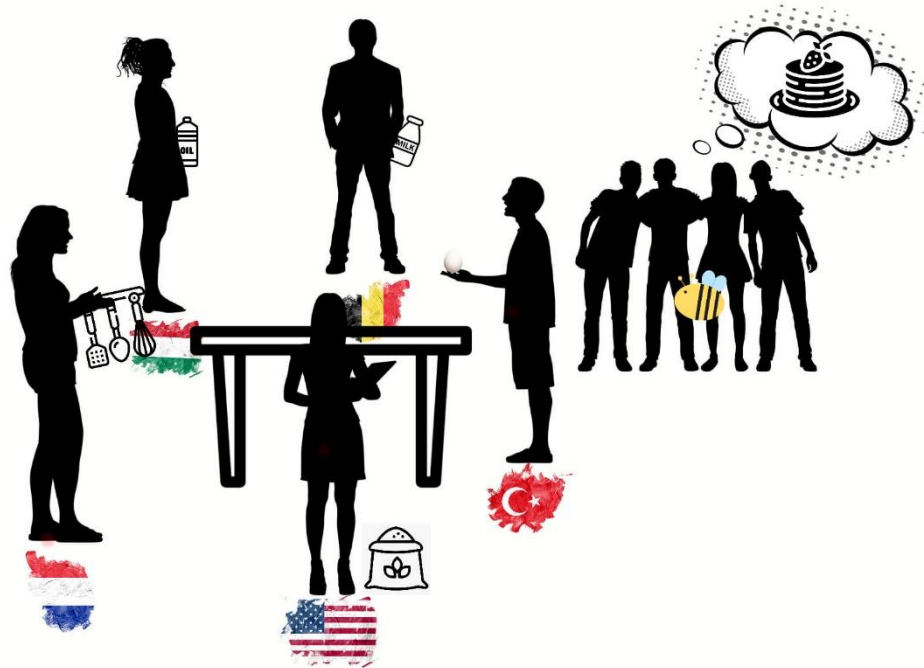# Harnessing the learning potential of Cultural diversity of an Environmental Sciences program by using the boundary crossing theory at WUR

MSc Thesis in Environmental Systems Analysis

EMESE OROSZ

June, 2023

Supervised by: Dr. Karen Fortuin (ESA) & Dr. Judith Gulikers (ELS)

Course code: ESA80436

# Harnessing the learning potential of Cultural diversity of an Environmental Sciences program by using the boundary crossing theory at WUR

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MSc Thesis in Environmental Systems Analysis

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*"I used to think the top environmental problems were biodiversity loss, ecosystem collapse and climate change. I thought with 30 years of good science we could address those problems. But I was wrong. The top environmental problems are selfishness, greed and apathy... And to deal with these we need a spiritual and cultural transformation - and we scientists don't know how to do that."*
*-James Gustave Speth*

# Preface

When I started my course called "Teaching, learning and capacity building for sustainable development", I had to design an educational initiative and write a course manual. I remember we did an activity called "Soft shoe shuffle" with our lecturer, Valentina on what sustainability means. This small activity made me realize the plurality of meanings of sustainability and sustainable development. At that time, my opinion on sustainable development was strongly related to the definition that can be found in the Brundtland report (1987). Thus, in my opinion, it was about meeting the needs of the present generation and preserving the needs of future generations at the same time. I was surrounded by students coming from different disciplinary and cultural backgrounds. They had several other definitions of sustainability and sustainable development. One student mentioned that it is about resilience. This experience made me realize the differences between disciplines. During my bachelor's at Avans, the students and most of our lecturers had natural sciences backgrounds. Therefore, I decided to design an educational design for the environmental sciences students at Avans, that help them get insights from social sciences perspectives to broaden their perspectives. This was the first time I heard about boundary crossing and boundary crossing competence.

I enjoyed reading about boundary crossing and I wanted to learn about it more. That is the reason why I decided to write a thesis about boundary crossing. That time, I met with Karen Fortuin, an expert on boundary-crossing competence. She helped me a lot to understand boundary crossing and to brainstorm about possible thesis topics related to boundary crossing. She became my main thesis supervisor for which I am very grateful. After I supervised the bachelor students during their course called "Introduction Environmental Sciences, I became sure about focusing on cultural boundaries. I was shocked that the students did not get explicit support to handle the cultural boundaries of their study program. I learned that course coordinators and professors currently work on integrating intercultural competencies by using dialog methods and I wished to support them with my research.

Working on my thesis was exciting and challenging. Honestly, I did not think that writing a thesis and raising my son who is 3,5 years old will be that tough. However, I learned a lot about boundary-crossing and intercultural competencies. Furthermore, I learned for the first time how to design a workshop including an escape room activity, conduct a focus group discussion, and analyze qualitative data. The learning process was not easy, especially when I struggled to find students to test the learning activities, but it contributed to my developing other skills and gaining knowledge for which I am grateful.

Emese Orosz ( 26th May 2023)

# Summary

The complex sustainability challenges such as climate change, biodiversity loss, and energy transition call for new, integral ways of dealing with them. Transformation Agents with their broad perspectives and skills to communicate and mobilize across different disciplines and cultures are core in overarching collaborations to tackle these sustainability issues. To ensure that university graduates are equipped with the proper knowledge, skills, and attitude to become *transformative agents*, universities must give students opportunities and explicit support during their studies.

At Wageningen University, the focus is on training students to develop boundary-crossing competences (BC). The BC competence refers to the ability of a person to collaborate effectively across practices (Fortuin et al., 2020). It involves *recognizing, seeking , appreciating and utilizing* tensions when they arise across practices (Fortuin et al., 2020). According to Akkerman and Bakker, (2011), in BC theory, there are four learning mechanism that act as fuel to the "vehicle" of BC competence development. The four learning mechanisms are namely (i) *identification, (ii) coordination, (iii) reflection* (perspective making and taking) and *(iv) transformation* including inner transformation). This paper focuses on identification, coordination and reflection learning mechanisms. Furthermore, as students are facing challenges to deal with the cultural boundaries that are between students coming from different countries, my thesis is focusing on these cultural boundaries. BC competence has overlap with intercultural competencies (IC) because both contain several set of skills, knowledge and attitudes that needs to be developed by one in order to collaborate and mobilize effectively across practices. Both can be visualized as a funnel of learning that is a continuous and dynamic process of lifelong learning and one's ongoing personal development (Deardorff, 2014; Bertelsmann Stiftung & Fondazione Cariplo, 2008). Intercultural sensitivity (ICS) as defined by Chen and Starosta, (2000) is the emotional orientation towards understanding, respecting and accepting the cultural differences. This seems to be the first common steppingstone between BC and IC.

So far no research has been done on using BC learning activities to support students' intercultural competencies' development. Thus, it is not known how effective BC theory and BC learning mechanisms are in enhancing intercultural sensitivity as part of their intercultural competencies. Hence, this thesis research seeks to investigate if learning activities based on the  BC theory are effective to enhance students' intercultural sensitivity and if those learning activities are suitable for and preferred by the students to harness the learning potential of cultural diversity in their education program.  Therefore, an intervention in the form of a non-formal workshop was given to test the effectiveness of BC learning activities (based on the three learning mechanisms) on students' intercultural sensitivity. This thesis hypothesized that if ES students are engaged in BC learning activities, it leads to an increased ICS in the students.

My research methodology consisted of five steps: searching and adapting BC learning activities and designing a workshop, reviewing the designed workshops by two experts (one expert of BC and one expert of IC), adjusting the learning activities based on the expert reviews, conducting the workshop and evaluating the workshop. The final BC learning activities were a story telling, a debate and an escape room activity. To evaluate the workshop, I used triangulation, explanatory mixed research methods. This method consisted of the quantitative survey of Chen and Starosta (2000), overt observation and a focus group discussion. The data was analysed using the independent sample t-test, Mann-Whitney U test, Wilcoxon signed ranks test, deductive and inductive thematic analysis.

A total of eight students (N=8) participated as volunteers in the workshop as experimental group. The control group was formed by seven (N=7) students who filled in the pre-test questionnaire.

The limited time of the participants (2 hours) and the small sample size (N=8) did not allow for drawing strong conclusions on the effect of BC learning activities on students' ICS. However, the statistically significant effect (p=0.025) on students' total ICS and the insights from the qualitative data suggest that BC learning activities are promising to be effective to enhance students' ICS.

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# 1. Introduction

## 1.1. Background

Society is facing global sustainability challenges. These challenges stretch across countries  and are hard to define and solve because of complex and interconnected systems involving many societal stakeholders, risks and uncertainties. Examples are energy transition, biodiversity loss and climate change (Achiam et al., 2021). Those problems cannot be solved by a single individual, discipline, or perspective (Guimarães et al., 2019). Creating sustainable solutions for these challenges requires collaborations with various and diverse actors.

Accordingly, sustainability practitioners such as environmental scientists need to integrate various perspectives into their practices (actions) to avoid bottlenecks (Norström et al., 2020; Shrivastava et al., 2020). Therefore, they need to be trained and educated to develop competencies that enable them to work together with people coming from different cultural, disciplinary and professional backgrounds and to integrate a variety of perspectives (Annan-Diab & Molinari, 2017; Clark et al., 2011; Norström et al., 2020).

Higher education prepares students to address these sustainability challenges in their future careers. The United Nations Educational, Scientific and Cultural Organization (UNESCO) emphasizes the importance of education to support environmental science (ES) students to become "*Agents of change*" or what others call *transformative agents* which is an ultimate goal of the Education for Sustainable Development (UNESCO, 2017).  *Transformative Agents* are individuals who can make changes in an organization by introducing successful innovations and/ or perspectives, therefore being described as core to move towards a sustainable world (Brown et al., 2021).  To ensure that university graduates are equipped with the proper knowledge, skills, and attitude to become *transformative agents*, universities must give students opportunities and explicit support during their studies (Clark et al., 2011; Stewart, 2020).

## 1.2. Boundary Crossing at WUR

Currently, at Wageningen University and Research (WUR), lecturers give several opportunities for the students to broaden their perspectives and to become *transformative agents* in the end such as; mixing the students to do a project based on their different cultures and discipline, connecting the students with several academic and non-academic stakeholders, and putting students into other roles (Fortuin, 2015). These opportunities are mainly given in form of international, inter-, and transdisciplinary collaborations which include several *boundaries* that need to be crossed by the students. *Boundaries* are sociocultural differences such as languages, norms, values, and beliefs between *practices* like science-society, school-home, school-work, and work-home that make people come across the need to alter their way of doing and/or broaden their perspectives to succeed or to be effective (Akkerman & Bakker, 2011). "*Practices*" means here the way people behave which is governed by social norms. Social norms are the actions that are desirable, appropriate, and obligatory in each group and these norms are mostly informal and unwritten (Cislaghi & Heise, 2018). Thus, effective collaboration, co-creation and to become *transformative agents* require the mobilization of the students between practices. In other words, those require *Boundary crossing (BC)*.

At WUR, the BC theory and competence are on the forefront of its vision of education and have been an important direction of research through the NWO Comenius Leadership Fellow project: Boundary Crossing (BC) as modus operandi at Wageningen University (*Comenius Leadership Grant for WUR*, 2018). The BC competence refers to the ability of a person to collaborate effectively across practices

(Fortuin et al., 2020). It involves *recognizing, seeking , appreciating and utilizing* tensions when they arise across practices (Fortuin et al., 2020).

The BC theory written by Akkerman and Bakker, (2011) introduces four learning mechanisms (LM)s that act as fuel to the "vehicle" of BC competence development. The four LMs are namely (i) *identification, (ii) coordination, (iii) reflection* (perspective making and taking) and *(iv) transformation* including inner transformation) and they are explained in several research articles as follows (Akkerman & Bakker, 2011; Akkerman & Bruining, 2016; Bakker & Akkerman, 2017; Fortuin & Bush, 2010; Fortuin et al., 2020):

- **Identification** refers to finding out the norms, values and perspectives of oneself and others, how students are seeing the world and what is their expertise, knowing their way of doing, differentiating between practices, recognizing their strengths and limitations, and also knowing those of others.
- The **coordination** learning mechanism refers to working and co-creating together in an effective way. Thus, students need to be eager to communicate and collaborate with students from diverse cultural and/or disciplinary backgrounds and with diverse societal actors. The students do not simply divide the work based on their disciplines, they need to seek for effective means to make the collaboration easier and more effective. These means are also called '*boundary objects'* for example using symbols or artifacts.
- The third learning mechanism is **reflection** which refers to the perspective making and taking. During this, the students need to be open to putting themselves into other's shoes to broaden their perspectives. By reflecting, they should recognize the value of doing that, and realise that they are getting a fuller picture than they perceived before. Moreover, they might stimulate others to do perspective making and taking.
- Lastly, **transformation**, where the perspectives that are gained are also integrated into actions. Thus, it refers to an inner change in the students. This inner change can lead to (i) adapting one's behaviour and (ii) creating innovative solutions.

As mentioned before, BC competence is the ability to mobilize, and communicate across different practices. The BC competence can be looked as a learning spiral (see Figure 1), which is a continuous and dynamic learning process. It promotes critical thinking and enables lifelong learning that is self-directed. Alexander et al. (2004) defined self-directed learning as the focus "on the process by which adults take control of their own learning, in particular how they set their own learning goals, locate appropriate resources, decide on which learning methods to use and evaluate their progress" (p1).
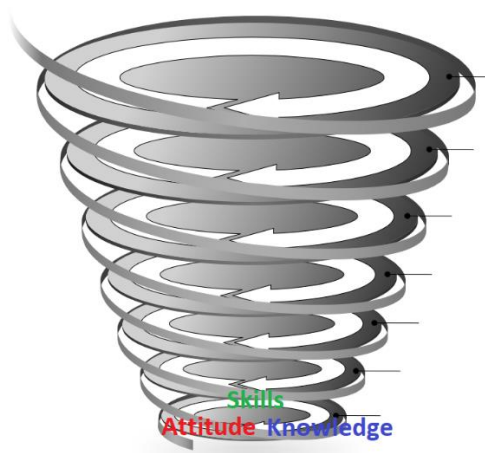


*Figure 1 Learning spiral*

Experts of BC at WUR developed learning trajectories to support students in developing BC competence throughout their studies. Furthermore, they give examples of BC learning activities and other supporting materials to educators to create and/or integrate BC learning into their course materials see Fortuin et al., (2020) or Gulikers, (2020). The learning trajectories are specific to study programs. The BC learning trajectory for the bachelor environmental sciences (BES) study program describes the included courses, the boundaries of focus, the involved BC LMs, examples of BC learning objectives, and examples of BC learning activities. In these learning trajectories and BC learning activities, the experts differentiate between *disciplinary, cultural* (meaning perspective and behavioural differences between nationalities), and *university-society boundaries.* The BES BC learning trajectory for instance starts in the course "*Sustainable Solutions for environmental problems*" where students learn how to co-create innovative solutions for complex or wicked environmental problems by integrating knowledge from natural science, social science, and technology.

## 1.3. Issues related to BC in the BES program

Despite the BC learning trajectories and supporting materials on BC learning activities for educators, the BES students (especially the first-year students) are often hampered by the cultural boundaries in their study program (Beunk, 2022). As Popov et al., (2022) mentioned: "Different interpretations among home students and international students can cause unhappiness, discomfort, or frustration among the students, which in turn can lead to an unproductive learning environment" (P. 675). These "different interpretations" can lead to tensions if those remain implicit.

The BES program at WUR is a three-year full-time study program that accounts for 180 credits. It combines principles from both natural and social sciences. The courses are given on basic cognitive and disciplinary knowledge such us basic statistics, ecology, mathematics and environmental policy instruments. Furthermore, the students are also trained in interdisciplinary problem-oriented research in the context of environmental sciences. The program includes learning activities to develop student's presentation, writing and collaboration skills.

The first two years of the study program is common part. After completion of the second year, the students can specialise based on their interests from the below mentioned specialisations:

A - Environmental Policy and Economics;
B - Environmental Quality and Systems Analysis;
C - Environmental Technology.

Table 1 shows the first-year BES program overview.

*Table 1 First year BES curricula at WUR retrieved from https://www.wur.nl/nl/onderwijs-opleidingen/bachelor/bsc-opleidingen/bachelor-environmental-sciences/studieprogramma.htm*

**Vakken Jaar 1**

| Periode 1 | | Periode 2 | | Periode 3 | Periode 4 | Periode 5 | Periode 6 | |
|---|---|---|---|---|---|---|---|---|
| Introduction Environmental Sciences | Sust. Solutions to Env.Problems | Introductory Physics | | Mathematics 2 | Statistics 2 | Environmental Policy Instruments | Ecology 1 | |
| Mathematics 1 *or* Statistics 1 | General Chemistry 1 | Water 1 | Introduction to Soil Geography | General Chemistry 2 | Mathematics 3 | Microbiology & Toxicology | Environmental Scien and Society | |

Although students often feel tensions like unhappiness, frustration and stress, the international study programs like the BES at WUR have great potential to teach students how to cross these cultural boundaries meaning to learn how to work together with people coming from different countries and to learn from and integrate the diverse cultural perspectives (Urban & Palmer, 2013). The BES program

at WUR became an international study program in 2018. From that time on, the courses are being taught in English and the study program is attracting students from all over the world. Every year about 30 % of foreign students and 70% Dutch students are following the program. Currently, 80 students are following the first year BES program. The students are being challenged to work together on several topics in small (5-9 student) multicultural groups and cocreate throughout multiple courses in an interdisciplinary and international setting. In such an international study atmosphere, students are exposed to a variety of perspectives and different life experiences coming from cultural boundaries (differences) that can be turned into learning opportunities.

To turn these cultural boundaries into learning opportunities, students need to be stimulated by the educators to be open and willing to learn from people from different cultures (Fortuin, 2015; Oonk et al., 2022). Students need to respect (value and appreciate) the diversity of their study group and seek to learn from diverse perspectives. These stimulations require explicit moments for students to express their diverse cultural perspectives and to reflect on other cultural perspectives (Oonk et al., 2022). Simply putting students from diverse cultural backgrounds into one group does not automatically lead to effective collaboration and the utilization of its learning potential (Fortuin et. al 2020).

The first course on Introduction to Environmental Sciences includes group work, where students need to collaborate to discover an environmental topic from diverse disciplinary perspectives such as environmental, social, governmental and technological. Currently, the students do not get special, explicit support from teachers or student assistants to express their diverse cultural identities, to see the value of cultural boundaries, broadening their perspectives and to utilize the cultural boundaries as learning opportunities. Research shows that if students experience a collaboration negatively, it can lead to student resistance to future collaborative learning (Stover & Holland, 2018).

Moreover, based on the thesis of Beunk, (2022), three problems have been identified, these are :

- Non-Western perspectives are not included in course materials
- Students are not or not explicitly invited to express their diverse perspectives
- Some students would like to have the choice to follow the program in Dutch- it is translated as a problem of not seeing the added value of doing an international program

The issues to be solved require *intercultural competencies* (IC)s to deal with cultural boundaries. Deardorff, (2020) describes ICs as follows: "intercultural competencies in essence are about improving human interactions across differences, whether within a society (differences due to age, gender, religion, socio-economic status, political affiliation, ethnicity, and so on) or across borders" (p5).

## 1.4. Linking BC to IC

BC competence has overlap with IC because both contain several set of skills, knowledge and attitudes that needs to be developed by one in order to collaborate and mobilize effectively across practices. Both can be visualized as a funnel of learning that is a continuous and dynamic process of lifelong learning and one's ongoing personal development (Deardorff, 2014; Bertelsmann Stiftung & Fondazione Cariplo, 2008).

Researchers from the intercultural education field developed several models and training frameworks for students to enhance their intercultural competences (IC) (Deardorff, 2006; Bennett, 2017; Nunez et al., 2017). This IC is defined in this thesis as "an individual's effectiveness in drawing upon a set of knowledge, skills, and personal attributes in order to work successfully with people from different national cultural backgrounds at home or abroad." (Johnson et al., 2006, p. 530) and "the ability to think and act in interculturally appropriate ways" (Hammer et al., 2003, p. 422). In other words, it requires one to be aware of own and others' cultural boundaries (differences), respect (value and appreciate) the boundaries, and perform appropriate behaviours when working together with people coming from different countries.

Straffon (2003) and Moore-Jones (2018) argue that one needs to develop intercultural sensitivity (ICS) first to develop IC and this IC further evolves into Intercultural Intelligence. Intercultural intelligence is, "the ability to engage in a set of cultural behaviours that uses skills (i.e., language or interpersonal skills) and qualities (e.g., tolerance for ambiguity, flexibility) that are tuned appropriately to the culture-based values and attitudes of the people with whom one interact"(Peterson, 2004, p. 87). Thus, this means that one needs to learn many appropriate behaviours and shift between them appropriately. Straffon and Moore-Jones see a linear relationships between the concept of ICS, IC, and intercultural intelligence, even though these concepts often overlap each other. This linear relationship is visualized in Figure 2. ICS is defined as one's ambition to understand, respect and accept differences among cultures (Chen and Starosta, 2000). Bennett (2004) mentions as well that "greater intercultural sensitivity creates the potential for increased intercultural competence" (p. 74).

ICS development seems to be the first common steppingstone in BC and IC. It includes knowledge, skills and attitude that enable students to be aware of cultural boundaries, understand, respect and accept them. In this paper, Intercultural boundaries are narrowed down to the differences that emerge when students coming from different countries collaborate/meet.
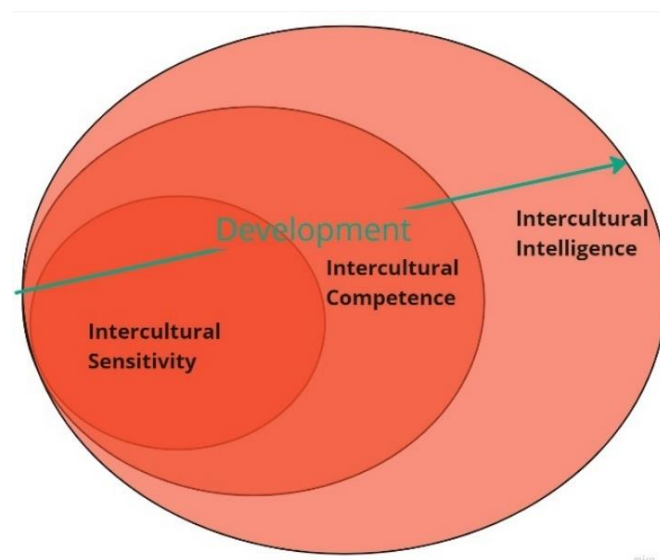


*Figure 2 Linear relationship in ICS, IC and Intercultural Intelligence development*

## 1.5. Knowledge gap and purpose of the study

So far no research has been done on using BC learning activities to support students' intercultural competencies' development. Thus, it is not known how effective BC theory and BC learning mechanisms are in enhancing intercultural sensitivity as part of intercultural competence.

Hence, this thesis research seeks to investigate if learning activities based on the BC theory are effective to enhance students' intercultural sensitivity and if those learning activities are suitable for and preferred by the students to harness the learning potential of cultural diversity in their education program.

Knowing the research gap, I got motivated to do an intervention-based research to eventually recommend BC learning activities which are suitable and preferred for the environmental sciences (ES) students to harness the learning potential of cultural diversity in their educational program. Assuming that harnessing the learning potential of cultural diversity requires individuals to be intercultural sensitive (understand, respect and accept differences as Chen and Starosta (2000) define) and use those differences as learning opportunities (Akkerman & Bakker, 2011).

The intervention was given in a form of a single workshop that targeted the student's following learning outcomes:

- 1. Being aware of cultural boundaries
- 2. Respecting the cultural boundaries
- 3. Seeking for boundary objects (effective means) when collaborating in an international group

The research questions that are addressed in this thesis are:

- Is the intervention based on Boundary Crossing Learning Mechanisms *identification, coordination* and *reflection* in form of a single workshop effective to enhance ES students' intercultural sensitivity at WUR?
- Does explicit Learning Activity on Boundary Crossing Learning Mechanism coordination makes Environmental Sciences students search for boundary objects when they are collaborating?
- How are those learning activities perceived by the Environmental Science students?

This thesis hypothesized that if ES students are engaged in BC learning activities, it leads to an increased ICS in the students.

## 1.6. Rationale

One of the intentions of this thesis is to provide and inspire course coordinators with practical examples of how BC theory can be applied in diverse learning activities, that actively engage students both in critical thinking and interaction enjoyment and get insight into how those learning activities work to enhance ICS. The other intention is to consider the added value of looking at BC competence and IC as concepts that complement each other and as one phenomenon that is looked at from different perspectives.

## 1.7. Thesis outline

This paper continues with the *theoretical framework* chapter that gives insight into the concepts of culture, cultural identity, cultural diversity and ICS. Then it continues with the conceptualisation BC learning mechanisms and ICS, and the explanation of their relationship, how those concepts are connected towards designing an educational intervention (workshop) to enhance students' ICS. Then

the steps with the relevant research methods, and the process of the research are described in the *methodology* section. After knowing how the research was done, the results are shown. This section is followed by the interpretation of the results in the discussion chapter. Lastly, the conclusion of the study and the recommendation can be read.

# 2. Theoretical framework

This following chapter starts with explaining what culture, cultural identity, cultural diversity, cultural boundaries and intercultural sensitivity means in a broader context as a literature review. The sub-chapter of intercultural sensitivity describes the six stages that are defined by Bennett to develop ICS and explains the ICS model by Chen & Starosta (2000). The chapter introduces the pedagogical approaches, Biggs' educational model (1992) and teaching strategies to be considered in the intervention (workshop) design. Finally, the chapter ends with the conceptual model of this thesis.

## 2.1. Culture

Several definitions can be found on culture. They point towards the familiar way of thinking, feeling and behaving due to similarities in background, the way we have been raised and educated.

Geert Hofstede defines culture as: "The collective programming of the mind that distinguishes the members of one group or category of people from others" (Hofstede, 1991 p.5). This definition was chosen because it captures the dynamic process of culture with the word "programming" as culture is continuously constructed/ programmed when students interact with each other.

Hofstede mentions three levels of uniqueness in human mental programming. The first level consists of the human nature itself, which is universal and all humans have it. Human nature is the ability to feel in certain ways as well as the need to interact with each other and to observe the environment. The second level is the culture, which is learned and therefore, it is specific to a group, where people learned from similar social environment. On the top, the personality stands as the third level of the pyramid in human mental programming. One's personality is defined as set of traits which are partially learned and partially inherited. Personality is "learned" in the sense that culture can shape and modify one's personality (Hofstede, 1991).

One's culture can be seen as an "onion" there are visible and invisible parts of culture. First layer which is seen is the peel or outer layer of the onion, which represents the *artefacts* also referred as objective cultures (such as seeing windmills and Dutch people eating bread and milk for lunch). The layer below it contains the underlying *norms and values* (such as Dutch people like to shake hands). Further inside, there are *basic assumptions* (beliefs), which are often hidden and one needs to be aware of those in order to develop intercultural sensitivity. The norms, values and basic assumptions are also called as subjective cultures and those are responsible for the way students interpret the world and their worldviews (Nunez et al., 2017).

## 2.2. Cultural identity & cultural diversity

After knowing what culture means, it is important to know what the terms cultural identity and cultural diversity hold.

Cultural identity is a complex and dynamic phenomenon, therefore it is hard to define. Formation of cultural identity is a continuous process. Students have ethnic identity which is related to nationality as students coming from the same geographic origin share this ethnic identity. However, cultural identity can be broader than ethnic identity. One can be part of several (sub) cultures, with or without overlaps in those cultures (Karjalainen, 2020).

In an international group, there is a wide variety of cultural beliefs, norms, values and behaviours that can be adopted and integrated by the group members into their cultural identity. Group members are able to combine and integrate different cultural identities (Prud'homme van Reine et al, 2017). Noteworthy, by coming to the Netherlands to study, international students adopt many traits of the Dutch culture to fit into the new social environment and broaden their perspectives about beliefs, values and norms. These students often feel detached from their old culture and it is hard for them to reconnect with their friends and families in their home country. They have "changed" (Nunez et al., 2017).

Cultural diversity can be quoted as "distinctions in the lived experiences, and the related perception of and reactions to those experiences that serve to differentiate collective populations from one another" (Marshall, 2002, p. 7). In other words, cultural diversity captures the differences between groups of students who have been through different experiences that contributed to the way they see and form opinions about certain things. One famous example is the example of the black swan. If people see only white swans, their basic assumption is that all swans are white. This basic assumption is valid until they see a black swan. Cultural diversity is smaller between groups of students who share similar life experiences and traditions than between groups of students who come from different parts of the world. This cultural diversity holds several cultural boundaries that need to be crossed by the students to mobilize and communicate across different practices effectively (Lehtonen, 2019).

## 2.3. Cultural boundaries

Cultural boundaries act like an implicit conceptual wall, which separates cultural entities (Lehtonen, 2019). These cultural entities can either absorb other cultural traits or refuse. It is upon the people who stand along both sides of the cultural boundary. If students approach these cultural boundaries with tolerance and with a sympathetic curiosity, when they are interacting with students from different cultural background, the intercultural learning is possible (Lehtonen, 2019). Other researchers mention that instead of tolerance, there is respect needed, as respect goes beyond tolerance. Respecting others' values calls for understanding the culture of others and the willingness to learn from each other (Prud'homme Van Reine & Blom, 2017). As Lehtonen (2019) states: "A peaceful crossing of cultural boundaries requires cultural exchange and a constant effort to genuinely understand other people's points of view."(p.58)

## 2.4. Intercultural sensitivity (ICS)

Most specifically to deal with cultural boundaries, students need to gain ICS. As it is described in the introduction section, ICS is defined as one's ambition to understand, respect and accept differences among cultures (Chen and Starosta, 2000).

### Milton Bennett's ICS Developmental model

Bennett developed a model for ICS in 1986 (Bennett, 2017). The model explains 6 stages in developing ICS. These are namely: the *denial, defence, minimization, acceptance, adaptation* and *integration*.

The first three stages are part of the *ethnocentric approach*, when one sees through his/her own cultural lens and reference other cultures from his/her point of view. The last three stages, the ethno-relative approach, includes broadening one's perspective and seeing one's culture as part of other cultures (Nunez et al., 2017). Students in the *denial* phase are not curious to learn about other cultures. They often say that there are not many differences for example, "we can understand each other if we speak English" and "we are the same, because we also eat in KFC, have watched the same movies and like the popular global songs". In the *defense* stage, the students acknowledges cultural differences mostly with negative stereotyping, they think that their culture is the superior, and they often say sentences such as "they should learn to speak in English better", and "they never take

initiatives".  There is also a *reverse defense*, when students look at other cultures as the superior one, and they wish to have a culture like that and leaving their own cultures. In the *minimization*, students find commonalities, but they think norms and values are universal and they want to change other students to their culture, because they think that should be the norm and they can be just like them. Students in that stage often say "should we teach them how to eat with cutleries?" and "we have same motivations after all".  From the next stage (*acceptance*) , students are able to respect the differences in values and behaviour and recognise the value of the cultural differences and they want to learn more about it. Moving forward to the next stage, which is called *adaptation*, students are curious to know how to approach students from different cultural background. Thus, they are careful how they communicate with each other. In this stage, it is important to gain cultural empathy .The last stage is the *integration*, where students combine and integrate various cultural identities. Their behaviour and attitude norms and values might change and therefore, they may feel that they do not belong anywhere anymore (Benett, 2017).

To summarize, students need to be aware of their own culture, the norms and values to move from the Denial stage to Minimization/ Acceptance. Furthermore, to fully develop ICS, students need to uncover their basic assumptions and understand how those basic assumptions form their own perspectives and drives their behaviour. This process is visualized by Figure 3.
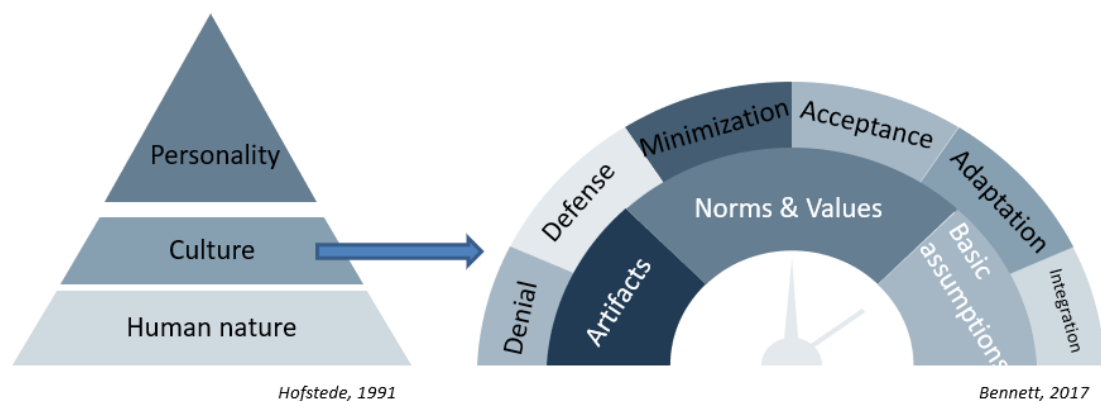


*Figure 3 on the left side Hofstede pyramid of mental programming and right side Bennett's developmental model. Culture is further decomposed to artifacts Norms & Values and Basic assumptions. To develop intercultural sensitivity, we need to know our norms & values*

Chen and Starosta argue that Bennett and Hammer by introducing the Intercultural Development Inventory (IDI) to measure ICS, confused the terms of ICS and IC (Chen & Starosta, 2000). They pointed out that the confusion comes from the difference in perceptions on the three following concepts: intercultural sensitivity, intercultural awareness and intercultural (communication) competence. Bennett and Hammer, (2003) see the developmental model of intercultural sensitivity (DMIS) as a "model of changes in worldview structure, where the observable behaviour and self-reported attitudes at each stage are indicative of the state of the underlying worldview" (p.423). They include all three affective, cognitive and behavioural ability of students in the process of ICS, while Chen and Starosta, (2000) do not include the cognitive and behaviour one. Chen and Starosta, (2000) claim that the cognitive aspect of IC is constituted as intercultural awareness, the behavioural aspect is in the concept of  intercultural adroitness that refers to "the ability to get the job done and attain communication goals in intercultural interactions"(Chen & Starosta, 1996, p. 367) and the affective aspect is represented in the concept of ICS. Thus, it seems that Chen and Starosta further decomposed the concept of ICS and made clearer distinction between ICS and IC than Bennett and Hammer in the development of IDI, because the DMIS includes transformation in students behaviour.

### Chen & Starosta model of ICS

As explained above, according to Chen and Starosta, (1996), there are three dimensions of intercultural competence. These are intercultural sensitivity, intercultural awareness and intercultural adroitness. In their paper of (2000), they describe six affective elements that students need to have to be interculturally sensitive. These are: open-mindedness, self-esteem, self-monitoring, empathy, interaction involvement, and suspending judgment. To assess the ICS as the affective dimension of IC, they came up with the intercultural sensitivity scale (ISS) to measure ICS in an US context. This scale is the first and only scale to assess the emotional dimensions of intercultural competence meaning to assess students' feelings and their "ability to develop emotion towards understanding and appreciating cultural differences that promotes appropriate and effective behaviour in intercultural communication" (Chen & Starosta, 1997, p. 5; Fritz et al., 2002). The scale of ICS by Chen and Starosta includes five factors. These are the following:

- **Interaction engagement**

  A degree of participation and students' feelings in intercultural interaction. It measures the students' willingness to interact with students from different cultural backgrounds and students' open-mindedness towards students from different cultural backgrounds.

- **Respect for cultural differences**

  Students' orientation to recognize, accept and respect the cultural diversity of others.

- **Interaction confidence**

  How confident students felt in the intercultural contexts.

- **Interaction enjoyment**

  Level of students' feeling of enjoyment and the positive and negative reactions towards intercultural communication.

- **Interaction attentiveness**

  As the ability to properly understand and interpret messages and to properly respond to them.

In this paper, the ICS model of Chen and Starosta, (2000) was used because it measures students' emotions towards understanding and respecting the cultural differences. As the intervention aimed at raising awareness of cultural boundaries and respecting cultural boundaries, the ISS was an appropriate choice to measure students' ICS.

## 2.5. Towards ICS by using the BC theory

As it is learned from the previous subchapters, ICS requires to understand our culture, norms & values and basic assumption (beliefs) and to recognize the differences in other cultures, but also to respect and understand those differences. To be intercultural sensitive, we need to move from the Denial stage to Integration. Chen, (2010) validated the hypothesis on higher ICS on ISS means also moving from the ethnocentric to ethnorelative stage.

BC identification may support students to move from the first three stages, thus from the ethnocentric approach to an ethno-relative approach to culture, where students do not place their culture as the superior one. Since LA triggering identification LM may help students discovering their own norms and values and being aware of their basic assumptions. Furthermore, LAs stimulating BC identification and

reflection may trigger students to value and learn from the different cultural perspectives, broaden own perspectives. In the acceptance stage, BC identification LM can play an important role. In the adaption stage, it is important to gain cultural empathy. This cultural empathy may be enhanced by triggering the reflection LM.

This thesis considers to use three BC learning LMs, the identification, coordination and reflection. The fourth LM, the transformation, is excluded from this study, because it was not realistic that students will change their behaviour or co-create new innovative practices within a single workshop. Thus no behaviour change of students is assumed to be happen within a single workshop.

The potential of LM identification is used in this thesis to help students identify their own norms, values and basic assumptions. However, basic assumptions are mostly hidden, meaning that we are often unconscious of our beliefs (Nunez et al., 2017). We need to experience our reality from another perspective or to be confronted with views or experiences that falsify our beliefs such as the black swan example in the section 2.2. This where reflection LM, perspective making and taking might help, because we need to think from another perspective.

The following table (Table 2) shows the LMs, the aims of them in this thesis context and the questions to stimulate those LMs.

*Table 2 Boundary crossing learning mechanisms in cultural practice adapted from (Gulikers & Oonk, 2019) and (Fortuin, 2020)*

| Learning Mechanism (LM) | Aim of the LM in cultural context | Questions to stimulate the LM |
| --- | --- | --- |
| **Identification** | *Being aware of the basic assumption, values and norms of different cultural perspectives* | *What are my basic assumptions, values and norms? What are the underlying values, norms and basic assumptions of others?*<br><br>*How do these shape our different perspectives and identities?* |
| **Coordination** | *Effective collaboration in an international group* | *How can we communicate and collaborate effectively?*<br><br>*What kind of boundary objects can I use to facilitate mutual communication?*<br><br>*What can I expect from others and what can they expect from me?* |
| **Reflection** | *Defining & Exchanging perspectives. Imagining to see the world with the eyes of the other.* | *What can I learn from others' perspectives?*<br><br>*How to make sure that we understand each other?* |

This study focuses on three specific learning outcomes. The first two learning outcome. " being aware of cultural boundaries" and "respect for cultural boundaries" are part of students' ICS development. The third learning outcome "seeking for boundary objects when collaborating in an international group" is connected to use the cultural boundaries as learning opportunities. Students need to be aware of the cultural boundaries in order to find effective boundary objects to communicate. The next Table 3 shows how the LMs are stimulated in form of LAs to test if those are effective to reach the learning outcomes.

*Table 3 How BC LMs are stimulated in specific LAs to get to desired learning outcomes*

| Learning activity on BC | Learning outcome | How LM is stimulated in this thesis |
|---|---|---|
| **Identification & Reflection** | Being aware of cultural boundaries | Students are asked to share what kind of cultural differences they perceive and why they perceive it as a difference. Viewpoints are explicitly shared Students are asked to be part of a debate where they have to take the contradictory role. Students are explicitly asked to take the contradictory role in the debate where moral norms and values are debated, so they need to broaden their perspectives and find arguments against their original view. |
| **Identification, Reflection & coordination** | Respect for Cultural boundaries | Respect is valuing other cultures (Deardorff, 2020). Learning to see from different perspectives. Students need to step into other's shoes and experience reality from a different point of view then they used to. In an escape room activity, students get a chance to value and appreciate the cultural knowledge and perspectives of their group mates. |
| **Coordination** | Seeking for boundary objects when collaborating in an international group | During the escape room activity, the students cannot talk verbally to experience the importance of non-verbal communication as well as the cultural biases behind non-verbal communication. The students need to find ways, symbols to effectively communicate with each other. |

## 2.6. Pedagogical approach & teaching strategy

For my thesis, I used Biggs' Education model (1992) to visualize the system of teaching and learning. Biggs' 3P model suggests that teaching and learning system is a complex phenomenon where all components including students, teaching context, learning activities and learning outcomes interact with each other. Within his model, he differentiates between *Presage, Process* and *Product.*

The Presage is where the students and the teaching context are situated (Biggs, 1992). Those together determine the process of learning. Students' personal characteristics, abilities, and prior knowledge affect the teaching context. The teaching context includes the learning environment, the content to be taught, the assessment methods, the characteristics of the teacher, and the curriculum. This teaching context influences the students. The following questions could be asked when focusing on appropriate teaching contexts:  Will the student feel comfortable in the classroom? Will the student share his or her point of view during the learning activities? How can the teacher or facilitator ensure that the students will feel comfortable? How can the teacher or facilitator ensure that the students are actively engaged? Thus both the teaching context and students' characteristics are important to consider to choose the appropriate learning activities.

Students who have insufficient prior knowledge of a topic, are less likely to be engaged in deep learning. Deep learning means that the students focus on the understanding of a phenomenon rather than aiming to reproduce knowledge for a test which is called a surface approach to learning (Beattie et al., 1997). The Process stage contains the learning activities. Setting clear goals and triggering students' curiosity is important for deep learning (Biggs, 1992). The appropriate learning activities together in turn lead to the Product, the "learning outcomes". To outline, desired learning outcomes can be reached only by looking at the components of teaching and learning as a system that influence each other.

Filho et al. (2018) emphasizes the importance of student-centred learning, when the learning outcome is not a simple knowledge that can be transmitted. When the learning outcome requires critical thinking and reflection, student-centred teaching strategies seem to be appropriate. This teaching strategy can enable deep learning that makes possible to achieve higher level cognitive learning outcomes (Biggs & Tang, 2011).

In this paper,  ES students' cultural diversity is used as source of learning. This diversity of perspectives, diverse life experiences and culture specific knowledges, are put into the centre of the learning process.

The teaching context is a workshop that is given in a non- formal educational setting. Non-formal education means that the workshop is given at the institution, but not as part of its curriculum (*Non-formal Education*, 2023). Furthermore the teaching context includes the creation of safe space that enables students to feel comfortable to share their stories and views with the rest of the group including the teacher/facilitator. The conceptualization of LAs are explained in Table 3 in the previous section.

The thesis boundary includes only the cultural boundaries that emerge when students coming from different countries collaborate/meet, and excludes other boundaries such as disciplinary, science-society, age, gender etc.
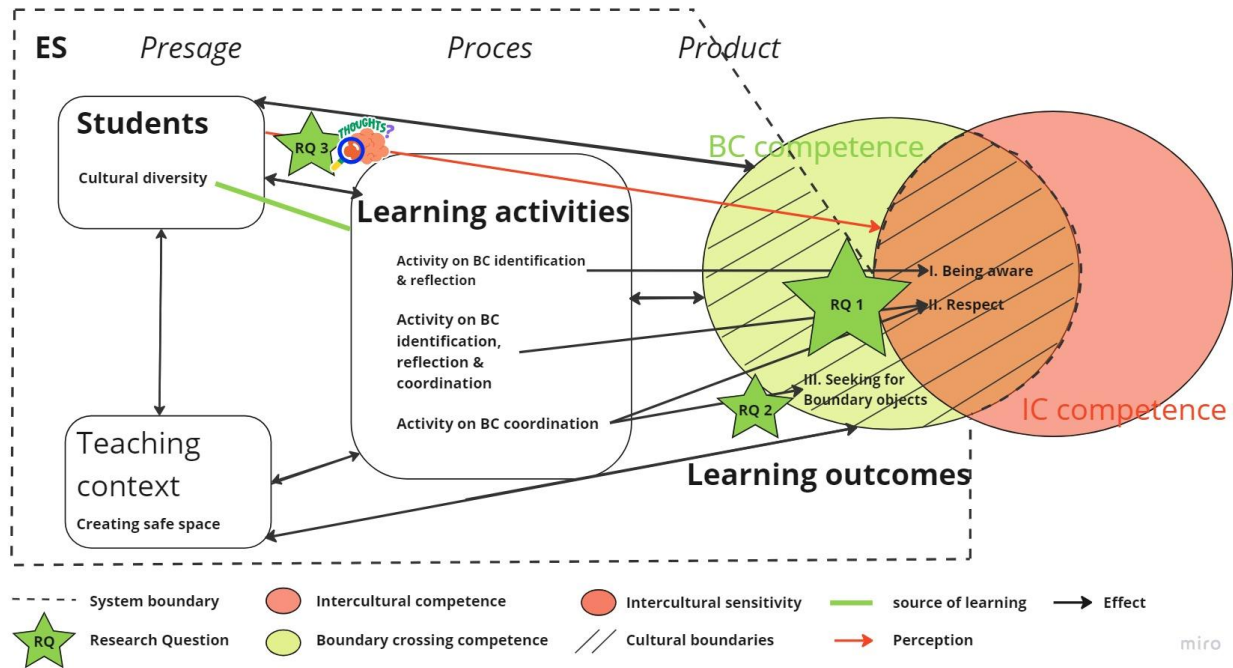
*Figure 4 Conceptual Framework*

The research questions that are addressed in this thesis are:

- Is the intervention based on BC LM *identification, coordination* and *reflection* in form of a single workshop effective to enhance ES students' intercultural sensitivity at WUR?
- Does explicit LA on BC LM coordination makes ES students search for boundary objects when they are collaborating?
- How are those learning activities perceived by the ES students?

# 3. Methodology

The following chapter describes the research design, the intervention and the research methods that were used to give answer to the above mentioned research questions. The first sub-chapter shows the steps that were taken in this research, then it is followed by the sub-chapter describing the intervention itself. The chapter ends with explaining the research methods.

## 3.1. Research design

The research was conducted in 5 steps. First I selected and modified BC LA and later those LAs were tested on ES student volunteers from the WUR in a form of a workshop. The workshop took place as an extracurricular activity on 9th February at the Wageningen Campus in Wageningen, the Netherlands. The steps that were taken in this research are shown in Table 4 and each step is explained below in detail.

*Table 4 Research steps*

| Steps | Activity | Methods |
|---|---|---|
| **Step 1** | Selecting and modifying BC Learning Activities (LA) | Literature review |
| **Step 2** | Reviewing the LA by experts (intercultural communication & BC) | Unstructured interview |
| **Step 3** | Improving the LA | - |
| **Step 4** | Executing the intervention with the LA | - |
| **Step 5** | Evaluation of the intervention | Pre and post-test – quantitative, review existing survey questions Observation- qualitative Focus groups- qualitative |

## 3.2. Intervention

### STEP 1- Learning activities

The research started with selecting and modifying learning activities based on a literature review. This review was used to find important frameworks to design the workshop and an escape room activity for intercultural learning and to find boundary-crossing learning activities. For this literature research, articles about "intercultural learning", "intercultural education" and "boundary crossing learning activities" in the context of higher education were used as starting points. Then, looking at the frameworks and listed important considerations for the design, further research articles were reviewed on the mentioned concepts from the previous research such as "comfortable learning environment" and "active engagement of students". I derived the LAs from literature resources and modified existing LA to fit better to ES students. The following table (Table 5) summarizes the considered literature sources in the LA design:

*Table 5 Literature source and inspiration for LA or attributes of LA*

| Source | LA or attributes for LA |
|---|---|
| **Gulikers, (2020)** | Debating different perspectives |
| **Fortuin et al., (2020)** | Debating different perspectives |
| **Gillert et al (2000)** | Workshop framework for intercultural learning |
| **Ferri, (2018)** | Engagement of students |
| **Bonwell & Eison, 1991** | Active engagement importance |
| **Bybee et al., (2006)** | Student centred approach |
| **Cable and Laurutis (2022)** | Escape room activity for intercultural learning |
| **Deardoff, (2020)** | Story circles for intercultural learning |

The first two sources from the Table 5 give examples for BC learning activities. The intention of the articles was to show educators practical examples how they can trigger BC learning. This list of learning activities give inspirations to educators to think on learning activities. The *debating different perspectives* was chosen and modified to address cultural differences and perspective making and taking in the intervention of this thesis. The reason was that, debates are active learning tools, meaning that it is engaging students in an active way and debates foster critical thinking (Kennedy, 2007). Moreover, scientific articles reported that students tend to enjoy debates which is helpful to engage them in a learning activity (McGraw-Hill, 2009). In addition, debate often takes place in an participatory learning method where learning outcomes are higher than in a lecture-based learning method (Mintz & Tal, 2013; Žalėnienė & Pereira, 2021).

The T-kit from Gillert et al., (2000), contains *a framework to design workshops* for intercultural learning with specific learning activities as examples. This framework lists important considerations that were used to design the learning activities for this thesis research. The authors started the list by creating an environment where students feel comfortable sharing their perspectives and feelings. Students need to feel empowered and self-confident when they need to listen to each other as equals. After creating this environment, which is called a safe/brave space, the next importance is called "Experiencing Identity". The authors of the T-kit explain that first, we have to understand ourselves, our identity, and our culture as a departure point for intercultural learning. Therefore, we need to look back at where we came from and what we experienced. The third important consideration is called "Constructed realities", which means there are many ways to interpret realities, and one needs to experience that he/she can experience his/her reality differently. The aforementioned consideration calls for respecting others, accepting different views, seeking to put different worldviews next to each other, and knowing our responsibilities while the differences stay constructive. Then, the "Dialogue with one other', which means putting ourselves into others' shoes was an important consideration that matches with the *Reflection* BC learning mechanism.

Deardoff, (2020) together with the UNESCO used the method *Story circles for intercultural learning* in five countries namely: in Thailand, Tunisia, Zimbabwe, Austria and Costa Rica. It was found that the participants gained strong tolerance, empathy, critical thinking and listening for understanding. Furthermore, this method was designed to help participants to familiarizes himself of herself with intercultural competencies. The method helps the participants to connect deeply and meaningfully

across all kind of differences and to find common humanity by simply being themselves and sharing their own stories and life experiences.

## STEP 2- Expert review

As the second step, the modified learning activities were reviewed by experts. These experts are coming from my personal contacts. The intercultural communication expert was **Derya Karagöz** from Avans University of Applied Sciences (Breda). She is a former teacher of the Environmental Sciences for Sustainability, Ecosystems, and Technology (ESSET) program, and she teaches the training called *Intercultural communication* for the ESSET students since 2014. Therefore, she has experience in training students coming from diverse cultural backgrounds to become intercultural sensitive. I interviewed Derya Karagoz at Avans personally. The objective of the interview was to get her personal opinion on the designed learning activities and to see if the learning activities are sufficient to train students to gain intercultural sensitivity in the sense of getting a deeper understanding of cross-cultural boundaries and respecting these cultural differences. The interview was kept unstructured and open to capture the free opinion and personal experiences of the interviewee. As she teaches students from similar interests to what BES and MES students have at WUR, her experiences were key to my knowledge, of how to involve the students, how to facilitate such learning activities, what would students like, and why.

**Derya Karagöz** emphasized the importance of creating safe space and the good facilitation. She mentioned, that if the facilitator is not interested in these learning activities, the activities are done quickly, but if a facilitator is interested, he/ she can facilitate those learning activities for longer time, as he/she grasps the feeling and group dynamics and can ask reflective questions to the students.

*"if I would be standing in front of class while I'm doing intercultural communication, I'm like, yeah, guys, do whatever talk. I have no examples. You know, you should bring it alive. You should be part of the process. You need to, you know, pull them in. And the only way you can do that is by being motivated, being enthusiastic, uh, coming with examples, sharing experiences that you've had. Because once the students see what you are referring to, and they start recognizing, they can connect to your story as well."*

*'And if you have an unmotivated teacher who's, who sees it as a waste of time, then you are jeopardizing the whole system, I think. So there should be some sort of natural interest in the topic."*

The second expert reviewer was **Dr. Carla Oonk** from the ELS group at WUR. She is an expert in Boundary Crossing Learning Theory. As a consequence of health issues, she was not interviewed personally. Her opinion on the learning activities was asked via email in a form of feedback. The objective of the review was to see if the learning activities are explicitly designed on the boundary crossing learning mechanisms, if there was further explanation needed or any other personal suggestions. Her review and feedback made me transform the learning outcomes to a more specific one.

## STEP 3- Finalizing LAs
Based on the expert reviews the learning activities were adjusted and improved. One of the major adjustment was made on the Debate activity. The students were put into roles that was against their original view. This idea was suggested by **Derya Karagöz.** In theory, putting students to other roles trigger BC reflection (perspective making and taking). The detailed explanation on the LAs can be found below, under "Procedure".

The final design of the workshop can be seen Table 6.

*Table 6 Workshop design*

| Activity | Purpose | Time (m) | Desired time (m) |
| --- | --- | --- | --- |
| **Introduction** | Getting to know each other, set the stage | 10 | 15 |
| **Mirroring** | Warming up, getting comfortable | 10 | 15 |
| **Powerful Perspectives** | Identification of our own values and values of others, identification of different cultural perspectives | 15 | 30-45 |
| **Debate** | Identification of own norms and values Perspective making and taking | 15 | 30 |
| **Escape your cultural biases** | Respecting different cultural perspectives, seeking for boundary objects during collaboration in an international group | 40 | 40 |

In the table, the desired time means the time that is at least required to do the activity properly with 5-8 people. For the mirroring activity, about 1 minute per round was counted per student. The first round the couples decide who starts with being mirror and who is the instructor and the mirror begins to copy the movements of the instructor for 1 minute long. Then they switch roles and do the same exercise for 1 minute long. Then they switch partners. It goes until everyone have been a mirror and the instructor with everyone.  For the Powerful Perspectives activity, at least 5 minutes per student was counted to share their own view on a topic, in this case cultural differences and climate change. The Debate activity starts with 5 minutes instruction and deciding upon their original view to which group they want to belong. Then the activity got twisted with putting the students into the contradictory role (against their view) and let them for 5 minutes to imagine themselves in that role. At least 20 minutes is needed to give everyone (all 7-8 students) the chance to talk, so each person has about 2.5 minutes to talk.

 As it can be seen, the actual time of some learning activity was less than the desired time. The reason is that the participants had limited time available, so they could only "taste" some of the activities.

## STEP 4- Workshop

The ES students were invited to participate in the intervention that was given as an extracurricular activity called workshop cultural perspectives first on 12th January and the second attempt on 9th February at WUR. To inform the students about the event, a poster was made that was sent by email to all ES students and I approached some of the students personally after their class. I had a list of all first year Bachelor ES students (80 students) and I got their schedule. I got permission from their teacher and I approached the students before their Tutorial to ask them if they would like to join to the workshop. The date and time was planned when the students had no lectures nor tutorials and I was open to other suggestions to find suitable day and time. I tried to create a snow-ball effect to gather as many students as possible. The poster can be found in the appendix Communication initiative. Furthermore, Aktief Slip and Marisa Beunk were also asked to promote the workshop and help to collect students.

### Participants

Despite the high efforts to gather students, a total of 8 students participated in the workshop. Three students came for the first workshop attempt from them 1 participated online. Then a total of 7 student participated in the second attempt from which 1 student joined to both attempts. There were students from 1st year and 3rd year BES and 2nd year Master Environmental Sciences (MES) students. The nationality of the participants was diverse, next to 3 Dutch students, Peruvian, Indian, Sri Lankan and Saudi students were present. The map below Figure 5 shows the country of origin of the participants. The age of the participants ranged between 19-34 years old.



*Figure 5 Country of origin workshop participants*

### Procedure

The workshop took 1,5 hours in total which was followed by the focus group discussion. It started with a short introduction and the fulfilment of the pre-test questionnaire. Then the students were asked to sit down in a circle to introduce themselves to each other. Right after, the students were asked to stand up and face each other in pairs for the mirroring as a warm up, confidence raising exercise. The

pairs needed to copy each other's movements. I facilitated the mirroring and I also participated in this activity to see if I can make them be comfortable with copying various movements.

The first LA was a story telling activity called "Powerful perspectives". I shared real stories about the essence of broadening our perspectives and learning the essence by showing what can go wrong and why diverse perspectives are valuable. Then I asked the students to tell their own stories about differences in climate change impacts and if they use any sustainable solutions to combat climate change. My hypothesis was that students will open up and talk about a topic that is important to them and at the same time they sense the differences among them in the perception of impacts and sustainable solutions (what counts as impact or sustainable).

The second LA was a debate on moral rights. The students were asked if they are pro-dolphin eaters or against eating dolphins. After they decided if they are in favour or against eating dolphins, I twisted the debate and put them into contradictory roles. The students had to think and put themselves into someone else's shoe to argue next or against dolphin eating without knowing any further context. The debate question was : "Is it morally right to eat a dolphin?"

The last LA was an escape room activity. The students had to participate in an underwater expedition. The expedition team got trapped in a cabin during the expedition of an underwater luxury ship like Titanic. They are underwater, so they cannot communicate verbally. Their oxygen tank lasted for 30 minutes. However, one discovered, that they could only escape through another door that got a padlock on it. To open the padlock, the team needed to know the right 4 digital codes. The cabin contained several clues from different cultural backgrounds, these clues lead to the final 4 digital codes. In the design of the escape room activity, I used jigsaw puzzle, word search puzzle, cross words, object with cultural bias such as Romanian numbered clock, Chinese health clock, Vietnamese candy bar, Vietnamese portrait and a poster with colours and Arabic text.

Because of the tight schedule, (students did not have more time available than this 2 hours) the reflection was not done separately after all learning activities. Instead, the focus group discussion played a crucial role in the reflection process. In this reflection process, the aim was to look back at the experiences and debrief.

## 3.3. Research methods

### STEP 5- Evaluation

To evaluate the workshop, a quasi-experimental design was used that included explanatory mixed (quantitative and qualitative) research methods. According to Deardorff (2006), the most appropriate research method to assess ICS is to use a mix of both quantitative and qualitative methods. Creswell, (2005) also argues that qualitative data supports the explanation or elaboration of the quantitative results.

*Quantitative research method*

First, to answer the first research question on the effectiveness of the intervention on enhancing students' intercultural sensitivity, pre- and post-tests were conducted. This was done by using a well-constructed survey shown in appendix Survey as a research instrument. The existing quantitative survey from Chen and Starosta was used to measure intercultural sensitivity and cultural awareness since this instrument was freely available and used in several research articles in the context of higher education such as Weda et al. (2022), Tamam (2010) and tested by Fritz et al. (2002). Chen and Starosta developed the ISS instrument. It contains 5 factors/ scales with 24 items, for measuring intercultural sensitivity. The 5 factors are *Interaction Engagement, Interaction Enjoyment, Interaction Confidence, Respect for Cultural differences* and *Interaction Attentiveness.*

The Intercultural Development Inventory (IDI) from Bennett could have given more detailed information on which stage of developing ICS the students (explained in chapter 2) are than the survey from Chen and Starosta, but it was not freely available (Hammer et al., 2003).

The pre-test survey was filled in by the students in the beginning of the workshop. Furthermore, to make sure that the voluntarily joined students do not have already higher intercultural sensitivity than the rest of the ES students, former students who did not participate in the workshop were also asked to fill in the survey. A total of 7 students filled in the survey and the data was used as control group. The students of control group have diverse nationalities, Dutch, Greek, Spanish, Colombian, Iranian, Sri Lankan and African ( their country of origin is visualized Figure 6) and coming from the 1st year BES, 1st year and 2nd year MES program.

## Country of origin of control group



*Figure 6 Country of origin control group*

I assigned each student a number from 1-15 (from 1 to 8, the experimental group and the rest the control group) to keep their identity anonymous. I coded my data with those numbers and I did not use the names of the students anymore.

The students needed to choose if they agree with the statement or disagree on a five point Likert scale. The survey can be found in the appendix Survey.

### Data analysis

This quantitative research method allowed to draw conclusion whether the intervention had an effect on students' intercultural sensitivity. For the data analysis both Microsoft Excel and Statistical Package for Social Sciences (SPSS) was used. I used both programmes to check my data and avoid mistakes in data typing.

First, the Cronbach's alpha was calculated to measure the internal consistency of the questionnaire. The pre-test questionnaire was used to test its reliability. The Cronbach's alpha was 0.81, a score equal or above 0.7 is acceptable, meaning that the questionnaire indeed had a high internal consistency.

Then a Wilcoxon signed rank non- parametric test was performed on the pre- and post- test of the experimental group to see if the post-test was significantly different, meaning that the workshop had a significant effect on students' intercultural sensitivity. The value of significance needed to be lower than 0.05 to be identified as statistically significant. Furthermore, the pre- and post- test of the experimental group was analysed with using descriptives to compare the mean values to see the differences in detail. Then the pre-test of experimental and control group was analysed by using the independent sample t-test (parametric) to see if the two population had significantly different background regarding their intercultural sensitivity.

*Qualitative research method*

However, this was not yet the desired result of this thesis. The thesis aims to recommend LAs that are suitable for the ES students to enhance their ICS. To answer of the "how'' research questions about the intervention, a more qualitative research method was desired. From the qualitative research methods, *observation* and *focus group* were used. The escape room activity was closely observed by using *overt observation.* Diana Castillo and I were the observers of the escape room activity.  It means that the students saw the observer, however, they might not been consciously aware that their actions were observed for research purposes. Observation notes were added on paper after the learning activity. The overt observation gave answer for the second research question, if the students made use of boundary objects to effectively communicate with each other.

The *focus group* research method was used to get insight into what students think about the learning activities and to give room to students to emphasize how they felt about the learning activities, how they perceived them, and how they thought they could make use of them. This insight gave answers to the third research question and partially on RQ1 and RQ2. Focus group discussion gives the opportunity to listen each other's' views and students might would like to change their view or give a voice to something that they would not think about themselves during an individual interview (Bryman, 2016). Furthermore, this thesis research aims to recommend learning activities, which are preferred by the students, therefore, coming up with ideas and brainstorming together for the collective good was an important part of the discussions.

I prepared few questions for the focus group discussions that helped students reflecting on the workshop itself and to start off discussions on what did they take away from the workshop. The questions can be found in the appendix Focus group questions. As I facilitated the focus group discussions, it was important that a second and even a third person attended as an observer. Marisa Beunk was one of the observers who is a master student. The second observer was Diana Castillo, an ESA MSc student. Both observers have experiences with conducting focus group discussions.  They had important role, because they also observed the group dynamics and noted down their perceptions of the discussions next to the voice record making the data more reliable.

Shortly after the workshop, the debriefing process came as suggested from Krueger, (2015). I wrote down my main thoughts about the focus group discussions. Then I collected the notes from the observers and discussed what they observed.

The next day, the transcription of the recording was done by using Microsoft Word. This transcript was carefully read to detect any mistakes in the transcribing process. I listened to the recording multiple times to correct any mistakes from the transcript done by Word.

Data analysis

The analysis started with putting the transcript into Microsoft Word. Then I read the transcript carefully and started to colour excerpts that I felt belonged together as a pattern. After this process, I

put the excerpts into Microsoft Excel. Each colour had a separate page in the Excel. I placed the excerpts with same colour into the appropriate Excel page. Then I read the excerpts of each page and the coding was done by searching for themes to narrow down the data inductively and deductively (Kreuger, 2015). This theme formulation followed the common thematic analysis. The tone of the language, the positive or negative meaning was observed as well. Paying special attention to agreements between the students (Bryman, 2016). The tone, body languages and other observations were included in the observation notes of focus group discussion. After finding the main conclusions from the focus group discussions, the statements and conclusions were fed back to some of the students and asked if they agree on how their statement was interpreted.

# 4. Results

In the following chapter the results from the intervention (workshop) evaluation are shown. It starts with the quantitative data that is gathered from pre- and post-test and control and experimental group survey results. This quantitative data answers for the first research question. Then the results from the qualitative data is shown, starting with the main themes that were identified in the thematic analysis.

## 4.1. Quantitative data

The following Table 7 below shows the results from the parametric independent sample t- test on the control and experimental group.

*Table 7 Independent sample test results Experimental and Control Group*

|  | Group | N | Mean | Std. D | Std. Error Mean | Two tailed P value |
|---|---|---|---|---|---|---|
| **Int_Engagement** | Exp. | 8 | 4.02 | 0.54 | 0.19 | 0.939 |
|  | Control | 7 | 4.04 | 0.60 | 0.23 |  |
| **Int_Enjoyment** | Exp. | 8 | 3.46 | 0.94 | 0.33 | 0.023 |
|  | Control | 7 | 4.48 | 0.47 | 0.18 |  |
| **Int_Confidence** | Exp. | 8 | 3.73 | 0.81 | 0.29 | 0.928 |
|  | Control | 7 | 3.69 | 0.83 | 0.31 |  |
| **Respect** | Exp. | 8 | 4.56 | 0.23 | 0.08 | 0.350 |
|  | Control | 7 | 4.38 | 0.47 | 0.18 |  |
| **Int_Attentiveness** | Exp. | 8 | 3.42 | 0.77 | 0.27 | 0.670 |
|  | Control | 7 | 3.57 | 0.57 | 0.21 |  |
| **Tot_ICS** | Exp. | 8 | 3.95 | 0.43 | 0.15 | 0.645 |
|  | Control | 7 | 4.05 | 0.38 | 0.14 |  |

The results from the independent samples test showed no statistically significant difference between the experimental and the control group. The difference in the mean of *total ICS* is 0.1 between the experimental and control groups. The *total ICS* between the experimental and control group did not show a statistically significant difference as it had a p-value of 0.645 (p=0.645). Although, the category called *Interaction Enjoyment* showed a statistically significant difference of 0.023 (p=0.023) between the two groups. The control group scored a significantly higher result in that category than the experimental group. It rejects the hypothesis that both groups are the same.

The experimental group scored the lowest in *Interaction Attentiveness* (M=3.42) and the highest in *Respect for cultural differences* (M=4.56). The control group scored the lowest in the same category, the *Interaction Attentiveness* (M=3.57) as the experimental group and the highest in *Interaction Enjoyment* (M=4.48).

Because of the small sample size, another non-parametric test called Mann-Whitney U test was also performed on the control and experimental group. The results are shown in the appendix Mann-Whitney U Test. This test showed that there were no significant difference between the groups.

To compare the mean values of the quantitative data, an agreement level that was used by Z Altan (2018) was added to the Likert scale. It is shown below in Table 8.

*Table 8 Agreement level of Likert Scale (Z Altan, 2018)*

| Rating | Mean | Agreement Level |
|---|---|---|
| **5** | 4.51-5.00 | Very high |
| **4** | 3.51-4.50 | High |
| **3** | .51-3.50 | Moderate |
| **2** | 1.51-2.50 | Low |
| **1** | 1.00-1.50 | Very low |

The mean scores of the experimental group in both the pre-and post-test are shown per questionnaire scale below in Table 9. The Mean of overall ICS was 3.95 (M=3.95, N=8) for the pre-test and 4.16 (M=4.16, N=8) for the post-test. It means that the differences in mean values in students *total ICS* was 0.21.

*Table 9 Pre- and post- test descriptives to see the differences in mean values between the pre- and the post-test*

| Category | | N | Mean | Std. D | Min. | Max. | Agreement |
|---|---|---|---|---|---|---|---|
| **Int_Engagement** | Pre-test | 8 | 4.02 | 0.54 | 3.14 | 4.57 | High |
| | Post-test | 8 | 4.21 | 0.49 | 3.29 | 5.00 | High |
| | Total | 16 | 4.12 | 0.51 | 3.14 | 5.00 | High |
| **Int_Enjoyment** | Pre-test | 8 | 3.46 | 0.94 | 2.33 | 4.67 | Moderate |
| | Post-test | 8 | 4.08 | 0.81 | 3.00 | 5.00 | High |
| | Total | 16 | 3.77 | 0.91 | 2.33 | 5.00 | High |
| **Int_Confidence** | Pre-test | 8 | 3.73 | 0.81 | 2.60 | 4.80 | High |
| | post-test | 8 | 3.80 | 0.79 | 2.80 | 5.00 | High |
| | Total | 16 | 3.76 | 0.77 | 2.60 | 5.00 | High |
| **Respect** | Pre-test | 8 | 4.56 | 0.23 | 4.17 | 5.00 | Very High |
| | Post-test | 8 | 4.67 | 0.28 | 4.33 | 5.00 | Very High |
| | Total | 16 | 4.61 | 0.26 | 4.17 | 5.00 | Very High |
| **Int_Attentiveness** | Pre-test | 8 | 3.42 | 0.77 | 2.00 | 4.67 | Moderate |
| | Post-test | 8 | 3.71 | 0.38 | 3.33 | 4.33 | High |
| | Total | 16 | 3.56 | 0.61 | 2.00 | 4.67 | High |
| **Tot_ICS** | Pre-test | 8 | 3.95 | 0.43 | 3.29 | 4.46 | High |
| | Post-test | 8 | 4.16 | 0.45 | 3.46 | 4.79 | High |
| | Total | 16 | 4.05 | 0.44 | 3.29 | 4.79 | High |

The following figure 7 shows the differences in mean values between the pre- and the post-test. Slight increase in mean values can be seen in all categories. The highest increase was in the *Interaction Enjoyment* category with a difference in mean with 0.62. The agreement level of this category went from the Moderate level to High level.
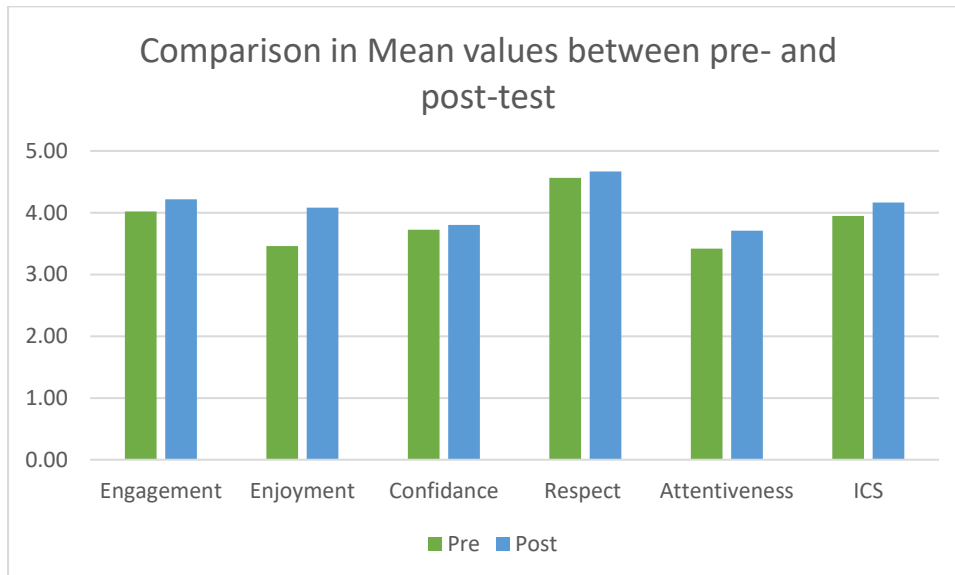


*Figure 7 Comparison in mean values between pre- and post-test*

The Wilcoxon signed ranks test from the pre- and post-test showed that the difference in the *Interaction Enjoyment* and in the total *ICS* was statistically significant with 0.042 (p=0.042) and 0.025 (p=0.025) respectively. This can be seen in Table 10.

*Table 10 Wilcoxon Signed Ranks Test of pre-test and post-test*

| Test Statistics | Engagement | Enjoyment | Confidence | Respect | Attentiveness | ICS |
|---|---|---|---|---|---|---|
| **Z** | -1.802 | -2.032 | -.513 | -1.222 | -1.667 | -2.243 |
| **Sig.(2-tailed)** | 0.072 | 0.042 | 0.608 | 0.222 | 0.096 | 0.025 |

## 4.2. Qualitative data-overt observation

During the escape room activity called "Escape you cultural biases", the students could not use verbal communication. This triggered students to make use of their body languages and find creative boundary objects to effectively communicate with each other.

The students entered the room and looked around. Some of the students were busy to get the jigsaw puzzle completed and other students looked for other clues. The students communicated with each other by facial expressions, nodding, and shaking their heads. The students were patient to each other and showed respect. They did not judge each other not knowing how to read a Romanian clock for example. Instead, they seemed to teach each other without using verbal communication.

Not all of the students worked on the word search puzzle at a time. There was not enough place to look at the word search puzzle for all 7 students. From the 7 students, 5 students stayed to work on the world search and 2 others were looking for the next clues.

On the paper of crossword puzzle, a student draw a paprika, when they had to find out what is the right word to fill in for "a famous Hungarian spice". This was surprising, because the student did not fill in the word by himself, but used the "symbol of paprika" to ask the rest of the group if they agree. After this moment, they continued to draw symbols to find the missing words. The students managed in the very last minute to escape the room, thus in 30 minutes.

## 4.3. Qualitative data-focus group discussion

The following sub-chapter shows how students percieved the workshop in general and with regards to the BC LMs and ICS. The chapter shares students' opinion about the activities and their suggestions to improve them to enhance their ICS. Furthermore, this chapter shows their additional points of improvement of their educational program.

The following main patterns (themes) were identified as part of the thematic analysis:

a) Interaction Enjoyment
b) Identification Learning Mechanism
c) Identification LM religious norms and values
d) Reflection Learning Mechanism
e) Suggestions to improve learning activities
f) Suggestions to involve religioues views
g) General opinions on learning activities

Furthermore, two additional themes were identified which were out of the focus of this study, these are:

h) Suggestion to improve group division
i) Reflection papers as assessment

## 4.4. Interaction Enjoyment

The objective of the escape room activity called "Escape your cultural biases" was to respect different cultural perspectives (*Respect for cultural differences*) and to seek for effective boundary objects to communicate in an international group. Furthermore, this activity was included to trigger the coordination LM and enhance students' *Interaction Enjoyment*.

The focus group discussion played an important role in students' reflection moment, because there was no time available during the workshop to reflect on the LAs separately.

All students enjoyed the activity, felt comfortable and they found it interesting enough and challenging. They mentioned that the story of the Escape room about having an underwater expedition "*made the escape room much more real and fun*" as it was expressed by a student. Moreover, one student who has worked as a lecturer is willing to use escape room activity in his future teaching career.

First of all, the rule on not using verbal communication allowed students to participate in the activity as equal group members, because everyone has the same " disability".

*"I was surprised how effectively we worked while being silent and how effectively you could communicate. Instead of starting, talking, or even shouting all through each other. I don't think dominance played like such a big role because everyone is silent, so everyone has the same."*- participant 2

Second of all, students highly appreciated to work together with their fellow students to "escape" the room together. It means that the escape room design made it difficult to solve it by only one student.

*"it's really good because she read this letters and still even now I don't know how they form."*- participant 5

*"I appreciate to have someone to collaborate with because alone I will never skip this"*- participant 4

As another student highlighted: "dividing tasks and despite that we cannot communicate As for example, some of us we were looking for some words and others trying to figure out the numbers. So I think that's important because of the time. (limit)"- participant 1

She meant that task division was still important in the groupwork, because of the time limit.

The debate activity surprised the students because their views got challenged and made them closer to each other and talk about this particular activity during their short break during the workshop when the escape room was prepared.

The students mentioned that the activity was enjoyable and it acted as "a nice icebreaker". It means that the debate activity opened doors to follow up discussions about their own norms and values after the activity.

*"What was also striking to me was with the dolphin stuff. Notice like how facilitating conversation also is kind of important, because here we were like you get a task, talk about it and yeah, it's felt more like a forced conversation. And then we had a little break in the hall and we still talked about the whole Thing more like a normal life. You know, like it was a nice ice breaker, you know. There we just talked in just in a relaxed way."*- participant 8

*"I enjoyed the debate. (Though I remain horrified that the conclusion was dolphins can be eaten.) I do think the activity was useful."*- participant 6

### 4.5. Identification Learning mechanism
The students reported that their perspectives got challenged and they started to question their peronal views, norms and values.

*"It helped me appreciate how ambiguous morality is what might be completely justifiable for one person isn't, and it's very hard to say who is actually right and wrong."* – participant 6

*"I was questioning the origin of my views from where did they come from and the difference the difference of views and maybe the origin of why? Like why do we do this. I have questions also: Why did we eat Chicken throughout this."* – participant 4

Thus, this activity helped the students discover that sometimes there are no wrong and right answers, but it depends on the perspective from where is looked at. Furthermore, they were challenged to think back on their own perspectives and try to get answers on how their views got formed. As participant 4 mentioned in this process maybe the most important is "how you have been raised".

## 4.6. Identification LM on religioues views

The debate LA revealed important insights into religion and feeling comfortable to share religious views with fellow students.

*"I love debates, so I argued on based on my perspectives. But as a Buddhist as Sri Lankan Respecting my cultural values, I will strictly against the notion of eating dolphin to the core. So back now I'm outside Sri Lankan. I've exposed these different cultures and now I respect. So when foreigner comes to My country and my home, and if they some kind of a OK, I bought dolphin meat from France. We should try I'll never eat. I will not allow you  Or you can't eat. I'll be like that before coming to the Netherlands. But now I'm exposed to these cultures and I respect their food habits and all. So I'm OK. This debate also, that's why I didn't talk anything about my religious perspective. It's nothing."*-participant 7

*"I think like we separate the values and the religions that we were raised with. Like from that study from what we study like for example, I  raised to not to drink alcohol. But I'm not going to bring it into the class here or into the discussion, or to be with or against something, something different. Yeah, maybe. Maybe not  to make myself keep it simple Like to be identified by my religion or to be identified as a religious person."*-participant 4

They both mentioned about separatating their religious values and norms and neglect them in discussions and/ or LAs like this debate LA, simply because they do not feel comfortable to share these religious views and/ or they do not want to be identified as a religious person an/ or make others feel unconfortable.

*"Sometimes I don't feel comfortable of sharing religious aspect, not the cultural law, Sri Lankan related context. But religion when comes to me it's kind of a sacred thing, so I don't want to take it to discuss about in a large group of people about dolphin eating, but if it is like two to three. Like someone I really talk with, like, really involved with. I'll talk. I can talk hours about Buddhism and vegetarian stuff and what his perspectives on eating meat and or not, but now not, not in this platform."*- participant 7

*"As a Muslim, maybe my answer is different if I'm asked as a person. Yeah, because as a Muslim it's I can't. This is for me. How will I deal with this situation? Am I going to eat or not? Are my children will be allowed to eat or not?"*- participant 4

To summarize, the debate LA showed that students do not only think about their norms and values, but they also distinguish between their religious norms and values and the norms and values that they are open to share with others in an international group.

## 4.7. Reflection Learning Mechanism

The debate activity revealed that the students' views were broadened resulting in perspective making and taking. The following prompts from a student shows  empathy formulation:

*"I think it brings me closer to people that have different views maybe than me."* - participant 2

*"Like if I in an exercise like this, I have to think about. I really have to sort of relocate myself into their view and consider what they have probably gone through to come to their decision to be For instance, pro dolphin eating, maybe because it's part of their culture or I don't know  They really enjoy You can think of plenty of reasons it would help me to understand  And their perspective and bring me therefore closer to them it's not a them versus US but more like a US as a whole."* - participant 2

*"I think so. I think it would, yeah, learn how to think from a different person's perspective. And it also brings you a bit closer indeed, because afterwards we were in the corridor saying like, well, what we said was not completely true We were a bit in between."*- participant 2

## 4.8. Suggestions to improve the learning activities

The students gave suggestions to improve the LAs. These suggestions were specific to the context of debate LA. The students mentioned that knowing more context on dolphin eating or issues with dolphin eating than just the question would have helped the debate activity.

*"It would have helped in general if you would have a bit more context like eating more dolphins. Is there a problem underlying that populations grow, or for instance, if you would give students a bit more context and for instance, give them 30 minutes To find scientific evidence to support their. Yeah, yeah, I understand It is time consuming, but that could be for an assignment at school would be really nice."*- participant 2

*"In terms of context like now it came kind of out of the blue like why dolphins. You can link it to environmental sciences, but like, is it on purpose that you chose was kind of weird or is it actually a normal to discuss or I just don't know about it or  Is this exercise also possible with a topic that is a bit controversial and very like publicly."*- participant 3

## 4.9. Suggestions to involve religioues perspectives

The students who talked about their religious views mentioned that creation of safe space is very important when you would like to invite students to share. Next to the safe space, it is important to ask specific questions about the religious views.

*"Within the question should be asked directly according to what do you think, not in general way."*- participant 7

During the focus group discussion, students were asked if they would prefer to have a dialogue activity to share their religious perspectives. Students mentioned that in a debate activity, they have to convince others which sort of forces the students to act and they do not want to have a debate about their religious perspectives.

## 4.10.    General opinions on learning activities

The opinions on the mirroring activity divided the students into two groups. Most of the students enjoyed the activity and agreed with the student who expressed his opinion as such:

*"I think the mirroring activity was a great way to start. I already knew Y, but if there was a stranger in their place, the activity would have made me feel more comfortable. I think it's a great way to get participants to loosen up."*- participant 6

Thus mirroring helped most of the students to feel comfortable and loosen up. But as one student mentioned:

*"Because I already knew some people here because we did some courses together I felt comfortable. But yeah, I remember also when I did a similar exercise with X, in another course and we were really embarrassed about what we were doing. So I think that if this is a group who is the first time that they are getting to know each other could be maybe more difficult"*- participant 1

Under circumstances when students do not know each other, some students might feel uncomfortable, or even embarrassed during an activity like mirroring.

The first LA was about telling stories about cultural differences and climate change in students' home countries and in the Netherlands.  Most of the students did not recall the LA well and it resulted in only few opinions. The rest of the group did not share opinions on this specific LA.

*"All the subjects you picked for us to discuss  climate change Yes, which is a global problem. So it was pretty nice. I think like everybody thought about a problem that affects everybody from their own."*- participant 8

*"It might also be interesting to you should Put a statement In the air and then see how people reflect on it, because you could see that flooding was like a general topic, but maybe. Some topics are present in all different countries but then others are the big news in one country, but are nothing in another country."*- participant 3

## 4.11.     Suggestions to improve group division

Sometimes one international student is placed with other Dutch students in a group to do groupwork. This makes the collaboration sometimes difficult, because the international student might feel excluded when Dutch students automatically switch to their mother language when they are talking. This phenomena is well summarized by a Dutch student who explains the situation as such:

"Once we had a group work with five Dutch people and one international student and then it was, for instance, when he was going to the toilet, we sort of automatically start talking Dutch again. I can imagine then. We really consciously had to think about it and now there was a problem, but you just do it. Yeah, you're being Dutch automatically, so I should say, I can imagine that sometimes that might have given a decent feeling towards him, maybe or an exclusive thing. Well, I'm sure that wasn't our intention, but it's Just our habits."- participant 2

## 4.12.     Reflection papers as assessment

As an addition, students brought in an interesting discussion about reflection papers as assessments. The students mentioned that grading makes the reflection process other than a truthworthy reflection about their learning process. They integrate that they want to get a good grade and they try to seek for answers that would be highly appriciated by their assessor/ lecturer.

One student expressed his/her opinion as follows:

*"If it's mandatory, it's a part of the study and it's mandatory, but it's not graded. Either pass or fail. Yeah, I would have the courage to write it and write it honestly. But if it's a graded yeah And I know that the teacher would give me. A grade based on what? He wants or what he Wants to like to read. If I write it in in the way that I want, not the way, and I didn't get a good grade, I will forget that that. Yeah, I wrapped it the way I wanted because now I'm evaluated and that didn't get a good grade."*- participant 4

The rest of the group agreed with his/ her opinion. Thus, students would write a honest reflection paper if it would be mandatory but not for a grade.

Moreover, as another student formulated it in his/her opinion, reflection papers might count as a cultural shock.

*"Yeah and this reflection thing, it's a new thing for me because in Sri Lanka, we don't have this this reflection paper graded stuff. It's actually a kind of a cultural slash academic shock to me.*"- participant 7

# 5. Discussion

The purpose of this study was to harness the learning potential of the cultural diversity of ES programs at WUR and use this learning potential to help students cope with cultural boundaries by using LAs based on BC LMs. The ultimate goal was to find and recommend BC LAs to support students in coping with the cultural boundaries of their study programs. Therefore, this master thesis aimed to investigate if LAs based on identification, coordination, and reflection LM are effective to enhance students' ICS and if students are stimulated to use cultural boundaries as learning opportunities. Here ICS is gained by the students if they understand, respect, and accept the cultural boundaries.

The first research question of this study was if the intervention based on BC LM identification, coordination, and reflection in the form of a single workshop was effective to enhance ES students' intercultural sensitivity. The statistically significant effect of the workshop on students' ICS supports the hypothesis of this thesis research that engaging students in BC LAs enhances students' ICS.  The students had already moderate and high ICS levels before participating in the intervention. The scale of Respect for cultural differences was very high in both the experimental and control group. The reason might be that the students are living in an international atmosphere for already some time, from more than half a year to 5-6 years. Furthermore, the qualitative data also supported that Interaction Enjoyment as a category of ICS had a significant effect on students and the focus group discussion revealed that the learning activities stimulated students' identification learning mechanism and reflection learning mechanism. The learning activities helped the students to be confronted with different cultural perspectives. By placing the cultural differences presented among the students next to each other, the students were faced with other views and it challenged their beliefs. This finding is similar to what Bolten, (2007) found about the experience of interculturality in role plays. The confrontation encouraged them to question their own cultural perspectives, norms, and values and to gain empathy which is one of the six effective elements that is needed to become intercultural sensitive according to Chen and Starosta, (2000). Empathy is a prerequisite to moving from the ethnocentric view of culture to the ethno-relative one (Bennett, 2004). The statistically no significant differences between the experimental and the control group. It means that there was no difference between the experimental and the control group in their intercultural sensitivity. Thus, this not significant difference reduced the probability of bias, which was a threat coming from the volunteered students.

The second research question was if explicit LA on BC LM coordination makes ES students search for boundary objects when they are collaborating. The students enjoyed the Escape room activity and they also could escape in 30 minutes without using verbal communication. The students paid attention to each other, they were not judging each other if they did not know how to read the Romanian clock for example. The students were patient and taught  each other. This escape room activity was an interactive way to experience cultural differences. Similarly  Sakurauchi, (2014) designed and tested a course on American and Japanese college students to enhance students' ICS by using the Kolb's learning cycle. She found in her studies that explicit support on intercultural education, e.g. active experimentation like experiencing a Japanese tea ceremony and reflecting on the cultural differences, enhance students' ICS.

The third research question was how the students perceived the workshop. The students articulated that they enjoyed the workshop. Giving more context in the debate might have helped the students to perform the activity better. At the same time, creative thinking can be enhanced when there is no strict rely on facts, unlike logical thinking that normally relies on facts and data (Koray & Köksal, 2009).

## Limitations

There are some limitations of this thesis that need to be mentioned and critically discussed. This limitations mainly come from the nature of the research methods and small amount of students who volunteered to be participant of the workshop.

### Biases coming from my perspective

As a researcher, I needed to be aware of my own biases when I interpreted the results from the qualitative data. Worthy to mention, that the name of the categories that come from the thematic analysis are subjective, meaning, that if another researcher would have analysed the transcript and categorize the excerpt into themes, he/she would have come up with other names and even different categories than I did. To lower my bias on the interpretation of these qualitative data, I had discussions with the two observers of the focus group discussion and I fed the interpretation back to the students who participated to ask them if they agree with that.

### Limitations of the methods

Regarding the questionnaire of ICS from Chen and Starosta, it was appropriate to measure students' level of ICS. However, as mentioned earlier, the Intercultural Development Inventory (IDI) from Bennett could have given an insight into which 6 stages (*Denial, Defense, Minimization, Acceptance and Adaptation*) of ICS development the students are. It could give a better overview that connect better with the BC LMs to make students move from an ethnocentric view to an ethnorelative one.

As it is mentioned in the methodology section, the actual time that was spent on the LAs was less than the desired time, because students had limited time available to participate in the workshop. This and the missing reflection moments after each LA could be the main raison why students could not recall well the first LA called "Powerful Perspectives". For a story telling activity, 15 minutes was not enough, because the students did not get enough time to be engaged with the topic of the activity and to share many life experiences. Although the duration of the activities was insufficient the learning activities had some positive effect on the students. The students articulated that the debate activity helped them question and identify their cultural norms and values.

Another limitation was concerning the observation data. I used overt observation without an observation scheme. Therefore, the obtained observation notes were limited. The observer and I looked at the interaction of the students and the manner of communication since they could not use verbal communication.

Lastly, the focus group questions did not contain specific questions on students' ICS that is related to RQ1. The reason was the time availability of the volunteered students. When I designed the workshop, I aimed for a workshop that takes three hours. The three hours of workshop would allowed me to introduce concept of BC and ICS. Furthermore, I would have time to extend my focus group questionnaire with explicit question on students' ICS development. Although the time was limited and not many questions were asked related to students' ICS, the students gave some valuable insights on how the debate activity worked on finding out how "ambiguous morality" is and their norms and values. Furthermore, the debate activity helped them to "*learn how to think from a different person's perspective".*

The statistical testing with small sample size (N=8)

Despite the above mentioned limitations on research methods, I used triangulation that strengthened the internal validity of this study. Merriam, (1998) defines triangulation as "in terms of using multiple methods of data collection and analysis, triangulation strengthens reliability as well as internal

validity" (p. 207). I used both quantitative and qualitative research methods in form of survey, overt observation and focus group discussion.

## Limitation of small sample size

During my data collection, I struggled with finding students to participate in my workshop. In total 8 (N=8) students participated in the workshop and 7 students filled in the pre-test questionnaire to be used as control group data. This small amount of data cannot be generalized for the whole ES students. However, the participants have diverse nationalities (Dutch, Peruvian, Indian, Sri Lankan and Saudi), and come from different study groups (from first year bachelor program to second year master program). A total of 4 female and 4 male participated in the workshop, which means that there was an equal gender representation. The cultural diversity of the control group was diverse. This diversity in students' background strengthened the validity of the results.

## Contribution to close the knowledge gap

This master thesis was the first research that seeks to investigate the effect of BC LMs on ES students' ICS in the context of WUR. The results show that BC identification, coordination, and reflection LM are promising to be effective to enhance students' ICS. This ICS development of the students can be seen as a first step towards gaining boundary-crossing competence as a generic competence that is a prerequisite to becoming transformative Agents.

## Recommendation

Learning activities based on BC LM identification, reflection and coordination seem to be effective to enhance students' ICS. Therefore, it is recommended to use the cultural diversity of a study group as a source of learning and involve students to explicitly share their different life experiences and perspectives on course topics and/ or in issue discussions.

Placing the diverse cultural life experiences/ diverse cultural perspectives next to each other seems to help students identify their own norms and values. Furthermore, it helps to uncover/ to be aware of the basic assumptions of the students.

The recommendation is to use Bennet's IDI to measure students current ICS to get a better overview in which ICS developmental stage the students are. Based on the results, the educators have a better overview on what students need to move from an ethnocentric view to an ethno-relative view. Having this ethno-relative view helps students to cope with the cultural boundaries in their study program (Bennett, 2004).

Furthermore, the learning activities need to be tested on more students, because students do not always share same opinions about LAs and the present sample size (N=8) was not enough to generalize the results to all ES students. Future studies which would like to test and evaluate these learning activities on students need to dedicate more time using at least the "desired time" from Table 6 and consider to add time for reflection moments after each learning activity. The evaluation can be improved by using observation schemes and asking questions that explicitly address intercultural sensitivity scales during the focus group discussion. If questions related to the ICS scales are requested, it is vital to dedicate time to explain the concepts of ICS to the students.

# 6. Conclusion

The focus of the study was to test the effectiveness of Boundary Crossing (BC) Learning Activities (LA) on Environmental Sciences (ES) students' Intercultural Sensitivity (ICS) and to recommend LAs that are suitable and preferred for the ES students. ICS is needed to help students cope with the cultural boundaries of their study program and to learn about their cultural norms, values and basic assumptions.

**RQ 1** Is the intervention based on BC LM *identification, coordination* and *reflection* in form of a single workshop effective to enhance ES students' intercultural sensitivity at WUR?

The response to this first research question is that based on the quantitative data from the survey results, the workshop is promising to be effective to enhance students' ICS. In order to justify the effectiveness of BC LAs, the BC LAs need to be tested on more students. The qualitative data showed also some of the aspects of ICS. These aspects are the identification of own values, norms and uncovering own basic assumptions like dolphins cannot be eaten. Furthermore, students justify the cultural empathy formulation when their reflection LM is stimulated. This cultural empathy formulation is important when students are in the adaptation stage and moving towards the integration stage of Bennett's ICS Development.

**RQ 2** Does explicit LA on BC LM coordination makes ES students search for boundary objects when they are collaborating?

The escape room activity called "Escape your cultural biases" seemed to help students to respect the cultural boundaries between them. This respect resulted in students finding alternative ways like drawing symbols to communicate with each other. The students did not judge each other, they were patient and even taught each other. For example, instead of filling in the words into the form by themselves, they sort of "asked" the opinions of others, and only when they agreed they filled in the words. This escape room activity was done only with 8 students and therefore, it is not proven that all students or students in all groups will search for boundary objects. Testing the escape room activity on more students is necessary to draw conclusion on its effect.

**RQ 3** How are those learning activities perceived by the ES students?

The students enjoyed the escape room activity. It was challenging and interesting enough for them. They thought that the activity was useful to respect the cultural boundaries of their fellow students.

The debate activity acted as an "icebreaker" which challenged the students to put themselves into others' perspectives and made the students question their norms and values. The debate activity seemed to stimulate students' identification and reflection LMs. As a result, the students showed cultural empathy formulation in their discussions. However, students mentioned that giving a bit of context about the topic would have helped them to perform the debate better.

The start-off activity called "Mirroring" did not make all students feel comfortable. As a student mentioned, this activity can feel a bit awkward and embarrassing if students do this activity together with strangers.

# References

Achiam, M., Dillon, J., & Glackin, M. (2021). Addressing Wicked Problems through Science Education. *Springer Publishing*.

Akkerman, S., & Bruining, T. (2016). Multilevel Boundary Crossing in a Professional Development School Partnership. *Journal of the Learning Sciences*, *25*(2), 240–284. https://doi.org/10.1080/10508406.2016.1147448

Akkerman, S. F., & Bakker, A. (2011). Boundary Crossing and Boundary Objects. *Review of Educational Research*, *81*(2), 132–169. https://doi.org/10.3102/0034654311404435

Alexander, S., Kernohan, G., & McCullagh, P. (2004). Self-directed and lifelong learning. *Studies in Health Technology and Informatics*, *109*, 152–166.

Alexandra, S. U., & Elena, A. P. (2023). *Learning With Escape Rooms in Higher Education Online Environments*. IGI Global.

Annan-Diab, F., & Molinari, C. (2017). Interdisciplinarity: Practical approach to advancing education for sustainability and for the Sustainable Development Goals. *The International Journal of Management Education*, *15*(2), 73–83. https://doi.org/10.1016/j.ijme.2017.03.006

Bakker, A., & Akkerman, S. (2017). The Learning Potential of Boundary Crossing in the Vocational Curriculum. *John Wiley & Sons, Inc. eBooks*. https://doi.org/10.1002/9781119098713.ch18

Barbosa, B. (2020). Building Intercultural Competence Through Virtual Team Collaboration Across Global Classrooms. *Business and Professional Communication Quarterly*, *83*(1), 57–79. https://doi.org/10.1177/2329490619878834

Beattie, V., Collins, B., & McInnes, B. (1997). Deep and surface learning: a simple or simplistic dichotomy? *Accounting Education*, *6*(1), 1–12. https://doi.org/10.1080/096392897331587

Becker, C. U. (2012). Sustainability Ethics and Sustainability Research. *Springer Science+Business Media B.V.*, 9–15. https://doi.org/10.1007/978-94-007-2285-9

Bennett, M. J. (2004). Becoming Interculturally Competent. *Toward Multiculturalism: A Reader in Multicultural Education 2*, 62–77.

Bennett, M. J. (2017). Developmental Model of Intercultural Sensitivity. *The International Encyclopedia of Intercultural Communication*, 1–10. https://doi.org/10.1002/9781118783665.ieicc0182

Bertelsmann Stiftung & Fondazione Cariplo. (2008). *Intercultural Competence – The key competence in the 21st century?* https://www.bertelsmann-stiftung.de/fileadmin/files/BSt/Presse/imported/downloads/xcms_bst_dms_30238_30239_2.pdf

Beunk, M. (2022). *Student Perceptions of Intercultural Competence development through Dialogue* [Master Thesis]. Wageningen University.

Biggs, J. B. (1992). *Teaching for Quality Learning at University: What the Student Does*. Amsterdam University Press.

Bolten, J. (2007). Was heißt Interkulturelle Kompetenz? Perspektiven für die internationale Personalentwicklung [What does intercultural competence mean? Perspectives for international personnel development]. In V. Künzer & J. Berninghausen (Eds.), Wirtschaft als interkulturelle Herausforderung [Economy as an intercultural challenge] (pp. 21–42). Frankfurt am Main, Germany: IKO.

Bonwell, C. C., & Eison, J. A. (1991). Active Learning: Creating Excitement in the Classroom. *ERIC Digest*. https://files.eric.ed.gov/fulltext/ED340272.pdf

Brown, C., White, R. S., & Kelly, A. (2021). Teachers as educational change agents: what do we currently know? findings from a systematic review. *Emerald Open Research*, *3*, 26. https://doi.org/10.35241/emeraldopenres.14385.1

Bryman, A. (2016). *Social Research Methods*. Oxford University Press.

Bybee, R. W., Taylor, J., Gardner, A. L., & Van, P. (2006). The BSCS 5E Instructional Model: Origins and Effectiveness. *Colorado Springs*.

Cable, L., & Laurutis, A. (2022). EDUCATIONAL AND INTERCULTURAL ESCAPE GAMES: A METHODOLOGY. *Association Odyssée*. https://www.researchgate.net/publication/360073270_EDUCATIONAL_AND_INTERCULTURAL_ESCAPE_GAMES_A_METHODOLOGY

Chen, G. (2010). The Impact of Intercultural Sensitivity on Ethnocentrism and Intercultural Communication Apprehension. Intercultural Communication Studies. https://digitalcommons.uri.edu/cgi/viewcontent.cgi?article=1032&context=com_facpubs

Cislaghi, B., & Heise, L. (2018). Theory and practice of social norms interventions: eight common pitfalls. *Globalization and Health*, *14*(1). https://doi.org/10.1186/s12992-018-0398-x

Clark, S. G., Steen-Adams, M. M., Pfirman, S., & Wallace, R. L. (2011). Professional development of interdisciplinary environmental scholars. *Journal of Environmental Studies and Sciences*, *1*(2), 99–113. https://doi.org/10.1007/s13412-011-0018-z

Creswell, J. (2005). Educational research: Planning, conducting, and evaluating quantitative and qualitative research. Upper Saddle River, NJ: Pearson Education.

Deardorff, D. K. (2006). Identification and Assessment of Intercultural Competence as a Student Outcome of Internationalization. *Journal of Studies in International Education*, *10*(3), 241–266. https://doi.org/10.1177/1028315306287002

Deardorff, D. K. (2014, May). Some thoughts on assessing intercultural competence. Urbana, IL: University of Illinois and Indiana University, National Institute for Learning Outcomes Assessment (NILOA).

Deardorff, D. K. (2020). *Manual for developing intercultural competencies: story circles*. United Nations Educational, Scientific and Cultural Organisation (UNESCO).

Ferri, G. (2018). *Intercultural Communication: Critical Approaches and Future Challenges*. Springer Publishing.

Filho, W. L., Tripathi, S. K., De Andrade Guerra, J. B. S. O., Gine, R., Lovren, V. O., & Willats, J. (2018). Using the sustainable development goals towards a better understanding of sustainability challenges. *International Journal of Sustainable Development and World Ecology*, *26*(2). https://doi.org/10.1080/13504509.2018.1505674

Fortuin, K. P. J. (2015). *Heuristic Principles to Teach and Learn Boundary Crossing Skills in Environmental Science Education*. Amsterdam University Press. https://edepot.wur.nl/356213

Fortuin, K. P. J., & Bush, S. R. (2010). Educating students to cross boundaries between disciplines and cultures and between theory and practice. *International Journal of Sustainability in Higher Education*, *11*(1), 19–35. https://doi.org/10.1108/14676371011010020

Fortuin, K. P. J., Post Uiterweer, N. C., Gulikers, J. T. M., Oonk, C., & Tho, C. W. S. (2020). Training students to cross boundaries between disciplines, cultures, and between university and society: developing a boundary crossing learning trajectory, in SEFI conference. *University of Twente*. https://www.4tu.nl/cee/publications/480-sefi2020-fortuin.pdf

Fritz, W., Möllenberg, A., & Chen, G. (2002). Measuring Intercultural Sensitivity in Different Cultural Context. *RePEc: Research Papers in Economics*. http://files.eric.ed.gov/fulltext/ED456491.pdf

Gillert, A., Haji-Kella, M., De Jesus Cascão Guedes, M., Raykova, A., Schachinger, C., & Taylor, M. (2000). Intercultural learning T-kit. *Simona*.

Guimarães, M. C. S., Pohl, C., Bina, O., & Varanda, M. P. (2019). Who is doing inter- and transdisciplinary research, and why? An empirical study of motivations, attitudes, skills, and behaviours. *Futures*, *112*, 102441. https://doi.org/10.1016/j.futures.2019.102441

Gulikers, J. (2020). BC toolbox: Examples of boundary crossing learning activities. WUR. https://edepot.wur.nl/566880

Gulikers, J., & Oonk, C. (2019). Towards a Rubric for Stimulating and Evaluating Sustainable Learning. *Sustainability*, *11*(4), 969. https://doi.org/10.3390/su11040969

Guo, S., & Jamal, Z. (1969). Nurturing Cultural Diversity in Higher Education: A Critical Review of Selected Models. *Canadian Journal of Higher Education*, *37*(3), 27–49. https://doi.org/10.47678/cjhe.v37i3.529

Hammer, M. R., Bennett, M. J., & Wiseman, R. (2003). Measuring intercultural sensitivity: The intercultural development inventory. *International Journal of Intercultural Relations*, *27*(4), 421–443. https://doi.org/10.1016/s0147-1767(03)00032-4

Hofstede, G., & Minkov, M. (1991). *Cultures and Organizations: Software of the Mind : Intercultural Cooperation and Its Importance for Survival*. McGraw-Hill Education.

Ives, C. D. (2019, April 24). *Inside-out sustainability: The neglect of inner worlds*. SpringerLink. Retrieved November 1, 2022, from https://link.springer.com/article/10.1007/s13280-019-01187-w?error=cookies_not_supported&code=c1e2fd63-dad9-4c8a-a790-365b538fc994

Johnson, J. R., Lenartowicz, T., & Apud, S. (2006). Cross-cultural competence in international business: toward a definition and a model. *Journal of International Business Studies*, *37*(4), 525–543. https://doi.org/10.1057/palgrave.jibs.8400205

Karjalainen, H. (2020). Cultural identity and its impact on today's multicultural organizations. *International Journal of Cross Cultural Management*, *20*(2), 249–262. https://doi.org/10.1177/1470595820944207

Kennedy, R. L. (2007). In-Class Debates: Fertile Ground for Active Learning and the Cultivation of Critical Thinking and Oral Communication Skills. *International Journal of Teaching and Learning in Higher Education*.

Koray, Ö., & Köksal, M. S. (2009). The Effect of Creative and Critical Thinking Based Laboratory Applications on Creative and Logical Thinking Abilities of Prospective Teachers. Asia-Pacific Forum on Science Learning and Teaching, 10(1). http://www.ied.edu.hk/apfslt/download/v10_issue1_files/koksal.pdf

Krueger, R. A. (2015). *Focus Groups: A Practical Guide for Applied Research*. SAGE Publications.

Learning for the Future: Competences in Education for Sustainable Development. (2012). *Journal of Education for Sustainable Development*, *6*(1), 165–165. https://doi.org/10.1177/097340821100600123i

Lehtonen, T. (2019). Cultural boundaries. *Problemy Polityki Społecznej: Studia I Dyskusje*, *46*(3). https://doi.org/10.31971/16401808.46.3.2019.3

Leicht, A., Heiss, J., & Byun, W. J. (2018). *Issues and trends in education for sustainable development*. United Nations Education, Scientific & Cultural Organization.

Li, X., & Longpradit, P. (2022). The effectiveness of guideline to improve intercultural sensitivity in cross-cultural management. *International Journal of Chinese Education*, *11*(1), 221258682110729. https://doi.org/10.1177/22125868211072932

Marshall, P. A. (2002). Cultural Diversity in Our Schools. *Belmont: Thomson Learning.*, 7.

Martinelli, S., Gillert, A., Taylor, M., Council of Europe. Directorate of Youth and Sport, & Sport, C. E. D. Y. (2003). *Intercultural Learning T-kit*. Council of Europe.

McGraw-Hill. (2009). Using taking sides: Approaching the classroom with taking sides. *Contemporary Learning*. https://studylib.net/doc/18539097/using-taking-sides-in-the-classroom

Merriam, S. B. (1998). Qualitative research and case study applications in education. SanFrancisco: Jossey-Bass.

Ministerie van Onderwijs, Cultuur en Wetenschap. (2022, August 15). *Tertiary (higher) education*. Secondary Vocational Education (MBO) and Tertiary (Higher) Education | Government.nl. https://www.government.nl/topics/secondary-vocational-education-mbo-and-tertiary-higher-education/tertiary-higher-education

Mintz, K. K., & Tal, T. (2013). Education for sustainability in higher education: a multiple-case study of three courses. *Journal of Biological Education*, *47*(3), 140–149. https://doi.org/10.1080/00219266.2013.821353

Moore-Jones, E. P. (2018). Intercultural Sensitivity, Intercultural Competence &amp; Intercultural Intelligence: A Review of the Literature and a Proposition of a Linear Relationship. *Journal of Education and Culture Studies*, *2*(2), 75. https://doi.org/10.22158/jecs.v2n2p75

Moore-Jones, Ed.D, P. (2018). Intercultural Sensitivity, Intercultural Competence &amp; Intercultural Intelligence: A Review of the Literature and a Proposition of a Linear Relationship. *Journal of Education and Culture Studies*, *2*(2), 75. https://doi.org/10.22158/jecs.v2n2p75

*Non-formal education*. (2023, February 28). UNESCO UIS. https://uis.unesco.org/en/glossary-term/non-formal-education

Norström, A. V., Cvitanovic, C., Löf, M. F., West, S., Wyborn, C., Balvanera, P., Bednarek, A. T., Bennett, E. M., Biggs, R., De Bremond, A., Campbell, B. M., Canadell, J. G., Carpenter, S. R., Folke, C., Fulton, E. A., Gaffney, O., Gelcich, S., Jouffray, J. B., Leach, M., . . . Österblom, H. (2020). Principles for knowledge co-production in sustainability research. *Nature Sustainability*, *3*(3), 182–190. https://doi.org/10.1038/s41893-019-0448-2

Nunez, C., Mahdi, R. N., Popma, L., & Oyamada, M. (2017). *Intercultural Sensitivity: From Denial to Intercultural Competence*. Koninklijke Van Gorcum.

Oonk, C., Gulikers, J., Den Brok, P., & Mulder, M. (2022). Stimulating boundary crossing learning in a multi-stakeholder learning environment for sustainable development. *International Journal of Sustainability in Higher Education*, *23*(8), 21–40. https://doi.org/10.1108/ijshe-04-2021-0156

Peterson, B. (2004). *Cultural Intelligence: A Guide to Working with People from Other Cultures: Vol. p. 89 (225)*. Hachette UK. ISBN:978-1-031930-00-0

Popov, V., Brinkman, D., Fortuin, K. P. J., Lie, R., & Li, Y. (2022). Challenges home and international students face in group work at a Dutch university. *European Journal of Engineering Education*, *47*(4), 664–678. https://doi.org/10.1080/03043797.2022.2044762

Prud'homme Van Reine, P., & Blom, H. (2017). *Valorisation of Internationalisation : about Internationalisation of Higher Education: Chapter IV: Handling cultural diversity in higher education* (Vols. 111–137). Stenden. https://www.researchgate.net/profile/Herman-Blom/publication/322235404_Handling_cultural_diversity_in_higher_education/links/5a4fad7a0f7e9b36f852c62b/Handling-cultural-diversity-in-higher-education.pdf

Redman, A., Wiek, A., & Barth, M. (2020). Current practice of assessing students' sustainability competencies: a review of tools. *Sustainability Science*, *16*(1), 117–135. https://doi.org/10.1007/s11625-020-00855-1

Rieckmann, M. (2017). *Education for Sustainable Development Goals: learning objectives*. UNESCO Publishing.

Sakurauchi, Y. H. (2014). Teaching and Learning for Intercultural Sensitivity: A Cross-Cultural Examination of American Domestic Students and Japanese Exchange Students. *ProQuest LLC eBooks*. https://doi.org/10.15760/etd.1642

Sandri, O. J. (2013). Exploring the role and value of creativity in education for sustainability. *Environmental Education Research*, *19*(6), 765–778. https://doi.org/10.1080/13504622.2012.749978

Scharmer, C. O. (2007). Uncovering the blind spot of leadership. *Leader to Leader*, *2008*(47), 52–59. https://doi.org/10.1002/ltl.269

Shrivastava, P., Stafford Smith, M., O'Brien, K., & Zsolnai, L. (2020). Transforming Sustainability Science to Generate Positive Social and Environmental Change Globally. *One Earth*, *2*(4), 329–340. https://doi.org/10.1016/j.oneear.2020.04.010

Stahl, G. K., & Maznevski, M. L. (2021). Unraveling the effects of cultural diversity in teams: A retrospective of research on multicultural work groups and an agenda for future research. *Journal of International Business Studies*, *52*(1), 4–22. https://doi.org/10.1057/s41267-020-00389-9

Stewart, B. A. (2020). An empirical approach to identifying employability skills required of graduates in the environmental sciences. *Industry and Higher Education*, *35*(2), 89–101. https://doi.org/10.1177/0950422220936869

Stover, S., & Holland, C. (2018). Student Resistance to Collaborative Learning. *International Journal for the Scholarship of Teaching and Learning*, *12*(2). https://doi.org/10.20429/ijsotl.2018.120208

Straffon, D. (2003). Assessing the intercultural sensitivity of high school students attending an international school. *International Journal of Intercultural Relations*, *27*(4), 487–501. https://doi.org/10.1016/s0147-1767(03)00035-x

Tamam, E. (2010). Examining Chen and Starosta's Model of Intercultural Sensitivity in a Multiracial Collectivistic Country. *Journal of Intercultural Communication Research*, *39*(3), 173–183. https://doi.org/10.1080/17475759.2010.534860

Tassone, V. C., O'Mahony, C., McKenna, E., Eppink, H. J., & Wals, A. E. J. (2017). (Re-)designing higher education curricula in times of systemic dysfunction: a responsible research and innovation perspective. *Higher Education*, *76*(2), 337–352. https://doi.org/10.1007/s10734-017-0211-4

UNESCO. (2017). *Education for Sustainable Development Goals: Learning Objectives* (Vols. 55–58). https://unesdoc.unesco.org/ark:/48223/pf0000247444

Urban, E. L., & Palmer, L. B. (2013). International Students as a Resource for Internationalization of Higher Education. *Journal of Studies in International Education*, *18*(4), 305–324. https://doi.org/10.1177/1028315313511642

Weda, S., Atmowardoyo, H., Samad, I. A., Fitriani, S. S., & Sakti, A. E. F. (2022). Measuring Intercultural Sensitivity of English Language Students at a Higher Education Institution in Indonesia. *TRANS-KATA: Journal of Language, Literature, Culture and Education*, *2*(2), 158–168. https://doi.org/10.54923/transkata.v2i2.74

Wendorf Muhamad, J., & Yang, F. (2019). Cross-Cultural Learning in Gameplay: BAFÁ BAFÁ, Persuasive Technology, and the Exploration of Intercultural Sensitivity. *Simulation &Amp; Gaming*, *50*(6), 848–859. https://doi.org/10.1177/1046878119879742

Zaffiro, A., Tablado, D., Van Der Ploeg, F., & Le Failler, R. (2020). The role of self-awareness for sustainability practitioners : MSc Thesis. *Blekinge Institute of Technology*. https://www.diva-portal.org/smash/get/diva2:1448771/FULLTEXT02

Žalėnienė, I., & Pereira, P. a. A. (2021). Higher Education For Sustainability: A Global Perspective. *Geography and Sustainability*, *2*(2), 99–106. https://doi.org/10.1016/j.geosus.2021.05.001

Z Altan, M. (2018). Intercultural Sensitivity A Study of Pre-service English Language Teachers. Journal of Intercultural Communication, 1–17. https://immi.se/oldwebsite/nr46/altan.html

# Appendix

## Communication initiative

# Cultural perspectives workshop

Dear participant, First, I would like to thank you to take the time (about 3-5 min) to fill in this survey for my MSc thesis work. Please try to fill the questions in by listening to your first feelings. As the term "Culture" is complex, in this survey it means the differences between people coming from different countries.

1.  What is your nationality?

2.  What is your age?

3.  What is your gender?

4.  Study program and study year ( e.g. first year, second year)

5.  Did you do Academic Consultancy Training (ACT) at WUR?

    ○ Yes

    ○ No

6. Did you do intercultural communication training?

◯ Yes

◯ No

5 = strongly agree, 4 = agree, 3 = uncertain, 2 = disagree, 1 = strongly disagree (Please put the number corresponding to your answer in the blank before the statement

_____ 1. I enjoy interacting with people from different cultures.

_____ 2. I think people from other cultures are narrow-minded.

_____ 3. I am pretty sure of myself in interacting with people from different cultures.

_____ 4. I find it very hard to talk in front of people from different cultures.

_____ 5. I always know what to say when interacting with people from different cultures.

_____ 6. I can be as sociable as I want to be when interacting with people from different cultures.
_____ 7. I don't like to be with people from different cultures.

_____ 8. I respect the values of people from different cultures.

_____ 9. I get upset easily when interacting with people from different cultures.

_____10. I feel confident when interacting with people from different cultures.

_____11. I tend to wait before forming an impression of culturally-distinct counterparts.

_____12. I often get discouraged when I am with people from different cultures.

_____13. I am open-minded to people from different cultures.

_____14. I am very observant when interacting with people from different cultures.

_____15. I often feel useless when interacting with people from different cultures.

_____16. I respect the ways people from different cultures behave.

_____17. I try to obtain as much information as I can when interacting with people from different cultures.

_____18. I would not accept the opinions of people from different cultures.

\_\_\_\_19. I am sensitive to my culturally-distinct counterpart's subtle meanings during our interaction.
\_\_\_\_20. I think my culture is better than other cultures.

\_\_\_\_21. I often give positive responses to my culturally-different counterpart during our interaction.
\_\_\_\_22. I avoid those situations where I will have to deal with culturally-distinct persons.

\_\_\_\_23. I often show my culturally-distinct counterpart my understanding through verbal or nonverbal cues.

\_\_\_\_24. I have a feeling of enjoyment towards differences between my culturally-distinct counterpart and me.

(Items 2, 4, 7, 9, 12, 15, 18, 20, and 22 are reverse-coded before summing the 24 items. Interaction Engagement items are 1, 11, 13, 21, 22, 23, and 24, Respect for Cultural Differences items are 2, 7, 8, 16, 18, and 20, Interaction Confidence items are 3, 4, 5, 6, and 10, Interaction Enjoyment items are 9, 12, and 15, and Interaction Attentiveness items are 14, 17, and 19.)

## Focus group questions

What did you take away from the workshop?

What did you think about the learning activities in general? What did you like and dislike and why?

About the start off activity: What did you feel when you did the mirroring activity? Would you do it in the future with another group during your studies?

What do you think about the learning activity on cultural awareness? What kind of items could be added to improve the activity?

Do you think the debating activity was useful for you to reach the learning outcomes about your norms and values? Why or why not? What did you feel during the activity? Would you recommend this activity or is there something you would add to improve the activity?


How did you feel during the escape room activity? Was it exiting enough for you and why, why not? Can you think of items that could improve this activity? What are those items?

## Mann-Whitney U Test

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig.[a,b] | Decision |
|---|---|---|---|---|
| 1 | The distribution of Int_Engagement is the same across categories of Group. | Independent-Samples Mann-Whitney U Test | 1.000[c] | Retain the null hypothesis. |
| 2 | The distribution of Int_Enjoyment is the same across categories of Group. | Independent-Samples Mann-Whitney U Test | .054[c] | Retain the null hypothesis. |
| 3 | The distribution of Int_Confidence is the same across categories of Group. | Independent-Samples Mann-Whitney U Test | 1.000[c] | Retain the null hypothesis. |
| 4 | The distribution of Respect is the same across categories of Group. | Independent-Samples Mann-Whitney U Test | .536[c] | Retain the null hypothesis. |
| 5 | The distribution of Int_Attentiveness is the same across categories of Group. | Independent-Samples Mann-Whitney U Test | .867[c] | Retain the null hypothesis. |
| 6 | The distribution of Tot_ICS is the same across categories of Group. | Independent-Samples Mann-Whitney U Test | .779[c] | Retain the null hypothesis. |

a. The significance level is .050.

b. Asymptotic significance is displayed.

c. Exact significance is displayed for this test.

## Escape room puzzles



After completing this first puzzle, letters of each piece led to the next clue "lookatthepharaoh"





**الترتيب الصحيح**