to those who felt more of an "outsider". Sara was "at home" in a number of ways: she was studying in her hometown and had been at the same university for three years. She was also very familiar with working in open-ended group projects. In terms of "place", the scenario was very familiar to her. In terms of "space", she had not worked with international students before and embraced this new experience and the different role it provided.

Table 4.1: Background details for the students interviewed

Name	Nationality	Previous experience abroad	Full-time work experience	Other
Yu Yang	Chinese	None	Few years in international company	
Pari	Indian	None	None	
Julio	South American[10]	1 year in the US; internship in Northern Ireland	None	
Sara	Swedish	None	None	Involved in student union activities
David	Swedish	2 years in China studying Chinese	None	

The three international students, Pari (Indian), Julio (South American) and Yu Yang (Chinese), were new to the university and many of the educational routines. Julio and Yu Yang were working in the same group. For Pari and Julio, it was the first time working in intercultural groups, though Julio had a lot of international educational experience. Yu Yang had worked in an international company and was familiar with IGW. Of the three international students, Julio expressed the most challenges with his group since one group member was often missing. Finally, David (Swedish) was familiar with working in groups and had some international experience from travelling abroad in China but took on a task fairly early on which isolated him from the rest of the group.

RQ3 focused on critical incidents, which over time, affected their roles in their different groups and either brought them closer to their group or further apart. In Sara's and Pari's group, struggles with different views on report writing brought the group together in Sara's case and pushed them apart in Pari's case. In Julio's, Yu Yang's and David's groups, lack of communication led to misunderstandings and frustration. By the end of the project, Sara was very much still an insider, but the others were more ambivalent, particularly David who never found a way back into his group again.

[10] Continent given instead of country to preserve anonymity

Fougère (2008) stresses the opportunity to question and learn about one's identity and the possibility of development and change in developing intercultural personhood and being in an in-between space. These aspects were particularly demonstrated in the article through the experiences of Julio who described his process of transformation in his contact with other cultures as being unable to recognise himself from the person he was at the start of the program. Though there were frustrations within his own group, he discussed the value of the experience longer term. Julio's insights are very different to David's, who showed few signs of belonging to a shared space and directed his frustrations with delegating work outwards, both in this project and a project later on, through othering the Chinese students he was working with.

The article concludes that insideness / outsideness and feeling "at home" emerge from a number of factors, partly based on nationality but also other aspects such as previous experience, the nature of the group work and intercultural competence skills such as openness and adaptability. These factors vary through time and are affected by critical incidents. In this article, the critical incidents revolved around communication, but not in the sense of language proficiency. The conclusion is to look beyond one student label such as nationality, be aware of the complexity that individuals bring to the group and avoid oversimplifying their experiences.

4.2 Article 2: Integrating Home and International Students in HE: Academic and Social Effects of Pair Work PBL Assignments Online

While article 1 focused on the more "human" aspects of IGW, article 2 considers the impact of "structural" aspects such as problem-based learning (PBL), pair work and students working online, on student integration. The online aspect was due to uncontrollable circumstances, since the data collection took place during the pandemic and the class was therefore moved online at short notice. PBL has been claimed to contribute to integration in previous studies (Severiens & Schmidt, 2009), while online learning has been claimed to affect students' sense of connectedness negatively (Parrish et al., 2021). Few studies have investigated the affordances of pair work which, according to most definitions, is not included as group work.

In contrast to Article 1 and in line with the focus on structural aspects, Article 2 took a broader perspective with a mixed method approach in order to identify trends in the student group as a whole.

The following research questions were explored:

RQ1. Which factors **helped** and **hindered** home and international students' integration into their study environment when working in intercultural pair work?

RQ2. How did the online set up affect the students' integration?

As *RQ1* emphasises, integration was addressed from the perspectives of both home and international students with the assumption that all students need to adapt to the study environment.

This study took place in a compulsory, eight-week course at a technical university in Sweden at the start of a two-year master's program broadly within the area of mechanical engineering. The course consisted of two strands, a lecture-based strand followed by an exam, and a problem-based strand, where the students worked in pairs to solve three consecutive, open-ended assignments. Among the 64 students, fourteen nationalities were represented, but they were predominantly Swedish and Indian. In order to capture the student experiences across the whole student group and follow the pair work process, semi-structured weekly diaries were kept by all the students (Mittelmeier et al., 2021). The diaries were divided into three sections: academic, social and pair work. The survey and diaries were followed up with interviews after the course using stimulated recall, discussing their diary entries and giving a broader picture of their background and situation.

Results of the statistical analysis showed that though the students were slightly negative about their academic experience, they were very positive about the pair work. For example, the average response for the statement "The assignments are easy" was 2.71 while the average response for the statement "My partner communicates well in our pair" was 4.68 (on a scale of 1-6 where 1= strongly disagree). These responses remained stable across the course.

The inductive coding of the 208 diary comments revealed three main themes: high workload; affordances of pair work and issues with online learning. As regards high workload, the highest percentage of diary comments (26%) mentioned this, specifically in relation to the three pair-work assignments in the course. However, the second highest percentage (21%) were comments about the course being at a good level, indicating that it was the pace rather than the level that was most problematic for some. The fourth category "challenging level of coursework" indicates that that was not the case for all, particularly for some of the international students in using mathematical software.

Table 4.2: Top 7 categories from coding of diary comments

	Category (total 624 comments – 208 comments per section)	**N**	**%**	**Section**
1	High workload	55	26	Academic negative
2	Course is a good level	44	21	Academic positive
3	Communicating well	43	21	Pair positive
4	Challenging level of coursework	41	20	Academic negative
5	No time for activities	40	19	Social negative
6	Working well	38	18	Pair positive
7	Workload being divided unevenly	36	17	Pair negative

As regards the pair work, the comments focused on two main areas: communication and dividing the workload. The third largest percentage of diary comments (21%) concerned "communicating well". Both the comments in the diaries and the interviews reflected a positive, respectful situation on the whole, where at times, discussions moved beyond the assignment and became more social in nature. "Dividing the workload" was more contentious since there were slightly more comments related to an uneven workload, where the lack of previous knowledge played a key role.

Finally, online learning produced challenges for the pair work in three key areas: socialising, working with assignments and communicating. In terms of socialising, the students referred to missing the possibility of informal meetings with other students such as at breaktimes between classes, leading to feelings of isolation at times. It was also difficult to find time to socialise due to the work pressure. In terms of working with assignments, it was felt that this took more time online with, for example, the lack of spontaneous conversations about the work, increasing the time pressure.

In terms of practical implications, the study showed that integration can take more time in an international, online environment but that teacher-formed mixed nationality pair work can provide one way to bridge the academic – social divide experienced by many students in the international environment. The pair work had affordances in some cases compared to group work, where being silent is not an option and knowledge imbalance and ways of solving this could be discussed more openly. In terms of integration, PBL provided a natural reason for the

students to meet up and discuss, though the pace and work pressure made this challenging at times.

In the light of the integration framework (Spencer-Oatey & Dauber, 2019) and Tinto (1997) (see section 2.1.3), the article concludes that both human and structural factors are important to consider in integration. In this case, the structural factors were pair work, problem-based learning and online learning. While results for the online environment reflect other research (cf. Parrish et al., 2021), they need to be interpreted with care, however, since the course was not designed with this in mind from the beginning.

4.3 Article 3: Teacher experience of intercultural group work in higher education: a scoping review

Articles 3 and 4 move from a student perspective to a teacher perspective on IGW. A teacher perspective is important since teachers play a central role in the success of IGW, as they are responsible for designing, facilitating, and assessing group work that brings together students from diverse cultural backgrounds. In article 3, this was done through a scoping review to ascertain the existing literature on the teacher perspective in IGW. The review aimed to answer two questions:

> RQ1: What empirical research has been carried out into teachers' perspectives and experiences of IGW in higher education?
>
> RQ2: What does the empirical research reveal about these perspectives and experiences?

In response to *RQ1*, the review revealed that empirical research on teacher experiences with IGW is sparse, as reported in previous studies (Beelen, 2018; Coryell & Salcedo, 2021; Hammond & Radjai, 2022; Zou et al., 2022). After screening 1309 articles, only 36 contained any empirical data connected to the teacher perspective and of these, only 10 focused on this perspective. Most studies reported on virtual IGW, with fewer addressing on-campus group work. The disciplinary focus was predominantly on engineering, an interesting finding when this area is generally considered to be underrepresented in IGW research (Jiang et al., 2023).

The themes emerging from the 36 articles were organised into the chronological order of course delivery: from planning to implementation to reflection on the course. As regards planning, aspects of constructive alignment were discussed,

from planning the group work as a whole through strategies such as team contracts; to designing activities and assignments; to setting up the teams; to planning the student interaction. Intercultural competence strategies were an important aspect.

As regards implementation, two major concerns brought up in the articles were facilitating interaction and assessment of learning, especially in ensuring fairness and recognising individual contributions within group work. Finally, concerning reflections, a major theme in the articles was communication between the different parties. Between students, the teacher concern was language proficiency. Between teachers, the importance of clear communication channels was emphasised. Between teachers and students, communication routines such as weekly meetings and agendas were stressed. Teachers also noted challenges related to cultural norms, communication styles, and expectations and the need to maximise the richness of the international classroom. These challenges resulted in role strain, in the need to act as facilitators, motivators, and cultural mediators which were not helped by time constraints, lack of training, and lack of institutional support.

In response to *RQ2*, the review identified four core areas of teacher engagement in IGW: interaction, curriculum design, intercultural competence, and teacher challenges. Interaction was a key focus in the articles, in terms of planning, facilitating and reflecting on IGW. Curriculum design, particularly in terms of assessment and activity development, was brought up as another area where teachers faced significant demands. Promoting intercultural competence was expressed both a goal and a challenge, requiring teachers to model and scaffold intercultural learning. Finally, while the articles tended to have a positive tone towards IGW, teacher challenges were mentioned as outlined above.

Despite the potential of IGW to support institutional internationalisation goals, we concluded that most initiatives were isolated and dependent on individual teacher engagement. Furthermore, it seemed that more research is needed into on-campus IGW and how it can be embedded at the program or institutional level since there was little evidence in the articles of systematic integration of IGW into broader institutional strategies. Finally, we highlighted a need for embedding intercultural training in teacher development programs, providing resources and frameworks for designing and assessing IGW, encouraging peer learning and communities of practice, and aligning IGW initiatives with

institutional internationalisation policies. In order to design this training, it should be supported by more empirical research on teacher experiences.

4.4 Article 4: Planning intercultural group work in engineering education: the importance of a multilevel approach

Article 4 continues with the teacher focus from article 3 and addressed the gap concerning empirical data on the teacher perspective when working with IGW, particularly in a broader context. The research adopted a multilevel analytical framework, examining IGW through international, national, program, and course-level lenses as well as teachers' experiences of working with IGW. Article 4 was a qualitative study investigating the planning and facilitation of intercultural group work (IGW) within engineering education, focusing on teacher and program manager perspectives across two European universities, one in Sweden and one in Flanders, Belgium. Data was collected via semi-structured interviews with twelve teachers (five program managers and seven course managers) and through documentation analysis of learning outcomes at various levels.

The article aimed to answer two questions:

> RQ1: What are the formulated learning outcomes and purposes of IGW, within engineering education at multiple levels, from European to classroom level?

Learning outcomes refer to those identified in documentation. Purposes are those expressed by teachers at course and program level.

> RQ2: To what extent does engineering teachers' planning of IGW align with the learning outcomes and purposes identified at multiple levels?

As a theoretical framework, the article revisited the integration framework from Spencer-Oatey and Dauber (2019), introduced in article 2, and combined it with Leask and Bridge's (2013) framework for Internationalisation of the Curriculum, where both frameworks provide the inspiration for the multilevel and the former framework emphasises the structural and human elements at play. IGW is an interesting context for this framework, since it combines both elements, the *structural* in its pedagogical approach but also the *human* in encouraging collaboration and interaction.

In response to *RQ1*, findings revealed that though learning outcomes on all levels included teamwork and intercultural collaboration, there were differences between the two countries in their explicitness regarding diversity. For instance, Swedish national and program outcomes stressed collaboration with diverse groups, whereas Flemish outcomes focused more on team roles and project management.

In terms of the purpose of group work and IGW, program managers generally viewed group work as essential for practical reasons (as a way of managing large student groups); for skill development (preparation for the workplace), and for social integration. However, they often lacked authority over how group work is implemented at the course level. Course managers, who are responsible for operationalising group work, articulated a range of purposes for group work — as a vital skill; combining skill sets; taking on different roles; producing more sophisticated solutions and implementing active learning. As regards *IGW,* their purposes could be divided into more skill based and more personal/ social aspects. In particular, they stressed preparation for the diverse workplace and gaining different perspectives and approaches.

In response to *RQ2*, teachers' planning showed alignment to a certain extent. In terms of group forming decisions where Swedish outcomes stressed collaboration with diverse groups, teachers at the Swedish university actively formed student groups using diversity criteria (e.g., nationality, gender, disciplinary background), while those at the Belgian university allowed students to self-select groups, albeit with encouragement to consider diversity. This approach led to more homogenous groups, as commented on in the literature ((Harrison & Peacock, 2010; Moore & Hampton, 2015; Summers & Volet, 2008; Tange, 2020; Volet & Ang, 2012). These contrasting approaches were shaped by contextual factors such as student demographics and program structure.

However, in terms of assessment, alignment was more challenging. Students were typically assessed through a group report and/or presentation and also received individual grades, both on these assignments and other individual assignments such as oral or written exams, labs or written assignments. Though these served to assess knowledge acquisition, they provided less information about how far students met learning outcomes connected to IGW and group processes. Despite the fact that there was some attempt to do this through, for example, peer assessment to adjust group grades, it is questionable how far these goals were assessed.

The study introduces a conceptual framework, shown in Figure 2.2, that situates IGW within broader contextual influences, integrating structural and human elements. Teachers are positioned as key agents who mediate between the structural, institutional goals and human interaction in classroom practices. In this dual role, they need to work not only with "knowing" (Barnett, 2009) but also with "acting" and "being" i.e. competence development and affective growth.

In the article, we reflect on the conceptual boundaries between group work in general and IGW, arguing that even though all group work involves some level of diversity, IGW explicitly foregrounds intercultural competence. We also highlight teachers' concerns around definitions of diversity and finding a balance between inclusive practices and avoiding stereotypes and recommend that teachers use other parameters as well as diversity ones for group forming.

In conclusion, the study emphasises the need for context-sensitive support for educators engaged in IGW. It proposes a set of guiding questions for teachers to consider when planning IGW, including the purpose of the group work, alignment with program outcomes, and student characteristics.

4.5 Themes across the four articles

The summaries of the four articles emphasise the shift in the articles from the student to the teacher perspective. When looked at through the integration framework (Spencer-Oatey & Dauber 2019), the articles also shift in focus between human and structural aspects of IGW. These aspects are represented in Figure 4.2 where the human aspects are represented by the outline of a human and the information in the pink rounded shapes, and structural aspects are represented by the outline of a building and blue rectangles.

Looking at the table as a whole, it is clear that structural aspects played an increasingly larger role in my research from article one to article four. When I interviewed the students for the first article, it was invaluable to follow their journey over time but at the same time, it was clear that their experiences were part of a bigger picture and in order to more fully understand that picture, it was important to include other perspectives, both human and structural.

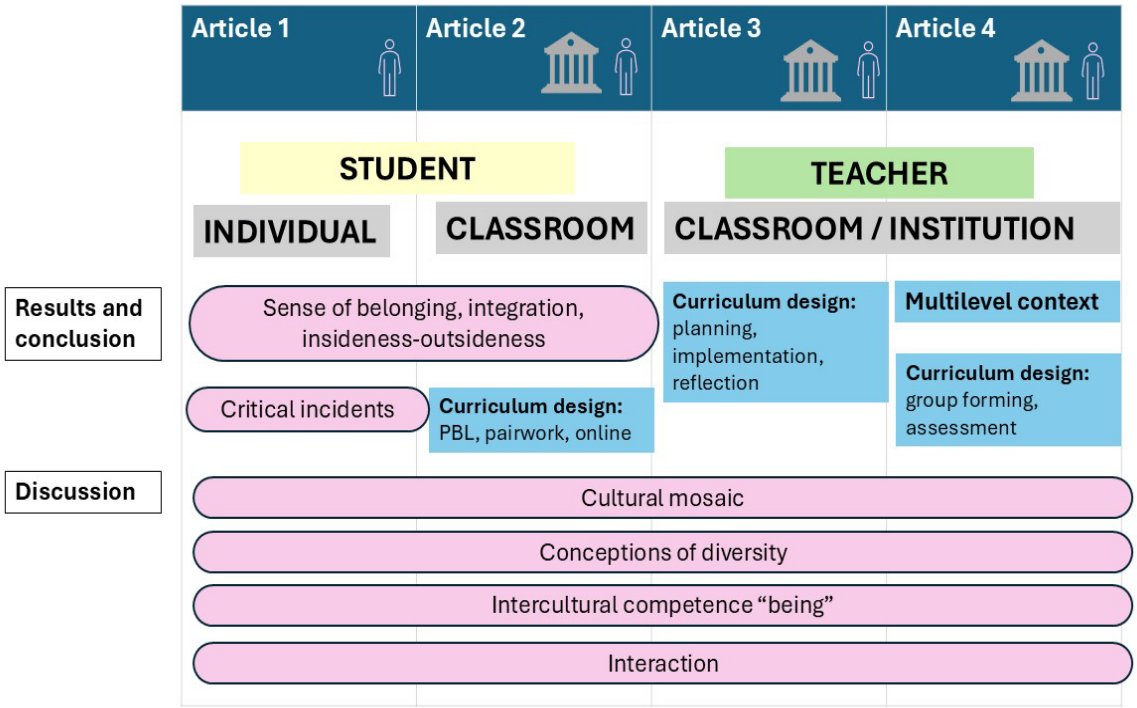

Figure 4.2: Summary of the four articles highlighting the human (pink shapes) and structural aspects (blue shapes)

In the top half, the figure shows aspects that were specific to one article and highlighted in the results and conclusions of those articles. In the bottom half, albeit rather simplified, the figure shows aspects which were variably present across the articles and often appeared in the background and /or discussion. For example, article one focused on individual students. Proceeding to the rows below, the human aspects of sense of belonging, insideness-outsideness and critical incidents were a major part of the results and conclusion. These aspects were discussed in the light of the cultural mosaic framework; conceptions of diversity (additional factors than being a home/international student affecting IGW); intercultural competence (the skills the students acquired through the IGW) and interaction (a formative aspect of their group work experience).

While structural and human aspects are presented separately, structural aspects affect human aspects and vice versa. No matter how far students themselves are motivated and open to meeting students from other cultures (or not), structural elements will either facilitate this motivation or make it more difficult. In that sense, it is difficult to separate the structural from the human (Spencer-Oatey & Dauber, 2019). One example of this comes from article two where knowledge of a particular mathematical software was essential to solving the assignment, thus

making it difficult for those students who were new to the software to contribute in the same way. No matter how open and motivated they might be, they started the assignment at a disadvantage. Thus, structural aspects around how the course is planned and the tools that are used can affect the human, interactive aspects. These aspects are discussed further in the next two chapters.

5. Discussion

Internationalisation at Home (IaH) is increasingly a central concept for many universities in the strategic efforts around internationalisation (Marinoni & Pina Cardona, 2024), but the burning question remains of how IaH might be realised in practice. This thesis has investigated one way of achieving this goal through exploring the affordances and challenges of intercultural group work (IGW). Taking both a student and a teacher perspective, the four studies have looked into IGW from both structural and human aspects (Spencer-Oatey & Dauber, 2019). This section starts by summarizing the key insights into IGW from my research related to the fields of IaH and intercultural communication, and then discusses some of the wider challenges, implications and areas for future research.

5.1 Insights into intercultural group work

The studies together provide insights into working with IGW in engineering education. Engineering education is an under-researched area in IGW but one where both internationalisation and group work are vital both academically and professionally, as illustrated in goals from international to institutional level (cf. article 4). Table 5.1 below shows how the aspects highlighted at the end of the previous chapter in Figure 4.2 have been summarised into insights that are conceptual, structural and have a human focus, including the article reference where this aspect is most discussed.

Table 5.1: Summary of insights from the four articles organized thematically

	Research with Teachers	**Research with Students**
Conceptual insights	Multilevel context (article 4, section 5.1.1)	Conceptualising culture (i.e. moving from binary to mosaic) (article 1, section 5.1.1, section 5.2.1)
Structural insights	Teacher spanning structural / human elements (article 4, section 5.1.2, 5.2.3) Course design (articles 2,3,4, section 5.1.2)	PBL & pair work (article 2, section 5.1.2)
Human insights	Interaction and development of 'being' (articles 3,4, section 5.1.3)	Identity development (the different journeys experienced) (article 1, section 5.1.1) Integration and adaptation (article 2, section 5.2.2)

5.1.1 Conceptual insights into IGW

In relation to more structural elements such as goal setting, a key contribution of my research is a more holistic, multilevel approach to IGW where the IGW and the course it is part of, is set within a wider context, including program, institution, national and even international contexts (cf. article 4). This is a perspective rarely taken in the literature, as shown in article three, a scoping review of teacher experiences of IGW, which showed that the IGW tended to be presented as an isolated initiative in one course. This is problematic for a number of reasons. Firstly, the context beyond the classroom can have an impact in terms of the top-down requirements that are placed on teachers. A course is often part of a larger structure designed to provide the student with a qualification and therefore is part of meeting program goals. Secondly, in order to achieve goals around internationalisation and group work, the IGW in one course should ideally not be an isolated, one-off incident since it requires time and practice to develop (Poort et al., 2019).

Related to time, there are two aspects to be considered here. Firstly, there is the extra time needed for the group to form and be productive (Canney Davison, 1996; Poort et al., 2019) compared to a more homogeneous group. Secondly, there will be critical incidents during the group work changing the dynamics and sense of belonging within the group which need to be handled (cf. article 1). To facilitate the group work, scaffolded activities are helpful to help students set up their work together (Canney Davison, 1996; Poort et al., 2019). Examples of such activities, as outlined in article three, are formulating a team agreement, getting-to-know-you activities and seminars on team building. Building on the second point on critical incidents, models such as the TRIPS model (Spencer-Oatey & Lazidou, 2024) can be helpful. TRIPS stands for Triggers (issues), Reactions (the reactions of the people involved), Interactions (what is said and done), People (impact on people involved) and Settings (impact of multilayered contexts) and can be a way to analyse a critical incident in order to move forward.

Regarding more human elements, my research has problematised a more binary conceptualisation of students shown in IGW research, in terms of international and home students (cf. Harrison & Peacock, 2010; Popov et al., 2022; Summers & Volet, 2008). My research approach in article one, in particular, used the cultural mosaic framework (Chao & Moon, 2005) to embrace other aspects beyond nationality when looking at students' interactions with each other. As regards integration and sense of belonging, I found that factors such as disciplinary background and experience of group work, the nature of the group

work itself, and intercultural competence skills such as openness and adaptability played a major role in students' sense of insideness and outsideness to the group (Fougère, 2008), in addition to nationality background. I used longitudinal data, rarely used in IGW research, to highlight critical incidents which brought members of the group together or drove them apart such as discussions around report writing.

Similarly to other recent IGW research from the Netherlands (Li, 2024; Poort et al., 2019) and Denmark (Tange, 2020)—other non-Anglophone contexts—my research has found that language proficiency has not played a prominent role in students' group work interactions, in contrast to findings from Anglophone contexts (cf. Spencer-Oatey & Dauber, 2017). This suggests that in environments where most students are using English as a second language and are used to functioning in a multilingual environment, there are potentially different attitudes and expectations around the English used and increased willingness to adapt accordingly (Summers & Volet, 2008) though this would need to be investigated further.

5.1.2 Structural insights into IGW

In terms of structural insights, my research suggests a conceptual framework for the teacher's role in facilitating IGW, and the structural implications of the teacher's role in terms of course and group design.

The teacher's unique role in straddling both human and structural aspects is highlighted below in Figure 5.1 (where the teacher is represented as the black figure standing behind a lectern). In terms of *structural* aspects (represented as a building), the teacher is responsible for curriculum design (including planning the course, implementing the plan in the form of activities and assessment and then following up on the plan), in other words, ensuring constructive alignment (Biggs, 2003). These aspects were reflected in articles three and four. Having goals for group work in the course, as many courses did, raised questions around how to include learning outcomes for intercultural competence (article 3) and develop intercultural strategies (article 3). In terms of *human* aspects (represented as three figures), the teacher is involved in interacting and building relationships with the students.

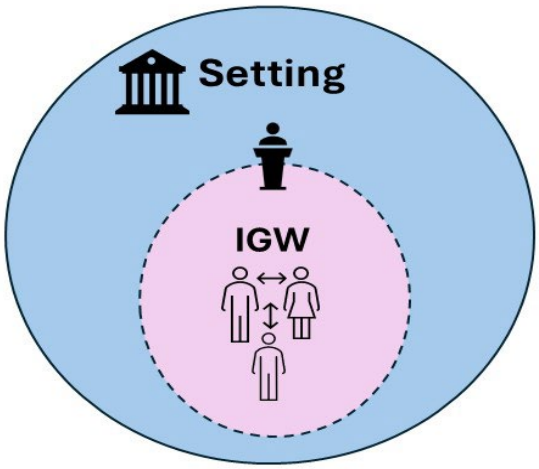

Figure 5.1: The teacher's role in IGW (simplified from Figure 2.2 and article 4)

Teachers' planning of the IGW in a course is very much connected to their own perceptions of the purpose of IGW and to a lesser extent, to the top-down goals for IGW (article 4). As described in article four, their own purpose for IGW was often framed in terms of competence development for future work life and gaining different perspectives (cf. Jiang et al., 2023). Realising these purposes and wider goals involved hands-on decisions for teachers in terms of key aspects such as group forming and assessment.

As regards group forming, a common consensus in the IGW research is that student-formed groups are more homogenous (Peacock & Harrison, 2009; Tange, 2020; Volet & Ang, 2012). This was also my own finding in article four where students at the Belgian university formed their own groups and there was a clear difference in diversity parameters between those groups and the teacher-formed groups in the Swedish university. However, this provides a dilemma for the teachers on which criteria to use if forming the groups themselves. As regards diversity criteria, there are a range of options from demographic information like nationality, gender and age to background information such as discipline and work experience (Chao & Moon, 2005; Li, 2025; O'Connell, 2025; Tange, 2020). One teacher interviewed for article four expressed the dilemma as follows:

> There's so many ways in which that there might be diversity in that team that I'm just not aware of, so. Yeah. And I also don't feel it's my

> place to really start to say, OK, who identifies here as I mean I don't want to be in that thing anyhow. So yeah, so it's not easy how to do that if you don't want to do it in a very simplistic essentialist manner.

This quotation highlights some of the issues with grouping solely on nationality where there can be a risk of making assumptions about the international students and stereotyping them into one group, ignoring the vast differences that exist (Tange, 2020). Tange (2020) advises a capability approach instead, where teachers highlight the skills and competencies relevant to the project and either form groups accordingly or give students these criteria to form their own groups. As discussed in article four, context plays a major role in making these choices, for example, how well the students know each other and what the nature of project is. In the Swedish context, with teacher-formed groups, information was collected through a survey at the start of the course and groups allocated according to student demographics (such as nationality, gender), disciplinary background and students' previous knowledge (for example, programming ability).

As regards assessment, this is very often a challenging area in group work in general, and particularly if assessment of intercultural competence is included (Ramstrand et al., 2026). Though attempts were made to assess the learning outcomes for IGW in the courses highlighted in article four, the majority of grades focused on the individual's content knowledge rather than on achieving goals connected to group work. Research shows that there are an increasing number of tools available for these kinds of assessments (Fernando et al., 2025; Luo & Chan, 2022; Ramstrand et al., 2026; Richter et al., 2023) but within STEM, they have been implemented less frequently (Luo & Chan, 2022). However, increasingly, the topic of more human-centric assessment is being discussed in engineering education (cf. Fernando et al., 2025) leading to questions around how student development in areas such as intercultural competence might be recognised if these are part of the course goals.

In terms of constructive alignment, activities in the course and how these are organized are important. Article two focused on course design and students' reflections on how this facilitated integration and interaction. Using active learning pedagogy in the form of problem-based learning was seen as positive by the students (supporting findings from Severiens and Schmidt, 2009). In addition, organizing the students into pairs seemed to contribute positively to students' sense of belonging, a topic which has been little explored.

Finally, teacher challenges in working with IGW should not be underrated. Teacher challenges in implementing IGW were apparent in article three, from the changing role of the university teacher to finding time and availability to feeling a lack of skills in this area. This reflects similar findings elsewhere (Lomer & Mittelmeier, 2021; Weissova et al, 2024).

5.1.3 Human insights into IGW

In terms of human insights, my research highlights Barnett's theory (2000) for preparing students for the supercomplexity of the world (article 4). He argues that the curriculum should move beyond "knowing" (content knowledge) and "acting" (skill development) to "being", involving questions around student self-awareness and self-realisation in dealing with a complex and uncertain world.

In article one, a more individual, in-depth approach to "being" is taken where five students' identity development in their group work is followed over a period of time and is affected by critical incidents throughout the group work. In particular, the experiences of Julio are highlighted in article one and his process of transformation throughout the course, where he describes his personal growth in dealing with group members who are different to himself. His comparison of his experiences to a two-sided coin representing both opportunity and new cultures on one side, and confusion on the other, illustrate his own internal journey to intercultural personhood (Fougère, 2008).

A key teacher concern raised in articles three and four, is that of interaction, both between students and between students and teachers. While interaction is important for "acting", that is, skill development for working in groups, it is also important for "being", that is, that through interaction, the students gain greater insights into both their own and others' approaches and motivations. The definition of intercultural communication, given in 2.2.1, is where "the cultural distance between the participants is significant enough to have an effect on interaction / communication that is noticeable to at least one of the parties" (Spencer-Oatey & Franklin, 2009, p.3). The question is how far these parameters should be maximized given the vast array of diversity parameters already brought up in mine and others' research such as nationalities, disciplines, age, experience of group work, content knowledge and personality factors (article 1; Jansen & Searle, 2021; Mannix & Neale, 2005). There has been some research comparing the relative effects of different diversity parameters (cf. Jansen & Searle, 2021; Mannix & Neale, 2005) which remains inconclusive but finding a

balance between diversity parameters to promote intercultural competence but still promoting interaction is a worthwhile challenge for the future.

5.2 Insights into internationalisation at home

The conceptual, structural and human insights provided by my research into IGW leads to insights into the research around internationalisation at home. When looking at the international campus, how could/ should culture be conceptualised; concerning integration and adaptation, who should adapt to whom; and what does this mean for the teacher's role on the international campus?

5.2.1 Conceptualisations around home / international labels

The labels of "home" and "international" have served a purpose administratively, in clarifying the fee-paying status of the individual student, though as pointed out in section 2.1.2, this is by no means straightforward either. But these labels become more problematic when used in the classroom context to make assumptions about students' background experiences and knowledge.

Achieving IaH does not necessarily need to involve international students (Jones & Reiffenrath, 2018; Leask, 2021). As discussed in section 2.2.2, students who are "home" students administratively, that is in this case, that they have Swedish citizenship and are non-fee-paying, can have vastly different cultural backgrounds, sometimes having more in common with international students than they do with other Swedish students. Therefore, IaH activities like IGW could be realised in a class of "home" students.

At the same time, "international" students, defined as those who left their country of origin for the purpose of study (OECD, 2024), also have large differences in factors from language to values to previous experiences. In a Swedish context, a Danish, British and Chinese student will join the education in Sweden with very different starting points, not least economically, depending on whether a student comes from the EU (non-fee-paying) or elsewhere (fee-paying). Recent research has problematised the use of the label "international student" (Lomer & Mittelmeier, 2021; Merabet, 2024) claiming that the label has become so synonymous with negativity that relabelling is required.

What is the way forward then? Leask (2021) suggests internationalisation of the curriculum 4.0 in line with the fourth industrial revolution. In this scenario, internationalisation of the curriculum would be re-labelled interculturalisation of the curriculum instead, that is, with a shift towards intercultural competence of

all students. In this scenario, the labels of "home" and "international" become less important and the emphasis is on promoting interaction and dialogue between people from different cultures. This definition of different cultures is more in line with the cultural mosaic framework (Chao & Moon, 2005) used in article one.

In relation to internationalisation and group work, what would then be the difference between group work and intercultural group work? In other words, what is the "intercultural" element referred to in IGW, when it might be argued that students in any kind of group work have some kind of diversity in their backgrounds? As discussed in article four, the purposes for group work and intercultural group work as described by the teachers highlight the fact that the skills and attitudes required for group work are similar but accentuated as regards IGW. For example, while group work is seen as an important skill for the workplace, IGW raises awareness of the diverse and global workplace. Group work offers different perspectives for more sophisticated solutions, but IGW increases those perspectives when participants come from more diverse cultural backgrounds.

5.2.2 Conceptualisations around integration and adaptation

A central framework used in this research has been the integration framework (Spencer-Oatey & Dauber, 2019) where integration has been defined according to Berry's definition of mutual adaptation (2006). This framework was reflected on in article two when examining how student pairs of Swedish and international students adapted to each other when working with problem solving exercises. Adaptation is central to IaH.

The concept of integration, as used in my article and others, was criticised by Mittelmeier (2025). She expresses concern about a deficit approach to international students in general when integration is discussed. She claims that rather than a two-way process where differences are appreciated, international students are in fact asked to conform to the institutional norm in the UK context. This picture is presented in a more nuanced way in another study, this time from Finland, a more similar context to Sweden. Mendoza et al. (2023) describe mutual but at the same time, unequal adaptation in which international students on the whole tend to need to adapt more than the local students, though they also problematise definitions around local and international.

While these results are not surprising, they call for a more reflective approach in the classroom, from both teachers and students. If Leask's (2021) suggestion for

interculturalisation of the curriculum is pursued, this calls for both sides to show both adaptation and integration in order to show intercultural sensitivity (Bennett, 1986). These are core skills in intercultural competence. In IGW, for instance, mutual adaptation is key to making the group work function.

5.2.3 Conceptualisations around the teacher role in IaH

Connected to the integration framework (Spencer-Oatey & Dauber, 2019), I have pointed out the teacher's crucial role in spanning the structural and human aspects of IGW. In article three, I highlighted some of the challenges experienced around this role, from lack of skills to lack of time to getting to grips with a changing role. These have been referred to as "blockers" (Leask, 2015) to achieving IaH (see section 2.1.4). Leask (2015) divides these blockers into three main groups: cultural, institutional and personal.

Whitsed (2021) encourages an approach where the blockers are seen as opportunities instead. For example, as regards personal blockers such as lack of skills, Whitsed suggests involving "disciplinary outsiders" such as blended learning experts to be a part of curriculum planning. In the context of IaH, this might also involve members of the international office. In connection with cultural blockers such as understanding of the curriculum, he suggests looking beyond content knowledge and a checklist of deliverables to engaging with the curriculum as a complicated conversation (Barnett & Coate, 2005) where opportunities are expanded for understanding of a complex reality. In reference to the complex reality, another cultural blocker might be processing old and new normals in a rapidly changing world, where for example, the rise of the extreme right, Trumpism and regionalism are challenging existing beliefs around globalisation and internationalisation. In this scenario, Whitsed (2021) encourages awareness of other recent realities such as diverse communities, mobile populations and different notions of citizenship to modify and adapt understandings of IaH.

Where does this leave engineering educators? As discussed earlier (see section 2.1.4), much of the literature has painted a deficit picture of engineering and STEM educators as regards IaH, as being least likely to engage with concepts around internationalisation (Alexiadou, 2023; Clifford, 2009; Green & Mertova, 2016; Zou et al., 2023). Returning to Kahn's quote (2010) that "people engage when they feel that, on balance it matters to do so" (in Whitsed et al., 2022), IGW does seem to be an area that has the potential to engage engineering educators. Firstly, the aspects of group work and internationalisation are clearly

emphasised in multilevel goals as discussed in article four. Secondly, in the scoping review (article 3), the majority of disciplines represented when looking at teacher experiences of IGW were connected to engineering, suggesting that engineering teachers found this a relevant activity. Thirdly, there is the close connection between IGW and professional skills that increases the relevance of this activity. In short, IGW can be a useful way to realise IaH goals in engineering education.

5.3 Personal reflections on "becoming" and "being" a researcher in internationalisation

My rationale for selecting IGW initially was the possibilities it provides for home and international students to come into contact on campus. Group work encourages interaction and collaboration, even if this is not always achieved. This interaction lies at the core of intercultural communication and international understanding.

In terms of international understanding, my own PhD journey in "becoming" a researcher has been somewhat different to the norm in a number of ways. Firstly, I started my PhD after teaching in the field for over 30 years, working closely with international students in different roles, countries and continents. I have worked within engineering education for 25 years. This role has involved close contact with both students and engineering colleagues and discussing both affordances and challenges that both sides experience. Many of these contacts have touched me deeply, meeting highly ambitious and talented individuals who have made life-changing decisions to follow certain programs and relocate across the world to achieve their goals. This decision often works out positively, and the results of some of these experiences are described in this thesis. I have also seen the challenges when adjusting to a different system's expectations and in some cases, struggling with these expectations when they have been top-performing students in their previous educational settings. These challenges have included language proficiency, learning different systems, educational expectations for background experience that they do not have, adapting to life in another country with often a very different climate and not least, working in groups when this is relatively new to them. It is also important to emphasise that everyone's journey is different. These contacts were the impetus for starting this PhD journey.

Secondly, I have been doing my PhD part-time, over eight years, in conjunction with my teaching. This has been very enriching for several reasons. It has

provided continued contact with students and teachers in a way that I believe has benefited both my research and my teaching. The insights I have gained from my research have been put back into my teaching and vice versa. It has also given me a chance to take a longitudinal approach to my research.

As regards the latter, the research into intercultural group work has developed considerably in the past eight years. In that time, IaH has taken more of a central role in university policy and strategy documents. The gaps that I identified at the start of my research have started to be tackled, including the lack of research into IGW on campus outside the Anglophone countries: the binary descriptions of home and international students and tendencies ascribed thereof, and the lack of research into engineering education. Outside the Anglophone countries, interesting research on IGW on campus has emerged from, for example, the Netherlands (Li, 2025; Ping et al., 2025; Poort et al., 2019), and Denmark (Jiang et al., 2023; Tange, 2020). However, many questions remain which are discussed in the next section.

As with many research journeys, increased insights have led to more complexity, making it challenging to provide simple, hands-on tips to teachers which was my initial intention. For example, moving beyond a consideration of nationality factors to other kinds of diversity factors, provides increased complexity in how IGW is defined and realised. Taking the wider context into account means that one size does not fit all.

Finally, we seem to be at the start of a paradigm shift where internationalisation and globalisation are starting to be questioned as positive goals to aim for. Winds of neo-nationalism are sweeping through (Brøgger, 2023; Bulut Sahin, 2025) and there is increasing mistrust and suspicion between countries and universities, in students' motives for travelling abroad and which countries are appropriate to travel to and work with, so-called responsible internationalisation. The US, which has long been at the forefront of internationalisation initiatives in higher education, has taken a different position in recent times. This makes the future in this field more uncertain.

5.4 Limitations

The scope of this thesis was necessarily limited in nature and has raised more questions for further investigation. In this section, I will highlight limitations around context, collaborative learning and realising internationalisation at home.

Firstly, my research has stressed the importance of different settings and taking the context into account. In my case, I have mainly focused on one institution in one country for my data collection (articles 1,2,4) though article four included another European university. While focusing on this setting has provided many affordances in the sense of having deeper insights into the situation and motivations of teachers and students, it also means that care is needed in applying these results to other contexts beyond a Swedish technical university. This makes the abductive approach even more relevant in comparing the themes from the data to existing research in the field to ensure transferability. At the same time, the scoping review for article three also provided insights into other settings. With that said, future research into other contexts would be invaluable for comparative purposes.

In connection with context, since in many cases I used purposive sampling for the interviews, questions can be raised about how representative these students and teachers were. In the case of the teachers, for example, I selected teachers who were implementing IGW into their courses since this was a necessary prerequisite. In these cases, ensuring trustworthiness is extremely important, as described in section 3.4.2. At the same time, collecting data from a whole class of students for article two was an opportunity to obtain a broader picture of student experiences.

Related to IGW, my research has focused on pair and group work in courses where students mainly work on projects and larger assignments as part of the assessment in a course, since this is generally the most common format in engineering education (Mercier et al., 2023). However, collaborative learning can take many other forms (de Hei et al., 2025; Mercier et al., 2023) from smaller, more informal problem-solving to much larger projects in larger group constellations, which might also provide interesting insights.

In terms of IaH, there are many other ways to realise IaH that have not been raised here. As mentioned in section 2.1, in a global study of over 700 universities, IaH has been interpreted largely as virtual exchange, otherwise known as COIL (Marinoni & Pina Cardona, 2024). In the case of COIL, this area of research has been well-researched by others (cf. Hackett et al., 2023). Nonetheless, other ways of realising IaH such as community outreach would be interesting to investigate.

5.5 Future research

As mentioned in the previous section, there is a lot of potential for future research in this area, both within and beyond IGW.

Within IGW, taking a broader interpretation of diversity, there are many areas left to explore regarding students' perspectives in IGW aside from nationality markers. For example, dynamics in groups of students with the same nationality but different cultural backgrounds remain underexplored (Binkley, 2025; de Hei et al., 2025), while at the same time student groups are becoming more diversified. It would also be interesting to follow IGW initiatives more longitudinally throughout a program since research claims that this is beneficial, but there are few studies to prove this (Poort et al., 2023).

Regarding teacher perspectives, more research is needed into teachers' work in the international classroom in engineering education. There are several areas of interest here. One is the multinational teacher profile which is common within engineering education and how these different cultures might affect teaching approaches. Another interesting area of research would be a broader data collection from teachers in engineering education, to investigate attitudes to the international classroom and particularly, the existing picture of lack of interest and motivation amongst engineering teachers. The latter point is challenging since people who are uninterested seldom volunteer for research projects! However, at my university, all teachers have recently followed a compulsory course in diversity and inclusion, including discussions of the international classroom, and it would certainly be interesting to follow up such an initiative.

Moving to other settings, it will soon be ten years since the Swedish governmental white paper (SOU2018:78) recommended that all students in higher education develop their intercultural competence. Recent research has showed that half of Swedish universities either have an IaH strategy or are developing one (Weissova, 2026). Therefore, a quantitative approach along the lines of a study into IaH in Sweden would be interesting to carry out, similar to a project in Finland (Weimer et al., 2019) and a master thesis project in Sweden, investigating ten universities (Weissova, 2021). This suggested project would aim to ascertain how IaH policies are operationalised in Swedish higher education and engineering education's position within this. These goals need to be followed up at a time when international awareness and relationships are more crucial than ever.

6. Conclusion

This thesis set out to explore the ways in which intercultural group work (IGW) can contribute to realising the goals of Internationalisation at Home (IaH) within engineering education, and how IGW is experienced by both students and teachers. In this thesis, I have adopted a holistic approach that spans individual experiences, classroom practices, and wider institutional structures. Using an integration framework, I have highlighted the importance of considering both structural and human aspects of IGW, as shown in Figure 6.1. As shown in the figure, these aspects are not separate from one another therefore the lines in the figure are dotted rather than filled.

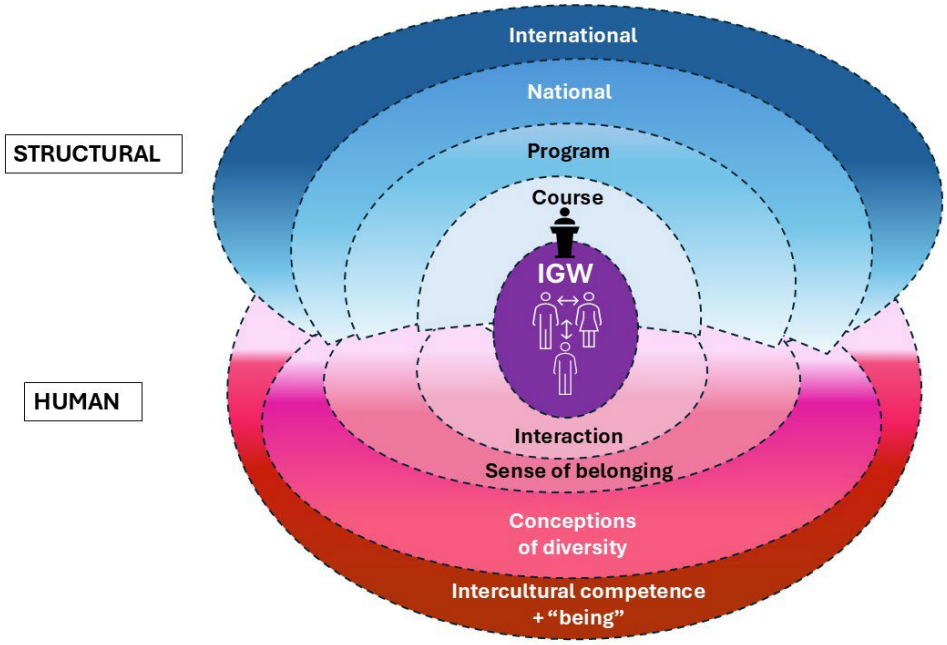

Figure 6.1: Figure summarising structural and human aspects of IGW covered in the thesis

The figure highlights the key contributions of the thesis, from a conceptual, structural and human perspective. The top half of the figure illustrates the conceptual and structural contributions. On a conceptual level, I suggest a multilevel approach to operationalising intercultural group work, which aligns with other conceptualisations of internationalisation of the curriculum (cf. Leask & Bridge, 2013). This approach considers the wider setting of IGW from course to international levels. I highlight the teacher's dual role in straddling the structural and human elements, in both structuring the context (and being influenced by it) and facilitating the interaction in the course. In terms of structuring the course, I have investigated the role of group and course design.

This research confirms previous research (Severiens & Schmidt, 2009) that active learning in the form of PBL can facilitate integration and also adds the perspective of intercultural pair work in increasing interaction. In terms of group design and conceptions of diversity, I recommend a broader interpretation of diversity when forming groups (cf. Tange, 2020) for example, considering aspects such as disciplinary background and students' previous experience as well as demographic aspects.

The bottom half of the figure illustrates my contributions from a human perspective. Firstly, I have discussed the role of IGW and intercultural pair work in contributing to a sense of belonging, and highlighted longitudinal aspects in the form of critical incidents which can affect this sense of belonging. Secondly, I have suggested a move beyond a binary approach to home and international students to including other aspects as mentioned in the previous paragraph. Thirdly, I have discussed the role of "being" (Barnett, 2000) in helping students deal with supercomplexity, moving beyond "knowing" (content knowledge) and "acting" (skill development). "Being" involves self-awareness and self-realisation which in turn are very much related to skills in intercultural competence. While these contributions have been made in the light of engineering education, I believe they could be applied to other disciplines as well, since these contributions are aligned with other research in the field of IGW.

Finally, returning to the main question "*How is IaH realised in practice through the IGW experiences of students and teachers in engineering education?*", the answer is that intercultural group work *can* be one way to support internationalisation at home goals for the formal curriculum in working with the purposeful integration of international and intercultural dimensions (Beelen & Jones, 2015). However, active teacher intervention is vital to enable this, otherwise the consequences can create and enforce negative stereotypes (Liang & Schartner, 2022). Since all my research has focused on IGW in practice, I will finish with some practical questions (inspired by article 4). These can be used when planning IGW and realising goals for IaH, taking both human and structural aspects into account. I address these questions directly to the teachers:

1. What is the purpose of the IGW in this course? What do you hope that the students will learn from doing this, apart from content knowledge?

2. How does the purpose connect to the group work in other courses before and after yours? How will you bring in the international and intercultural aspects?
3. How does the purpose connect to program and institutional engineering education learning outcomes for group work and internationalisation?
4. Who are your students in terms of diversity aspects, previous experience and background?
5. How can you form the groups to best achieve your purpose?
6. How can the assessment be designed to reflect both engineering-related content knowledge and intercultural skills?

These questions consider the curriculum and students in the course but also look beyond the course to the program and institution goals. They might provide some first steps in working with IGW and embracing the international environment that typifies engineering education.

References

Ahmed, S. K. (2024). The pillars of trustworthiness in qualitative research. Journal of Medicine, Surgery, and Public Health, 2, 100051.

Alexiadou, N., Kefala, Z., & Rönnberg, L. (2023). Through the eyes of the disciplines – student perspectives and positionings towards internationalisation-at-home. European Journal of Higher Education, 14(2), 249-266.

Amadasi, S., & Holliday, A. (2017). Block and thread intercultural narratives and positioning: Conversations with newly arrived postgraduate students. Language and Intercultural Communication, 17(3), 254-269.

Ambagts-van Rooijen, M., Beelen, J., & Coelen, R. (2024). Leveraging diversity through purposeful flexibility: Towards a redefinition of the international classroom. European Journal of Higher Education, 1-20.

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. International Journal of Social Research Methodology, 8(1), 19-32.

ATIAH. (2018). Internationalisation at Home: Approaches and Tools. Retrieved 7 March 2026 from https://research.ncl.ac.uk/atiah/

Barnett, R. (2000). University knowledge in an age of supercomplexity. Higher Education, 40(4), 409-422.

Barnett, R. (2009). Knowing and becoming in the higher education curriculum. Studies in Higher Education, 34(4), 429-440.

Barnett, R., & Coate, K. (2005). Engaging the curriculum in Higher Education. Open University Press.

Beaven, A. M. G. (2012). An exploration of cross-cultural adaptation in the context of European student mobility [PhD thesis, University of Warwick].

Beelen, J. (2017). Trends and issues after almost twenty years of internationalisation at home. In Grenzen überschreiten: Facetten und Mehrwert von qualitätsvoller Auslandsmobilität in der Hochschulbildung (pp. 26-29). OeAD & BMWFW.

Beelen, J. (2018). Watering a hundred flowers_Institutional leadership for internationalisation at home. In J. Beelen & J. Walenkamp (Eds.), Leading internationalisation in higher education: People and policies (pp. 65-80). The Hague University of Applied Sciences.

Beelen, J. (2019). Internationalisation_at_home: obstacles and enablers from the perspective of academics. In G. Hillebrand-Augustin, G. Salmhofer, & L. Scheer (Eds.), Responsible university. Verantwortung in Studium und Lehre; Sammelband Tag der Lehre 2017 der Karl-Franzens-Unversität Graz (pp. 29-54). Grazer Universitätsverlag.

Beelen, J., & Jones, E. (2015). Redefining internationalization at home. In The European higher education area: Between critical reflections and future policies (pp. 59-72). Springer International Publishing Cham.

Bennett, M. J. (1986). A developmental approach to training for intercultural sensitivity. International Journal of Intercultural Relations, 10(2), 179-196.

Bernard, H. (2013). Social research methods: qualitative and quantitative approaches. Sage.

Berry, J. W. (2006). Contexts of acculturation. In D. L. Sam & J. W. Berry (Eds.), The Cambridge handbook of acculturation psychology (pp. 27-42). CUP.

Bhabha, H. K. (1994). The postcolonial and the postmodern: The question of agency. The location of culture, 171-197.

Biggs, J. (2003). Teaching for Quality Learning at University (2nd ed.). The Society for Research into Higher Education and Open University Press.

Binkley, J. H., Lauridsen, K. M., & Dennis, J. L. (2025). Local Internationalization of the Curriculum: Opportunities for Intercultural Learning in the Globally Diverse Classroom. Journal of Studies in International Education, 29(5), 796-813.

Borghetti, C. (2017). Is there really a need for assessing intercultural competence? Some ethical issues. Journal of Intercultural Communication, 17(2), 1-15.

British Council. (2014). Integration of international students.

Bryman, A. (2016). Social research methods. Oxford University Press.

Brøgger, K. (2023). Post-Cold war governance arrangements in Europe: The University between European integration and rising nationalisms. Globalisation, Societies and Education, 21(2), 278-292.

Bulnes, C., & de Louw, E. (2022). Towards a typology of internationalisation at home activities in academic disciplines: a study conducted at a Dutch university of applied sciences. Compare: A Journal of Comparative and International Education, 54(2), 332-351.

Bulut Şahin, B., Köylü, Z., & Soulé, M. V. (2025). Inclusive internationalization: Insights from International Office Professionals on implementing Internationalization at Home. European Educational Research Journal.

Canney Davison, S. C. (1996). Leading and facilitating international teams. In M. Berger (Ed.), Cross-Cultural Team Building–Guidelines for More Effective Communication and Negotiation. London: McGraw-Hill.

Cao, X., & Henderson, E. F. (2021). Introduction: The (re) naissance of diary method research in and beyond higher education studies. In Exploring Diary Methods in Higher Education Research (pp. 1-11). Routledge.

Cena, E., Burns, S., & Wilson, P. (2021). Sense of Belonging and the Intercultural and Academic Experiences Among International Students at a University in Northern Ireland. Journal of International Students, 11(4), 812-831.

Chao, G. T., & Moon, H. (2005). The cultural mosaic: A metatheory for understanding the complexity of culture. Journal of Applied Psychology, 90(6), 1128.

Charmaz, K. (2014). Constructing grounded theory. Sage.

Cho, J. Y., & Lee, E.-H. (2014). Reducing confusion about grounded theory and qualitative content analysis: Similarities and differences. Qualitative Report, 19(32).

Clifford, V. A. (2009). Engaging the disciplines in internationalising the curriculum. International Journal for Academic Development, 14(2), 133-143.

Coryell, J. E., & Salcedo, A. (2021). Values and Attitudes for Teaching International Graduate Student Populations European Faculty Insights for Instructional Professional Development During European Higher Education Internationalization. In The Experiences of International Faculty in Institutions of Higher Education (pp. 101-116). Routledge.

Cozart, S. M., & Gregersen-Hermans, J. (2021). An international competence profile for educational developers. In Internationalising programmes in higher education (pp. 37-51). Routledge.

Creswell, J.W., Plano Clark, V. L. (2011). Designing and conducting mixed methods research: 2nd edition. Sage.

Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches. Sage publications.

Crotty, M. J. (1998). The foundations of social research: Meaning and perspective in the research process. Sage.
Crowther, P., Joris, M., Otten, M., Nilsson, B., Teekens, H., & Wächter, B. (2000). Internationalisation at home, a position paper
Curşeu, P. L., & Pluut, H. (2013). Student groups as learning entities: The effect of group diversity and teamwork quality on groups' cognitive complexity. Studies in Higher Education, 38(1), 87-103.
Cutler, S., & Strong, A. C. (2023). The overlooked impact of faculty on engineering education. In A. Johri (Ed.), International Handbook of Engineering Education Research (1st ed., pp. 286-311). Routledge.
Dauber, D. (2012). Opposing positions in M&A research: culture, integration and performance. Cross Cultural Management: An International Journal, 19(3), 375–398
de Hei, M., Ambagts, M., Issa, T., & Tabacaru, C. (2025). Implementing Group Learning Activities to Foster Intercultural Competence: Facilitating Interaction Across Differences in Higher Education. In Handbook of Diversity Competence: European Perspectives (pp. 189-202). Cham: Springer Nature Switzerland.
De Vita, G. (2002). Does assessed multicultural group work really pull UK students' average down? Assessment & Evaluation in Higher Education, 27(2), 153-161.
De Wit, H., & Altbach, P. G. (2021). Internationalization in higher education: Global trends and recommendations for its future. Policy reviews in higher education, 5(1), 28-46.
De Wit, H., Hunter, F., Howard, L., & Egron-Polak, E. (2015). Internationalisation of higher education study. EU Directorate General for Internal Policies. Policy Department B: Structural and Cohesion Policies.
Deardorff, D. K. (2006). Identification and assessment of intercultural competence as a student outcome of internationalization. Journal of Studies in International Education, 10(3), 241-266.
Deardorff, D. K., & Jones, E. (2022). Intercultural competence as a core focus in international higher education. In D. Deardorff, H. De Wit, B. Leask, & H. Charles (Eds.), The handbook of international higher education (2nd ed., pp. 223-241). Routledge.
Denson, N., & Zhang, S. (2010). The impact of student experiences with diversity on developing graduate attributes. Studies in Higher Education, 35(5), 529-543.
Denzin, N. K., & Lincoln, Y. S. (2018). The Sage handbook of qualitative research (5th ed.). Sage.
Dervin, F. (2014). Exploring ‘new’interculturality online. Language and Intercultural Communication, 14(2), 191-206.
Edwards, R., & Holland, J. (2013). What is qualitative interviewing? A&C Black.
ENAEE. (2022). EUR-ACE® Framework Standards and Guidelines. https://www.enaee.eu/eur-ace-system/standards-and-guidelines/#standards-and-guidelines-for-accreditation-of-engineering-programmes
Erudera. (2026). Sweden International Student Statistics 2024. Retrieved 5 May 2026 from https://erudera.com/statistics/sweden/sweden-international-student-statistics
Feilzer, M. Y. (2010). Doing mixed methods research pragmatically: Implications for the rediscovery of pragmatism as a research paradigm. Journal of Mixed Methods research, 4(1), 6-16.

Fernando, A. R., Ghazali, N. E. b., Phang, F. A., & Rahman, N. F. A. (2025). Competencies of a holistic engineer: towards the development of a competency model and curriculum framework for future-proof engineers. European Journal of Engineering Education, 50(6), 1305-1345.

Fougère, M. (2008). Adaptation and identity. In H. Spencer-Oatey Culturally speaking: Culture, communication and politeness theory (pp. 187-203). Continuum.

French, J. R. P., & Raven, B. (1959). The bases of social power. In D. Cartwright (Ed.), Studies in Social Power (pp. 150-167). University of Michigan: Ann Arbor.

Glass, C. R., & Westmont, C. M. (2014). Comparative effects of belongingness on the academic success and cross-cultural interactions of domestic and international students. International Journal of Intercultural Relations, 38, 106-119.

Grant, M. J., & Booth, A. (2009). A typology of reviews: an analysis of 14 review types and associated methodologies. Health Information & Libraries Journal, 26(2), 91-108.

Green, W., & Mertova, P. (2016). Transformalists and transactionists: Towards a more comprehensive understanding of academics' engagement with 'internationalisation of the curriculum' [Article]. Research in Comparative and International Education, 11(3), 229-246.

Gregersen-Hermans, J., Carey, L. D., & Gilmour, R. A. (2021). Facilitating intercultural group dynamics to enhance learning in and from the international classroom. In Internationalising Programmes in Higher Education (pp. 79-93). Routledge.

Gu, Q., Schweisfurth, M., & Day, C. (2010). Learning and growing in a 'foreign'context: Intercultural experiences of international students. Compare, 40(1), 7-23.

Guba, E. G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries. Ectj, 29(2), 75-91.

Görman, U. (2023). Guide to the Ethical Review of Research on Humans. Uppsala

Hackett, S., Janssen, J., & Van Tartwijk, J. (2025). The significance of personality traits, collaborative attitudes, and group composition during collaborative online international learning (COIL): a mixed methods study. Journal of Computing in Higher Education, 1-37.

Hammond, C. D., & Radjai, L. (2022). Internationalization of Curriculum in Japanese Higher Education: Blockers and Enablers in English-Medium Instruction Classrooms in the Era of COVID-19. Higher Education Forum, 19, 87-107.

Handford, M., Van Maele, J., Matous, P., & Maemura, Y. (2019). Which "culture"? A critical analysis of intercultural communication in engineering education. Journal of Engineering Education, 108(2), 161-177.

Harrison, N., & Peacock, N. (2010). Interactions in the international classroom: the UK perspective. In E. Jones (Ed.), Internationalisation and the student voice. Routledge.

Harrison, N. (2015). Practice, problems and power in 'internationalisation at home': Critical reflections on recent research evidence. Teaching in Higher Education, 20(4), 412-430.

Hermans, J. W. M. (2016). The impact of an international university environment on student's intercultural competence development [PhD thesis, Università Cattolica del Sacro cuore Milano].

Hoffman, E., & Verdooren, A. (2018). Diversity competence: Cultures don't meet, people do. Coutinho.

Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). Cultures and organizations: software of the mind: intercultural cooperation and its importance for survival. McGraw-Hill.
Holliday, A. (1999). Small cultures. Applied Linguistics, 20(2), 237-264.
Holliday, A. (2010). Complexity in cultural identity. Language and Intercultural Communication, 10(2), 165-177.
Holliday, A. (2019). Understanding intercultural communication: Negotiating a grammar of culture. Routledge.
Hudzik, J. K. (2011). Comprehensive internationalization: From concept to action. Washington, DC: NAFSA: Association of International Educators, 44.
Jansen, A. E., & Searle, B. J. (2021). Diverse effects of team diversity: a review and framework of surface and deep-level diversity. Personnel Review, 50(9), 1838-1853.
Jiang, D., Dahl, B., & Du, X. (2023). A Systematic Review of Engineering Students in Intercultural Teamwork: Characteristics, Challenges, and Coping Strategies. Education Sciences, 13(6), 540.
Johri, A., & Jesiek, B. K. (2014). Global and International Issues in Engineering Education. In A. Johri & B. M. Olds (Eds.), Cambridge handbook of engineering education research. Cambridge University Press.
Jones, E., & Reiffenrath, T. (2018, 7 March). Internationalisation at Home in practice. https://www.eaie.org/resource/internationalisation-at-home-practice.html
Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. Educational Researcher, 33(7), 14-26.
Kimmel, K., & Volet, S. (2010). University Students' Perceptions of and Attitudes Towards Culturally Diverse Group Work. Journal of Studies in International Education, 16(2), 157-181.
Kimpton, C., & Maynard, N. (2024). Factors shaping teamwork skills development in tertiary engineering education: A systematic literature review. European Journal of Engineering Education, 50(2), 253-280.
Kramsch, C., & Uryu, M. (2012). Intercultural contact, hybridity, and third space. In The Routledge handbook of language and intercultural communication (pp. 229-244). Routledge.
Kroeber, A. L., & Kluckhohn, C. (1952). Culture: A critical review of concepts and definitions (Papers. Peabody Museum of Archaeology & Ethnology, Harvard University.
Kvale, S., & Brinkmann, S. (2015). *Interviews*. Sage.
Leask, B. (2009). Using Formal and Informal Curricula to Improve Interactions Between Home and International Students. Journal of Studies in International Education, 13(2), 205-221.
Leask, B. (2015). Internationalizing the curriculum. Routledge.
Leask, B. (2021). Internationalization of the curriculum: evolving towards education 4.0. In M. Morosini, C. Cassol, C. Elsner, & C. Whitsed (Eds.), Internationalization of higher education practices and reflections from Brazil and Australia. ediPUCRS.
Leask, B., & Bridge, C. (2013). Comparing internationalisation of the curriculum in action across disciplines: theoretical and practical perspectives. Compare: A Journal of Comparative and International Education, 43(1), 79-101.
Leask, B. (2025). Rethinking the Internationalization of Higher Education as a Transformational Educational Endeavor International Higher Education.

Li, W. (2024). Mixing cultures, boosting learning: how diversity can improve the value of student group work in higher education [PhD thesis, University of Groningen]. Groningen. https://research.rug.nl/en/publications/mixing-cultures-boosting-learning-how-diversity-can-improve-the-v/

Li, W., Otten, S., Van der Zande, I. S., & Coelen, R. (2023). Do students value intercultural group work? The effects of perceived value in diversity on intercultural interactions. Innovations in education and teaching international, 60(3), 412-425.

Liang, Y., & Schartner, A. (2022). Culturally mixed group work and the development of students' intercultural competence. Journal of Studies in International Education, 26(1), 44-60.

Lindgren, B.-M., Lundman, B., & Graneheim, U. H. (2020). Abstraction and interpretation during the qualitative content analysis process. International Journal of Nursing Studies, 108, 103632.

Lomer, S., & Mittelmeier, J. (2021). Mapping the research on pedagogies with international students in the UK: a systematic literature review. Teaching in Higher Education, 1-21.

Luo, J., & Chan, C. K. Y. (2022). Qualitative methods to assess intercultural competence in higher education research: A systematic review with practical implications. Educational Research Review, 37, 100476.

Malmström, H., & Pecorari, D. (2021). Språkval och internationalisering: Svenskans och engelskans roll inom forskning och högre utbildning. In: Institutet för språk och folkminnen.

Mann, S. (2011). A critical review of qualitative interviews in applied linguistics. Applied Linguistics, 32(1), 6-24.

Mannix, E., & Neale, M. A. (2005). What differences make a difference? The promise and reality of diverse teams in organizations. Psychological science in the public interest, 6(2), 31-55.

Marginson, S. (2023). Limitations of the leading definition of 'internationalisation'of higher education: is the idea wrong or is the fault in reality? Globalisation, Societies and Education, 1-20.

Marinoni, G., & Pina Cardona, S. B. (2024). Internationalization of higher education: Current trends and future scenarios.

Masgoret, A.-M., & Ward, C. (2006). Culture learning approach to acculturation. The Cambridge handbook of acculturation psychology, 58-77.

McGowan, J., Straus, S., Moher, D., Langlois, E. V., O'Brien, K. K., Horsley, T., Aldcroft, A., Zarin, W., Garitty, C. M., & Hempel, S. (2020). Reporting scoping reviews—PRISMA ScR extension. Journal of Clinical Epidemiology, 123, 177-179.

Mendoza, C., Dervin, F., & Layne, H. (2023). 'Integration is not a one-way process': students negotiating meanings of integration and internationalization at home (IaH) in Finnish higher education. Higher Education Research & Development, 42(5), 1150-1164.

Merabet, R. (2024). Students we label international: an urgent call to reconceptualise research with international students. Equality, Diversity and Inclusion: An International Journal, 44(3), 292-308.

Mercier, E., Goldstein, M. H., Baligar, P., & Rajarathinam, R. J. (2023). Collaborative learning in engineering education. In International Handbook of Engineering Education Research (pp. 402-432). Routledge.

Merola, R. H., Coelen, R. J., & Hofman, W. (2019). The role of integration in understanding differences in satisfaction among Chinese, Indian, and South Korean international students. Journal of Studies in International Education, 23(5), 535-553.

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). Qualitative data analysis. Sage.

Mittelmeier, J. (2025). Against 'integration'in research and practice with international students. Journal of studies in international education.

Mittelmeier, J., Lomer, S., Al Furqani, S., & Huang, D. (2022). Internationalisation and students' outcomes or experiences: A review of the literature 2011-2021. Advance HE.

Mittelmeier, J., Rienties, B., Zhang, K. Y., & Jindal-Snape, D. (2021). Using diaries in mixed methods designs: Lessons from a cross-institutional research project on doctoral students' social transition experiences. In Exploring Diary Methods in Higher Education Research (pp. 15-28). Routledge.

Montgomery, C. (2009). A Decade of Internationalisation: Has It Influenced Students' Views of Cross-Cultural Group Work at University? Journal of Studies in International Education, 13(2), 256-270.

Moore, P., & Hampton, G. (2015). 'It's a bit of a generalisation, but …': participant perspectives on intercultural group assessment in higher education. Assessment and Evaluation in Higher Education, 40(3), 390-406.

Moscoso, J. N. (2019). Abductive reasoning: A contribution to knowledge creation in education. Cadernos de Pesquisa, 49(171), 308-329.

Munn, Z., Peters, M. D., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. BMC Medical Research Methodology, 18, 1-7.

Nilsson, B. (2003). Internationalisation at Home From a Swedish Perspective: The Case of Malmö. Journal of Studies in International Education, 7(1), 27-40.

O'Connell, M. T. (2025). Unpacking Interdisciplinary Groupwork in Engineering Education: Theory and Practice [PhD thesis, Chalmers Tekniska Hogskola (Sweden)].

OECD. (2024). Education at a Glance 2024: OECD Indicators. OECD Publishing, Paris, https://doi.org/10.1787/c00cad36-en..

Parrish, C. W., Guffey, S. K., & Williams, D. S. (2021). The impact of team-based learning on students' perceptions of classroom community. Active Learning in Higher Education, 1-15.

Peacock, N., & Harrison, N. (2009). "It's So Much Easier to Go with What's Easy" "Mindfulness" and the Discourse Between Home and International Students in the United Kingdom. Journal of Studies in International Education, 13(4), 487-508.

Pettigrew, T. F. (1998). Intergroup contact theory. Annual Review of Psychology, 49(1), 65-85.

Ping, C., Kleingeld, A., Hendrickx, M., Rispens, S., & Taconis, R. (2025). Group diversity, diversity beliefs, and group processes in a design course for engineering students. Journal of Engineering Education, 114(1), e20623.

Poort, I., Jansen, E., & Hofman, A. (2019). Intercultural group work in higher education: Costs and benefits from an expectancy-value theory perspective. International Journal of Educational Research, 93, 218-231.

Poort, I., Jansen, E., & Hofman, A. (2022). Promoting University Students' Engagement in Intercultural Group Work: The Importance of Expectancy, Value, and Cost [Article]. Research in Higher Education.

Poort, I., Jansen, E., & Hofman, A. (2023). Cultural intelligence and openness to experiences pave the way for cognitive engagement in intercultural group work. Journal of Studies in International Education, 27(2), 277-297.

Popov, V., Brinkman, D., Fortuin, K. P. J., Lie, R., & Li, Y. (2022). Challenges home and international students face in group work at a Dutch university [Article]. European Journal of Engineering Education, 47(4), 664-678.

Ramstrand, N., Weissova, L., Nylander, E., & Johansson, A. (2026). Interventions and evaluation of intercultural competence of students enrolled in higher education–a scoping review. Education Inquiry, 17(1), 212-232.

Reid, R., & Garson, K. (2017). Rethinking Multicultural Group Work as Intercultural Learning [Article]. Journal of Studies in International Education, 21(3), 195-212.

Reissner-Roubicek, S., & Spencer-Oatey, H. (2021). Positive interaction in intercultural group work: Resources to foster success. In Z. Zhang, T. Grimshaw, & X. Shi (Eds.), International Student Education in Tertiary Settings (pp. 82-104). Routledge.

Richter, T., Kjellgren, B., Arnó-Macià, E., & Fleischhauer, K. (2023). Global competence needs: A comparative study of stakeholders' perspectives on engineering education. 19th CDIO Conference, Trondheim, Norway, Trondheim.

Riebe, L., Girardi, A., & Whitsed, C. (2016). A systematic literature review of teamwork pedagogy in higher education. Small Group Research, 47(6), 619-664.

Rienties, B., Luchoomun, D., & Tempelaar, D. (2013). Academic and social integration of Master students: a cross-institutional comparison between Dutch and international students. Innovations in Education and Teaching International, 51(2), 130-141.

Russell, J., Rosenthal, D., & Thomson, G. (2009). The international student experience: three styles of adaptation. Higher Education, 60(2), 235-249.

Saldaña, J. (2011). Fundamentals of qualitative research. OUP, USA.

Sanchez, H. S., & Grimshaw, T. (2019). Stimulated recall. In McKinley, J., Rose, H., (Eds.) The Routledge handbook of research methods in applied linguistics (pp. 312-323). Routledge.

Schreier, M. (2012). Qualitative content analysis in practice. Sage.

Severiens, S., ten Dam, G., & Blom, S. (2006). Comparison of Dutch ethnic minority and majority engineering students: social and academic integration. International Journal of Inclusive Education, 10(1), 75-89.

Severiens, S. E., & Schmidt, H. G. (2009). Academic and social integration and study progress in problem based learning. Higher Education, 58(1), 59.

Shaules, J. (2015). The intercultural mind: Connecting culture, cognition, and global living. Nicholas Brealey.

SOU2018:78. (2018). Internationalisation of Swedish higher education institutions SOU 2018:3 and SOU 2018:78. Stockholm

Spencer-Oatey, H., & Dauber, D. (2017). The gains and pains of mixed national group work at university. Journal of Multilingual and Multicultural Development, 38(3), 219-236.

Spencer-Oatey, H., & Dauber, D. (2019). What Is Integration and Why Is It Important for Internationalization? A Multidisciplinary Review. Journal of Studies in International Education, 23(5), 515-534.
Spencer-Oatey, H., Dauber, D., & Williams, S. (2014). Promoting integration on campus: Principles, practice and issues for further exploration. UK Council for International Student Affairs (UKCISA).
Spencer-Oatey, H., & Franklin, P. (2009). Intercultural interaction: A multidisciplinary approach to intercultural communication. Springer.
Spencer-Oatey, H., & Kádár, D. Z. (2021). Intercultural politeness: Managing relations across cultures. Cambridge University Press.
Spencer-Oatey, H., & Lazidou, D. (2024). Making working relationships work: The TRIPS Toolkit for handling relationship challenges and promoting rapport. Castledown Publishers.
Spitzberg, B. H., & Changnon, G. (2009). Conceptualizing intercultural competence. In D. Deardorff (Ed.), The SAGE handbook of intercultural competence (pp. 2-52). SAGE Publications, Inc.
Stein, S., & De Andreotti, V. O. (2016). Cash, competition, or charity: International students and the global imaginary. *Higher education*, *72*(2), 225-239.
Stein, S. (2019). Critical internationalization studies at an impasse: making space for complexity, uncertainty, and complicity in a time of global challenges, Studies in Higher Education, 46 (9), 1771-1784
Stohl, M. (2007). We have met the enemy and he is us: The role of the faculty in the internationalization of higher education in the coming decade. Journal of Studies in International Education, 11(3-4), 359-372.
Strauss, P., U, A., & Young, S. (2011). 'I know the type of people I work well with': student anxiety in multicultural group projects. Studies in Higher Education, 36(7), 815-829.
Summers, M., & Volet, S. (2008). Students' attitudes towards culturally mixed groups on international campuses: Impact of participation in diverse and non-diverse groups [Article]. Studies in Higher Education, 33(4), 357-370.
Tajfel, H. (1982). Social psychology of intergroup relations. Annual Review of Psychology, 33(1), 1-39.
Tange, H. (2020). Teaching practices in a global learning environment: An interdisciplinary take on international education. Routledge.
Tashakkori, A., Teddlie, C., & Johnson, B. (2015). Mixed Methods. International encyclopedia of the social & behavioral sciences (Vol. 15). In: Amsterdam, the Netherlands: Elsevier.
Timmermans, S., & Tavory, I. (2012). Theory construction in qualitative research: From grounded theory to abductive analysis. Sociological Theory, 30(3), 167-186.
Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. Review of Educational Research, 45(1), 89-125.
Tinto, V. (1997). Classrooms as communities: Exploring the educational character of student persistence. The Journal of Higher Education, 68(6), 599-623.
Trompenaars, F., & Hampden-Turner, C. (2011). Riding the waves of culture: Understanding diversity in global business. Nicholas Brealey International.
Turner, Y. (2009). "Knowing me, knowing you," is there nothing we can do? Pedagogic challenges in using group work to create an intercultural learning space. Journal of Studies in International Education, 13(2), 240-255.

UKÄ. (2025). Internationalisering och mobilitet. https://www.uka.se/download/18.7e95b7601975835244150/1750065630344/UK%C3%84_%C3%85rsrapport_2025_Kapitel_4webb.pdf

Volet, S. E., & Ang, G. (2012). Culturally mixed groups on international campuses: an opportunity for inter-cultural learning. Higher Education Research & Development, 31(1), 21-37.

Weissova, L. (2021). To reinvent the wheel: Internationalisation at Home at Swedish Higher Education Institutions [Master dissertation, PH Ludwigsburg University of Education, Helwan University].

Weissova, L., Gregersen-Hermans, J., & Pantelic, D. (2024). Academic Voices: Continuing Professional Development for Teaching in Internationalized Classrooms. Journal of Comparative and International Higher Education, 16(5), 91-105.

Weissova, L. (2026). Continuing professional development for the internationalisation of the curriculum: Academics' engagement and conditions for change [Doctoral dissertation, Università Cattolica del Sacro Cuore]. Università Cattolica Institutional Repository.

Whitsed, C. (2021). Internationalisation of the Curriculum: Opportunities and lessons from practice. In Internationalization of Higher Education practices and reflections from Brazil and Australia. ediPUCRS.

Whitsed, C., Gregersen-Hermans, J., Casals, M., & Leask, B. (2022). Engaging faculty and staff in the internationalization of higher education. In The handbook of international higher education (pp. 325-342). Routledge.

Yin, R. K. (2016). Qualitative research from start to finish. Guilford publications.

Zhu, H. (2016). Research methods in intercultural communication: A practical guide. John Wiley & Sons.

Zimmerman, D. H., & Wieder, D. L. (1977). The diary: diary-interview method. Urban life, 5(4), 479-498.

Zotzmann, K. (2015). The impossibility of defining and measuring intercultural competencies. In D. Rivers (Ed.), Resistance to the known: Counter-conduct in language education (pp. 168-191). Palgrave.

Zou, T. X., Law, L. Y., Chu, B. C., Lin, V., Ko, T., & Lai, N. K. (2022). Developing academics' capacity for internationalizing the curriculum: A collaborative autoethnography of a cross-institutional project. Journal of Studies in International Education, 26(3), 334-351.

Zou, T. X. P., Law, L. Y. N., & Chu, B. C. B. (2023). Are some disciplines 'hard to engage'? A cross-disciplinary analysis of university teachers' approaches to internationalisation of the curriculum. Higher Education Research & Development, 42(5), 1267-1282.