

THESIS FOR THE DEGREE OF LICENTIATE OF PHILOSOPHY

Internationalisation at home?

Home and international students' integration into engineering education

BECKY BERGMAN

Department of Communication and Learning in Science

CHALMERS UNIVERSITY OF TECHNOLOGY

Gothenburg, Sweden 2022

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BECKY BERGMAN

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Department of Communication and Learning in Science

Chalmers University of Technology

SE-412 96 Gothenburg

Sweden

Telephone + 46 (0)31-772 1000

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Abstract

Internationalisation is a strategy for over 90 percent of universities and student mobility is a key part of that strategy. At the same time, home and international students do not tend to mix. Recent government initiatives in Sweden have stressed the need for all students to develop their intercultural competence, yet only a small minority will travel.

The concept of internationalisation at home argues that students can benefit from the exchange of ideas and broadened horizons on their own campuses, through bringing together home and international students. The aim of this thesis is to investigate the process of integration from a student perspective (both home and international), in particular, the effect of practices like intercultural group work on academic and social integration. Intercultural group work has been interpreted as students from different nationalities working in pairs or groups in a course. For engineering students, intercultural group work is an essential skill for the global workplace many will work in.

Using a co-constructivist approach, the two appended articles present data collected through interviews and through student diaries, to build a picture of student experiences of integration into engineering education, including academic, social, human and structural elements.

There are four key findings. Firstly, in-depth interviews revealed the complexity within the categories of “home” and “international” student experiences in group work. The feeling of being an insider in a group is affected by many more factors than nationality such as previous experience, the nature of the group work and personal aspects like openness and adaptability. Secondly, the longitudinal nature of the first study revealed critical incidents within the groups which affected the group dynamics. Thirdly, diary data showed the students’ appreciation of intercultural pair work in bridging the academic and social divide that can be experienced at the start of a programme. Finally, the use of an integration model highlighted the importance of looking at both human and structural factors in planning intercultural group work.

These findings suggest the importance of a pedagogical structure around intercultural group work. Intercultural group work can facilitate integration, but care is needed. The teacher plays a crucial role in forming the groups, supporting them and facilitating the project in other ways, such as choice of task. The findings also suggest a programme perspective, such that consideration is given to timing of pair and group activities in the programme as a whole.

Keywords: internationalisation at home, integration, intercultural group work, intercultural competence, home students, international students, engineering education

Appended papers

The thesis is based on the following papers:

- Paper 1 Bergman, B., Negretti, R., & Apelgren, B.-M. **Individual experiences of intercultural group work in engineering education over time: Beyond “home” and “international” labels**

Undergoing revisions, to be submitted for second round of review in European Journal of Engineering Education.

I conceived the idea and design. I carried out the data collection independently and I wrote the paper. Data analysis and revisions were done jointly with my co-authors.

- Paper 2 Bergman, B., Negretti, R., Spencer-Oatey, H. & Stöhr, C. **“The assignments help getting friends”:** integrating culturally diverse students into an international course online

Submitted to Journal of Studies in International Education

I conceived the idea and design. I carried out the data collection independently and I wrote the paper. Qualitative data analysis and revisions were done jointly with RN and HSO. Quantitative data analysis was done with CS.

Other relevant contributions

Bergman, B. & Norman, A. (2019) **Making the culturally diverse classroom work: Activities for successful groups**

In *Proceedings of the 47th European Society for Engineering Education (SEFI) Conference 2019, Budapest, Hungary* (p.2036)

Bergman, B. (2019). **Book review of Teaching writing for academic purposes to multilingual students. Instructional approaches**

In *ESP Today – Journal of English for Specific Purposes at Tertiary Level*

Bergman, B., Peterson, L., Sjöblom, J., Malmqvist, J. (2020) **An inclusive, international learning environment?**

Conference presentation in *KUL, Chalmers pedagogical conference, Gothenburg*

Bergman, B. (2020). **Students are stories: Individual experiences of intercultural group work in engineering**

Conference presentation in invited symposium In *SIG 10, 21 & 25 Conference: Process-oriented research on learning in contemporary society, online*

Peterson, L., Bergman, B. & Norman, A. (2020). **Intercultural group work: engaging diversity to enhance learning in an integrated engineering master's project course**

Conference presentation in *NU2020, online*

Bergman, B. (2021). **Studying online in international Master's engineering programs: lessons learnt from a pandemic.**

Proposal and presentation in *2021 WES-CIHE Summer Institute: Inclusive and Innovative Internationalization of Higher Education, online*

Bergman, B., Poort, I., Davis, K. (2021). **Intercultural collaboration for HE students: current and possible research directions**

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List of abbreviations

Abbreviation	Explanation
EAIE	European Association for International Education
EMI	English medium of instruction
IaH	Internationalisation at home
ICC	Intercultural competence
IGW	Intercultural group work
STINT	Swedish Foundation for International Cooperation in Research and Higher Education
SUHF	Association of Swedish Higher Education

*“Borders? I have never seen one. But I have heard they exist
in the minds of some people. “*

-Thor Heyerdahl

*“As long as the world around me has been new each time, it
has not become my world”*

-Eva Hoffman “Lost in translation”

1. Introduction

“Home” is an evocative word. For some, it symbolizes a particular place; for others, a certain group of people, often family. For many, it signifies belonging, connectedness and safety. The title of this thesis refers to two concepts using the word “home” – internationalisation at home and home students (in connection with international students). Both are commonly used terms within the internationalisation of higher education.

Internationalisation has been a key part of university strategy worldwide for some time, connected inextricably as it is to the recruitment of excellent candidates, high university ranking, excellence in education and certainly not least, improved university economies (de Wit & Albach, 2021; Zhang et al., 2021). Internationalisation at Home (IaH) has increasingly become a hot topic within the umbrella of internationalisation where the focus is moving beyond mobility targets to a focus on the university campus and *all* students (not just the small percentage who are mobile) (de Wit & Albach, 2021; Hudzik, 2015). In particular, discussed areas are intercultural competence, integration and internationalisation of the curriculum. A commonly used definition of IaH 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, 76).

In Sweden, this is reflected in discussions at national level to include intercultural competence for all students in the Higher Education Act and a shift in focus at the Association of Swedish Higher Education (SUHF) from mobility to one embracing all students and staff (SUHF, n.d.). Since the ratio of incoming to outgoing students is approximately 2:1 in Sweden, many more Swedish students have better possibilities to come into contact with an international student at their home university than will travel abroad. Therefore, facilitating this contact to ensure intercultural competence for all students is imperative at an institutional, regional and national level. This thesis focuses on how this contact can be achieved at the institutional level, in particular student interaction in the academic environment.

Student interaction involves “home” and “international” students, “home” students in this context, referring to Swedish students. 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. Some “home” students for example will feel that they have more in common in terms of ethnicity and culture with some “international” students than other “home” students.

“International students” refers to students from all continents who travel to the host university from abroad, defined by the OECD as “those who left their country of origin and moved to another country for the purpose of study” (2020, 235). This means that both EU and non-EU students are included in this category in this thesis¹. It is important to note in this study, the international students in focus are those who will study for a longer period of time, typically

¹ This is not always the case administratively, for example, where EU and non-EU students can be in different pay brackets (see Bond 2017 for further discussion of this definition)

two years on a master programme, rather than short term students on exchanges such as the Erasmus programme.

As with the “home” definition, the category “international students” includes an extremely wide range and complexity, from all countries and continents. This means, for example, that they might well be speakers of English as a first language. Lomer & Mittelmeier (2021) criticise much of the existing literature for framing “international students” both as a homogenous group and in deficit terms. This is clearly problematic for such a diverse group of students.

In terms of feeling “at home”, research shows that students who feel part of the university community and feel connected to fellow students are more likely to be successful, not least academically (Glass & Westmont, 2014; Severiens et al., 2006). At the same time, many studies have indicated a divide in the international classroom between the home and international students which makes this connection problematic and integration more challenging in the international classroom (e.g. Leask, 2009; Spencer-Oatey & Dauber, 2019a).

This thesis focuses on students’ interactions in the classroom in constellations such as intercultural group work (IGW) within IaH. If “home” signifies “belonging”, “connectedness” and “safety”, how do students experience this in the international classroom? How does the process of adjustment and integration look?

This process of adjustment is an area of professional, academic but also personal interest to me. As someone who has moved a great deal and adjusted to many different cultural realities, the question of “home” is an interesting one. I was born in the UK into an English family. Up until the age of 18, my family did not live in the same location for more than 5 years and relocated at least 8 times covering 4 countries on 3 continents. From 18-30, I lived and worked in 8 places covering 6 countries on 4 continents. Since then, I have lived in Sweden, taken Swedish citizenship and consider myself very much a part of both Swedish and British culture. My own history has made me very aware of processes of belonging, insiderness and outsiderness and the complex layers in those processes.

1.1 Aim and research questions

The aim of this thesis is to investigate the process of integration from a student perspective (both home and international), in particular, the effect of practices like intercultural group work on academic and social integration. While many studies have investigated the integration of international students into the university environment, few have been based in non-English speaking countries and even fewer have included both home and international students. Furthermore, this study focuses on engineering students, a group which is underrepresented in the literature, but who are very interesting due to the global nature of their future careers. As an area of study, engineering is the second most internationalised in terms of numbers of international students (after business studies) (OECD, 2021).

The range and complexity *within* the two groups of home and international students as described above is clear. However, it is not only in terms of nationality that categorisation can be complex. There can be vast differences in the backgrounds of home and international

students, including academic discipline, age, work experience and travel experience. This thesis therefore adopts a co-constructivist approach to the process of integration, where factors other than nationality are considered.

The following research questions have been foregrounded:

RQ1: How do home and international master engineering students experience an international academic environment, both academically and socially?

This question focuses particularly on the start of the students' master studies when they are new to the international environment. Article 2 follows the progression of students on one master programme on a weekly basis both academically and socially.

RQ2: What are the experiences of adaptation and integration over time for both the home and international students?

Article 1 follows the students' experiences of integration over time. It takes a longitudinal, in-depth approach following five home and international students over the course of a year in intercultural group work.

RQ3: How do experiences of intercultural group work contribute to integration into the academic environment?

Both article 1 and 2 focus on intercultural group work and how it contributes to integration. By following five student stories and critical incidents in Article 1, the students' sense of belonging and insiderness / outsiderness are reported on going beyond the categorisation of home and international. Article 2 looks at the affordances of intercultural pair work in facilitating integration into the course and the programme.

1.2 Overview of thesis

The three themes of internationalisation at home, integration and intercultural competence are key to this thesis as described in chapter 1 (see figure 1.1).

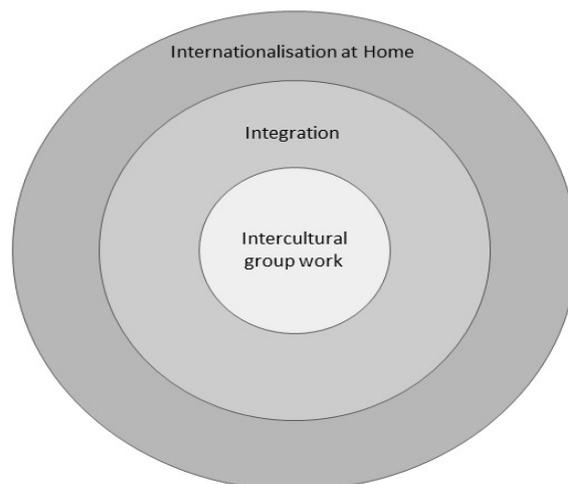


Figure 1.1: Overview of thesis

With this in mind, the rest of the thesis is organised as follows:

Chapter 2: Theoretical framework for intercultural communication and intercultural competence

Intercultural competence is a core concept in this thesis and policy documents. This chapter positions my own approach to intercultural competence in this thesis in the context of theoretical frameworks in the area.

Chapter 3: Overview of internationalisation and integration

This chapter delves more deeply into the concepts of internationalisation, internationalisation at home (internationally and from a Swedish perspective) and integration, in particular, integration models within education.

Chapter 4: Intercultural group work – integration in action

Having provided the broader perspective of internationalisation and integration, this chapter focuses on one way of realising these goals in the classroom: intercultural group work. This includes how it might be facilitated and the affordances and challenges in the light of integration models.

Chapter 5: Methodology

This chapter provides an overview of research paradigms within intercultural communication before describing the co-constructivist, pragmatic approach taken in this thesis. The mixed methods used are investigated, in particular the diary-interview method and the subsequent qualitative content analysis.

Chapter 6: Summary of the papers

As suggested from the title, this chapter provides a summary of the important points from the two appended articles.

Chapter 7: Discussion

Referring back to the research questions, this chapter takes a closer look at the main contributions as well as ideas for future research.

Chapter 8: Concluding remarks

This chapter briefly sums up the thesis, returning to the three themes of internationalisation at home, integration and intercultural competence.

2. Theoretical framework for intercultural communication and intercultural competence

At the core of internationalisation at home (IaH), integration and intercultural group work is the idea of students gaining and using intercultural competence in their interactions with each other (Deardorff & Jones, 2012; Leask, 2015). This chapter describes the underlying concepts behind culture and intercultural communication as used in this thesis, since they are crucial when discussing intercultural competence and the dynamics of students from different cultural backgrounds interacting with each other and in understanding my approach in this study. Intercultural competence is a key higher education goal on a programme, institutional, national and international level. Nevertheless, Van Maele and Vassilicos (2015) commented that:

To date, there is not a consensus on how best to address the development of intercultural competences in science / engineering/ technology education (p.1)

2.1 Culture

While IaH by default includes students from different nationality backgrounds, which remains at the heart of the interactions investigated in this thesis, definitions of culture and intercultural communication are typically broader than this. The word “culture” is used in many different contexts from the arts to biology and medical terms (Oxford Advanced Learner’s Dictionary). The main context in this thesis is culture as a “way of life”. One attempt to define culture led to more than 160 definitions (Kroeber & Kluckhohn, 1952) but this thesis will use as its basis a definition from Spencer-Oatey and Kádár (2021):

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).

This definition requires some unpacking, which I have done below, focusing on the words in the definition in italics: social group and patterns. Closely connected to these two concepts is behaviour: social group membership and patterns affect and are affected by dynamics in terms of encounters, perceptions of context and interactional behaviour.

2.1.1 Social group

“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 model (2005) for example, they include the following categories:

- demographic (physical characteristics);
- geographic factors (natural or man-made physical features of a region);

- associative (formal and informal groups).

Demographic factors include characteristics such as age and gender in addition to ethnicity and race. Geographic factors include whether a person comes from an urban or rural area. Associative factors include formal and informal groups like family, religion and profession. 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 patterns and behaviour in complex ways. For example, if we compare Elin, a young Swedish woman working with IT in Stockholm to Bengt, a retired farmer living in the forest, we can see that while both share the same demographic factor of being Swedish, other demographic factors such as age and gender are different. In addition, they differ in their geographic factors (city / country) and associative groups (e.g. profession). These differences are likely to affect their beliefs, values, norms and behaviour.

In terms of groups formed through circumstance, some claim that the concept of Communities of practice can be helpful in understanding the more dynamic aspect of an individual's cultural identity. A community of practice is defined as "a set of relations among persons, activity, and world, over time" (Lave & Wenger, 1991). Corder and Meyerhoff (2007), for example, claim that using this concept within intercultural communication shows that "culture is not fixed or static, but rather is negotiable, mutable and often goal-directed." (p. 457).

Taking my research as an example of these social groups, membership through birth would refer to the students' nationalities, for example, whereas membership through circumstance could refer to their study programme. The latter would be the student's community of practice where they form a set of relations with the other students in the programme over time. All of these social groups affect the interaction between the students and in the case of the community of practice, is part of an evolving process.

2.1.2 Patterns

Social groups share patterns which might consist of "traditions, beliefs, values, schemas, norms and symbols" (Spencer-Oatey and Kádár, 2021) as visualised in figure 2.1 below. These patterns unite the group since they are what the group has in common. "Norms" for example, might include expected behaviour at a business meeting and "schemas" refer to the non-behavioural aspects, in this example, the setting of the meeting, for example, furniture (Spencer-Oatey et al., 2019). Values and beliefs are grouped together as perspectives by Spencer-Oatey and Kádár (2021).

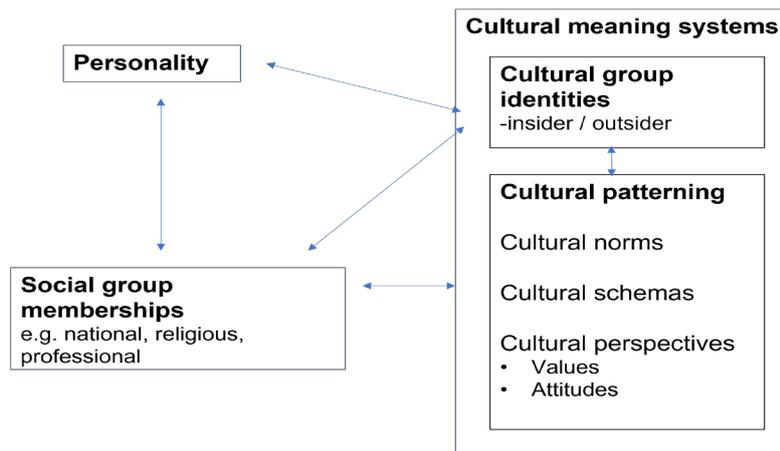


Figure 2.1: Representation of culture (simplified from Spencer-Oatey & Kádár, 2021, p.72)

The group’s patterns unite the group and form the group identity. These, in turn, influence the group’s and individual’s behaviour.

National cultural values have been of great interest within intercultural research. Many researchers have presented possible classifications of these. One of the earliest and possibly one of the 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. Other well-known examples of categories are Gesteland (2002), Trompenaars and Hampden-Turner (2011) and Meyer (2014). These dimensions have been used to compare nationalities with each other. For example, in a high power distance culture, there is more respect for the power hierarchy than in a low power distance culture.

One discussion within intercultural research has been how useful these dimensions are, particularly when applied at the country cultural level. Holliday et al. (2010) have described a dichotomy between essentialist and non-essentialist intercultural research, where the former is criticised for describing homogenous cultures connected to one country whereas the latter (non-essentialist) describes society as more complex, borders as more blurred and people as moving between multiple cultures. Handford et al. (2019) classify this dichotomy as “culture-as-given” (essentialist) and “culture-as-construct” (non-essentialist) and Dahl (2014) describes it as “descriptive essentialist culture” versus “dynamic constructivist culture” and asks the question “is culture something we have or something we do?” My response is “can’t it be both?” While interpreting culture narrowly as national culture is overly simplistic, there is still an interplay between the values of the groups people are born into and the groups people join later in life. While Hofstede et al. (2010) warned against connecting country values to individual values, and Fischer and Schwartz (2011) found more variation between individuals within countries than between countries, Schwartz (2011) also talks about the press of society and comments:

To rephrase Hofstede's metaphor, culture is the 'programmer' of the mind, not its programming. By virtue of living in particular social systems, individuals experience the normative value emphases of their society's culture as a press to which they are exposed, a press that influences their attitudes, beliefs, behaviour and thought (Berger and Luckmann, 1966). (p.470)

As a metaphor for the effect of culture on individuals, Zegarac (2008) draws a parallel between cultural effect and an epidemic (a relevant example at the time of writing!). Just as not everyone reacts in the same way to a disease in an epidemic, not everyone reacts to culture in the same way, yet everyone is affected by it to some extent.

In figure 2.1, cultural meaning systems are built up of both cultural patterning and cultural identities. Spencer-Oatey and Kádár (2021) draw on psychology in identifying both personal and social identity. Personal identity "defines self in terms of idiosyncratic personal relationships and traits" and social identity "defines self in terms of group memberships" (Hogg and Vaughan, 2002:122 in Spencer-Oatey & Kádár, 2021: 51). The combination of these two satisfy the typical human desire to both be a part of something (a sense of belonging) while simultaneously being different (a sense of uniqueness). Being part of a group (or not) leads to in-groups and out-groups and insiders and outsiders, a concept explored in social identity theory (Tajfel, 1982) , discussed in article 1 and significant in intercultural communication. This concept is explored more thoroughly below in 2.2.

In reality, it is challenging to understand the reasons behind an individual's behaviour, though we might speculate on factors due to social groups, patterning or identity. This is interesting when studying intercultural group work. For example, if a student is experienced as quiet in the group, there are all sorts of possible reasons behind this. Social groups and ensuing expectations could play a part in that there is an understanding about when it is appropriate to speak and who it is appropriate to speak to (power distance). There might also be expectations from previous studies and how used one is to studying in groups (Community of Practice). Apart from social groups, there are other factors that can be equally strong such as the student's personality or the particular context of the group which affects the student's own behaviour. There might be dominant members of the group or generally, an unwelcoming atmosphere. The student's own motivation or previous skills might not be a good match. In short, there are many possible reasons for this behaviour which may or may not be due to culture. Therefore, when studying intercultural groups, it is important to be open to all possibilities.

2.2 Intercultural communication

If culture is based on membership in different social groups, "intercultural communication" (literally communication between cultures) could be interpreted very broadly. As Holliday describes "the *cultural* that we encounter every day is always, in effect, *intercultural*" (Holliday, 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” (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 due to personality or culture. Therefore, if two people meet from different cultural groups but do not experience strangeness or notice a distance in any way, it is not an intercultural situation according to this definition.

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. The “ultimate attribution error” (Pettigrew, 1979) makes people interpret behaviour differently between their in-groups and out-groups. For example, negative behaviour from the in-group will be interpreted as an exception to the rule whereas negative behaviour from the out-group is seen to define that person and their group and seen as typical. The opposite happens with positive behaviour. 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. The home students 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. This “expert power” can give the home students a particular role in intercultural group work for example, whether they want that role or not.

One example in article 2 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, 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. Part of this final stage involves having less contact with the in-group as a result of more contact with the out-group.

In the context of international education, intercultural group work can be seen as one way to bring groups of home and international students together. Allport’s contact theory (in Pettigrew, 1998) lists four conditions in order for a group to work together:

1. they should have equal status
2. they should have a shared goal
3. they should have institutional support
4. they should have intergroup cooperation.

Pettigrew (1998) added one more condition to this list – that the contact situation must provide the participants with the opportunity to become friends. These conditions are explored in article two, where the students worked in pairs at the start of a master’s programme.

In conclusion, intercultural communication has been interpreted as broader than communication between two nationalities in connection with the definition of culture in 2.1. A key element in intercultural communication is the idea of “noticeable distance” or “strangeness” in the encounter. People belong to in-groups (similar to communities of practice discussed in 2.1) and have certain perceptions of out-groups which can be damaging to the interaction.

2.3 Intercultural competence

If intercultural communication goes beyond nationality level, how can intercultural competence (ICC) be defined and measured? This is becoming a burning question when recognition of the importance of ICC is growing at institutional and national level. For example, the OECD (2018) included global competence as part of the PISA evaluation for 15-year-olds worldwide. In Sweden, a governmental white paper called for all students who earn university degrees to develop their international understanding or intercultural competence (SOU2018:3).

Like “culture” and “intercultural communication”, the terms “global competence” and “intercultural competence” (ICC) have been much defined and discussed.² One area of agreement amongst intercultural researchers is that intercultural and global competence is important for all students. Leask (2015), for example, describes it as

a graduate attribute, an outcome of internationalization (and in particular international activities such as study abroad and exchange), a requirement for effective global citizenship, and a professional competency (p. 62).

Though there are many models depending partly on the focus and definition of intercultural communication, most models of ICC include as their base the “ABC” of ICC: Attitudes (affective), Behaviour (skills), and Cognitive (knowledge) (Spencer-Oatey & Franklin, 2009). Fantini (2014) defines ICC as follows:

Intercultural competence is a complex of abilities needed to perform “affectively” and “appropriately” when dealing with others of a different language – culture background (p.391)

In this definition, an interpretation of intercultural communication is of communication between national groups. Hoffman and Verdooren (2018) take the broader interpretation of intercultural communication that I have outlined earlier and then define ICC as follows:

intercultural competence can best be seen as an *extension* of general social, personal, professional or strategic competences, with the added challenge of performing them in an intercultural situation (p. 63, their italics)

Their definition of “intercultural situation” implies that one or both parties experience strangeness. Therefore, ICC is described as similar to general social competence with an intercultural twist. This interpretation is explored in more detail below.

Several researchers have provided overviews of some ICC models, notably Arasaratnam - Smith (2017), and Spencer-Oatey and Franklin (2009). Spencer-Oatey and Franklin (2009) group ICC models into different perspectives: psychology and communication studies; applied linguistics and foreign language education; and international business and management studies. Of the six models focused on in Arasaratnam-Smith (2017), I will describe three which have been influential within intercultural communication and show different perspectives: Byram’s Intercultural Competence Model (1997); Deardorff’s Process Model of Intercultural Competence (2006) and Bennett’s Developmental Model of Intercultural Sensitivity (DMIS) (1986).

Byram’s model shows a more traditional way of looking at ICC and has a strong linguistic focus. It originates in concepts on communicative competence, connecting his model to the ICC definition by Fantini (2014) above. His model is divided into four key areas of competence: linguistic, sociolinguistic, discourse and

² As many documents use the terms global and intercultural competence (ICC) interchangeably, this section will do the same. Other terms such as intercultural interaction competence (Spencer-Oatey & Franklin, 2009), intercultural communication or communicative competence; intercultural sensitivity, cultural intelligence and cross-cultural awareness have also been used.

intercultural. The final category is further divided into five key areas, which he labelled in terms of “savoirs”, including knowledge, skills, attitudes and education. This model was developed into the INCA framework, a collaboration between higher education (in particular, linguists) and engineering companies for assessing ICC to meet the needs of employers.

Deardorff’s Process Model of Intercultural Competence (2006) (see figure 2.2 below) was formulated through synthesizing items that 80% or more intercultural experts from different fields agreed on. It is this model that formed the basis for the PISA OECD evaluation mentioned earlier.

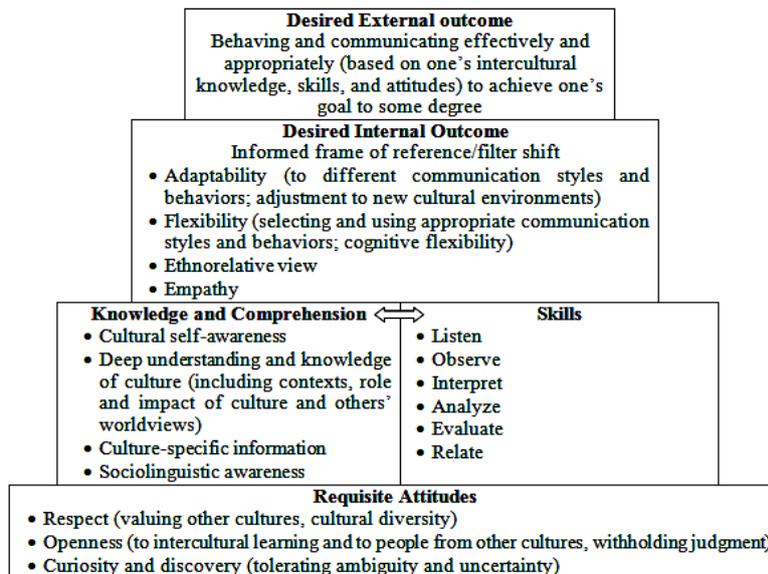
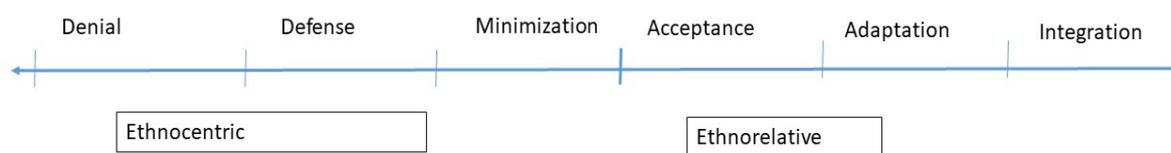


Figure 2.2: Pyramid model of intercultural competence (Deardorff, 2006)

Key elements of intercultural competence in this model once again, are knowledge, skills and attitudes. Deardorff notes that it is possible to enter the pyramid at any level but that having components from the lower levels enhances the upper levels and that attitude is a requisite starting point. Other versions of this model emphasise the process perspective where, instead of a pyramid, the different boxes are pictured in a circle where one starts with attitude and finishes with external outcome but that these processes might happen at different levels, according to increasing experience of and exposure to intercultural situations. Another model which emphasizes process is King and Baxter Magolda’s model of intercultural maturity (2005) where they identify three levels of maturity: initial, intermediate and mature, based on the three areas of cognitive, intrapersonal and interpersonal.

The third model, Bennett’s Developmental Model of Intercultural Sensitivity (DMIS) (1986), also focuses on process (see Figure 2.3). Unlike the other models, it does not specify areas such as knowledge, skills and attitudes and instead, is more broadly divided into ethnocentric and ethnorelative.



The ethnocentric side involves placing one's own culture first and consequently placing minimizing or denigrating others' cultures (similar to the "Othering" discussed earlier). To the extreme left and in extreme cases (denial), this could mean assigning subhuman characteristics to other groups. "Defense" involves defending one's own worldview, for example, by negatively stereotyping other groups. "Minimization" involves trivializing differences and assuming that people act on basic human patterns of behaviour. This is problematic in the sense of denying that there are differences between people and possibly assuming the right behaviour is one's own.

Within the ethnorelative side of the scale, "acceptance" to the left signifies that cultural difference is recognized and respected (similar to the initial stage mentioned above). The next step, "adaptation" embodies empathy and finally "integration" suggests a person who can embrace difference as an important part of life and can both adapt to and change behaviour accordingly.

In this thesis, conceptualisations around ICC have been useful, particularly when students come into contact in intercultural group work. From Deardorff's model (2006), for example, attitudes such as respect, openness and curiosity are essential for a well-functioning group as well as the skills listed such as listening, interpreting and relating. From Bennett's model (1986), minimization is common where students can assume that people are essentially the same and have the similar motivations and goals. This can cause problems when these assumptions are disproved, and people act in strange or unfamiliar ways.

While these conceptualisations are useful to provide ways of discussing ICC, it is also challenging to measure and this is not a part of the thesis. All of the models mentioned above, have accompanying tests to "measure" the level of ICC that an individual displays, or to see what stage of ICC the individual is at. Yet several of the qualities mentioned are difficult to assess, such as "empathy" or "respect". It has also been noted that ICC is not a linear process – while someone might display ICC in one situation, they might not in another. Returning to Bennett's model, it is possible to adapt to one situation / person and not to another, depending to some extent on how much we can relate to in that situation.

To conclude the discussion of ICC, a return to the definition of culture from the start of the chapter and how this affects ICC is helpful. Hoffman and Verdooren (2018) outline four key aspects in multicollectivity (membership in multiple social groups) and ICC. Recognition of several group memberships:

- Makes it possible to find similarities and build connections (e.g. “though we are different nationalities, we are all engineers”)
- Leads to different interpretations of behaviour
- Enables negotiation based on commonalities (e.g. “though we have different understandings of time, we all have the same deadline”)
- Changes the focus so that unfamiliarity is seen as *partial* rather than *total* (e.g. “we have both used this programming tool even though you use it in a different way to me”)

The perspective of understanding ICC through emphasizing building bridges rather than observing differences (though both are important) are important aspects in integration.

2.4 Concluding thoughts

This chapter has shown the complexity around the topics of culture, intercultural communication and intercultural competence and challenged conceptions of these topics as being *solely* connected to interactions between people from different nationalities. The chapter has discussed different group memberships, both that we are born into (e.g. nationality) and that we join at different times in our lives in a more dynamic way (e.g. profession). The definition of intercultural communication and competence used in this thesis assumes that all our group memberships play a part in our interactions and behaviour as well as our competence in dealing with situations.

At the same time, nationality is a vital part of intercultural communication. Internationalisation at home is about bringing students together from different nationality backgrounds. Intercultural group work, discussed in chapter 4, shares similarities with any group work but there is an added dimension from the interaction between students of different nationalities. To refer back to the idea of “strangeness” (section 2.2), there is typically more that is strange and unexpected in these meetings. This increases both the affordances and the challenges of these meetings.

3. Overview of internationalisation and integration

In a multicultural environment, building bridges between cultures is essential to realise goals connected to integration and intercultural competence. This chapter will discuss the following: internationalisation and related goals, particularly as regards internationalisation at home (IaH) and the Swedish context; and models of integration, crucial in connection to IaH.

One of the most common ways of assessing internationalisation is through counting numbers of incoming and outgoing students, so-called mobile students. However, the assumption that the mere presence of a mixed nationality student body will fulfil the goals of internationalisation is increasingly being challenged. While a mixed student group is an essential starting point, numerous studies have testified to the divide in the university classroom between home and international students (De Vita, 2002; Leask, 2009; Summers & Volet, 2008) where students remain in their nationality groups and have little interaction with each other. The question then becomes how students can develop intercultural competence without meaningful contact with one another. Maximising this exchange is part of the Internationalisation at home (IaH) concept which encourages changes at all levels of the institution, to move away from a concept of internationalisation as defined quantitatively and towards a fundamental change at all levels to provide students with the global competence that they need.

3.1 Internationalisation (at home)

Internationalisation is a buzz word on campuses and features in over 90% of higher education mission/ strategy plans worldwide (Marinoni, 2019). At the same time, student mobility has increased exponentially this century with an unprecedented number of students studying abroad (OECD, 2020 ; Wächter & Maiworm, 2014), despite a temporary drop due to the Covid-19 pandemic. From 2000-2017, the number of international students increased from 2 million to more than 5.3 million (Zhang et al., 2021). In terms of numbers, student mobility globally has mainly involved students from Asia, particularly China, India and South Korea, studying in Anglophone countries (predominantly the US, the UK, Canada and Australia) though this is predicted to change. In 2019, nearly half (47%) of the total number of international students travelled to the Anglophone countries, while nearly a third (32%) to the top six non-Anglophone countries, the top three being China, France and Russia (Wang, 2022).

Closely connected to mobility is the rise in programmes delivered in English in non-Anglophone countries. This is particularly true in Europe, where the number of programmes taught in English (English Medium of Instruction or EMI) outside Britain make up 63% of all EMI programmes worldwide (British Council, 2021). Of these, Scandinavia features significantly as four out of the top ten countries offering EMI programmes per number of universities, with Sweden in third place (Malmström & Pecorari, 2021; Wächter & Maiworm, 2014).

What is internationalisation and how has it been defined? This definition of internationalisation by Hudzik (2011) is widely used:

a commitment, confirmed through action, to infuse international and comparative perspectives throughout the teaching, research, and service missions of higher education. It shapes institutional ethos and values and touches the entire higher education enterprise. It is essential that it be embraced by institutional leadership, governance, faculty, students, and all academic service and support units. It is an *institutional imperative*, not just a desirable possibility. (p. 6, my italics).

This definition raises several important points. Firstly, internationalisation should be part of all three university mission areas and goes beyond international collaborations. Secondly, internationalisation has many stakeholders who are affected by its processes from students up to leadership levels. Thirdly, internationalisation is not an add-on, but an integral part of a university's activities.

It has been argued that there are two main pillars of internationalisation, “abroad” and “at home³” (Knight, 2006). Generally speaking, “internationalisation abroad” focuses on students relocating (typically the goals found in university strategy documents), and “internationalisation at home” refers to initiatives to develop international understanding and intercultural competence on the campus. Despite the large number of students who *are* mobile, the majority are *not* and while the goal in Europe is 20% mobile students (25% in Sweden), the reality is more like 15%. Therefore, more students have the possibility to meet someone from another nationality on their home campus than students who will travel. These two pillars can exist simultaneously, i.e. it is possible to have goals connected to mobility *and* to campus activities.

Some urge that the internationalisation of higher education should refocus, in part speeded along by the pandemic, to look beyond mobile students and staff towards *all* students and staff (de Wit and Altbach, 2021; de Wit et al., 2015; Leask, 2015; Zhang et al., 2021). This has begun to be reflected in national and international mission statements. For example, in Sweden, the SUHF's (Association of Swedish Higher Education) expert group in internationalisation recently quoted the de Wit et al.'s (2015) report to reformulate their own definition of internationalisation:

to enhance the quality of education and research for *all* students and staff, and to make a meaningful contribution to society” (p.281, my italics).

However, paradoxically, while “preparing students for the global world” is prioritised by higher education in Europe in theory (Rumbley and Sandström, 2019, p.7), according to the EAIE (European Association for International Education) barometer, it is still mobility which is prioritised by institutions in practice. Similarly, in Sweden, despite the SUHF goals, the national assessment of internationalisation in higher education is based solely on quantitative factors. STINT (Swedish Foundation for International Cooperation in Research and Higher Education) was set up by the Swedish government in 1994 to internationalise Swedish education and research. Since 2014, they have assessed Swedish higher education's level of internationalisation using the following index:

³ the pandemic has produced discussions of a third pillar “internationalisation at a distance” (Mittelmeier et al., 2021)

1. International research
2. Share of mobile students
3. Share of international PhD students
4. Share of education in English
5. Share of faculty with research abroad
6. Share of faculty with PhD from abroad

Thus, a university can score a top mark for internationalisation without enhancing the quality of education, without working with intercultural competence, without having an internationalisation strategy or without making a “meaningful contribution to society”, simply through having significant numbers in the right places. A recent white paper on internationalisation (SOU 2018:3) has suggested changes to the higher education act such that “all students who earn university degrees have developed their international understanding or intercultural competence” (p. 130). If this becomes law, it will be interesting to see the possible consequences for the STINT criteria and the assessment of internationalisation in Swedish higher education.

A blog for the IaH special interests group of EAIE (European Association for International Education) outlines the activities that might be included in IaH in practice (Jones & Reiffenrath, 2018). They list the following ten points as suggestions:

1. Offer all students global perspectives within their programme of study, whether or not they spend time abroad
2. Move beyond electives or specialised programmes
3. Develop international and intercultural perspectives through internationalised learning outcomes in the formal curriculum
4. Support informal curriculum activities across the institution
5. Make purposeful use of cultural diversity in the classroom for inclusive learning, teaching and assessment practice
6. Create opportunities for student engagement with “cultural others” in local society
7. Involve all staff, not just academics
8. May or may not include teaching in English
9. Can include virtual mobility through online working
10. Foster purposeful engagement with international students

The eighth point about language might seem rather strange. In Sweden, like many other countries where English is not the first language, teaching in English has been very much part of the internationalisation process. In that sense, intercultural competence has been very much tied up with a language perspective of ability to communicate successfully in English. The

point in number eight is that IaH goes beyond language use. It is not just about translating a course into English but considering new viewpoints and contexts as well. IaH is also not restricted to English as a medium of instruction.

In this thesis, points 1,2,3,5,10 are focused on. The data collection has taken place in project courses with international learning outcomes and where students work together in intercultural groups. More about intercultural group work is discussed in chapter 4.

One concept which is sometimes used interchangeably with IaH is internationalisation of the curriculum. This term was coined by Leask (2015) who argues that the curriculum plays a vital role in communicating an interpretation of internationalisation to the students. She describes this as consisting of three main elements: the formal curriculum, the informal curriculum and the hidden curriculum. The first includes the syllabus and the planned events in the programme. The second involves the various support services and additional activities organised by university groups such as the student union. Finally, the hidden curriculum is defined by the “various unintended, implicit and hidden messages sent to students” (Leask, 2015, p. 8). For example, if a university only offers intercultural training to the international students at the university, it implies that they are the only group that needs this competence.

These categories of formal, informal and hidden are echoed in some of the theories surrounding integration. If IaH and internationalisation of the curriculum are focused on, then integration of all students into the multicultural environment becomes important, both at a formal and informal level.

3.2 Models of integration

A key element in ensuring internationalisation at home is that there is integration between the “home” and “international” students and between the students and their environment, that all students feel a sense of belonging or connectedness. Article 2 focuses on integration and uses the following definition from the Macmillan dictionary (2007):

the process of becoming a full member of a group or society, and becoming involved completely in its activities” (our italics).

Several models have analysed the process of integration, within education and outside, and two aspects are clear. Firstly, integration is important for all students. Secondly, very broadly speaking, integration generally tends to be more challenging for international students than for home students. On the first point, 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 (Severiens et al., 2006; Spencer-Oatey & Dauber, 2019b). On the second point, as mentioned at the start of this chapter, the divide on campus between home and international students is well documented.

While all students encounter strangeness in some way on starting university, this happens on many more levels for international students, both within their studies and outside them.

Challenges involve the physical, social and psychological, from homesickness to differences in academic practices, practical worries about finance, and fear of failure (Cena et al., 2021). Despite this, one study in Australia 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).

While a sense of belonging is more challenging for international students, it is crucial for IaH. The British Council (2013) 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 the study by Tinto (1975) of student retention, where he divided integration into academic and social. These categories have been very useful in this thesis. Tinto does not provide a full definition of “academic” and “social (and this has been interpreted in various ways since then) though “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 definitions of formal and informal curriculum (see 3.1). 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. In addition, he noted other influential aspects in his model including background characteristics of individuals (for example, social status, school experiences and individual attributes such as sex, race and ethnicity) but also expectational and motivational attributes (such as career and educational expectations).

Another study, this time focusing on the intercultural experiences of international students (Gu et al., 2010), similarly highlighted pedagogical experiences and social culture as influencing adaptation as well as emphasizing the importance of personal, psychological and organizational cultures. 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.

One model which focuses on integration in an IaH context is Spencer-Oatey and Dauber’s (2019a). This model has been particularly influential in my own work. Their model considered integration models from a number of fields, including education, intercultural communication, and organisational studies. For example, from education, they have partly used Tinto’s (1975) model; from intercultural communication, Bennett’s developmental model (Bennett, 1986 as

discussed in section 2.3) where integration lies at the far right of the scale; and from organizational studies, work done on mergers, where both social and structural integration are important.

From these different models, they suggest three levels of integration: individual, community and institutional which happen at both the human and institutional level (see table 3.1).

Table 3.1: Examples of integration pathways for higher education institutions (Spencer-Oatey & Dauber 2019a)

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 to cater to needs of students and staff

These levels develop Tinto’s model (1975), which focuses on the student perspective, to a broader perspective where the student perspective (individual) is combined with the institution, and the role the institution can play in encouraging integration between international and home students. This model partly indicates the ways that formal and informal interaction can be facilitated (“individual/ human” and “community/ human”), but also structural practices that the higher education institution can implement such as internationalisation of the curriculum at the “community structural” level to facilitate primarily academic integration of home and international students.

Thus, while student integration is partly the responsibility of the students themselves, institutions and programmes play a key role in facilitating this integration through the organisation and support network provided. Several practical examples from the UK are given in Spencer-Oatey et al. (2014) highlighting all sorts of initiatives from rethinking student housing, to writing support, to buddy schemes.

One example of a structural measure which can have a significant impact on student integration is peer groups. 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). Within international higher education, the topic of intercultural group work (IGW) has been much discussed and its impact on bringing students together (see chapter 4 for more discussion).

One final aspect of integration which has become very visible in the past couple of years, is the on-line aspect. The pandemic pushed the majority of studies and meetings online and this has been the setting for some of the data collection in this study, particularly for article 2. While online meetings provide many opportunities from an international perspective, as shown in COIL projects, global virtual teams and more, they are also potentially challenging from an integration perspective. A recent study by Kolm et al. (2021) highlighted the lack of expertise and research in this area from both a student and staff perspective and encouraged the development of International Online Collaboration Competences such as ICT, intercultural skills, organisation and collaboration. This is an area currently attracting much attention within higher education in general.

4. Intercultural group work (IGW) – integration in action

Intercultural group work (IGW) is one possible way to promote integration and IaH. It offers both deepened learning and useful transferrable skills for employability (Reissner-Roubicek & Spencer-Oatey, 2021). These are particularly important in engineering education where graduates will be expected to work in international and global teams. At the same time, IGW needs preparation and support in order to work (Leask, 2009).

IGW (also referred to as multicultural group work, culturally diverse groups, and culturally mixed groups) 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 I have also done while acknowledging the major part played by the other cultures that students bring to their interactions (see article 1). In this thesis, I have focused on tasks inside the classroom and also included intercultural pair work (see article 2) which in some ways, has similar affordances to IGW, but also creates other possibilities. This definition could also include global virtual teams, but this thesis focuses on IGW designed for campus delivery.

How can IGW play such a crucial role in both IaH and integration? Returning to the discussion of intercultural communication (see 2.2) and Allport’s contact theory (1959 reported in Pettigrew, 1998), IGW fulfils the four conditions of the contact theory, at least in theory. Students have equal status, a shared goal, institutional support and intergroup cooperation. They also fulfil the added fifth condition – that they have the opportunity to make friends.

Regarding IaH, and returning to the EAIE blog list (Jones & Reiffenrath, 2018) for IaH discussed in 3.1, the following points apply to IGW:

Point 10: Foster purposeful engagement with international students

When home and international students work together on a meaningful task in IGW, they need to interact purposefully with each other.

Point 5: Make purposeful use of cultural diversity in the classroom for inclusive learning, teaching and assessment practice

In the IGW I have followed in this study, the group work has been a substantial part of the final grade.

Point 2: Move beyond electives or specialised programmes

In this study, the IGW has been part of a project course on the programme (often compulsory for these students), rather than an add-on intercultural activity.

Point 3: Develop international and intercultural perspectives through internationalised learning outcomes in the formal curriculum

“Working in international teams” or similar formulations have often been part of the learning goals for the courses and programmes studied in the data collection.

Regarding integration and the integration pathway model (Spencer-Oatey & Dauber, 2019a), IGW is key on both a human and structural level, shown below with some examples:

- Individual/ human: students mix with people from different backgrounds
- Individual/ structural: international students in particular get a greater insight into the educational system and requirements
- Community/ human (programme level): students are initiated into the community on the programme
- Community/ structural (programme level): internationalisation of the curriculum

Three points are important to note. The first is that *all* students are involved in IGW. The second is that both student input *and* the structural elements are needed to make this work. Finally, IGW is only *one* of many possible ways to IaH and integration but can be an important part of the process.

4.1 Overview of research into intercultural group work

IGW is by no means a new phenomenon and research in this area has increased in line with internationalisation as a whole and IaH in particular. I carried out a literature study in Scopus (2019) with the parameters of IGW in higher education; any academic discipline (not exclusively engineering); globally i.e. with no particular focus on specific countries; and after 2000. I then selected the most cited articles which are analysed below in table 4.1.

Table 4.1: Summary of literature search on IGW

Category	Number of articles (21 in total)
Anglophone country of origin	18 (8 from UK; 7 from Australia)
Students partially or completely from business studies	15
Qualitative study	12
Majority of students international students	8 (7 where majority home students)

As shown in table 4.1, the majority of studies have taken place in Anglophone countries, particularly the UK and Australia. The three articles outside Anglophone countries were all written in the Netherlands. A more recent search in Scopus showed an increase in the numbers outside Anglophone countries but the former still dominate.

As also shown, the majority of studies (three out of four) have focused partially or fully on students on business studies programmes (where this information was given). Only two studies focused on students from science and engineering.

In terms of the balance between home and international students, some research has argued that the percentage of home to international students can change perceptions quite significantly in that the lower the number of international students, the more positive the home students are towards this group (Peacock and Harrison, 2009; Ward et al., 2005). The origin of the international students has also been discussed – in particular, Chinese students are mentioned quite specifically as a group that are overrepresented and tend to be perceived as more problematic to integrate into the university (Montgomery, 2009; Peacock & Harrison, 2009).

In conclusion, when considering the findings from the research reported above, it is important to bear in mind the context in terms of country (the Anglophone world) and discipline (business studies). It is likely that the cultures surrounding both country and discipline, as well as the student nationalities involved have played a part in affecting results. Finally, an area that has not been much discussed is academic level. In my own research, the data comes from students studying at master's level but in the research reported above, it is a mixture of bachelor's and master's which might make a difference in maturity levels (Harrison, 2012).

Spencer-Oatey and Dauber (2017) argue that the findings on IGW are at times contradictory and that this is a result of “relatively small-scale qualitative studies” (p.222). They also claim that even the quantitative articles have involved a relatively small number of participants.

4.2 Forming intercultural teams

Forming groups in the international classroom is an interesting topic because firstly, it illustrates the teacher's role in IGW and secondly, it illustrates the contradictory data in IGW research. There are two ways groups can be formed: self-selection, where the students choose their own group members, and teacher selection. Teacher selection can be achieved in a number of ways from random groups to grouping based on a number of predetermined criteria.

Studies have shown that students tend to keep to their nationality groups where possible, a phenomenon described as ‘passive xenophobia’ by Peacock and Harrison (2009) so when students self-select groups, they tend to form homogenous groups. Teacher selection, therefore, is typically used to ensure IGW. In this study, the groups have been formed by teacher selection using different criteria. The groups discussed in the first article were teacher formed through the criteria of nationality, project chosen, scheduling issues, previous experience and student personality. The pairs in the second article were initially teacher formed by pairing students from different nationalities and then the students could select their own pairs if they were two different nationalities.

Literature on student reactions to group forming shows mixed results with some claiming that all students prefer their own nationality groups (Volet & Ang, 2012), some that international students prefer teacher selected groups but not home students (Strauss et al., 2011) while others claim the opposite (Osmond & Roed, 2010). It is true to say at least that there are mixed feelings towards IGW, particularly from the student side, and this can partly be connected to concern

about grades and results. However, the few studies that have investigated this have claimed that IGW produces more positive results than monocultural groups. The most cited study is by De Vita (2002), a large-scale study of a first-year business studies programme in the UK where 36% of the students were international, and found that IGW tended to have a positive effect on the individual average mark of all students. Rienties et al. (2014) found that randomly formed groups by the teacher developed equally strong internal group relations but more “knowledge spillovers” outside their group than the self-selected groups. It should be noted though that the student group in this case consisted of 96% international students, most of whom were from China, Thailand and India.

If teacher selected groups are the way forward, as seems to be the case if IGW is to be successfully achieved, teachers need support in setting this up and as importantly, making the reasons for their decisions clear to the students. Leask (2009) 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)

A recent study (Poort, 2021) showed that students who see the value of IGW are more likely to apply themselves to it, both behaviourally and cognitively.

Therefore, despite mixed results, it can be summarised that to ensure IGW, it is better if the teacher forms the groups based on certain parameters and also supports the groups during the process of the group work.

4.3 IGW in the light of the integration model

When looking at research on IGW through the lens of the integration model in table 3.1, many studies have focused on the individual/ human aspects of IGW (student response) and less on the structural aspects (organizational aspects on a course, programme and institutional level). From an individual/ human perspective for example, there has been much discussion about the benefits and costs for the individual students and how students can maximise their experiences of IGW. Spencer-Oatey and Dauber (2017) comment though that “the overall picture of students’ reactions to working in mixed national groups, is diverse and potentially confusing” (p.221). Reissner-Roubicek and Spencer-Oatey (2021) in their summary of the IGW literature divide the benefits of IGW into the following (while making the point that much of the literature does not focus so much on the positive aspects):

- 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)

Many of the examples for these categories could apply to any kind of group work, whether students are from the same nationality or different nationalities. For example, “self-awareness”

listed above involves personal growth and “interactional” includes learning how to compromise, which are useful skills for all students. However, in IGW, many of these aspects 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). 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).

In terms of the challenges of IGW, these are summarized by Reissner-Roubicek and Spencer-Oatey (2020) from the literature as the following:

- Language and communication (unequal language skills, accents and different styles)
- Group composition (national / regional / disciplinary heterogeneity leading to different expectations)
- (Inter)personal attitudes and engagement (different levels of motivation and ambition/ stereotypes/low personal confidence/ other responsibilities)
- Group interaction (different styles of decision-making / role ambiguity)

Once again, some of these challenges can be seen as pertinent to group work in general while others (such as language issues) are more specific to IGW. Interestingly, while studies from the Anglophone countries have brought up language and communication issues as by far the biggest challenge, this has not been the case in my own research where other factors like different educational experiences have proved more challenging on the whole. Poort et al. (2019) conclude that IGW becomes easier over time, that the costs are short-term while the benefits are long-term and that students perceived the benefits as being worth the costs.

4.4 Summary

Summing up the existing research on IGW:

- the present research has a strong Anglophone bias and focus on business students (where stated)
- the research has focused on student experience in this environment
- there are contradictions in the findings on student experience
- students tend to be categorised into “home” and “international” to describe their experiences
- Groups in IGW tend to be teacher formed since students tend not to mix by choice
- while both benefits and challenges have been reported, the latter have been focused on.

- the main challenge reported has been that of language and communication in the group.

These findings affected the data collection for the first article where one question, for example, was if it was possible to describe student experience in terms of “home” and “international”.

5. Methodology

The aim of this research was capturing the student voice and experiences when integrating into the international environment. This chapter describes the methodology used, in particular surmounting some of the challenges presented by simultaneously collecting rich individual data and looking at trends over a group of students. The research questions (RQs) are as follows:

RQ1: How do home and international master engineering students experience an international academic environment, both academically and socially?

RQ2: What are the experiences of adaptation and integration over time for both the home and international students?

RQ3: How do experiences of intercultural group work contribute to integration into the academic environment?

These RQs have been explored in the two articles:

Table 5.1: Overview of articles

Paper	Paper 1 (RQ2 and 3)	Paper 2 (RQ1 and 3)
Purpose of approach	Following student adaptation to intercultural group work over time	Student adaptation and integration to the international environment from an academic, social and pairwork perspective
Methodological approach	Longitudinal interview study	Diary - interview
Objects of enquiry	5 students (2 Swedish, 3 international)	Class of 64 students, both home and international
Data source	3 interviews with every student, at the start, end and a year after their course	Weekly diaries * 7 weeks * 64 students 7 interviews with international students at the end of the course

5.1 Research paradigms within intercultural communication

Within intercultural communication, a number of research paradigms are represented, mirroring the multidisciplinary nature of the field from psychology to anthropology to linguistics. A paradigm is the overarching framework behind research (Hua, 2016). Hua identifies five key paradigms within intercultural communication: positivist, interpretative, constructivist, critical and realist where interpretative and constructivist are often combined. The earlier, and still very influential, research in intercultural communication tended to be positivist in nature, where for example, cultural norms were identified and seen as measurable

and where cultural patterns were generalized, comparisons made between national cultural groups and cultural values used to explain behavioural patterns (see section 2.1.2). Researchers in this area include Hofstede (2010), and Trompenaars and Hampden-Turner (2011). Interpretative research also emerged early on through key proponents such as Hall (1959) who used ethnographic studies involving detailed observation to capture and interpret cultural norms.

Closely related to the interpretative paradigm is the constructivist one where culture and intercultural differences are seen as socially constructed and the understanding of culture is seen as subjective. Key intercultural communication researchers such as Holliday (1999) position themselves as interpretive constructivist, describing culture as a socially and politically constructed concept. In more recent times, intercultural communication researchers such as Dervin (2016) have positioned themselves more within a critical 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. Finally, in the realist paradigm, the focus lies on explaining culture in relation to other systems at play rather than describing it (positivist), interpreting it (interpretative), focusing on subjective nature (constructivist) or transforming it (critical).

Rather than positioning my work under one of these paradigms, I have taken a more pragmatic stance. This is an approach closely connected to mixed method research, where “the research question, not the paradigm or purpose, should dictate the methods and strategies used” (Tashakkori et al., 2015, p.622). 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).

Creswell and Plano Clark (2011) describe the pragmatic approach as problem-centred, pluralistic and real-world practice oriented. In my case, this has meant changing approaches according to the study:

- Student story (article 1): in working with the students’ individual stories, I have adopted a more interpretivist constructivist paradigm, described in Denzin and Lincoln (2018), as assuming:

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. (p.20)

- Student trends (article 2): in following student trends as a group, I have adopted more of a realist paradigm, where the intersectionality of cultural norms with other norms or forces are taken into consideration.

Two paradigms that I have distanced myself from in this thesis are positivist and critical. In terms of positivist, I will try to avoid broad generalisations about cultural patterns shown by groups. In terms of a critical stance, while there are undoubtedly issues of power and ideologies

which affect the students' reactions and attitudes, I will not focus on these or try to unpack them, while at the same time acknowledging that those tensions probably exist.

5.2 Mixed method research

In taking a pragmatic approach, I moved from a purely qualitative approach (paper 1) to a mixed methods approach (paper 2), in order to include a broader perspective which can be lacking in qualitative research. Tashakkori et al. (2015, p.620), describe three broad categories of mixed method studies: sequential, parallel, and conversion designs. These lead to a fourth family (fully integrated) when combined.

Creswell and Plano Clark (2011) extended these to six approaches in mixed method studies as shown in the table below:

Table 5.2: Six designs of mixed method studies as shown in Creswell and Plano Clark (2011)

	Design	
1	Convergent parallel design	Data from multiple methods collected separately but at same time and drawn together in analysis
2	Explanatory sequential design	Initial quantitative data collection phase followed by qualitative data collection, explaining the initial results of quantitative analysis
3	Exploratory sequential design	Initial qualitative data collection phase followed by quantitative data collection, allowing for an initial exploration phase before bringing the study to scale
4	Embedded design	Data from multiple methods are collected together at the same time in one single research phase
5	Transformative design	A transformative theoretical framework is used to inform all decisions within the mixed methods design
6	Multiphase design	Convergent and sequential designs are combined over a larger programme of study

Paper 2 follows a convergent parallel design where the two different methods, quantitative and qualitative, are combined to triangulate results about a single topic in order to produce a more complete understanding of the situation.

5.3 Data collection: Diary-interview

In choosing a method to capture the students' story, a key consideration was to achieve both breadth and depth within the data. In line with mixed methods, I wanted not only to observe trends but more importantly, to follow the student stories within the trends. In article 1, in-depth longitudinal interviews were used and in article 2, a diary-interview approach. The diary-interview approach in particular has not been used extensively within the field of intercultural group work (IGW).

5.3.1 Interviews

Interviews are the backbone of qualitative research and used extensively within intercultural research, particularly IGW where they constitute the main form of data collection. While interviews themselves are common, what is less common within intercultural group work is a longitudinal approach, where students are interviewed over a period of time to follow changes and progression (article 1). In article 2, the interviews were used as a way to follow up on the student entries in their diaries.

In my research, 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 interesting paths / stories further (Edwards & Holland, 2013). This 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 students wanted to share. In connection with the data collection for article 2, I prepared a summary of the student's weekly diary comments before the interview and the interview involved stimulated recall through reflections on those comments. The interview started with looking at their responses to a questionnaire on their background that they had also completed at the start of the course. In capturing the student experience, the advantages of interviews are clear – the student can present their perspective, the data is rich and nuanced and it is possible for the researcher to follow up on interesting areas.

However, interviews have their limitations. Firstly, the number of student stories collected is relatively low in order to be able to process the data. Moreover, since the interviews are conducted with student volunteers, the stories are not necessarily very representative of the student group as a whole. Secondly, students are recounting their experiences retrospectively and therefore, indirectly. There are therefore question marks over the reliability of the information which has been filtered through time and other experiences since then (Creswell, 2014). In connection with that, there are also power issues at stake when a student is talking to a researcher (and in my case, a lecturer on the course) which will affect how students present themselves and convey information.

Moving from the first to the second study, I therefore widened the data collection to include student diaries.

5.3.2 Diaries

Article 2 combines diaries with interviews in order to capture a broader range of student experiences. But diaries have more advantages as a method than that. Though a relatively unused way of data collection, they offer the possibility to enter into students' everyday lives in a range of contexts, document their lives as they are living them rather than retrospectively, and examine the daily rhythms of life (Cao & Henderson, 2021).

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 2, 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 via Microsoft forms with a link that only I and the students had access to. I followed up the diary data with interviews. This data collection was inspired by Beaven (2012) who used a similar method to follow the experiences of Erasmus students.

As mentioned, one reason I used 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: since the students are filling in the diary in their own time and space, there is less risk of researcher influence on their responses
- Encourages self-reflection: the action of filling in the diary on a weekly basis, encouraged the students to reflect on their processes.

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. This is discussed further in section 5.6. 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 in section 5.6).

5.4 Setting and participants

The data was collected from master's students at a medium sized technical university in Sweden. Students on short term exchanges such as Erasmus students have not been included in the statistics given here or data collection carried out, though they are a significant group (about 200 students per year) and tend to study at master's level, since the bachelor programmes are predominantly in Swedish. A master programme in Sweden takes two years to complete (in line with most universities in Europe). At the technical university in this study, at master's level, two thirds of the full-time students are Swedish and one third, international. Of the international students, over 80 countries are represented though the largest group are from India (approximately one third of 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 programme to programme (there are over 45 master programmes offered).

These statistics have been affected during the last two years (2020-2022) due to the Covid-19 pandemic. This had two consequences. The first was that the number of international students 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.

The data collected for this thesis came from two master programmes. The data for article 1 was collected pre-pandemic and came from a programme broadly within computer science where the ratio of Swedish / international students was approximately 50/50. The data for article 2 was collected during the pandemic and came from a programme broadly within mechanical engineering where 75% of the students were international and 40% of the total were Indian students.

5.5 Data analysis: qualitative content analysis

Since the majority of the data collected has been qualitative, this section will focus on the analysis of that data which has taken the form of interview transcripts (article 1) and diary comments (article 2). In both cases, qualitative content analysis has been carried out abductively using the software NVivo to identify codes and categories. Qualitative content analysis is similar in some respects to grounded theory in that both involve a systematic coding process. The difference though is that in qualitative content analysis, the end goal is not generating a theory but finding themes from the categories (Cho & Lee, 2014). These themes have been generated through inductive analyses of the data initially, using process coding (Saldana, 2011) and these analyses have led to revisiting theories and using the lens of these theories to interpret the data abductively. According to Timmermans and Tavory (2012), "abduction refers to an inferential creative process of producing new hypotheses and theories

based on surprising research evidence” (p.170). What is important to emphasize 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, Lundman and Graneheim, 2020).

For the interview transcripts in article 1, Yin’s (2016) analytic process of assembling, disassembling, reassembling and interpreting was used. This involved compiling the transcriptions in NVivo (assembling), and producing initial coding based on the questions asked and on topics that emerged from the data (disassembling). 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 Fougère’s (2008) spatial metaphors for identity construction.

For the diary comments in article 2, a similar process was used in that the diary comments were compiled in NVivo and coded comment by comment. The initial coding of topics led to groups of positive and negative comments for each of the three sections: academic, social and pair work. The transcripts of the interviews were used for abductive interpretations of the diary data, comparing diary comments with interview comments on a similar topic such as “high workload”. Finally, the integration models from Tinto (1975) and Spencer-Oatey and Dauber (2019) were used as lenses to interpret the data.

5.6 Ethical aspects

The data collection procedure led to ethical issues which needed to be addressed. Reflecting the students’ own stories should not come at the expense of compromising their anonymity. At the same time, my own position vis-à-vis the students and the role that might play should be acknowledged, in terms of possible power dynamics.

5.6.1 Student considerations

In order to protect the individual student identity as well as provide them with some control over the data collection process, the following measures were taken:

- Student consent: students were provided with a consent form for both the diary and the interviews which described how the data would be stored, who had access to it and the fact that data would be used anonymously by changing names and information which might identify them personally. They could choose whether or not to take part in the research study by signing the consent form and were made aware that they could change their mind at any time. These consent forms were kept on a drive which only I had access to.
- Student awareness: in the introductory text to the diary as well as in the introduction to each of the sections, the students were made aware that only the main researcher had access to their comments and that all information would be used anonymously.

While these measures are typical for qualitative research in general, the interviews with the students on their diary data led to strong emotional reactions at times, particularly when the students described their social situation. I believe this was partly as a result of the unusual times

in which the data collection took place (during the Covid-19 pandemic) but also the nature of the lived experiences noted in the diary which brought them to life in a way that retrospective reflections on experiences do not necessarily do. This caused for particularly sensitive handling, both during the interview but also of the ensuing data to make sure that the students were treated with the utmost respect. At all times, I endeavoured to keep student interests at the forefront, sometimes with the result of not discussing interesting stories / cases to protect anonymity.

5.6.2 Researcher considerations

The students involved in the data collection for articles 1 and 2 were taking a course where I was involved in providing some input in terms of a workshop on intercultural communication. While I was neither involved in grading nor in any kind of assessment, the fact remains that as a lecturer, I hold a position of power which is likely to affect student responses and reactions in terms of what students are prepared to share and how willing they are to get involved in the study. It can also affect my own objectivity. While it is important that this position of power is acknowledged within the data collection, at the same time, this emic position also provides some advantages. My experience of over 20 years at the university means that I am familiar with the environment and contexts the students are working within thus providing insider information on the challenges they face, albeit from a lecturer perspective (with the risk that familiarity leads to assumptions). It is also undoubtedly the case that through building a relationship with the students at the start, it was easier to get student permission to take part in the project, though with the issues of objectivity mentioned already.

Another aspect in terms of interpreting situations and results is my own personal background as an immigrant to Sweden (albeit 20 years ago). In the co-constructivist approach, all perspectives, including the researcher's own, play a part in interpreting and constructing the results.

6. Summary of the papers

In this chapter, the two appended articles are summarized. First, an overview is given of joint themes from both articles followed by a summary of each one, focusing on the results. Finally, the chapter addresses interesting questions that both studies raise, leading to the final discussion.

Both studies connect to the theme of integration and the process of being part of an international academic engineering setting as a student, both home and international. Article 1 discusses the fact that the terms “home” and “international” are rather problematic in describing these two groups of students and their experiences of intercultural group work, since there is so much diversity contained within both groups. Article 2 investigates student adaptation at the start of a master’s programme in terms of academic and social aspects and experiences of pair work.

As regards integration, there are a number of related terms which are used in both articles: belongingness, connectedness, and insiderness/ outsiderness to express being part of the group and community. Studies show that although integration can be difficult for all students, it can be particularly challenging for international students for whom the university experience can be more stressful.

One way that universities can encourage integration in the international classroom is through students working together in pairs or intercultural group work. Teacher formed groups can ensure that students work with different people and can serve to break down some of the invisible barriers set up in the classroom.

6.1 Article 1: Individual experiences of intercultural group work in engineering education over time: Beyond “home” and “international” labels

The first study is a qualitative, longitudinal study where five engineering students (two home and three international), working in different intercultural groups, were interviewed over a period of a year, and their experiences of insiderness /outsiderness in their groups. The first interview took place at the start of their group work, the second at the end of the project (after five months) and the final one, a year after the course, to gather their reflections. The study took a co-constructivist approach where other aspects of the students’ identities were taken into account than just nationality, such as their work, education and travel experience. The cultural mosaic model used, for example (Chao & Moon, 2005), expands the definition of cultural identity from nationality to include other factors such as demographic (e.g. age, gender, race, ethnicity), associative (formal and informal groups a person is part of) and geographic (e.g. if someone is from an urban or rural background).

In order to capture this fluidity, this study used conceptual metaphors from Fougère (2008) to understand identity construction in 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 insiderness/ outsiderness, place and space, and in-between spaces to conceptualise people’s intercultural journeys. “Insiderness” and

“outsiderness” 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.

The study also challenges existing literature around intercultural group work (IGW) which presents home and international students as having different experiences in this environment. While IGW is said to be beneficial for all students in learning how to be a global citizen, seeing alternative perspectives and problem-solving (Poort et al., 2019; Spencer-Oatey & Dauber, 2017), the challenges are presented as different for the two student groups. Home students are said to prefer working with other home students, partly due to language proficiency, easier communication and awareness of academic requirements (Moore & Hampton, 2015) and international students are described as quiet and passive.

In the course, the students worked in teacher formed groups of five-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.

Initially, in terms of positioning, all the students described themselves as “insiders” in their groups, though along a continuum. These students are described, in order, in terms of more “insider” and more “outsider”. Sara (home student) 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 group projects. In terms of “place”, the scenario was then 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. 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 due to missing group members. Finally, David (home) was familiar with working in groups and had some international experience from travelling abroad in China, (place,) but took a role fairly early on which isolated him from the rest of the group.

Over time, critical incidents 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, Yu Yang and David’s groups, lack of communication led to misunderstandings and frustration. By the end of the project, while Sara was very much still an insider, the others were more ambivalent, particularly David who never found a way back into his group again.

The article concludes that insiderness / outsiderness and feeling “at home” is due to a number of factors, partly based on nationality but also other aspects such as previous experience, the nature of the group work and personality. Critical incidents during the group work also affect belonging. The article urges us to look beyond one student label such as nationality and embrace other aspects as well.

6.2 Article 2: “The assignments help getting friends”: integrating culturally diverse engineering students into an international course online”

Article 2 uses the lens of two integration models to study a mixed group of home and international students who were new to a master’s program, broadly within the area of mechanical engineering. The first model is Tinto’s drop out model (1975) where he divides integration into two main areas, academic and social. The other is Spencer-Oatey and Dauber’s model (2019a) for the international educational environment where integration is divided into human and structural elements and at three levels of individual, community and institution. Both models make it clear that the onus on integrating is not just an individual student responsibility, but part of a larger picture, where everyone – from student to teacher to university management – is responsible for the educational and social integration of students.

In this mixed method study, the students filled in a pre-course survey and a weekly diary over a period of eight weeks which consisted of prompts and open comments. The survey provided a broader picture of their background in terms of academic, work and travel experiences. The diaries were divided into three sections: academic, social and pair work. The students responded to statements on a Likert scale from 1-6 such as “the course work is easy” and were required to make comments for each of the three sections. The survey and diaries were followed up with interviews after the course with eight volunteer students (all international students), discussing their diary entries and giving a broader picture of their background and situation. These responses were analysed through a descriptive statistical analysis, a qualitative content analysis of the diary comments in the software NVivo and abductive interpretations of the diary comments in the light of the integration models.

Since the study was done during the pandemic, the course took place online. It consisted of two strands, a more traditional strand of lectures followed by an exam, and a problem-based strand, where the students worked in pairs to solve three consecutive, open-ended assignments. The students worked in three different pairs, the first of which was arranged by the course manager, with a view to mixing nationalities in the class. The second and third pairs were chosen by the students themselves, with the stipulation that they work with someone from another country. The class consisted of 64 students, where 39% were Indian, 25% Swedish, 10% Chinese and the remaining 26% were from 11 other nationalities.

Results showed that while the students were slightly negative about their academic experience, they were very positive about the pair work. These responses remained stable across the course. The comment analysis 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. The majority of the

comments concerned finding time for the assignments. Two issues related to time were studying online and lack of prior knowledge. As regards the latter, the assignments involved using mathematical software, matlab, which some of the international students were unfamiliar with.

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. Uneven previous knowledge played a key role here, as described earlier.

Finally, online learning produced challenges in three key areas: socialising, working with assignments and communicating. Socialising affected both the university social programme but also more informal meetings such as at breaktimes, leading to feelings of isolation at times. In terms of working with assignments, it was felt that these took more time online with for example, the lack of spontaneous conversations about the work.

The study concludes that integration takes 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.

6.3 Final thoughts from the articles

Though we need to be aware of individual circumstances and of the complexity of this international academic environment, there are nevertheless some broad generalisations concerning integration in higher education that have been reported on in the two articles.

1. Integration is important for all students’ development (article 2)
2. Integration between home and international students is challenging (article 2)
3. International students generally have more issues integrating (article 2)
4. Integration is the responsibility of multiple parties and not just the individual student (article 2)
5. Teacher formed intercultural pair and group work is one way to facilitate academic and social integration (article 1 and 2)
6. Forming intercultural groups should take other factors into account than just nationality (though this should be one of the key factors) (article 1)
7. Relationships within a group will change over time due to critical incidents which can either bring the group together or push it apart (article 1)
8. It is important to look beyond the labels of “home” and “international” student (article 1)

7. Discussion

This chapter starts with a reminder of the rationale for the research before returning to the research questions; investigating the thesis' contributions; and moving onto future research.

My starting point for this research was the divide I noticed between home and international students on campus, and which is a phenomenon confirmed in numerous books and articles worldwide (see Spencer-Oatey & Dauber, 2019b for an overview). At the same time, one of the goals of internationalisation is knowledge exchange and intercultural competence (Hudzik, 2011). The question then becomes how students can develop intercultural competence without meaningful contact with one another. Furthermore, without mixing, integration is challenging which is problematic when we know that integration is essential to student well-being and success (Glass & Westmont, 2014; Severiens et al., 2006; Spencer-Oatey & Dauber, 2019a).

The aim of this thesis was to investigate the process of integration from an engineering student perspective (both home and international), and in particular, the effect of practices like intercultural group work (IGW) on academic and social integration. Engineering students will typically work in global teams in an international environment, yet there are few studies focusing on integration and intercultural group work with this group in focus and even fewer including both home *and* international students.

7.1 Research findings in relation to the appended articles

This section is structured around the three research questions posed in the introduction.

7.1.1 Home and international students' experiences of an international academic environment, both academically and socially

To investigate the process of student integration, it was crucial to get insight into the experiences of both home *and* international students. This was achieved in different ways in articles 1 and 2.

Student experiences at the start of a master's programme was the focus in article 2. This study used mixed methods, where 64 students in a course at the start of their master's programme kept a weekly diary relating their academic, pair work and social reflections and eight students were interviewed at the end of the course. The course used active learning pedagogy, where the students worked on three assignments in teacher formed pairs with mixed nationalities and the data collection was conducted online (due to the Covid-19 pandemic in 2020-2021). The diaries showed that while students struggled at times with the workload, they were very positive to the pair work in terms of communication, mutual respect and dividing the workload. Online factors possibly accentuated the feeling of high workload while giving the pair contact more significance when they did not meet as a class on campus.

Student experiences in intercultural group work were focused on in article 1. This article was a qualitative, longitudinal, in-depth study of five home and international students working in the same project course but different groups. The data showed that their experiences changed over time, particularly due to certain critical incidents. The article focused on their feelings of

belonging (or not) to the groups they were in and the factors that caused this. This is discussed further below.

There are three aspects which are particularly interesting and have not been explored to any extent in previous research: **the role of pair work in their initial experiences; whether the experiences of home and international students differ; and the use of diaries to capture experiences.**

Pair work is a common way to group students in the international classroom and yet, research has tended to focus on intercultural group work instead (see chapter 4), defined as groups of three or more students from different cultures working together. However, pair work provides interesting affordances in terms of integration. Firstly, students need to engage with each other in a way that does not always happen in a group, where it is possible for an individual to withdraw. Secondly, the pairs were forced to deal with their knowledge imbalance in order to solve the task. The latter could prove frustrating at times, but the pairs changed for each assignment, giving the students a chance to work with someone else. Each assignment took approximately two weeks to solve. Having this structure at the start of the master's programme helped bridge the academic and social divide in some cases.

Previous research into IGW has also tended to differentiate students' experiences according to **home or international student groups**. This has been criticized by, for example, Spencer-Oatey and Dauber (2017) for the "simplistic bi-polar distinction" (p.224) made. Article 1 showed that the students' self-positioning and sense of belonging to the group were affected by a range of factors including previous experience, the nature of the group work and personal aspects such as openness and adaptability. In other words, whether a student felt "at home" in a group was not necessarily about being a "home" or "international" student.

In terms of tracking students' experiences on a weekly basis in article 2, the quantitative data showed no significant differences between the home and international students in terms of reactions to the academic or pair work statements. Both groups struggled to some extent with the workload and both groups reacted positively to the pair work. The latter finding was surprising when IGW research has shown differences between these two groups in their reactions to intercultural group work (Peacock & Harrison, 2009; Strauss & Young, 2011; Volet & Ang, 2012).

However, this does not mean that home and international student groups are essentially the same. The opposite is being argued here – that we need to be careful when making assumptions because the differences *within* the groups are so vast, due to a range of factors, both internal and external. For example, returning to the cultural mosaic model and definition of culture (see 2.1.1), an older student with travel and professional experience is likely to have a different approach to intercultural group tasks than a younger student who has never worked in groups before. Personality also plays a part (Poort et al., 2021). Nationality can play a major role where some studies have shown differences between students from Southern Asia and from Europe in terms of adaptation and group work (Rienties & Tempelaar, 2013; Spencer-Oatey & Dauber, 2017). The point is that it is these factors in combination with each other, rather a single factor, which decides how well the group will work.

Finally, methodologically, in terms of capturing a larger group of students' individual experiences, **the diary – interview method** proved a useful tool for following the students on a weekly basis. The diary had the advantage of providing both quantitative and qualitative data on the students' weekly experiences making it possible to both follow trends and to get an insight into their progress week-by-week. The diary was also used in the interviews for stimulated recall, providing a helpful prompt to the experiences over two months. Thus, it proved a relatively straightforward way to collect rich data.

7.1.2 Home and international students' experiences of adaptation and integration over time

The second research question asks whether and how experiences change over time. Few studies have investigated this but there is reason to believe that this might be the case. For example, Poort et al. (2019) suggest that IGW becomes easier over time and that the benefits are more long term while the costs are short term. On the other hand, Cai (2017) reported little change in attitudes when following IGW over the course of a year.

This question was investigated in article 1 where interviews took place with five students at the start of the course, at the end of the course after five months and after a year. The data provided a rich insight into their personal journeys of insideness and outsideness in the group and changing attitudes over time due to critical incidents within the group work.

These critical incidents either brought them together or pushed them apart. I grouped the incidents into two categories: communicating the project through writing and communicating about the project. In the first category, different levels of writing skills resulted in uniting the group over the common “enemy” (the task) or dividing the group when students changed other students' work without asking. In the second category, communicating about the project caused frustration when students in the group were perceived as not as open and responsive as expected.

Though this study was small scale, and all groups are likely to experience some kind of incident, some studies indicate that these kinds of critical incidents are likely to be more outside people's comfort zones in IGW (Rienties & Tempelaar, 2013; Spencer-Oatey & Dauber, 2019). Having the possibility to reflect on these incidents can help students identify the reasons behind them and adjust practices moving forward. It is worth keeping in mind the pressure students are under in project courses where they are trying to understand the project and each other as well as keep to deadlines and deliverables.

7.1.3 How experiences of intercultural group work contribute to integration into the academic environment

The third question focuses on integration. As discussed in section 3.2, integration is important for all students for well-being and study success (Glass & Westmont, 2014; Severiens et al., 2006). In an international environment, it can also aid intercultural competence (Spencer-Oatey & Dauber, 2019a).

The second article uses two integration models (Spencer-Oatey & Dauber, 2019a; Tinto, 1975) as lenses to examine integration in an IaH context. Tinto divides integration into the categories of social and academic. Spencer-Oatey and Dauber (2019a) divide integration pathways into

human and structural (initiatives and facilitators) and suggests three levels: individual, community and institutional (see table 3.1). One example given of integration at the individual/human level is mixing with people from different backgrounds, for example, IGW or intercultural pair work. This brings us to the third research question: how do experiences of IGW contribute to integration into the academic environment?

While IGW can aid integration, article 1 has shown that various factors influence how well IGW works in reality and how far students feel a part of the group. The data from article 2 has shown that students seemed positive to the contact that they had in their pair work. This seemed, in some cases, to provide a bridge between the academic and social sides of integration in that some students were able to form friendships through their pair work.

Both these articles focus on what is referred to as the “individual/ human” level in Spencer-Oatey and Dauber (2019a) model (see table 3.1), meaning that the articles focus on the students themselves and how they react to one another within the structure they have been given. This is the focus of much research within IGW. However, the integration model also encourages us to look beyond the individual/ human level, to the structural, community and institutional level. One question then in the case of IGW is how the course structure, tasks, facilitators (e.g. teachers) and so on make a difference in terms of the individual student’s experience. In short: how can integration be facilitated in the best way and what are the contributing factors besides the students themselves? This will be explored in the next section.

7.2 Contribution and implications

The thesis title is “Internationalisation at home?” and much of the discussion has centred around what that might mean in practice, in the sense of moving away from compositional internationalisation (with a focus on numbers of incoming and outgoing students) and moving towards competency internationalisation, where integration and intercultural competence are valued (Spencer-Oatey & Dauber, 2019b) (see section 3.1). The thesis has particularly focused on IGW as one way of working towards integration. One theoretical contribution of this thesis has been using an integration model (Spencer-Oatey & Dauber, 2019a) as a lens for looking at IGW, as discussed in the previous section. I have used this model (table 7.1) to summarise the contributions from this thesis.

Table 7.1: Examples of integration pathways with IGW as discussed in the articles (adapted from Spencer-Oatey & Dauber 2019a)

Integration level	Integration pathway	
Individual	Human	Working in intercultural pairs or groups
	Structural initiatives and facilitators	Teacher formed groups

7.2.1 Individual/human: working in intercultural pairs or groups

“Individual/ human” focuses on the student and their own experience and behaviour. Both articles examine student experiences within intercultural pairs and groups and how well these facilitate integration. In the intercultural pair work described in article 2 at the start of the programme, this seems to have been a useful strategy to encourage integration. The students report that communication works well and that they have respect for each other on the whole.

One contribution then is the affordances of using intercultural pairs in the international classroom, for both academic and social integration.

In article 1, where the students work in intercultural groups over five months, there are more complexities involved, particularly involving critical incidents which can change the group dynamics over time. This confirms existing research that IGW can be complex (Spencer-Oatey & Dauber, 2017). It is clear however, that the students gain intercultural insights through their experiences, which are, on many occasions outside their comfort zones. It was also clear that the student experiences in the IGW were affected by a range of factors, including

Another contribution is following intercultural group work over time showing the changing dynamics within the groups. These dynamics served to bring students into the group or push them out.

One implication of these studies is that intercultural pairs and groups can serve a social function as well as an academic one. Teachers should make the rationale clear to the students for structuring groups the way they have (and reflect intercultural goals in the learning outcomes of the course) and allow time and opportunity for the social aspect in the group to develop. This might happen through an arranged social activity early on or avoiding important deadlines early on in the group work. It is helpful to remind students of the benefits of IGW before they start.

Another implication is that it is helpful to support individual groups over time as there can be critical incidents during the group work which can affect the group negatively.

7.2.2 Individual/ structural: Teacher formed groups

“Structural facilitators” refers to the people creating the structure and making it work. In these studies, the facilitators were the teachers who formed the pairs and groups and adopted an active learning pedagogy. The teachers formed the pairs / groups due to predetermined criteria. In the case of pairs, the criterion was that the students should come from different nationalities. The teacher formed the first pair and then the students could form their own pairs as long as they were from different nationalities. In the case of groups, the teacher used a more complex set of criteria including nationality, gender, choice of project, schedules, previous experience and personality since the students would be working together for a longer period of time.

The use of pairs or groups in a class is interesting when connected to timing in the programme. As mentioned, both serve a social function as well as an academic one. Pair work can be a useful tool at the start for shorter assignments as a way to be initiated into a programme. Group

work is useful with more complex tasks over a longer period of time. IGW needs support during the process, especially at the start of the programme (Leask, 2009).

These findings support research which has investigated the affordances of teacher formed groups (e.g. Rienties et al, 2014). Student formed groups tend to be more homogenous (Peacock & Harrison, 2009) so if intercultural competence is a goal, the groups need to be formed by the teacher.

The implications of these contributions are several. Firstly, they argue in favour of teacher formed groups as a way to promote intercultural competence in the programme. Secondly, they argue for a systematic plan for using pair and group work in the programme in terms of timing where it can be advantageous to use pair work in early courses, for example.

7.2.3 Wider implications

The wider implications of this study point firstly, to the use of the integration model to indicate further possible structural changes in the educational set up. Secondly, in connection with the question of moving towards internationalisation at home, can these structural changes be made into measurable goals to add to the existing quantitative mobility goals?

Some possibilities for structural initiatives in connection with IGW are given below.

Table 7.2: Examples of possible structural integration pathways connected to IGW (adapted from Spencer-Oatey & Dauber 2019a)

Integration level	Integration pathway	
Community (programme)	Structural initiatives and facilitators	Teacher support on individual level
Institutional (university)	Structural initiatives and facilitators	Teacher support throughout university e.g. pedagogical courses Internationalisation of the curriculum

One topic involves teacher support at a local level in the programme and in a wider sense, at the university. If teacher formed groups and IGW in general is a recommendation, teachers need support to make this work. Teachers are already overloaded, stressed and challenged by a myriad of demands to their time. In this study, these two courses were run by two teachers (one of which was also the program manager) with an exceptional interest in pedagogical matters as well as engineering. Both of them took courses in pedagogy (and in one case, also delivered courses in pedagogy) and took extra time to consider multiple factors in setting up the activities in their courses because of the affordances for the students. But this will not always be the case.

Teacher support needs to happen at a local level and a university level. At a local level, teachers might need assistance in facilitating groups – both setting them up and supporting them during

the course. They also might need assistance in selecting topics which are achievable for a wider range of students. At a university level, pedagogical courses can discuss the implications and affordances of working with students in this way, as well as the affordances of promoting an international environment in general. These discussions could involve internationalisation of the curriculum at both teacher and programme manager level. Suggestions might include examining course content so that it is accessible to a variety of backgrounds and selecting topics which are internationally relevant. There might also be support material available to teachers.

Discussions of how these initiatives might look as goals for IaH have been discussed in various places. The Academic Cooperation Association (ACA) is currently running think pieces on inclusion in international higher education in Europe (Janebová et al., 2022). A project, HEIDA (promoting data driven decision making for internationalisation of higher education) has collected tools and indicators for internationalisation. One European project it mentions (IMPI) has resulted in various countries formulating their own indicators for internationalisation (William Internationalization at Home, 2019). The EAIE blog mentioned in 3.1 (Jones & Reiffenrath, 2018) can also provide inspiration. The Global People Competency Framework (Spencer-Oatey & Stadler, 2009) provides helpful criteria for intercultural competency. These are just a few of the resources published in the area. The point is that while it may be more complex to formulate criteria for IaH, it is possible and is being done.

7.3 Limitations

There are two main limitations of this research, one connected to data gathered and the other connected to the focus. The second limitation in particular is interesting in connection to future research.

7.3.1 Limitation 1: data collection

This thesis has argued that it is problematic to make sweeping statements about international students in particular when the differences within the group are so vast, not only in terms of nationalities but also in terms of other cultures such as age, gender, discipline and so on. It is therefore important in this area to 1) be very explicit about the student group that the data came from and 2) be aware that these cultures will affect the results. The students represented in articles 1 and 2 are all masters' students at the same university of technology (though from different programmes in the two different articles). In the master's programme used for article 2, the percentage of Indian students was nearly 40% and of Swedish students 25%. At the same programme, the percentage of male students was 95% at the time of data collection. The majority of the students were under 25 years old. It is likely that all these factors have affected student responses and therefore, my own conclusions (Harrison, 2012; Lomer & Mittelmeier, 2021).

The data has also been collected in Sweden, which provides a particular context. There has not been much research in EMI programs on IGW which is a gap this research fills. On the other hand, the Swedish educational environment is one which has group work at the core of the system, from the first year that students start at school. This could well have influenced home students' attitudes and expectations around working in groups.

Another limitation is the fact that the data was gathered during a pandemic when the student and teaching situation was different. This meant, for example, that much more of the course content and interaction took place online than usual, and that the international students came from a narrower range of countries. Though the affordances and challenges of online education have been discussed in relation to the data in article 2, this is a much wider topic and has not been done justice here.

7.3.2 Limitation 2: focus of data collection

One contribution that this thesis makes is that of using an integration model for looking at the international engineering classroom. As pointed out in the contributions, the data has focused on the individual/ human level, in terms of student reactions and responses to intercultural pair and group work in the classroom. The model raises awareness of other aspects of integration, apart from the student attitudes and responses.

7.4 Future research

The limitations raise questions for future research. Once again, I will use the categories of “human” (student) and “structural” (teachers and organisations) from the integration model.

7.4.1 Student level

As regards both the limitations and building on the contributions, future research focusing on students could take one or more of the following directions:

1) Diary – interview data in “normal” circumstances

One limitation as regards the data collection for article 2, was the fact that it took place in a pandemic. It would be interesting to see, for example, if the perceived appreciation of the pair work in terms of social affordances would be similar in “normal” circumstances, which in this case would mean the students on campus.

2) Diary – interview data at a different time in the education

For article 2, the data collection took place at the start of the master’s education when all students were new to the programme and each other. It would be interesting to repeat the study at a later point in their education (master’s education being two years in Sweden) to see the role that intercultural pair and group work played then in integration into the programme.

3) Diary- interview data at an engineering programme in another country

The limitation stated that the Swedish context and the cultures of the home and international students at one university of technology have affected the results. It would be interesting to collect similar data from an engineering programme in another country to see how far these results can be supported.

7.4.2 Structural level

An interesting path for future research would be to investigate other areas of the integration model, in particular the structural side of integration at an individual, community and institutional level. For integration to work, it needs to happen at all levels.

1) Structural facilitators: teachers

As discussed in 7.2.2, the teachers' role in facilitating integration is a vital and interesting one. The teachers formulate the projects and the groups. They decide the learning goals for the course and how these will be achieved. They decide their pedagogical approach in the course, consciously or subconsciously. All of these aspects affect integration. It would be interesting to follow up the teacher situation and choices that need to be made when balancing the various requirements, wishes and goals for a course. If intercultural competence is a course goal, how can that be achieved in a productive way for both teacher and student?

2) Structural facilitators: programme managers

Programme managers decide the vision and goals for the programme as a whole and put together the puzzle in the sense of courses to reach these goals. As regards intercultural competence as a programme goal, some of this research has suggested planning a programme not only from a content perspective, but from the perspective of integration. This might involve, for example, ensuring that the first courses in the programme contain elements of pair work and looking at the progression of pair / group work in the programme. Teachers also need to have the tools to carry this out in the classroom. It would be interesting to hear how programme managers might reason around these choices. If intercultural competence is a programme goal, how can that be achieved in a productive way for teachers and students on the programme?

3) Structural facilitators: university management

University management decide the goals of the university as a whole. These goals include internationalisation (the case in over 90% of universities) and should include goals and strategies for reaching this. Reports show that these goals and strategies generally focus on mobility goals and not for achieving internationalisation at home which would include goals for integration and intercultural communication. It would be interesting to hear how university management might reason around these choices. This reasoning will probably partly be connected to ranking and external criteria for internationalisation. If intercultural competence is a university and national higher education goal, how can that be made visible and included in criteria in an inclusive way?

University management also make choices around funding initiatives to support goals at the university. This could take the form of pedagogical courses and resources for teachers, for example. What support is possible and needed to achieve IaH goals?

8. Concluding remarks

In higher education, internationalisation is often presented as an exciting opportunity: an opportunity for universities to improve the quality of research and education; to increase their competitiveness and strengthen their attractiveness (STINT, n.d.). Mobile students are told that this will improve their employment prospects, broaden their horizons, and give them access to new experiences. An important concept within internationalisation is an exchange of ideas in order to achieve excellence.

This thesis has focused on the idea of internationalisation at home which argues that all students should benefit from internationalisation and not just the small minority of mobile students. Internationalisation at home involves all students getting the possibility to exchange ideas with students from other cultures and become interculturally competent, as an important life skill at university and beyond.

Internationalisation at home requires integration of both home and international students and this thesis has investigated intercultural pair and group work within courses as one way that students can integrate educationally. Intercultural group work has many advantages as regards both academic and social integration. At the same time, there can be greater challenges than when working with students from the same culture and students need preparation and support to navigate this environment on both an individual and structural level.

This thesis has focused on engineering students for four reasons: 1) engineers work in international environments 2) teamwork is a crucial part of an engineer's work 3) science and engineering is the one of the most attractive international education and 4) engineering students are underrepresented in intercultural group work studies.

The international higher education environment is complex and rewarding. It is crucial that we, as educators and researchers in this environment, have a dialogue about how to utilise the benefits for all students, both home and international. As part of that dialogue, we also need to look beyond the labels of "home" and "international" and look at the diversity within those categories. We also need to look beyond mobility to include integration and intercultural competence. This way, we have a better chance to achieve the SUHF goals of enhancing the quality of education and research for *all* students and staff.

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