

# **Designing a collaborative toolkit to raise cultural awareness of designers on cross-cultural teams**

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# Abstract

In a globalized era, many corporations are dealing with global issues. To create products for international audiences, designers must build relationships with customers/users worldwide and collaborate with people from various cultures and disciplines. Cultural awareness becomes highly significant in the process. This project explores how a collaborative toolkit can support designers on cross-cultural teams to raise their cultural awareness.

First, an exploratory study was conducted with 14 designers to explore their cultural awareness in design contexts and cross-cultural collaboration and to discover the problems and needs of raising designers' cultural awareness. After that, the goals of the toolkit were defined. Then, brainstorming was conducted to generate ideas for designing the collaborative toolkit. The toolkit was developed based on the insights from the in-depth interviews, ideas collected from ideation activities, and two theoretical models (i.e., cultural iceberg and Hofstede's cultural dimensions). Afterward, the concept of the toolkit was tested. Based on the feedback from the user testing, the toolkit has been improved and evaluated to answer the main research question.

The results of the user testing and the final evaluation indicated that the toolkit could create an open and accessible space for participants to share their mindsets, past collaboration experiences, and cultural backgrounds with their teammates, which helped them to know their teammates better. In the toolkit, some scenarios that could often happen in workplaces were designed based on Hofstede's cultural dimensions (i.e., individualism-collectivism, power distance, and uncertainty avoidance). These scenarios worked well to surface participants' ways of thinking, values, and communication styles at work. The toolkit also helped participants to discover the differences in how everyone approached work-related scenarios and inspired them to reflect on the influence of culture on their behaviors and worldviews (e.g., ways of thinking, values, and communication styles). Findings have shown that the toolkit might effectively raise participants' awareness that culture could influence a person's behaviors and worldviews. Lastly, the toolkit allowed participants to express their expectations in collaboration and helped them build a common ground for collaboration.

# 1. Introduction

*“Cultural Awareness is the foundation of communication, and it involves the ability of standing back from ourselves and becoming aware of our cultural values, beliefs, and perceptions. Why do we do things in that way? How do we see the world? Why do we react in that particular way?”* (Quappe & Cantatore, 2008). Cultural awareness is also an ability to understand that people with different cultural backgrounds may have completely different values, beliefs, and perceptions (Macillan education, 2019). People with cultural awareness are generally able to respect and embrace the differences between each other (Macillan education, 2019).

This ability is critical in cross-cultural design teams. Due to globalization, many corporations are dealing with global consumers, designing products for global audiences, and hiring people worldwide. Since design can be conceptualized as a process of communication between designers and intended users (Mugge, 2018), there is a higher possibility of miscommunications between designers and intended users due to cultural differences between designers’ cultures and intended users’ cultures (Tang et al., 2021). Cultural awareness can help designers reduce misunderstandings when interacting with users from different cultures. Therefore, cultural awareness is important for cross-cultural design teams in design contexts.

Cultural awareness also plays a significant role in cross-cultural collaboration. Designing involves planning and activities, which requires collaboration between designers from various cultures and disciplines (Dym et al., 2015). Although cross-cultural collaboration can boost a team's creativity and is essential for tackling complex problems, it can also be challenging. Culture shapes how individuals behave in collaboration, especially in a group or individual emphasis. People from different cultures may have various perceptions of achievement and responsibility, and who make decisions in a group. Culture can additionally influence individuals’ thinking processes and communication styles in collaboration (Bosley, 2009; Gelfand et al., 2007; Grossman et al., 2021). For example, some cultures value group benefits over individual benefits; thus, students from these cultures may perform better within collaborative groups (Bosley, 2009). Grossman et al. (2021) explained that people from different cultures have various conceptualizations of collaboration, which may shape how they approach and engage in collaboration. Thus, misunderstandings and conflicts are more likely to happen in cross-cultural collaboration due to the differences in the conceptualizations of collaborations across cultures. Cultural awareness can make people on a team recognize and understand the differences; thereby, people on the team may have a common ground for collaboration. Hence, cultural awareness is necessary for cross-cultural collaboration.

Despite the importance of cultural awareness in cross-cultural design teams, there is a lack of approach to specifically raising the cultural awareness of designers in cross-cultural teams. Previous toolkits and techniques have been used to bring cultural aspects into the design process to raise the awareness of cultural aesthetics in product design and highlight the importance of cultural sensitivity in

the design process (Wang & Ajovalasit, 2020), or to support cross-cultural teams working remotely (Brandl & Neyer, 2009; Nemiro et al., 2008; Schadewitz, 2009; Rutkowski et al., 2002). However, the main focus of these tools is not increasing the cultural awareness of designers in cross-cultural design teams. Some studies regarding cross-cultural collaborations proposed solutions to raise the cultural awareness of collaborators. Bosley (2009) suggested having a session before collaboration to make team members discuss cultural differences in general and specifically in the group or individual emphasis, how everyone on the team perceives achievements and responsibility, who makes decisions on a team, thinking processes, and communication styles. Grossman et al. (2021) and Schadewitz (2009) both proposed having a similar session before collaboration, which allows collaborators to discuss how they perceive collaboration and what they expect from it to reduce miscommunications. Although they proposed to design a session before collaboration to make collaborators have a cultural dialogue to open up the previous experiences that shaped their behaviors and worldviews, few of them have tested the solution's effectiveness in experiments. There is no such toolkit that cross-cultural design teams, in general, can use.

This research project contributes to designing a collaborative toolkit for cross-cultural design teams to raise designers' cultural awareness. The toolkit would be investigated in experiments.

## 1.1 Goal and research question

Most studies about cross-cultural collaboration focus on cultural differences and issues in cross-cultural collaboration (Bosley, 2009; Gelfand et al., 2007; Grossman et al., 2021). Although some proposed having a collaborative session before collaboration to raise collaborators' cultural awareness, few tested the idea in experiments. Moreover, there is no such toolkit that cross-cultural design teams, in general, can use to raise designers' cultural awareness. Thus, the goal of the thesis is to see how to design a collaborative toolkit to raise designers' cultural awareness, making cross-cultural collaboration successful. The main research question is determined to reach the goal:

***“How can a collaborative toolkit support designers on cross-cultural teams to raise their cultural awareness?”***

In order to answer the main research question, the thesis is split into two parts. The first part focuses on getting an understanding of the field of the research and looking for opportunities to improve the cultural awareness of designers on cross-cultural teams. An exploratory study is conducted to answer the following sub-questions:

### **1. How are designers aware of the importance of culture in cross-cultural teams?**

This sub-question explores the cultural awareness of designers in design contexts and cross-cultural collaboration. With the sub-question, the exploratory study looked into the degree that designers are aware of the importance of culture in design and how designers incorporate cultural aspects in design contexts. The exploratory study also explored what designers value in



cross-cultural collaborations and the problems/difficulties they have encountered in cross-cultural collaboration.

## **2. What are the needs and problems to improve the cultural awareness of designers in cross-cultural teams?**

Based on the previous question, the problems and needs to improve the cultural awareness of designers on cross-cultural teams will be analyzed. The insights can help to define the goal of the collaborative toolkit and formulate design directions.

The answers to the sub-questions will inform the design phase by reframing the goals of the toolkit. The design phase will explore how various ideas and design elements could reach the toolkit's goals, eventually answering the main research question.

## **1.2 Approach**

The exploratory- and design research is divided into five phases to answer the main research question. The five phases follow the approach of design thinking (Both & Baggereor, 2018). The process is visualized in diagram 1. The phases and related activities are discussed below.

### **Phase 1: Exploration**

An exploratory study is conducted to answer the sub-questions. Before the study, a literature review has been done to define relevant terminologies, introduce the theoretical frameworks for designing the toolkit, and prepare for the exploratory study. The exploratory study is done through in-depth interviews with designers to explore their cultural awareness.

### **Phase 2: Define**

The results of the exploratory study are discussed, and the goals of the toolkit are defined. Some insights are also translated into design strategies that can be used in developing the collaborative toolkit.

### **Phase 3: Ideate**

The ideas on designing the collaborative toolkit are collected through various ideation activities (a brainstorming activity and a test activity for an icebreaker exercise). Different design solutions are discussed at the end of the phase, and the final design idea for the toolkit and relevant design elements are determined.

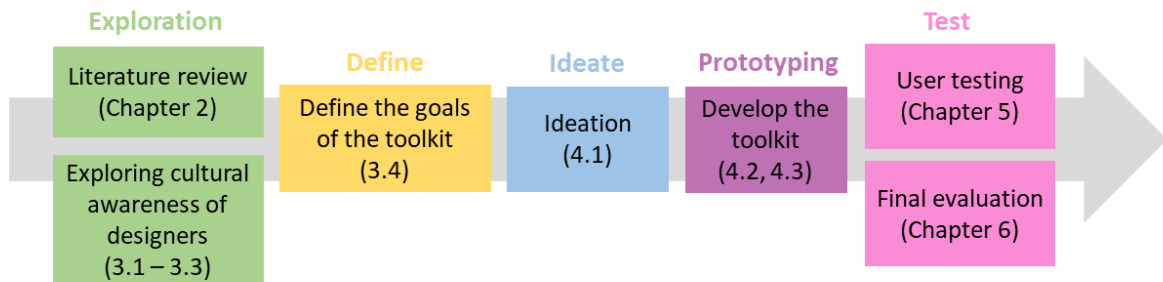
### **Phase 4: Prototyping**

The toolkit is developed based on the theoretical frameworks introduced in the literature review, some insights in phase 2, and the design idea and relevant design elements selected in phase 3.

## Phase 5: Test

Two tests are conducted. The first (user testing) is to test the prototype developed in phase 4, namely, whether the design solution can achieve the goals of the toolkit defined in phase 2, which design elements work, and how to improve the design elements. Then, the toolkit is improved based on the findings generated in the user testing. The revised toolkit is re-evaluated to see how different design elements reach the goals of the toolkit. In the end, the main research question is answered. The impact of the thesis is reflected and discussed, and some recommendations are provided for future research in improving the cultural awareness of designers on cross-cultural teams.

Diagram 1. Thesis outline: *the visualization of the process of developing the collaborative toolkit*



## 2. Literature review and theoretical models

In this session, all the relevant terminologies in this project will be defined. The cultural iceberg and Hofstede's cultural dimensions will be introduced. The two cultural models are selected because they will help operationalize cultural dimensions that can be incorporated into the toolkit. The roles of culture in design and collaboration will also be explored to gain insights into designers' cultural awareness in design contexts and collaboration.

### 2.1 Define culture

Since "culture" is broadly studied, there is no single definition. To define culture in this project, the first step is to evaluate different definitions from studies relevant to design contexts and cross-cultural collaboration and definitions from some authorized dictionaries. Then, the scope of culture will be defined based on the common dominators in the definitions and the context of this project.

*"Culture is the collective programming of the mind that distinguishes the members of one group or category of people from others"* (Hofstede, 2011)

*"Culture is [the] system of shared beliefs, values, customs, behaviors, and artifacts that the members of a society use to cope with their world and with one another, and that transmitted from generation to generation through learning"* (van Boeijen et al., 2017)

*"The underlying values, behaviors and codes of practice of a group of people which guide as to how to behave and react in the response to a given situation. These responses can be seen as almost a shared pattern among members of a society"* (Razzaghi & Ramirez, 2005)

*"Culture is the way of life, especially the general customs and beliefs, of a particular group of people at a particular time"* - [Cambridge dictionary](#)

*"Culture is the customary beliefs, social forms, and material traits of a racial, religious, or social group, also, the characteristic features of everyday existence (such as diversions or a way of life) shared by people in a place or time"* - [Merriam-Webster dictionary](#)

When looking at different definitions of culture, they are overlapping with each other, namely, the shared way of life (e.g., beliefs, values, customs, and behaviors) of a particular group of people. The range of a particular group of people is diverse. It could be a country, a city, or even an organization. Everyone may belong to different groups of people in their life; for example, you are a member of a city, and at the same time, you are also a member of your country. The culture of your city may somehow overlap with the culture of your country, but there are differences as well. To ensure diversity, a particular group of people would not be specified in the definition of culture.

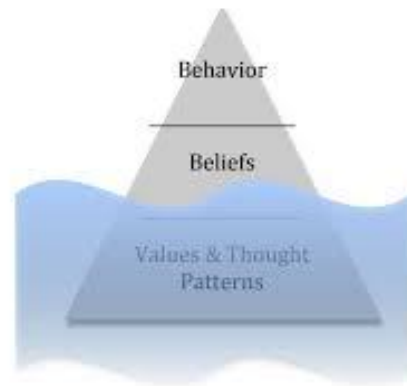
There are also specific differences between different definitions. For example, Van Boeijen and her colleagues specified that culture is static between generations and can be learned; however, the Cambridge dictionary definition mentioned that culture could be changed over time. Since we are in a globalized world, information exchange and travel are expected. Things and the environment can be changed rapidly. Therefore, culture is dynamic and can also be changed.

In the context of this project, culture is the **shared values, beliefs, behaviors, and norms of a group of people that guide people on how to think and react to a given situation**. As discussed earlier, the range of culture in this definition could be broad since “a group of people” is not specified. In this project, I will mainly look at the national culture, not that of groups (e.g., females, children, elderly, etc.). National culture would be the shared values, beliefs, behaviors, and norms of the population in a sovereign nation (i.e., a nation with one centralized government that has supreme legitimate authority over the territory (Philpott, 1995; world population review, 2022)). The definition of national culture defines the scope of culture in this project. The toolkit will be built around the definition.

## 2.2 Cultural iceberg

The cultural iceberg model was introduced by Hall in 1976 (Hall, 1976). It provides another way to analogize cultures. If the culture of a society is an iceberg, some parts will be above the water; but there will be a significant portion beneath the water. Hall divided culture into conscious (external) parts and unconscious (internal) parts. The conscious parts are what we can see and are on the top of the iceberg, consisting of behaviors and beliefs; the unconscious elements are hidden in the water and not visible. Usually, this includes some beliefs, values, and ways of thinking that determine behaviors.

Fig 1. The cultural iceberg model (Romford, 2022) - *If viewing a country's culture as an iceberg, some parts are visible and above the water, mainly people's behaviors and some beliefs; some pieces are hidden underneath the water, mostly people's values and thought patterns.*



The significant difference between internal culture and external culture is that internal culture cannot be explicitly learned. It is unconscious, hard to change, and a person's subjective knowledge (referring to "how much an individual thinks he/she knows about something"). Whereas external culture can be explicitly learned. And it is conscious, easy to change, and based on a person's objective knowledge (referring to "how much an individual knows").

We can learn from the model that external culture is easier to reveal than internal culture. The only way to understand the internal culture of others is to participate in their culture. As a person spends more time in a new culture, the inner beliefs, values, and mindsets that determine people's behaviors will surface. This model tells us that we can't judge a new culture when we're just encountering it. We need to take the time to understand and interact with the people in that culture. In chapter 4, a collaborative toolkit will be designed to start the dialogue of culture among people. According to lessons learned from the cultural iceberg, some insights can be applied when creating the toolkit:

- To start a conversation about culture, it is a better idea to start with external culture and gradually move to internal culture.
- The toolkit can only help people start a conversation about culture, but it cannot make people fully understand another culture.
- There should be no judgment when using the toolkit to have a dialogue of culture.

## 2.3 Hofstede cultural dimensions

"Each person's mental programming is partly unique, partly shared with others" (Hofstede, 2016). The psychologist Geert Hofstede studied cultural differences and developed a model (Hofstede cultural dimensions) to differentiate cultures (Hofstede, 2011). These dimensions reflect the influence of a society's culture on its members' values and how these values relate to their behaviors. The model was

first introduced 40 years ago by Geert Hofstede. It was originally derived from factor analysis of a worldwide survey of employee values by IBM. The first model consisted of four dimensions: individualism-collectivism, uncertainty avoidance, power distance, and masculinity vs. femininity. The dimensions of long-term orientation and indulgence vs. self-restraint were added later to cover the aspects of values that were not discussed in the original model (Hofstede, 2011).

Hofstede's cultural dimensions are chosen because they provide a way to measure culture, and the model helps operationalize culture in the design of the collaborative toolkit. In addition, the model was developed based on the global analysis of the differences in employee values; therefore, it can reflect the cultures at workplaces, which is highly related to the focus of the project (i.e., cross-culture collaboration). Hence, Hofstede's cultural dimensions would be applied to design the collaborative toolkit. Here is the introduction to the six cultural dimensions:

### **Individualism vs. Collectivism**

"Individualism-Collectivism" measures the degree "to which people in a society are integrated into groups" (Hofstede, 2011). Individualism is on one side of the dimension, whereas collectivism is on the other. In the individualistic culture, people prefer the loose-knit social framework and are expected to care for themselves and their close families. Additionally, personal opinions are valued and expected, and speaking one's mind is encouraged. On the contrary, people in the collectivist culture prefer the close-knit social framework and expect people in particular in-groups (i.e., a social group of which a person psychologically identifies as a member) to take care of themselves in exchange for absolute loyalty (Hofstede, 2011). Moreover, the in-group's opinions will be valued when personal opinions are conflicted with the in-group's benefits.

### **Power distance**

The index of power distance refers to "the extent to which the less powerful members of organizations and institutions (like the family) accept and expect that power is distributed unequally" (Hofstede, 2011). There is a high variance in power in a high power distance society, whereas the power is distributed more evenly in a society with a low power distance.

Power distance is associated with how people perceive mistake-based feedback and the effectiveness of mistake-based feedback (Eriksson et al., 2019). Studies have shown that making mistakes was considered a failure, which made students seem stupid in western countries, while mistakes were viewed as a sign of what could be learned or improved in China and Japan (Stevenson & Stigler, 1992). Eriksson et al. (2019) explored the cultural variation in the effectiveness of mistake-based feedback. They analyzed the association between the mistake-based feedback and students' achievements in the TIMSS 2015 assessment. The results showed that the estimated effect of mistake-based feedback was more positive in the countries with high power distance, which means students can handle mistake-based feedback better in the countries where authorities have more power.

Power distance orientation would influence employees' voice behaviors (Yoon, 2012). Yoon (2012) analyzed the survey data from a cross-sectional sample of over 400 Korean employees of

profitable companies in South Korea. The findings suggested that the power distance index negatively predicted employees' voice behaviors (i.e., "employee behavior that proactively challenges the status quo and makes positive changes" (Yoon, 2012)). Employees in an organization with less power distance were more willing to express their opinions; on the contrary, people in an environment with high power distance were less likely to express themselves.

### **Uncertainty avoidance**

The uncertainty avoidance index measures a society's tolerance of ambiguity (Hofstede, 2011). "It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations." The unstructured situation is new, novel, unknown, and full of uncertainty. Societies with high uncertainty avoidance try to minimize/reduce this uncertainty by creating strict behavior codes, laws, and rules and dismissing deviant opinions.

In some studies, uncertainty avoidance has been used to measure risk tolerance, which can be viewed as a cultural trait at a national level (Frijns et al., 2013). Frijns et al. (2013) defined risk tolerance as having two components - risk aversion and risk perception. Risk aversion is the tendency of people to choose the result with less uncertainty. Risk perception is the belief that people with the same risk aversion may perceive gambling differently. For example, for the same gambling, some people may perceive as an opportunity; however, some may perceive it as a risk. Frijns et al. (2013) examined the effect of risk tolerance, measured by Hofstede's (1980, 2001) uncertainty score, on corporate takeover decisions. It turned out that uncertainty avoidance significantly affected relatively large takeovers. CEOs of companies in countries with low uncertainty avoidance scores were more likely to take over, whereas CEOs in high uncertainty avoidance environments required higher premiums before they took over. Additionally, the study also revealed that CEOs from the nations with high uncertainty avoidance were less engaged in cross-national/cross-industry takeovers, which suggested that uncertainty avoidance reflected more on risk perception over risk aversion.

The dimension of uncertainty avoidance will influence face communication strategies, that is, the action taken to maintain or gain face (one's public self-image) (Merkin, 2006). Merkin (2006) analyzed the influence of uncertainty avoidance on facework in six cultures (Chile, Hong Kong, Israel, Japan, Sweden, and the United States). According to facework negotiation theory, people in all cultures try to maintain and negotiate face, particularly in a face-threatening embarrassment situation. Therefore, she asked participants to read a face-threatening situation and rate the likelihood of using nine different strategies (i.e., direct, indirect, harmonious, hostility, consultation expectations during organizational change, self-attribution, ritualistic, cooperative, and competitive). Results showed that uncertainty avoidance would influence harmonious, ritualistic, and aggressive strategies. Thus, uncertainty avoidance had a significant impact on facework communication strategies.

### **Long-term orientation**

Long-term orientation versus its opposite, short-term orientation, deals with change (Hofstede, n.d.). The long-term-oriented cultures believe that the world has been continuously changing, and people always need to prepare for the future. On the other hand, for short-term-oriented cultures, the world is

naturally as it creates. Therefore the past provides a moral sense, and complying with it is morally right. The dimension is strongly correlated with economic growth and can also be used to predict life philosophies, religiosity, and educational accomplishment (Hofstede, 2011).

According to Hofstede's long-term orientation scores, East Asian countries are the most long-term oriented, followed by Eastern- and Central Europe. South- and North-European and South Asian countries are medium-term orientation. The United States, Australia, Latin America, Africa, and Muslim countries are short-term oriented.

### **Masculinity vs. Femininity**

Masculinity versus its opposite, femininity, is a societal characteristic used to measure the power and value distributions of genders in society (Hofstede, 2011). IBM studies showed that women's values among societies differ less, whereas men's values differ significantly among societies. In masculine societies, men are supposed to be assertive and competitive, completely different from women's values. In feminine societies, men's values are close to women's modest and caring values. Additionally, competition is not publicly advocated.

### **Indulgence vs. Restraint**

Indulgence versus its opposite, restraint, deals with happiness in life (Hofstede, 2011). It's weakly negatively correlated to the dimension of long-term orientation. In indulgent societies, it's considered good to be free, and the basic human nature of having fun and enjoying life is allowed and accepted; on the contrary, in restraint cultures, the gratification of needs is controlled and regulated by strict social norms. According to Hofstede's indulgence scores, indulgence wins in North and South America, Western Europe, and parts of Sub-Saharan Africa. Restraint appears more in Eastern Europe, Asia, and Muslim countries. Mediterranean Europe is in the middle of this dimension.

Even though Hofstede's cultural model is one of the most cited cultural models, it still gets many criticisms from many scholars. The latest Hofstede's model was updated in 2010. Many researchers have found that culture is dynamic and constantly changing (Jones, 2007). Therefore, some studies questioned the accuracy of the model. Additionally, some studies worried that Hofstede's model missed the uniqueness of individuals. When generating the model, Hofstede viewed a nation as a unit and considered "how the national characteristic can be treated as a unit in the analysis of organizational and institutional behaviors" (Baskerville, 2003). Not everyone in a culture will have the same characteristics as Hofstede's model.

Although the model cannot fully depict a culture, it can somehow reflect and reveal the cultural values and behaviors of people from different societies. Therefore, Hofstede's cultural dimensions were applied in designing the collaborative toolkit, specifically for designing the scenarios to reveal different cultural values and thinking patterns among people. I would only focus on the dimensions of power distance, individualism-collectivism, and uncertainty avoidance since they were more relevant to the scenarios in the workplace.



## 2.4 Define design and designers

Chapter 3 will explore the cultural awareness of designers in the design process. Since design is also a broad term, there are many definitions. Therefore, this session will define the scope of design and designers before understanding the cultural awareness of designers in design contexts. I would first look at how professional English dictionaries and relevant research papers define design. After that, the scope of design in this study will be defined based on the common dominators in the definitions and the project context.

Dym et al. (2005) defined culture as *“a systematic, intelligent, process in which designers generate, evaluate, and specify concepts for devices, systems, or processes whose form and function achieve clients’ objectives or users’ needs while satisfying a specific set of constraints”*.

*Design can be conceptualized as a process of communication between designers and end-users* (Mugge et al., 2018).

Merriam-Webster online dictionary provides two possible definitions of “design”:

- As a verb, it is defined as *“to plan and make decisions about (something that is being built or created): to create the plans, drawings, etc., that show how (something) will be made.”* In this definition, designing is a process or set of activities to make/create something.
- As a noun, “design” is *“the way something has been made: the way the parts of something (such as a building, machine, book, etc.) are formed and arranged for a particular use, effect, etc”*. In this definition, design is an object or entity.

The definitions of design can be summarized into two categories. As a verb, “design” means a process of making/creating an object (e.g., a building, system, device, etc.). As a noun, “design” means the result of a design process/series of design activities in a form of an object or process. In this project, “design” will be defined as a verb.

When looking at these definitions of design, designing is a set of activities that designers conduct. Participatory design is a design approach that actively involves all the stakeholders in the design process to make the design meet their requirements and needs (Trischler et al., 2017). As the development of participatory design, design can also be done with the collaboration of stakeholders (e.g., employees, end users, partners, etc.).

In the context of this project, design is defined as **a systematic and concrete process in which designers (sometimes with the collaboration of stakeholders) generate, evaluate, and determine concepts for products, devices, systems, or processes whose forms and functions meet the objectives of clients and the needs of users within a set of constraints**. The people who conduct designing are designers. According to the definition, designing can be done either by an individual designer or a group of designers, sometimes with stakeholders’ involvement. I will focus on the design conducted by groups in this project.

## 2.5 Design process

Design process is a designer's sequence of activities. There are many design processes in the field of user interface design and human-computer interaction. Design thinking is one of the design processes that has been widely adopted by interface and application designers.

### 2.5.1 Design thinking & Double diamond

There are many design processes and approaches, such as design thinking and frame-creation proposed by Kees Dorst (Dorst, 2015). Different design processes or approaches have different focus points and functions. For example, design thinking focuses on generating solutions to a problem. In contrast, frame-creation creates approaches to a problem by exploring and diving into the problem space, its context, and human needs (Dorst, 2015). Although design thinking also starts with understanding the problem to solve, four out of five steps are about looking for solutions to the problem.

Since participants in chapter 3 will mention design thinking, it will be mainly addressed in this session. There is no single definition of design thinking. According to IDEO (Brown, 2022), "design thinking is a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success." More concretely, design thinking is a problem-solving process that organizations/teams use to understand users, challenge assumptions, reframe problems, to discover hidden strategies and solutions that are difficult to identify based on the initial level of understanding (Dam & Siang, 2021). To better understand design thinking, two process visualizations will be introduced. First is the [Design Council's](#) Double Diamond. There are four iterative stages in Double Diamond's process:

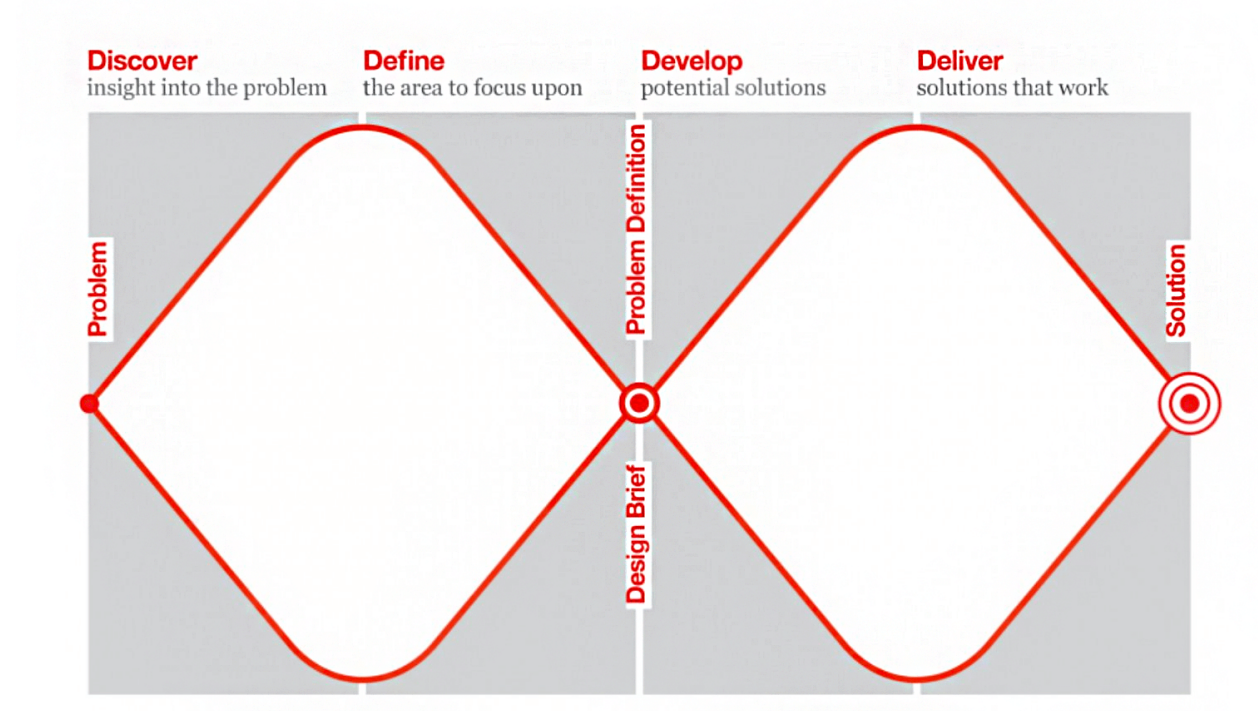
**Discover:** The process starts from understanding issues instead of assuming them. It involves conducting research with people who are affected by the subjects to understand their problems, needs, and context.

**Define:** The second stage is to generate insights from discovery and understand how users' needs align with the situation. The result is to define a problem scope or create a design challenge based on the insights.

**Develop:** The third stage focuses on generating, testing, and improving possible design solutions.

**Deliver:** The last step is choosing a single solution to solve the problem and preparing it for launch.

Fig 2. The [diagram](#) of Double Diamond - consists of discovering the problems, defining the problem scope, developing potential solutions, and delivering solutions that work.



Stanford Design School's Design Thinking Bootleg is another way to understand the process. In this illustration, design thinking consists of five stages.

**Empathize:** The process starts from understanding who you are designing for through user research.

**Define:** The second is defining a problem scope based on the insights in *Empathize*.

**Ideate:** The third stage is coming up with as many potential solutions as possible through brainstorming or other design methods.

**Prototype:** The fourth stage is creating or building some of your ideas and showing them to others.

**Testing:** The last step is to test your prototypes with your target users for feedback.

Fig 3. Design Thinking [Bootleg](#) - consists of empathize (understanding context); define (define problem scope); ideate (brainstorm solutions); prototype (create ideas); test (test ideas for feedback)



Fig 3 presents the five phases of design thinking in a linear sequence; however, the process is not sequential, and some steps can happen in parallel or repeatedly.

Many big companies such as Google, IBM, and Airbnb, have employed design thinking to innovative strategies and deal with complex problems. According to the Harvard Business Review 2008 (Brown, 2008), Tim defined “Design thinking as a methodology that focuses on people and uses design tools to solve complex problems.” Following the trend, many worldwide design schools have offered design thinking relevant courses (Melles et al., 2012).

Even though the advantages of design thinking vary based on the context, here are some common advantages. First, it will be easier for users to adopt the solution since design thinking solutions start from end-users’ needs and problems. It also helps the growth of the innovation culture inside the organization (Zeratech, 2019).

Design thinking also has its limitations. First, it tends to go fast from problems to solutions without exploring the problem space from different perspectives. Moreover, it tends to forget to involve end-users in the design process and not fully embrace participatory design practices. Most importantly, it tends to neglect the larger impact of design at different levels. Design thinking is a solution-driven design process whose goal is to have a solution as soon as possible without adopting a reflective attitude from a societal perspective.

When looking at the double diamonds and design thinking proposed by the Stanford d school, they only focused on solving problems and building connections with end-users. However, designing could be a group work that always requires collaboration among designers and end-users. A good collaborative culture can encourage problem-solving and lead to high degrees of personnel involvement. As a result, increasing the productivity and performance of a group (Reina & Reina, 2011). In these design processes, the collaboration among designers was ignored. In this project, the collaborative toolkit can fill the gap and help designers build a good and supportive collaborative culture in each stage of the design process.

## 2.6 Culture and design

### 2.6.1 The influence of culture on design

Culture plays an important role in design. It affects how we dress, eat, work, and interact with others; correspondingly, it will influence users' needs, tasks, and environment. Leur and Drukker (2006) explored the cultural difference between the South-Korean and the Dutch kitchen environment through focus groups with cultural probes. The Korean participants focused on the emotional experience of the kitchen; on the other hand, Dutch participants cared more about the functional experience of the kitchen. It concluded that cultural diversity could be reflected in products and experiences of products. Thus, understanding the target user groups' needs and environments is necessary for cross-cultural designs.

How people perceive/process things is also connected to culture (DiMaggio, 2003). Masuda and Nisbett (2001) showed American and Japanese participants a picture and asked them to recall what they had seen. The results revealed that the Japanese participants focused more on the context and relationships, whereas the American participants focused more on objects and tended to detach objects from the environment. Dong and Lee (2008) also discovered the differences between Koreans, Chinese, and Americans in webpage perception. People from different cultures apply different view patterns when viewing a webpage.

Culture is crucial in the information exchange between designers and target users (Tang et al., 2021). Tang et al. (2021) probed cultural differences in designs created by British and Chinese students who took the same design course. It turned out that the designs made by UK students were with round shapes, fixed structures, and less creativity, in contrast to the designs made by Chinese participants with more complex structures, more functions, and more creativity. They also recruited UK participants and

Chinese participants online to ask them to evaluate these designs. It showed that the designs tended to appeal to participants from the same cultural backgrounds. Hence, “the difference in perception between the designer and the target user/culture is an important parameter to consider when designing for different cultures” (Sudarshan, 2015).

In summary, the literature reviewed the influence of designers’ and users’ cultures on design; however, few studies explore designers’ awareness of the influence of culture on design. Therefore, chapter 3 will explore to what extent designers with different experiences are aware of the influence of culture on design and how they perceive such influences. The following session will discuss culture in design education and the influence of culture in cross-cultural collaboration.

## 2.6.2 Culture and design education

Culture is still a neglected area in design education (Tang et al., 2021; van Boeijen et al., 2017). Current design education has realized the importance of understanding users and focuses on developing designers’ empathic sensibility. Thus, a growing number of design methods and techniques (e.g. context mapping, personals, customer journey) are designed to help designers understand intended users and their problems and needs. Even if we can use these methods and techniques to explore different aspects of users, including the cultural aspect, the dedicated tools and techniques specific to address the cultural aspects are still rare.

Although many studies have looked at how culture will influence design, cultural influencing factors on the design process have not been investigated, namely, how the design process needs to change when it comes to a culture or people with different values, habits, and preferences. These cultural preferences can unconsciously influence design activities (Razaghi and Ramirez, 2006). Therefore, there is no unique way to address cultural aspects in the design process. This project will look into how designers with different experiences incorporate cultural aspects in the design process in chapter 3.

## 2.7 Culture and collaboration

Products’ target audience gets larger due to globalization. To make products more inclusive, the design team behind the products plays an important role (Gomes, 2021). If a team is more culturally diverse and inclusive, the product designed by the team will represent more diverse audiences. Thus, it is common for designers to collaborate cross-culturally to design a product (Diehl, 2006).

Culture is a double-edged sword in cross-cultural collaboration. On the one hand, multicultural collaboration can increase the creativity of the team (Tadmor et al., 2012); on the other hand, it can also create barriers to teamwork due to cultural differences (Damian & Zowghi, 2003). Damian and Zowghi (2003) did a case study to understand the impact of culture and distance on software requirement negotiation. Specifying software requirements is one of the most important steps in global software development, which requires intensive communication collaborations across different cultures and time zones. The case study has shown that the differences in languages, national culture, and organizational

culture significantly impacted attaining a common understanding and negotiating requirements. Stal et al. (2010) conducted a meta-analysis to surface the effects of cultural diversity in teams. The results revealed that cultural diversity positively related to creativity and increased team satisfaction. However, cultural diversity can lead to inefficient group work through task conflict (i.e., “an awareness of differences in viewpoints and opinions pertaining to a group task”) and decreased social integration (i.e. ‘the attraction to the group, satisfaction with other members of the group, and social interaction among group members’ (Tsui & O’reilly, 1989)). The effect of cultural diversity varied, relying upon contextual influences.

To sum up, cultural diversity can offer opportunities; on the other hand, it can also bring potential barriers to a team if the team does not engage in dialogue and shared understanding. Today’s design requires extensive collaborations among professionals from different cultures and areas, like graphic design, interaction, and animation. Although quite a few studies have explored the effects of cultural diversity in teams, few studies have specifically looked into cross-cultural design teams. Therefore, this study will investigate what designers value in cross-cultural collaborations and the problems and difficulties that designers have experienced in cross-cultural collaboration in chapter 3.

## 2.8 Cultural awareness

Cultural awareness means being aware of different cultures. It is the ability to recognize and understand that we all have different values and attitudes shaped by our diverse cultural backgrounds (Macillan education, 2019). The behaviors believed normal in one culture can be completely different in another (Macillan education, 2019). Even though people may behave differently or have different opinions, we can still respect them and accept their opinions, attitudes, and feelings. To develop cultural awareness, it is important to be aware of our cultural backgrounds and what it means to us. Only by doing so, can we develop the cultural awareness of other cultures (van Boeijen et al., 2017).

Cultural awareness is important in the design process among designers. Mugge et al. (2018) conceptualized design as a communication process between designers and users. In the process, there is a high probability of discrepancy between the designers’ intentions and the end-users’ responses due to the diversified cultures of designers and users brought by globalization (Tang et al., 2021). Cultural awareness can reduce misunderstandings and conflicts in the interaction between designers and intended users. As a result, helping designers avoid mismatches between products and users (van Boeijen et al., 2017). In addition, developing cultural awareness can help designers be aware of their cultural backgrounds and how it relates to the context they are designing for, which can boost new product ideas (van Boeijen et al., 2017). Having cultural awareness is not enough for incorporating culture into design. It’s also critical to develop cultural sensibility, which is about knowing which cultural aspects matter, how they matter, and how to integrate them into the design process (van Boeijen et al., 2017). This project will only focus on cultural awareness.

Culture awareness also has many benefits for multi-cultural collaborations. One of the greatest advantages of cultural awareness is that it helps designers communicate effectively with people from

different cultures, thereby reducing misjudgment of people due to cultural differences. Cultural awareness can also help designers respect different cultures. Gradually, designers may develop the ability to embrace multiple perspectives, which is crucial for collaborations and designing. Meanwhile, by understanding different cultures and beliefs more, designers can relate to people with diverse backgrounds, reducing the risk of cultural conflicts. In short, cultural awareness plays a significant role in creating healthy group dynamics, in which designers will communicate effectively, respect each other, and embrace different ways of thinking. Eventually, the efficiency and performance of the team will be increased.

With numerous advantages in designing and cross-cultural collaboration, it is essential to develop the cultural awareness of designers. Studies have shown that cultural awareness can be learned and gained through cross-cultural experiences (van Boeijen et al., 2017; Hoyos et al., 2015). Collaborating with people from different cultures may help raise the cultural awareness of designers.

Therefore, the study aims to design a collaborative toolkit to raise the cultural awareness of designers, specifically helping members of cross-cultural design teams become aware and understand the differences in perspectives, values, and communication styles. As cultural awareness is beneficial for design contexts and cross-cultural collaboration, the specific goals of the toolkit will be determined based on the problems and needs discovered in chapter 3.



## 3. Explore cultural awareness of designers

This chapter will explore the cultural awareness of designers in design contexts and collaborations. It will present the data collection methods, analysis, and results. Insights regarding the research will be drawn at the end of the session.

### 3.1 Method

The goal of this chapter is to explore the cultural awareness of designers and discover problems regarding designers' cultural awareness in design contexts and cross-cultural collaboration. The insights discovered in this session will guide the design of the collaborative toolkit in chapter 4. Here are the research questions that will be answered in this chapter:

#### 1. How are designers aware of the importance of culture in cross-cultural teams?

- **RQ1-1:** To what extent are designers with different experiences aware of the influence of culture on design? And how do they perceive such influences?
- **RQ1-2:** How do designers with different experiences incorporate cultural aspects in the design process?
- **RQ1-3:** What are the things that designers value in (cross-cultural) collaboration?
- **RQ1-4:** What difficulties or problems have designers experienced in cross-cultural collaboration?

Based on the insights of the above questions, the problems and needs to improve the cultural awareness of designers on cross-cultural teams will be analyzed, which leads to the second sub-research question in this chapter.

#### 2. What are the needs and problems to improve the cultural awareness of designers on cross-cultural teams?

The insights of sub-research question 2 can help define the goals of the collaborative toolkit and formulate design directions.

This study has applied In-depth interviews to answer the above questions. The details of the interview study will be presented below.

##### 3.1.1 Participants

The study's target groups are designers with relevant experiences in product, digital, or user experience design. The age of the participants should be above 18. With the collaboration of [the LEGO Group](#), the participants were recruited through the internal connections in the LEGO Group and convenience sampling. The study tried to recruit the same number of male and female participants to ensure gender equality.

In total, 14 designers voluntarily participated in the interviews. Ten of them are females, and four of them are males. The geographic distribution and design experience of the participants were diverse. Most participants are from Europe, and few are from Asia and USA; however, 13 out of 14 participants took their design education in European countries. Regarding design experience, some participants have over 20-year experience in designing, and some are design students who only have one- or two-year experience in the field.

### 3.1.2 Interview protocol

The interview questions were created based on the four research questions (see 3.1). The first part of the interview consisted of basic questions regarding participants' demographic information, design experience, and how they collaborate with other designers when doing design work. Specifically, I also asked about participants' duration in design fields, industries they have worked in, and their target design audience.

The first objective of the research is to understand *"To what extent are designers with different experiences aware of the influence of culture on design? And how do they perceive such influences?"*. The objective relates to participants' past design experiences and how they culturally identify themselves. The interview asked participants what they valued when designing a product/service and their typical design processes to answer this research question. I also asked participants to describe their cultural background(s) and the cultural differences they have experienced. Moreover, participants were asked to give an example if they had noticed any cultural differences between themselves and target users and to what extent the differences influenced their design process. Then, participants were asked whether they think their or the target users' cultures would influence design and what they think of that influences.

The second objective is to investigate *"How do designers with different experiences incorporate cultural aspects in the design process?"*. To answer this research question, participants were asked whether and how they handle the cultural differences between target users and themselves and whether it's important to acknowledge cultural differences between designers and target users in the design process. The moderator also asked if participants considered the cultural aspects of their target users, which cultural aspects they would consider, and how often they would consider the cultural aspects in the design process.

The third and fourth objectives are about cultural awareness in cross-cultural collaborations - *"What are the things that designers value in (cross-cultural) collaboration?"* and *"What are the difficulties or problems that designers have experienced in cross-cultural collaboration?"*. Participants were asked the important things when collaborating with others to answer these questions, specifically in cross-cultural teams. Participants also needed to give an example of having a good collaboration with others. Last but not least, the moderator asked participants to what extent their cultures influence cross-cultural collaboration and what they think of the influences of their cultures on cross-cultural collaboration. For the details of the questions, please check Appendix 1.

### 3.1.3 Interview procedure

Before the interview, participants were asked to sign a consent form. The interviews were conducted on Teams (an online meeting platform) and were audio-recorded. Each interview took around 35 - 45 minutes. The interview was semi-structured. The moderator started by having small talk with participants to build rapport. Then the questions in the interview protocol were asked. Some follow-up questions were also asked to gain a more in-depth understanding of participants' responses. Participants can decline to answer a question if they feel uncomfortable answering it or do not have an answer at the moment. Table 1 shows the setting of the interview study.

Table 1. The setting of the in-depth interview

Topic	Choice
Participants	14 participants through a convenience sample
Target profile	Designers whose ages are above 18 and have relevant experience in product, digital, and user experience design
Duration	35 - 45 min
Medium	Online (Teams)
Recording	Audio recording

## 3.2 Data analysis

Thematic analysis was chosen to analyze the data collected in the interviews. First, the interview recordings were transcribed automatically by teams (an online meeting platform) and then reviewed manually by me. Subsequently, the data were coded according to the research questions (see 3.1) and organized in spreadsheets. When looking at the questions in the interview protocol (see Appendix 1), all the questions can be summarized into three categories:

1. culture (i.e., how participants identify their cultures, how their cultures influence their ways of thinking and design, and how participants perceive such influences),
2. cross-cultural collaboration (i.e., things participants value in (cross-cultural) collaboration, difficulties in cross-cultural collaboration, and tips for cross-cultural collaboration), and design (i.e., the design process that participants always use, target user groups, how they perceive the influence of culture in design,
3. how they handle cultural aspects in design).

The coded data were distributed to the three spreadsheets based on relevance to the three categories. Then, the coded data were grouped based on similarities.

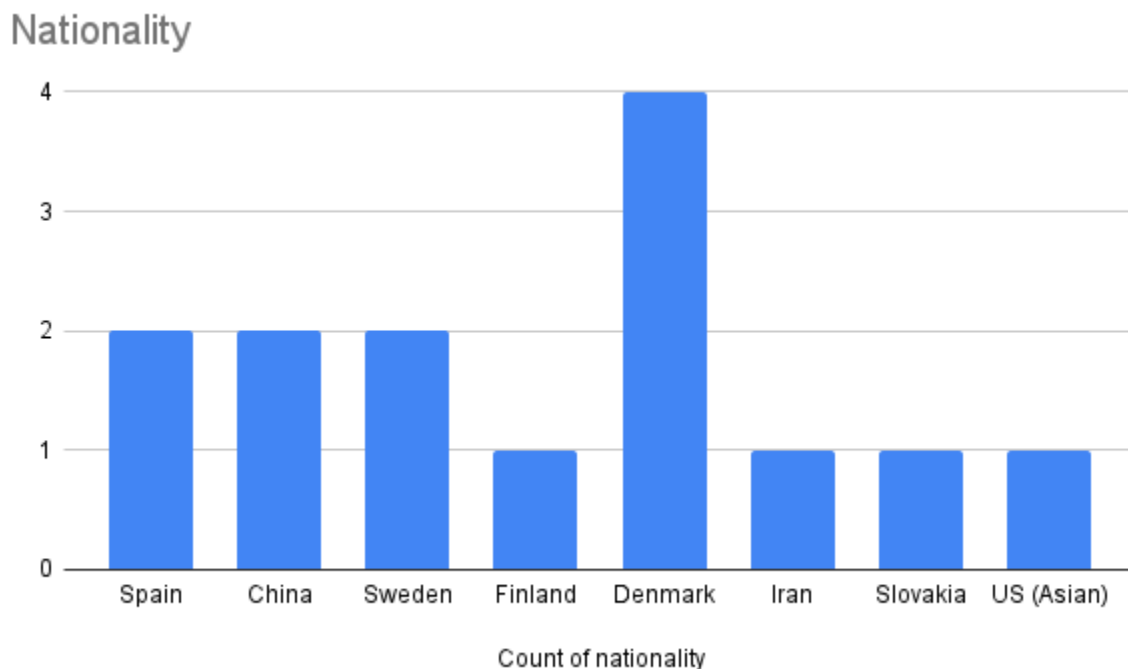
### 3.3 Findings

The findings of the in-depth interviews would be presented in this chapter. First, the basic information of participants (i.e. the demographic information, their design, and collaboration experiences) will be introduced. Then, the results of the interviews will be explained based on three categories (culture, cross-cultural collaboration, and design). The details of the three categories were addressed in 3.2. All the findings are based on the interviews with the 14 participants. Since the sample size is not big enough, the findings cannot represent the whole population of a culture. However, these findings could help me prototype a toolkit that should be further developed and tested at later stages.

#### 3.3.1 Basic information of participants

In total, 14 participants were recruited. Ten of them are females, and the rest are males. Most participants are from European countries. Two are from China, one from Iran, and one from the United States. Fig 4 shows the geographic distribution of the participants. Even though participants are from different countries, most participants have experienced more than one culture in their study and work experiences. For participants' age, Eight out of 14 are between 25 and 30; two are over 40; four are between 21 and 24.

Fig 4. The geographic distribution of the participants



When it comes to the design experience, most participants took their design education in European countries, specifically in Spain, Italy, and Nordic countries. One participant took her design

education in the United States. All the participants have experience in user experience design and digital design. Six participants also have experience in graphic and service design. 11 out of 14 participants are design students, and all have at least one internship experience in industries. The other three participants are full-time designers at the LEGO Group: one is a digital designer with 2-3 years of design experience, and the other two have over 15-year design experience.

For collaborations, most participants mentioned they always had cross-cultural and multi-disciplinary collaborations when doing design work. However, some participants would sometimes do individual projects. Only one participant did not have much experience in cross-cultural collaborations.

### 3.3.2 Culture

This part is about how participants identify their cultural backgrounds, how they influence their ways of thinking (i.e., the thinking process of how people approach a task at work) and design, and how participants perceive the influences.

#### **How participants identify their cultural backgrounds**

Culture can influence people's behaviors. Although some of the participants are from the same or similar cultures, there were differences discovered in their behaviors. For example, P5 (Sweden) and P6 (Finland) are from Nordic countries. Both of them mentioned their cultures belonged to Scandinavian cultures. However, differences were discovered in their statements. From P5's perspective, *"Swedish people are a bit shy and not speak so much, quieter I would say but also kind and not talk so much straight forward."* On the other hand, P6 mentioned that Finnish people are straightforward and outspoken from her perspective. Even though P5 and P6 are from similar cultures, they had opposite descriptions of their cultures regarding the communication styles. P6 also commented, *"People say that Finnish people are shy but I don't think that's very true. I think we are actually like, honesty is the thing here. Your words matter a lot. So if you say something, you have to sort of living it up. So we just don't do much of a small talk"*. We can learn from the statements that stereotypes of a culture are not valid for everyone in the culture. Since everyone has different growing environments, past experiences, and personalities, not everyone will fall into the box of stereotypes.

In the study, many participants have experienced more than one culture. Some participants reflected that they had difficulties identifying which culture they belonged. For example, P14 addressed,

*"I'm Korean. But I was born and raised here in America, and I think that's something I always battled with, like being disconnected from Korean culture, but also being disconnected from American culture. So it's really weird in between those two and struggling to find my identity within each because I feel like I don't belong in, like, fully belong in either group."*

In different situations or scenarios, some participants may belong to different cultures. For instance, P14 mentioned that her identity of being American stood out when she interacted with native Koreans (i.e.,

people who grew up in South Korea) at a conference held in South Korea. P14 explained she felt left out when interacting with them because they had completely different experiences since growing up and the native Koreans were more tied to P14's motherland than she did. On the contrary, when she went to places with fewer Asian Americans in the US, she was more cognitively aware that she was Korean. Therefore, everyone may be influenced by multiple cultures, and we cannot just define or distinguish an individual by a single culture.

Another interesting fact was that people would gain more understanding of themselves and their cultural backgrounds as they experienced more cultures. P12 (Denmark) asserted that he learned more about his culture when he went to South Korea for exchange. While interacting with people from different cultures, he realized how people are different and reflected upon his own culture. For example, he found out that people in Seoul lived much more outside than Danish people. In Seoul, people like to hang out with friends outside; however, in Denmark, people prefer to have fun with friends at home. While experiencing more cultures, some participants have learned more about themselves, such as what they like and dislike. They can distinguish the positive and negative sides of a culture, selectively absorb its positive parts and avoid the influence of the negative parts. In particular, P9, who is from Slovakia but had lived in other countries since high school, said,

*"I cannot relate to Slovak culture anymore. It is because people in Slovakia are very pretty hateful because they're not happy with the way things are. They're very skeptical. That's something that, you know, was left behind. But I'm trying to find it and just be seeing mistakes and everything rather than enjoy life and enjoy like the day".*

Even if everyone may perceive a culture differently due to diverse life experiences, P9 found the negative parts of her culture based on her experiences and tried to ignore the negative parts. Hence, cross-cultural experiences can help people be more aware of themselves and reflect on their cultural backgrounds.

Diagram 2. Culture and individuals: *People are influenced by multiple cultures. Everyone has a personal filter: their personalities and past experiences. Culture and the personal filter together shape an individual. Therefore, every individual is different.*

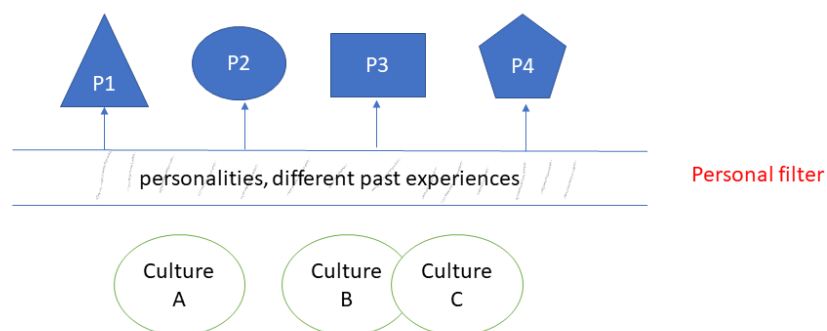


Diagram 2 was come up with to illustrate the findings above. Everyone is influenced by at least one culture. Everyone also has a personal filter (i.e., their personalities and past experiences). The culture and the personal filter together shape an individual. Even if the same culture influences people, everyone will be different since the filter is personal and unique. Therefore, we cannot define a person just by the culture they belong to. We need to look at their personal filter to understand or get to know a person.

### **How participants' cultures influence their ways of thinking and design**

Culture would subconsciously influence participants' **ways of thinking**, that is, the thinking process of how people approach a task at work. For instance, P1 (Spain) self-reflected that Spanish culture makes her pay more attention to details when doing design work, whereas P2 (China) and P4 (China) thought more systematically and focused on the big picture. Specifically, P4 mentioned she thought more logically. When she works on a project, she would think of the outcomes first and then dive into details. The influences can also be shown in **teamwork**. From P13 (Danmark)'s point of view, Danish people prefer collaborating with others. They were trained to collaborate with others since primary school. It's important for him to get things done and not talk too much about himself. He also pointed out that his cultural background made him difficult to think individualistic. P2 (China) and P4 (China) addressed that group benefits were prioritized over individual benefits. And people would rather stand out as a group instead of as an individual. Therefore, both claimed they had problems proactively expressing themselves when doing group work since they did not want to steal the limelight.

Culture will also affect people's ways of **communication**. From p5's point of view, Swedish people are kind, and people do not talk straightforwardly. When she had just started her design school, she felt sad and uncomfortable when someone talked with her in a straightforward way or things came up too harsh to her because she was not used to the way of communication. As she worked with more students from different cultures, she started to embrace the straightforward way of communication since it is clear and transparent. Language influences how people think and, therefore, influences how people communicate with others. For P6 (Finland), Finnish culture advocates a straightforward way of communication, and Finnish people do not use many polite phrases when they talk, which causes trouble for P6 in cross-cultural collaborations. She shared her story:

*"I'm quite impatient when we're collaborating with multiple cultures because I don't say things as they are. So sometimes I feel like things are drowning under the polite phrases and all these people, are just saying words that don't mean anything. And I'm like, this is the core idea. This is where we need to be. This is where we need to focus. So I sometimes get really frustrated with the fact that sometimes when someone uses a lot of polite phrases or filler words like they do especially in the English language like the people who speak it as their native language. I find it hard to trust them and what they're saying. Because in Finland if you do that I just assume that you're lying because we just don't talk that way"*

*"Culture defines how you see the world, your vision of the world defines your **design thinking**."* Designers' cultures impact participants' focus on design and their design decisions. For instance, P1 (Spain) declared that Spanish culture made her focus more on colors and pay more attention to

decorations; on the other hand, P2 (China) said she has been taught to be simple, pragmatic, and not overconfident in her behaviors. Thus, she preferred to choose less bright colors in her design even though the feature needed to catch people's eyes. Additionally, all the participants from Nordic countries mentioned their design styles were close to Scandinavian design (i.e., focus on functions and minimalism is the core). Moreover, the cultures of design education may also influence designers' design processes and styles. As P6 mentioned, she was the product of her design school, which trained her to think and do things in certain ways.

In summary, culture can influence people's ways of thinking (i.e., how people think and approach things), as shown in how participants approach things in work-related teamwork and communication styles. Designers' cultures and cultures of design education will affect designers' ways of designing and their design styles. However, all the influences are on a subconscious level because some things were just there, but participants cannot be aware of them.

### **How participants perceive the influences of their cultures in design**

Four out of 14 participants reflected that designers' cultures can create more buried solutions for designing. P1(Spain) explained that people tried to think of solutions based on their original perspectives, which were influenced by their cultures. For the same problem, different cultures may have different solutions. For example, different cultures use various tools to eat food. In western countries, people use forks and knives; in some Asian countries, people use chopsticks; and in some cultures, people prefer to use a hand. Thus, cultural perspectives on the same topic can bring more ideas/solutions and increase diversity. Specifically, P8 added that gathering information from different countries/cultures can help her develop more ideas in the Ideation phase (a phase in design thinking to create solutions).

Designers are more comfortable designing for users who are from the same/similar culture as them. P2 (China) claimed she was more aligned with the design ideas from Asian countries. She was also more comfortable designing for users from Asian countries since she is more related to Asian cultures so that she can have more opinions and voices in the team. P1 (Spain) also shared her experience as a designer to help students from a Spanish university and a Chinese university design logos for their startups. She could help Spanish students well, but cultural differences made her have difficulties helping Chinese students. She explained how she designed western logos did not apply to Chinese logos due to language differences, and the market in China was completely different from the market in Spain. To design Chinese logos, she had to learn more about Chinese markets, learn some Chinese and understand how Chinese characters work.

However, from the disadvantaged point of view, designing for users from similar cultures can also make participants blind. When P2 designed for the Chinese audience, she would be an expert and understand target users more than people from other cultures. She added,



*“when I hear a voice from another cultural perspective, maybe I will feel offended or just ignore their voices because I feel like, oh, they don't really understand the problem or I understand better than them and they don't. They never lived there. They have no right to say that”.*

Hence, although designers can be more related to users from similar cultures and more confident in designing for them, the familiarity may make them blind and unable to listen to voices from other cultural perspectives.

### 3.3.3 Culture and cross-cultural collaboration

This part will give an insight into the difficulties and obstacles that participants have encountered in cross-cultural collaboration, things they valued in (cross-cultural) collaboration, and their suggestions on working with people from different cultures.

Before diving into the insights, I would briefly introduce the collaboration conditions of the participants. Most participants often collaborate with people from various cultures in their design projects. P7 and P13 had experience in cross-cultural collaborations (i.e., working with people from other cultures) but not as frequently as the other participants. Some participants with more industry experience also regularly collaborated with other departments, such as copywriters, researchers, and engineers. P7 and P9 have done many individual design projects as well.

#### **Difficulties and obstacles in cross-cultural collaboration**

**Identity confusion due to stereotypes:** Some participants expressed their identity confusion due to stereotypes. Specifically, when P1 (Spain) and P14 (USA) are in multicultural groups, people always view them based on their stereotypical pictures of a person in that culture. They sometimes conflict about whether to be a “stereotypical person” or be themselves in cross-cultural collaborations. Moreover, P1 shared her feelings when working in international groups:

*“I become a lot more Spanish when I'm in an international group. I don't know why. I don't know how to explain it. Um, maybe because when I'm with Spanish, I don't feel Spanish because that's normal. Like everyone in the room is Spanish, what do you mean you are Spanish? We're all Spanish. But when I'm in international groups, I have this. I don't know, suddenly, I am Spanish and that also comes with expectations. And that's also something that I find conflicting because I'm Spanish, people expect me, for example, to be like, like parties, be loud and be extroverted, but, um, I don't align a hundred percent with everything that is typically Spanish, you know, but when I'm in international rooms, I'm like, should I represent Spain and its culture? Or do I represent myself? And even unconsciously, I feel I become more Spanish when I'm with non-Spanish people just because suddenly it's part of my identity. I'm a designer, but I'm also Spanish and there are certain expectations from that.”*

**Perception differences:** Some participants had experienced perception differences in cross-cultural collaborations, especially when there are significant differences between cultures. In particular, P2

(China), P4 (China), and P8 (Iran) are from Asian countries and are taking their design education in European countries. P2 and P4 sometimes discovered their teammates thought completely differently from them when they were in cross-cultural groups. Cultural differences can create barriers for people to understanding each other. Furthermore, P2 gave a personal story when she participated in a design competition to solve a problem for an Italian community with local students:

*The difference I felt when I was working with other people trying to find a solution for the local community. That really hates me because I couldn't really understand the problem because for me it's not a problem, but for them, it's a huge problem, and at that time, I couldn't really understand why*

P2 continued that they started to brainstorm solutions after finding the problem to solve. Everyone came up with solutions based on their life experiences and cultural backgrounds. Some ideas sounded interesting and familiarising to most teammates, but they sounded strange for P2 because she had obstacles relating to Italian cultures.

**Communication issues:** Four participants addressed the obstacles they experienced due to different ways of communicating. In different cultures, there are common and accepted ways of communication. When working in cross-cultural teams, participants had to get out of their comfort zones and experience different ways of communication, which may bring them negative feelings. Specifically, P3, P5, and P9 mentioned people in their cultures do not speak directly and are more careful when speaking. When they first worked with students/colleagues who pointed out their problems directly and straightforwardly, they felt they were attacked personally and had un-explainable negative feelings. However, as they worked more in international groups, they learned not to take critiques personally and embraced the straightforward way of communication.

Due to different ways of communication, trust crises can also happen in cross-cultural teams. P6 is from a culture in which people are straightforward and consider honesty as the core of their communication. She had problems trusting people's words when she interned at an American company. She explained, *"When managers there communicate with me, I don't always trust what they are saying ... because like I said, Finnish people are very upfront, and I feel like in that American corporate culture, a lot of things are hidden into like amazing, brilliant, great and they're hiding like a lot of things. So that gets me reserved"*

**Lost voice and hard to fit in groups:** P2 is from China and took her design education in Italy and the Netherlands. She also participated in some design competitions to solve problems for local communities in Italy and the Netherlands. In her design experiences, she often collaborated with people from different cultures, but she was always the minority on the team. Most teammates are from the same/similar cultures, and she is from a completely different culture from the others. She addressed her problems of fitting in and losing her voice in groups. She explained that it was difficult for her to find design problems for local communities as a foreigner since she did not understand the situation there. Thus, she had to follow the opinions of her teammates, who were locals. Additionally, everyone came up with solutions based on their experiences and cultural backgrounds. If her teammates consistently held

their opinions as local people, she felt she had nothing to fight with them. She would follow the lead and gradually lose her voice in the team.

### **Things that participants value in (cross-cultural) collaboration**

What we can learn from the interview data is that making a good design needs collaboration among people. The process requires planning and intensive communication inside a design team and with people relevant to the design projects. Six participants agreed that having a clear goal for cooperation and expectations of each other was significantly important in collaboration. Therefore, everyone will be on the same page and acknowledge each other's strengths and weaknesses. Sometimes, making a compromise is also necessary. As P12 mentioned, everyone may have different approaches to solving a problem. To choose a solution, team members must compromise or find a middle way by combining some solutions. Some participants expressed that having a playful or friendly environment also positively impacts collaboration, so team members are willing to discuss and show their opinions.

Other than the things that participants value in general collaboration, participants also pointed out the things that were specifically significant in cross-cultural collaboration. Most participants valued clear and transparent conversation. P14 claimed that clear and transparent conversation could prevent confusion and setbacks. P6 added people from other disciplines, or cultures may have different perspectives, and you may talk about the same things with different words. Clear communication is the basic and essential tool to fit everyone together. Respect was another thing that most participants valued. P1 declared that without respect, there is no cooperation and willingness to learn. P7 said she had not to be friends with her colleagues, but respecting and learning from each other was important. Furthermore, trust, mutual support, and no judgment played a crucial role in multi-cultural teams. Most participants agreed that a non-judgment environment could make them feel free to express themselves.

### **Suggestions on cross-cultural collaboration**

In the interviews, participants provided some advice on cross-cultural collaboration based on their experiences. Some participants suggested having an introduction session before working on a project to get to know everyone on a team. Specifically, P1 proposed team members needed to acknowledge the culturally important things in the session, which would help everyone know each other's boundaries. P4 and P5 also added to know each other's design habits and what makes them feel energetic when designing; therefore, it will be easier to divide tasks afterward.

Most participants reflected on how essential it was to be open-minded and communicate proactively in cross-cultural collaboration. P5 explained that it was easy to misunderstand each other when people were from different cultures. Thus, it is crucial to be transparent and not take things personally. *"When you feel uncomfortable, you need to speak about it."* P8 mentioned it was important to respect different opinions and accept the differences in various ideas and perspectives when working in a diverse environment. Moreover, P6 suggested having a free space so that people can ask questions if they do not understand something or have opinions on some ideas. To avoid miscommunication, P3 and P6 recommended putting things down in writing since the written format was easier to refer back to.

### 3.3.4 Culture and design

This part dived into participants' design experiences and how they incorporate cultural aspects in design processes. In the interviews, all the participants were asked which design process they always applied. Half of the participants answered design thinking, and the other half answered double diamonds. According to 2.5.1, design thinking and double diamonds fall into the design thinking mindset. Since 13 out of 14 participants took their design education in European countries, it can be concluded that design thinking/double diamonds might be popular and frequently taught in Europe. However, more studies must be done to investigate if other cultures also often apply or teach the methods.

When asked what things participants value in designing, most participants addressed that understanding users and knowing their problems and needs were the most important; therefore, they can solve the right or relevant problems through designing. Besides, P7, P10, and P14 also mentioned user experience. P10 claimed that a product is bad if the experience is bad no matter how good the rest of the parameters are. P7 explained, *"it's important to me that the communication is clear and that is easy to understand what it's about and see how to use it. So like simplicity. Not necessarily simplicity visually, but yeah, but it has to be simple how you're using it in the process"*. Other than understanding problems and user experience, P6 also valued the sustainability of her solution, such as how long it can last, whether it is repairable, and whether it can be recycled.

Regarding the target user groups in design experience, most participants mainly designed for regional specific user groups. 11 out of 14 participants were still students at school. They claimed they only considered users or stakeholders from local cultures/markets in school projects. Some participants mentioned that their target user groups depended on projects and contexts. P9 explained that according to her experience, the smaller-scale projects are normally for smaller audiences or more specific cultures, whereas bigger projects are usually for larger audiences. For example, the projects from the [LEGO](#) group always consider global audiences.

Most participants have never considered the cultural aspects when designing. P5 realized she was not included because she had never thought about cultures when doing design projects. Some participants explained there was no need to consider cultural aspects because they only designed for local audiences with the same/similar cultures as them in school projects. Participants with experiences in designing for different cultures were more aware of the influence of cultures in design. They tended to consider the cultural aspects of their target audiences in their design projects. P6 (Finland) had several internships in global companies. In her school projects, she always designed for Finnish stakeholders but would consider cultural aspects in her design. She gave an example:

*"When you do an app design, what are the symbols you want to use? What are the colors you want to use? For example, if you do an app for a healthcare system, using green or turquoise translates to pretty much every culture that it's for healthcare. It's sort of global in that sense. So those are like small ways. I try to consider it"*

P10, who had over 15-year design experience (seven years at LEGO), constantly considered the cultural aspects in his design projects. He explained, “*we are in a time where cultural differences are not any more specific to a country.*” He meant that we could see people from different cultures in one place due to globalization. Therefore, cultural aspects are everywhere in a global economy.

Some participants addressed that business sometimes is an obstacle to cultural inclusivity in design. P8 and P9 have worked for global companies. They claimed that such big companies would design for different nationalities but not all nationalities. P8 mentioned her company focused on major markets, like Europe, China, and the US, but there was no focus on markets in Africa and the Middle East. P12 told us he tried to be more culturally inclusive in his work; however, he did not know how viable it is from a business point of view.

Lastly, how participants handle cultural aspects in design will be presented. When asked which cultural aspects they would consider and how to incorporate them into design processes, almost all participants declared that they would start by understanding the context and users through concrete user research. They tried to reduce the bias from their sides in this stage. Based on the context and problem, they would decide on design factors. They would consider some cultural aspects if they were relevant to the problem or context. Otherwise, they would not consider them intentionally. Since P10 designed for global audiences in his work, he constantly considered the cultural aspects of users. He also mentioned that he would determine which cultural aspects to consider based on topics and requirements of user interactions. He told us [Lego](#) would send people to share day-to-day life with some families from the target cultures before Covid-19, especially when the target cultures are so different from designers’ cultures. Doing so can help designers build a basic understanding of their customers based on the customers’ behaviors and preferences. Moreover, P10 claimed that it was not easy to understand a new culture in a short time. Some parts of a culture are so deep that you do not know their existence if you do not live there. He gave us an example of the use of the Chinese dragon:

*In European culture, you can just choose a dragon for whatever you want. I mean, a dragon, it's more like a fantasy feature that you can just put in a logo and this and that. And you can give it any significance because in traditional (fairy tales) there are always ... like the monster (dragon) that kidnaps the Princess and then the knight goes there to kill the dragon and save the Princess, right? And because it's called a dragon, you just give for granted that grand Dragons are the same everywhere, right? While it's ... not like that in China ... It's completely different ... because dragon is representation of positive things ... this is the kind of differences that you are not aware of.*

Therefore, P10 and P11 suggested being cautious of every element in design, especially when designing for cultures you are unfamiliar with, and using some elements that can be easily understood universally, like neutral icons or colors. To avoid misunderstanding a culture, some participants recommended testing your design with people from the target cultures. Even though some participants have never thought of the cultural aspects in their design, they all reflected that an inclusive mindset is very important for a designer. The final product would become more inclusive if a designer could consider

diverse user groups. Additionally, P14 also mentioned the importance of embracing and respecting differences:

*“the important thing is to know and embrace differences, instead of finding things that are similar, like you wanna find things that are similar between people who are different from you, but also embracing differences too. So you're not, like putting people into, like this one box.”*

Lastly, some participants addressed the significance of building culturally diverse teams. Thus, the team will include different cultural perspectives in the beginning. P6 explained:

*“We need the diversity and we need to understand and like you asked me how I recognize what is culture and what is not. It requires diversity because I can't predict how a certain culture behaves or understands this thing because I'm not from that culture, and I can't base anything on stereotypes as a designer because it's just not fair.”*

## 3.4 Discussion and conclusion

In this session, the results of the interviews will be discussed to answer the research questions in 3.1. Then, the problems and needs to improve the cultural awareness of designers will be addressed. In the end, I will define the toolkit's goals and some insights to guide the design of the collaborative toolkit in the next chapter.

### 3.4.1 Answer to the sub-research questions

The first goal of chapter 3 is to explore designers' cultural awareness in design and cross-cultural collaboration. To achieve the goal, a research question was asked: **“How are designers aware of the importance of culture in cross-cultural teams?”**. Four sub-questions were asked To answer the research question.

The first sub-question is, **“To what extent are designers with different experiences aware of the influence of culture on design? And how do they perceive such influences?”**. Based on the results in 4.3, it can be concluded that designers' cultural awareness in design contexts depends on their professional experience. The more experience they gain through designing for users from different cultures, the more culturally conscious and empathetic they are in their design. Among all the participants, most were design students and had few experiences in designing for users coming from different cultures. When asked how often they would consider cultural aspects in their design, over 90% of the participants mentioned they seldom considered cultural aspects or have never thought about cultures when designing. On the other hand, some participants, who had experience designing for different cultures, would intentionally consider the cultural aspects in their design even if they designed for users with similar cultural backgrounds as them.

How participants perceive the influence of culture in design contexts was investigated from two directions: the influence of designers' cultures on design and the influence of target users' cultures on design. Most participants reflected that their cultural backgrounds could increase team creativity, particularly when designers brainstorm solutions for a problem. A participant also explained that designers' cultures can create many buried design solutions and may help designers keep history and traditions in their design. Furthermore, when designers design for users from the same or similar cultures, designers' cultural backgrounds can help them figure out the problems easily and quickly; however, the familiarity can also make designers blind and unable to hear the voices of designers from other cultures. When designers design for users with different cultural backgrounds from them, some participants had problems understanding the problems since they had never lived there and did not know the local situations. Some participants mentioned that some parts of culture are so deep and cannot be realized in a short time. Language barriers can also bring obstacles to graphic design and understanding target user groups. The good thing is that designers from different cultures can bring various perspectives to the team. It raises a debate on whether to ask designers to design for users who are from cultures they are unfamiliar with. Future research can explore how designers can better design for users from different cultures.

The second sub-question is **"How do designers with different experiences incorporate cultural aspects in the design process?"**. Most participants would decide on which cultural factors to consider after understanding target users and problems through user research. While conducting user research, participants can also get to know the target users and their cultures better. Sometimes, designers have to design for users from cultures they are unfamiliar with. To reduce the perception gaps, some participants would ask colleagues from the/similar culture to evaluate their design and discover some mistakes due to misunderstanding of a culture. In graphic design, some participants would use elements that can be easily understood universally, like neutral colors and icons. Moreover, an inclusive mindset is also important for designers to handle culture in design processes. With this mindset, designers may initially include users from diverse cultures. Lastly, another method that participants mentioned the most is to build a culturally diverse design team so that everyone can bring different perspectives and the team will have more cultural representations; as a result, their design will be more inclusive.

The third sub-question is **"what are the things that designers value in (cross-cultural) collaboration?"**. Most participants expressed that having transparent and open conversations is the most important in collaboration. Especially in cross-cultural collaboration, people from different cultures may have different ways of communication and diverse thinking process. For example, some cultures prefer to communicate straightforwardly; some cultures may talk less straightforwardly. Therefore, being transparent and open-minded would be significant in avoiding miscommunications and reducing the risk of cultural conflicts. Moreover, respecting and trusting each other on a team is essential. A participant mentioned there is no cooperation if people do not trust each other. Furthermore, most participants valued the importance of supporting and not judging each other, which can encourage team members to express their opinions and create more ideas. Since designing requires much planning and coordination, having a clear goal and expectations of each other becomes inevitable in collaboration. Last but not least, some participants reflected that it was necessary to make a compromise sometimes in

collaboration. For the same problem, everyone on the team may have a solution. Only one solution can be chosen at the end. Thus, someone on the team has to make a compromise or combine some ideas as one.

The last sub-question is “**what difficulties or problems have designers experienced in cross-cultural collaboration?**”. The obstacle that most participants have experienced is being uncomfortable with different ways of communication. People in different cultures have diverse ways of communication. When first experiencing the differences in cross-cultural collaboration, some participants were not used to it. For example, participants from a culture where people talk less directly would feel hurtful when someone bluntly points out their mistakes. However, as they collaborated with more people from different cultures, they preferred the straightforward way of communication. Additionally, some participants were annoyed by perception differences. People in different cultures may have various thinking processes, which lead to diverse opinions on the same thing. A participant told us she sometimes had problems understanding her teammates, not because of language barriers. For instance, she and her teammates (from different cultures) were seeking problems to solve in a design challenge. Her teammates found a problem that was huge for her teammates but was not a problem for her. Furthermore, a participant expressed her problems of losing her voice in some cross-cultural teams. Especially when they were solving a problem in a region, and she was the few foreigners on the team, the participant as a foreigner would have difficulties understanding the problem since she did not know the context of the region. As a result, she gradually lost her voice and had to follow opinions and ideas of others. Lastly, some participants suffered from identity confusion in cross-cultural collaboration. Sometimes, people would have expectations of the participants based on their stereotypical picture of a culture. Since some participants were not fully aligned with the stereotypes, they were confused if they would be themselves or be someone in the stereotypes because they also represent their culture.

### 3.4.2 Insights for the design of the collaborative toolkit

The second goal of the in-depth interview was to discover problems and needs to raise the cultural awareness of designers on cross-cultural teams. Therefore, a research question was asked: “**What are the needs and problems to improve the cultural awareness of designers on cross-cultural teams?**”. The research question was answered based on exploring the cultural awareness of designers in design contexts and cross-cultural collaboration. This session will address the research question and define the goals of the collaborative toolkit. Table 2 summarizes the main problems and needs discovered in the interviews and the corresponding requirements.

Based on the in-depth interview’s insights, we can learn that culture may influence a person’s behavior, ways of thinking (i.e., how people think and approach things), communication styles, and values. However, most participants were unaware of the influence of culture on cross-cultural design teams. For example, when exploring cultural awareness of designers in design contexts, most participants have never considered cultural aspects in design processes. In cross-cultural collaboration, some participants also reflected that they had experienced conflicts and misunderstandings due to



cultural differences. Hence, one goal of the toolkit would be to raise designers' awareness that culture could shape their behaviors, ways of thinking, values, and communication styles.

When exploring designers' cultural awareness in design contexts, I found participants' cultural awareness in design was relevant to their design experiences. The more cross-cultural design experiences they gained, the more culturally aware and sensitive they were. Therefore, the toolkit might not be feasible to improve participants' cultural awareness in design contexts. Some participants reflected that building a cultural-diverse team can also increase the cultural inclusivity of product designs since the team will have diverse cultural representatives. However, while investigating the cultural awareness of designers in cross-cultural collaboration, participants expressed that conflicts and misunderstandings can always happen due to cultural differences. Hence, the toolkit's focus would be on supporting designers in cross-cultural collaboration.

In the in-depth interview, participants valued having a clear goal and expectation, transparent communication, and mutual respect and trust in cross-cultural collaboration. Some participants also gave some advice on cross-cultural collaboration based on their experiences. They suggested that it would be beneficial to have an introduction session before working on a project to let everyone on a team know each other and share their cultural backgrounds and past work experiences. Therefore, everyone will know each other's boundaries and expectations in collaboration. This suggestion provided a solution on how to support designers in cross-cultural collaboration.

In this thesis, I will design a collaborative toolkit that can provide a space for designers to share their cultural backgrounds and past work experiences, in order to support them in cross-cultural collaboration and raise their awareness that culture could shape a person's behaviors, ways of thinking, values, and communication styles. Since the toolkit aims to support designers in having a dialogue about their experiences, a workshop might be a good format for the toolkit. The direct stakeholder of the toolkit is the designers from the LEGO Group. According to my experience, I found designers at the LEGO Group were always busy. Thus, the toolkit should not be too long. A 1-2 hour workshop might be perfect for the toolkit. Therefore, the toolkit will be in a 1-2 hour workshop format.

Table 2. Requirement table for the toolkit

<b>Problems/Needs</b>	<b>Requirements</b>
Culture could shape people's behaviors, ways of thinking, values, and communication styles; However, most participants are unaware of the influence of culture in cross-cultural collaboration.	The toolkit should raise people's awareness that culture could shape a person's behaviors, ways of thinking, values, and communication styles.
Participants need an introduction session to know each other before collaboration	The toolkit will be used before the collaboration starts and should allow people to have a dialogue about their past experiences that are relevant to work and collaboration.

Expectation management (i.e. knowing the things people value in collaboration and their expectations in collaboration) is important in cross-cultural collaboration	The toolkit should give people a chance to share the things they value and expect in collaboration.
Respecting and embracing the differences is important in cross-cultural collaboration	The toolkit should help people understand the differences between each other so that they could be more open-minded in collaboration

### 3.6 Conclusion

This qualitative study aimed to explore the cultural awareness of designers in design contexts and cross-cultural collaboration. For this purpose, 14 participants with diverse design experiences were interviewed. The results indicated that the level of a person's cultural awareness was associated with their cross-cultural experiences. A person with more experience in designing for different cultures would be more culturally aware and sensitive in their design. Some participants reflected that building a culturally diverse team can increase the inclusivity of product designs. However, the study uncovered some problems and obstacles in cross-cultural collaboration. Therefore, the toolkit's focus will be on supporting designers in cross-cultural collaboration.

In the next step, a collaborative toolkit in a 1-2 hour workshop will be designed for cross-cultural design teams and be used before starting a project. The goals of the toolkit are

- to help designers understand each other's cultural backgrounds and past work experience
- to raise designers' awareness that culture will influence their ways of thinking, communication styles, and values
- to support designers in cross-cultural collaboration.

The toolkit will be designed in two iterations based on the insights of the qualitative study and Hofstede's cultural dimensions (i.e., power distance, individualism vs. collectivism, and uncertainty avoidance). A brainstorming session will first be conducted to get inspiration for designing the toolkit. The toolkit will be evaluated in workshops through observation and questionnaires.

## 4. Ideate and prototyping

In previous chapters, I explored the cultural awareness of designers from their experiences in design contexts and cross-cultural collaboration. At the end of chapter 3, I defined the goals of the collaborative toolkit and determined its design directions. Here are the objectives of the toolkit.

The toolkit:

- Can help designers have conversations about their cultural backgrounds and past work experience
- Can help designers be aware of the influence of culture on their ways of thinking (i.e., how people think and approach things), communication styles, and values.
- Can support designers in cross-cultural collaboration.

The toolkit will be in the format of a 1-2 hour workshop and used by cross-cultural design teams to kick off a project. This chapter will describe the process of designing the collaborative toolkit. An ideation session was conducted to gather ideas about the format of the toolkit and relevant design elements. Then, the toolkit would be developed based on the ideas collected in the ideation session (see 4.1) and the two cultural models (i.e., cultural iceberg and Hofstede's cultural dimensions) mentioned in Chapter 2 (see 2.2 and 2.3). Afterward, the toolkit would be tested in user testing (see chapter 5) and improved based on the feedback collected from the user testing.

### 4.1 Ideation

There are two main goals of the toolkit. First, the toolkit aims to raise designers' awareness of how culture could shape behaviors, ways of thinking, values, and communication styles. The second is to support designers in cross-cultural collaboration. For the second goal, participants in the in-depth interview had proposed a solution: creating a space for designers to share their cultural backgrounds and past work experiences so that everyone could know each other better. Participants moreover suggested revealing designers' expectations and values in collaboration, which would be helpful for designers to build a common ground in collaboration. The solution to the second goal would be considered when developing the toolkit and tested when evaluating the toolkit. However, no solution was proposed to raise designers' awareness of the influence of culture on their behaviors, ways of thinking, values, and communication styles. The current design elements can be summarized in the table below (see Table 3).

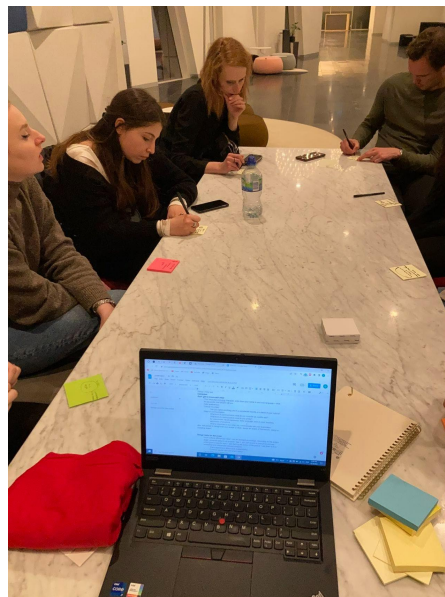
Table 3. Summary of design elements

Goal	Design elements
Raising designers' awareness that culture could influence their behaviors, ways of thinking, values, and communication styles	none
Supporting designers in cross-cultural	- Creating a space for designers to share their

collaboration	cultural backgrounds and past work experiences - Letting participants share their expectations and values in collaboration
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An ideation session was conducted in a focus group with eight colleagues at the LEGO Group (4 research interns, 3 thesis writers, and one designer) to gain more ideas on raising designers' awareness that culture could shape a person's behaviors, ways of thinking, values, and communication styles and the overall format of the toolkit. The ideation session consisted of two activities addressed in detail below.

Fig 5. The picture of the ideation session



## Activity 1: Test Dumpling Icebreaker Exercise

The first activity was to test an idea of an icebreaker exercise. According to Parallel (2022), “*An icebreaker is the perfect way to keep people engaged — it fosters connection, breaks down stereotypes and presumptions, and encourages familiarity*”. Since the toolkit will support designers to have a dialogue about their cultural backgrounds and past work experiences, an icebreaker will be a good start.

Lu (a cross-cultural designer) (2021) introduced a dumpling icebreaker for cross-cultural workshops: “If you were a dumpling, what type of dumpling would you like to be?”. According to the Cambridge English Dictionary, a dumpling is defined as “a small ball of dough (flour and water mixed), often cooked in hot liquid, and eaten with meat and vegetables”. Dumpings, although not named as

“dumplings” in various cultures, can be found in various cuisines. Since dumpling is diverse in different cultures and food is part of a culture, designing a dumpling character could be a good start for dialogues of cultures. Therefore, an icebreaker was developed based on the dumpling exercise and tested in the ideation session.

The goal of the icebreaker exercise was to create a fun, relaxed environment to help participants get to know each other through designing dumpling characters and sharing the basics of their cultural backgrounds. In the exercise, I asked participants to design a dumpling character that could represent themselves and write down their names in their native languages and English, which helped participants get to know various languages and how they prefer people to call them. Participants were also asked to answer, “What kind of communication style do you prefer?” so they would know each other’s ways of communication. Then, participants shared their results with others. In case some participants did not know what dumplings were, I had to show them some pictures of dumplings before the exercise.

I observed the process when participants were doing the exercise and wrote down their problems and difficulties. After the exercise, participants also provided their feedback on the exercise. For the observation, some participants had problems designing the dumpling character even though I had introduced the definition of dumplings in the beginning and also showed them pictures of dumplings, which means some participants were unfamiliar with dumplings. For the feedback, some participants commented the exercise was cute; however, some mentioned they had never heard of dumplings, which was difficult for them to design a dumpling character. Some participants did not understand the question about their communication style. A participant suggested giving an example of the answers to the exercise to reduce the risk of misunderstanding some questions. Another participant reflected that I asked them to answer many questions simultaneously. They cannot remember all the questions. It would be better to ask them one by one. Hence, what can be learned for designing an **icebreaker exercise** in the toolkit is that:

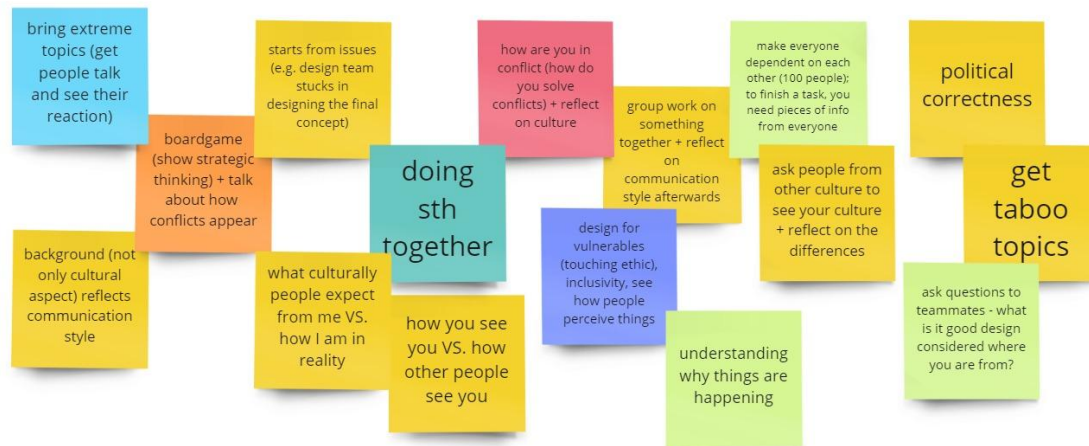
- The icebreaker should be universal for all cultures so that everyone can feel relatable to the exercise
- The icebreaker should be fun with easy questions
- It is necessary to give an example on how you expect them to do the exercise

## Activity 2: Brainstorming

Brainstorming is used to “create a vast array of ideas and draw links between them to find potential solutions” (Foundation, 2022). Brainstorming with the participants was done to collect more ideas on raising designers’ awareness of the influence of cultures on their behaviors, ways of thinking, values, and communication styles and the toolkit format. During the brainstorming activity, I first told participants that I would like to design a collaborative toolkit in the format of a 1-2 hour workshop that can allow designers to share their cultural backgrounds and past work experiences to raise their awareness that culture could influence a person’s behaviors and worldviews (i.e., ways of thinking, values, and

communication styles) and support them in cross-cultural collaboration. Then, I asked participants to brainstorm ideas on how to raise designers' awareness of the influence of cultures on their behaviors simultaneously. Within 20 minutes, each participant tried to write down as many ideas as possible on post-its individually. Then, participants shared their ideas in the group. Meanwhile, some new ideas were also generated.

Fig 6. All the ideas collected from the brainstorming session



The data was analyzed on Miro - an online visual collaboration platform. All the ideas were transformed on Miro first (see Fig 6). The colors in Fig 6 did not have any meanings. Then, various ideas were grouped based on similarity. Here are the categories generated from the ideas.

### Showing differences and reflection

- Bringing extreme/taboo topics to get people to talk and see their reactions and reflect on each other's reactions afterward
- Ask people how they are in conflicts and how they solve conflicts and reflect on how their cultures influence how they deal with conflicts
- Design, a board game which can show strategic thinking and a group, reflects on how conflicts appear after playing the board game
- Provide a design task, like designing for vulnerable (touching ethics and inclusivity) and see how people perceive things
- Ask people to finish a story individually and share the stories afterward
- Ask people to work on a task individually and reflect on how my culture influences my values and communication or is it my personality thing

### Empathy and reflection

- Ask people from other cultures to see your culture and reflect on the differences on how you perceive your culture
- Design colored glasses and ask people to perceive things wearing the colored glasses (seeing

things from different lens)

**Others that can be included in the toolkit**

- Ask teammates “what is good design considered where you are from”
- Ask “what culturally do people expect from me vs. how I am in reality”
- Backgrounds (not only cultural aspects, like family atmospheres, personality, and past work experience) reflects values and communication styles
- Expectation management is also important for the workshop

There were two types of ideas on raising designers’ awareness that culture may influence a person’s behaviors, ways of thinking, values, and communication styles. The most commonly mentioned idea was to design an individual or collaborative task/challenge that can surface the differences between each other, and then ask participants to reflect on how culture influences the differences. The other idea was to develop empathy by seeing a culture from a different lens and then reflect on the differences in how people perceive culture.

The idea of showing differences and reflection was chosen by comparing the two ideas. The toolkit’s goals are

- to raise designers’ awareness of the influence of culture on people’s behaviors, ways of thinking, values, and communication styles;
- to create a space for designers to share their past work experiences and cultural backgrounds
- to enable designers to share their expectations and values in collaboration.

The idea of empathy and reflection seemed only to fulfill the goal of raising designers’ awareness of the influence of culture on people’s behaviors, ways of thinking, values, and communication styles. On the contrary, showing differences and reflection could achieve the three goals by designing work-related challenges to surface differences. In addition, when studying Hofstede’s cultural dimensions, some papers indicated that some cultural dimensions could influence a person’s behaviors in the workplace (Hofstede, 2011; Eriksson et al., 2019; Yoon, 2012; Merkin, 2006; Frijns et al., 2013), which can be applied to design the challenges to surface differences. Therefore, the idea of showing differences and reflection was chosen, and Hofstede’s cultural dimensions would be used to design challenges to surface differences between each other. For the toolkit format, I was inspired by a card game - [The thing from the future](#) - designed by Situation Lab. With the advantages of being user-friendly, simple, and easy to implement, cards were chosen as the toolkit format.

Concluded from the results, an individual or collaborative work-related challenge would be designed based on relevant literature on Hofstede’s cultural dimensions to show the differences between each other. Then, participants would be asked to reflect on how their cultural backgrounds and personalities influence their ways of thinking, behaviors, communication styles, and values. The toolkit would be in a format of a card game.

## 4.2 Develop the toolkit

This session will dive into developing the toolkit. The toolkit is in the structure of a 1-2 hour workshop, which enables designers on cross-cultural teams to have a conversation about their cultural backgrounds and past work experience. The toolkit aims to help designers recognize and understand the differences between each other regarding their ways of thinking, behaviors, communication styles, and values and be aware of the influence of culture on these factors.

The toolkit was designed based on lessons learned in previous sessions, which were summarized in Table 3. According to the insights gained in the in-depth interviews, the design scope of the toolkit was confirmed. The ideas of designing the toolkit and the cultural elements to be considered were determined in the brainstorming session. The cultural iceberg and Hofstede's cultural dimensions helped operationalize cultural dimensions that can be incorporated into the toolkit.

The final idea selected to reach the goals of the toolkit was to design an individual or collaborative challenge which can show the differences between each other. Subsequently, there would be a reflection session to help participants reflect on the influence of their cultures and personalities on their ways of thinking, behaviors, communication styles, and values. Besides, the elements of a person's general background information, such as their personalities, family atmosphere, and past work experience, would also be included in the toolkit.

According to the cultural iceberg (see 2.2), external culture (i.e., people's behaviors and some beliefs) is easier to be revealed compared with internal culture (i.e., people's thought patterns and values). Since some general background information, like a person's personality and family atmosphere, belongs to external cultures, it would be easier to start a conversation with these topics. Therefore, a "get-to-know-each-other" session was added before the challenge session. In addition, to warm up the conversation among participants, the toolkit would start with an icebreaker exercise, which is fun, easy to play, and universal for all cultures so that everyone can feel relatable when doing the exercise.

In conclusion, there will be five steps in the toolkit. The first step is an icebreaker exercise to warm up the conversation among participants. The second exercise is to help participants get to know each other's external cultures. The third exercise is an individual or collaborative challenge that can help participants recognize and understand the differences between each other regarding their ways of thinking, behaviors, communication styles, and values. After that, participants will reflect on how their cultures and personalities influence these factors. The toolkit will end up with a takeaway message, demonstrating the importance of respecting and embracing differences between teammates.

Table 3. The lessons that have been learned for designing the toolkit. *The table summarizes all the lessons learned in previous stages of the project, which will be used in the design of the toolkit*

Activities	Lessons	How they influence the design of the toolkit
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Literature review	<p>Cultural iceberg:</p> <ul style="list-style-type: none"> <li>• To start a conversation about culture, it is a better idea to start with external culture and gradually move to internal culture.</li> <li>• The toolkit can only help people start a conversation about culture, but it cannot make people fully understand a culture.</li> <li>• There should be no judgment when using the toolkit to have a dialogue of culture.</li> </ul>	<p>An icebreaker and a “get-to-know-each-other” exercise were added before the core of the toolkit so that participants may be easier to talk about their internal cultures.</p>
	<p>Hofstede’s cultural dimensions:</p> <ul style="list-style-type: none"> <li>• reflect the influence of a culture on its members’ values and how these values related to their behaviors</li> <li>• The dimension of individualism will influence people’s behaviors on speaking their minds</li> <li>• Power distance will influence how a person handles mistake-based feedback and employees’ voice behaviors</li> <li>• Uncertainty avoidance will influence a person’s face strategy in an embarrassing situation and how people perceive risks and deal with uncertain situations</li> </ul>	<ul style="list-style-type: none"> <li>• Guided the design of scenarios to surface the differences between each other in their behaviors, ways of thinking, values, and communication styles</li> <li>• Individualism-collectivism, power distance, and uncertainty avoidance would be focused since relevant literature have shown they would influence people’s behaviors at work</li> </ul>
In-depth interviews	<p>The goals of the toolkit</p> <ul style="list-style-type: none"> <li>• can help designers have conversations about their cultural backgrounds and past work experience</li> <li>• can help designers aware the influence of culture in their ways of thinking, communication styles, and values.</li> <li>• Can support designers for cross-cultural collaboration</li> </ul> <p>Elements that can be included in the toolkit:</p> <ul style="list-style-type: none"> <li>• Growing environment</li> <li>• Design habits</li> <li>• Surface culture to build connections, like their favorite food or movie</li> <li>• Expectation management in collaboration</li> <li>• Cultural boundary</li> </ul>	<ul style="list-style-type: none"> <li>• Defined the goals of the toolkit</li> <li>• Determined the format of the toolkit: a 1-2 hour workshop used by cross-cultural design teams before kicking off a project</li> </ul>
Ideation	Activity 1 - some requirements for the icebreaker exercise	Guided the design of an icebreaker

	<ul style="list-style-type: none"> <li>• it should be universal for all the cultures so that everyone can feel relatable to the exercise</li> <li>• it should be fun with easy questions</li> <li>• it's necessary to give an example on how you expect them to do the exercise</li> </ul>	
	<p>Activity 2</p> <p>The core idea of the toolkit to help participants aware of the influence of culture on their ways of thinking, behaviors, communication styles and values are:</p> <ul style="list-style-type: none"> <li>• designing an individual or collaborative challenge which can show the differences between each other</li> <li>• then, asking participants to reflect on how their cultural backgrounds and personalities influence their ways of thinking, behaviors, communication styles and values</li> </ul> <p>Other elements that can be included in the toolkit:</p> <ul style="list-style-type: none"> <li>• Participants' general backgrounds, like their family atmosphere, personalities, and past work experience</li> <li>• Expectation management</li> </ul>	<ul style="list-style-type: none"> <li>• Determined the core of the toolkit: designing scenarios that could happen at work to show the differences between each other and asking participants to reflect the influence of culture and personalities on their behaviors, ways of thinking, values, and communication styles</li> <li>• Determined the format of the tools used during the workshop: cards</li> </ul>

### 4.3 Final toolkit overview

This session will introduce the toolkit that was designed based on the cultural iceberg model and Hofstede's cultural dimensions, the insights gained from the in-depth interviews, and the ideas collected from the ideation session. The overall structure of the toolkit has been illustrated in Diagram 3. In total, there are 5 steps. The toolkit starts with an icebreaker exercise to warm up the workshop and let everyone introduce themselves. Then, it follows with some simple "get-to-know-you" questions to help participants get to know each other, specifically about their personalities, growing environment, and external cultures. The core of the toolkit is step 3 and step 4. In step 3, some scenarios are designed according to studies about Hofstede's cultural dimensions. Participants will be asked to answer the questions in the scenarios and discover the differences between them regarding their ways of thinking, behaviors, communication styles, and values. In step 4, participants will reflect on how their cultures and personalities influence their ways of thinking, behaviors, communication styles, and values. Lastly, the toolkit will end up with a takeaway message that demonstrates the uniqueness of individuals and the

need to respect and embrace the differences between teammates. Each step will be explained in detail as follows.

Diagram 3. Overview of the structure of the final toolkit



miro

## Step 1: Icebreaker

The icebreaker aims to warm up the workshop and let people introduce themselves. Based on the lessons learned in the ideation session, the icebreaker should be fun, easy, and universal across cultures. A name tent exercise was designed. The inspiration for the exercise came from one of my courses, in which the professor asked students to make a name tent and write their names on it so that everyone in the class would know each other's names.

In the exercise, I give instructions on how to make a name tent and ask participants to design a character that can represent themselves. Also, participants need to write down their names in their native languages, the name they wish people to call them in English, and where they are from. Then participants will show their name tents to the other participants. An example name tent is provided in the instructions to make the exercise easier. Through the exercise, participants will learn a bit about each other and start a conversation about their cultural backgrounds.

Fig 7. The illustration of step 1

## STEP 1 Making your name tent

**Estimated time:** 10 min

**Instructions:**

1. Take a piece of paper on the table
2. Fold it in half
3. Draw your character
4. Write your name in your native written language, the name you wish people call you in English, and where you are from on one side of the paper
5. Stand the name tent on the table with the name side towards others
6. Present your name tent to the others and show them why you draw the character/symbol like this

*draw a character (symbol) to represent yourself*

*your name in your native language*

*the name you wish people call you in english*

*where are you from*

## Step 2: Get to know each other

The goal of step 2 is to help everyone to know each other and their external cultures. Some of the elements collected in interviews and the ideation session, such as growing environments, some parts of personalities, behaviors, and food, belong to external cultures; however, some focuses of the toolkit (i.e., ways of thinking and values) belong to internal cultures. According to the cultural iceberg model, it will be easier to know external cultures than internal cultures. Therefore, a “get-to-know-each-other” exercise was designed.

The exercise is simple. Some “get-to-know-you” question cards were created based on the elements collected from previous sessions. Then, one of the participants will pick up a card randomly. All

the participants will answer the question and their answers with everyone. Within 15 minutes, participants need to answer as many questions as possible. The illustrations of step 2 and question cards have shown in Fig 8 and 9.

All the questions in the exercise can be categorized into the following categories: growing environment (or family atmosphere), personalities, surface culture (i.e., food, music, movie, book, and language), design habits, and collaboration habits (for expectation management). All the categories were mentioned in sessions 3 and 4. The questions regarding the growing environment, personalities, and surface cultures came from resources online and were modified based on the lessons learned from previous sessions. Questions regarding design and collaboration habits were from the in-depth interviews and brainstorming activities. The details of the questions were shown in Appendix 2.

Fig 8. The illustration of step 2

Fig 9. The illustration of question card

### Step 3: Discover differences

This exercise aims to help participants recognize and understand the differences between each other regarding their behaviors, ways of communication, values, and communication styles. The idea for the exercise came from the brainstorming session. Some scenarios that may happen at work were designed

based on relevant literature about Hofstede’s cultural dimensions. In this exercise, participants will be asked to randomly pick up a scenario card, answer the questions on the scenario card, and share the answers with other participants. Then, participants will collaboratively fill in a reflection card with questions to trigger them to find differences in their ways of thinking and behaviors of dealing with the situation in the scenario card. Participants will be asked to pick up more scenario cards if time permits. The illustrations of step 3 and reflection cards have shown in Fig 10 and 11.

Fig 10. The illustration of step 3

**STEP 3 Discover differences**

**Estimated time:** 30 min

**Purpose:**  
To help us recognize and understand the differences between each other in terms of our values, attitudes, and ways of communication

**Instructions:**  
There are list of scenario cards. Imagine if you were the person in the scenario, how would you deal with the situation.

1. shuffle scenario cards
2. ask a team member to pick up a card randomly
3. read the scenario aloud
4. everyone writes down your answer on a post-it
5. share your answers with others
6. write down the differences between you and the others in terms of how you think and deal with the situtaion on reflection cards
7. pick up more cards

Fig 11. The illustration of a reflection card

**Reflection Cards**

**Which scenario?**

**Which are the differences on how you think and deal with the situation?**

**How do you perceive such differences?**

While reviewing literature regarding Hofstede’s cultural dimensions, some studies have proved through experiments that some cultural dimensions will influence people’s behaviors, which can be summarized in Table 8.

Since the exercise aims to show differences between each other and the central theme of the toolkit is about collaboration at work, some scenarios which may happen at work were designed based on the studies mentioned in Table 4. Scenario 4 was selected from the original paper. Scenario 9 was from my supervisor and my personal cross-cultural experiences. When designing the scenarios, I not only asked how participants would deal with the challenges in the scenarios but also the reasons behind their behaviors, which can reveal the thinking process and values of a person. The full version of the scenarios was presented in Appendix 3.

Table 4. Cultural dimensions of each scenario

Cultural dimensions	Cues from relevant literature	Scenario number
Individualism-collectivism	Speaking one's mind is healthy (Hofstede, 2011)	3,8
Experience from me and my supervisor	Welcome new member	9
Power distance	Mistake-based feedback (Eriksson et al., 2019)	1
	Voice behavior (Yoon, 2012)	2
Uncertainty avoidance	Facework strategy in an embarrassment situation (Merkin, 2006)	4
	Risk perception (Frijns et al., 2013)	6,7
	Uncertain situation (Frijns et al., 2013)	8

## Step 4: Reflection

This exercise helps participants reflect on how their cultures and personalities influence their behaviors, ways of thinking, communication styles, and values, therefore, participants will understand the differences discovered in step 3 and realize the influence of cultures. The idea for the exercise came from the brainstorming session.

In this step, participants will be asked to look back to the reflection cards they filled in step 3 and think of the following questions:

- how do their cultures influence their ways of thinking and communication
- how do their personalities influence their ways of thinking and communication

and then compare the answers to these questions. The step is illustrated in Fig 12.

Fig 12. The illustration of step 4

**STEP 4 Reflection**

**Estimated time:** 10 min

**Purpose:**  
To help us reflect on how culture will shape our values, attitudes, and ways of communication

**Instructions:**  
Looking back to the reflection cards, think of the following questions:

- How does my culture influence my ways of thinking and communication?
- How does my experience and personality influence my ways of thinking and communication?
- How does the answers to the first question different from the answers to the second one?

Write down your thoughts on post-its and share it with your teammates

## Step 5: Takeaway message

The toolkit ends up with a takeaway message that addresses the main point of the toolkit, that is, everyone is distinctive, and we should respect and embrace the differences between each other. Fig 13 shows the illustration of the takeaway message.

Fig 13. The illustration of the takeaway message

Congrats! Hope you enjoy the session with your amazing teammates.

**Everyone is shaped by their cultures and experiences. Nowadays we are in a globalization world. You may meet people from different cultures in one country. Therefore, cultural differences are not any more specific to a country.**

**Be open-minded and empathetic with your teammates and your users!**



## 5. User testing

This chapter will introduce a usability test to evaluate the usability of the toolkit (see chapter 4) and investigate if the toolkit can achieve its goals set in chapter 3:

- to help designers understand each other's cultural backgrounds and past work experience
- to raise designers' awareness that culture will influence their ways of thinking, communication styles and values
- to support designers in cross-cultural collaboration

Chapter 5 would also address the details of the study, the process of data analysis, results, as well as the discussion of the result and some insights for the improvement of the toolkit.

### 5.1 Method

The study aims to evaluate the usability of the toolkit and test if the toolkit can achieve its goals set in chapter 4, specifically to answer the following questions.

Q1: How did the toolkit help designers have a conversation about their cultural backgrounds and past work experience?

Q2: To what extent did the session help participants understand how culture influences their behaviors, ways of thinking, values, and communication styles?

Q3: To what extent does the toolkit help participants collaborate with each other after using the workshop?

Q4: What are the things that can be improved for the design of the toolkit?

Although the toolkit is not directly relevant to raising the cultural awareness of designers in design, the toolkit aims to make designers realize the impact and importance of cultures on shaping people's behaviors and worldviews (i.e., ways of thinking, values, and communication styles). There is a possibility that participants will connect the lessons learned in this toolkit to their design process. Therefore, the study will also test:

Q5: To what extent will the toolkit help designers acknowledge the influence of culture in design? (if possible)

#### 5.1.1 Participants

Four participants were recruited through convenience sampling. All are students from the University of Twente and study majors related to design. Additionally, the participant group was diverse; everyone

came from different cultures (China, Canada, Spain, India). All of them have experienced more than one culture. P1 (Spain) and P2 (Canada) knew each other before the workshop, but they had never collaborated. P1 and P4 collaborated in a course before. P3 did not know the other participants before the workshop. P4 (China) came to the workshop half an hour late due to traffic jams. She managed to deal with one scenario with the other participants. The rest of the participants did two scenarios.

### 5.1.2 Procedure

Before the workshop, participants were asked to fill in a questionnaire, and I introduced the toolkit and purposes of the study. Since the toolkit had concrete instructions for each step, participants navigated the toolkit by themselves. During the workshop, I only intervened when they had confusion or questions for me. Meanwhile, I observed the whole session and took notes about how participants approached different scenarios, behaviors, and difficulties during the workshop. The sticky notes with participants' answers were also collected. After the workshop, participants were asked to fill in the other questionnaire. In the end, participants had a workshop-discussion session regarding its strengths and improvement points. The discussion session was audio recorded by phone.

Fig 14. A picture of the user testing



### 5.1.3 Questionnaire design

The purpose of the questionnaires was to get participants' opinions about the toolkit and answer the sub-questions listed at the beginning of Session 5.1. Two questionnaires (i.e., pre-questionnaire and post-questionnaire) were designed for user testing. The pre-questionnaire and some questions of the post-questionnaire were to explore to what extent the toolkit would help designers acknowledge the influence of culture in design contexts (i.e., Q5). The rest questions of the post-questionnaire are to help answer Q1 - Q4. Table 5 summarizes the questions that were asked in the pre-and post-questionnaires. The table below explains the design of the questions.

Table 5. The summary of questions in the pre-and post-questionnaire

Goal	Questions in questionnaires
<p>Q2 (To what extent did the session help participants understand how culture influences their behaviors, ways of thinking, values, and communication styles?)</p>	<p><b>Post-questionnaire:</b></p> <p>Step 3 consists of some scenarios with uncertainty. Have you discovered some differences in how your teammates deal with uncertain situations compared with you?</p> <ul style="list-style-type: none"> <li>- If so, what are the differences?</li> <li>- From your perspective, will culture shape the differences?</li> </ul> <p>And How?</p> <p>Step 3 also consists of some scenarios about making mistakes and interacting with managers. Have you discovered some differences in how your teammates deal with such situations compared with you?</p> <ul style="list-style-type: none"> <li>- If so, what are the differences?</li> <li>- From your perspective, will culture shape the differences?</li> </ul> <p>And How?</p> <p>Have you seen the influence of culture on our behaviors and ways of thinking?</p> <ul style="list-style-type: none"> <li>- If so, how?</li> <li>- If not, why?</li> </ul>
<p>Q3 (To what extent does the toolkit help participants collaborate with each other after using the workshop?)</p>	<p><b>Post-questionnaire:</b></p> <p>When you work with these people in the future, what would you do if you have different ideas/opinions?</p>
<p>Q4 (What are the things that can be improved for the design of the toolkit?)</p>	<p><b>Post-questionnaire:</b></p> <p>What are the points of improvement in the toolkit?</p> <p>What are the current strengths of the toolkit?</p>
<p>Q5 (To what extent will the toolkit help designers acknowledge the influence of culture in design?)</p>	<p><b>Pre-questionnaire:</b></p> <p>Based on your experience, is it necessary to consider the cultural aspects of your target users and why?</p> <ul style="list-style-type: none"> <li>- If so, in which situation will you consider cultural aspects?</li> </ul> <p>Have you ever considered the cultural aspects of your target users and colleagues in previous design experience? How? Please give an example</p> <p><b>Post-Questionnaire:</b></p>

	<p>After the workshop, is it necessary to consider the cultural aspects of your target users and why?</p> <ul style="list-style-type: none"> <li>- If so, in which situation will you consider cultural aspects?</li> </ul>
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Q1 explores to what extent the toolkit helps participants converse about their cultural backgrounds and past work experiences. The sub-question will be answered based on participants' dialogues regarding how they would approach different scenarios and their reflections on how their culture and personalities influenced their behaviors and worldviews. Thus, no Q1-specific questions were asked in the questionnaires.

Q2 investigates to what extent the toolkit helps participants understand how culture influences their behaviors, ways of thinking, values, and communication styles. The sub-question is relevant to how participants approached different scenarios and the reflection of how their cultures and personalities influenced their behaviors and worldviews. Thus, questions regarding how participants approached scenarios were asked in the post-questionnaire. Such as,

“Step 3 consists of some scenarios with uncertainty. Have you discovered some differences in how your teammates deal with uncertain situations compared with you?

- If so, what are the differences?
- From your perspective, will culture shape the differences? And How?”

Besides, the post-questionnaire also asked participants if they had seen the influence of culture on their behaviors, ways of thinking, values, and communication styles during the workshop.

Q3 aims to evaluate if the toolkit can help with cross-cultural collaboration. Therefore, participants were asked what they would do if they had different ideas or opinions when working with the rest of the participants in the future.

Q4 seeks the improvement points of the toolkit. Participants were asked to advise on how to improve the toolkit and the current strengths of the toolkit.

Q5 aims to check if the toolkit can help raise the cultural awareness of designers in design. A pre-questionnaire was designed to ask participants if it is necessary to consider the cultural aspects of target users in design processes and which cultural aspects they would consider in their design project. Participants were also asked the same questions after the workshop. The answers in the pre-questionnaire and post-questionnaire were compared. It's possible to learn from participants' experiences that the toolkit may help improve the cultural awareness of designers in design contexts. For the full version of the pre-questionnaire and the post-questionnaire, please check Appendix 4 and 5.

## 5.2 Data analysis

The answers regarding how participants deal with cultural aspects in design contexts have not been significantly changed. So, the toolkit may not help improve the cultural awareness of designers in design contexts, or the current study cannot test if the toolkit will affect participants' cultural awareness in design. Therefore, the focus of the data analysis was to answer Q1 - Q4.

The data for the user testing consisted of participants' answers about dealing with different scenarios during the workshop, the reflection cards they filled in, notes regarding participants' behaviors and the difficulties they encountered during the workshop, questionnaires, and the recording of the workshop discussion session. Thematic analysis was chosen to analyze the data. First, the recording was manually transcribed by me. All the data were coded based on the sub-questions of the user testing (see 5.1) and organized in spreadsheets. Relevant codes were grouped as a theme. Each spreadsheet represents a theme. Four themes were generated: *getting to know each other*, *discovering the differences and reflection*, *building a common ground for collaboration*, and *improvements*.

## 5.3 Findings

Since participants' answers to the questions related to design had not significantly changed before and after the workshop, it was hard to say that the toolkit would help participants raise their cultural awareness of design. Therefore, only the results regarding Q1 - Q4 will be dived into.

Before addressing the results, the two scenarios (i.e. mistake-based scenario and uncertainty scenario) that participants chose would be addressed since they would be mentioned in the findings. All the participants completed the uncertain situation scenario and discussed their answers. Three participants (P1, P2, and P3) also completed the mistake-based scenario but did not finish the discussion about the scenario. Here are the two scenarios:

- **Mistake-based scenario:** You made a mistake at work. Your manager pointed out your mistake and gave you feedback during the group meeting on Monday. How did you feel when you received the mistake-based feedback? What will you do after the group meeting?
- **Uncertainty scenario:** During the group meeting, your manager introduces a new project also about Metaverse. However, this is the first Metaverse project in your company. Nobody has experience with Metaverse or knows a lot about the topic. Your manager asks who would like to lead the project. How do you perceive the project? Assuming everyone has the same level of seniority, will you take it or not, and why?

There were four themes: *getting to know each other*, *discovering the differences and reflection*, *building a common ground for collaboration*, *improvements*. The details of each theme were introduced below.

### 5.3.1 Getting to know each other

The toolkit gives participants chances to share their personal experiences and cultural backgrounds that shaped their behaviors and worldviews. In the reflection part of the toolkit, participants were asked to reflect on how their cultures and personalities influenced their behaviors and worldviews (i.e., ways of thinking, values, and communication styles), which gave them opportunities to share their personal experiences that shaped who they are. For instance, P1 reflected, *“my culture gives me a lot of fear”*. She explained that the unemployment rate in Spain is high, which made her scared of making mistakes or taking on unknown projects at work because she was afraid to lose her job. P1 also shared that anxiety and her previous unhealthy work environments made her have trust issues. She used to work at small companies without clear boundaries, and managers always asked her to overwork. P3 used to work at a large international company and said, *“in a large-scale company and in multi-cultural teams, boundaries are set as a standard for everybody”*.

The toolkit cannot help participants understand a culture. Still, it can help participants know each other individually. In the workshop discussion session, some participants reflected that the toolkit asked many questions regarding their experiences. Through these questions, they got to know the other participants better. For instance, P2 shared her feelings about the toolkit and said,

*“I also think a lot more of these questions are about your background and not necessarily your culture. So I think there are a lot of cultural experiences that we share because there were aspects of our backgrounds that are similar. I share a lot of cultural experiences with other people who grew up with expat parents in Canada because there's just a high expat immigrant population in Canada. And if your parents are immigrants, you also share certain cultural things. And I think that puts us less in like, oh, I'm from Canada and you're from Spain. And we're like, you know, we actually do share things. And I think that's also something that you wanna build.”*

P3 added, *“I wouldn't say so much so as a culture, like if I hear anything about China from her, I'm not going to, you know, automatically apply everything that I learned from her to someone else. But her values and whatever she prefers and not prefers, I know that right now”*.

In the workshop-discussion session, participants also discussed what values the toolkit could bring to cross-cultural design teams. P4 indicated that people's behaviors might be different in various cultural settings. When the cultural setting has been changed, you cannot expect people to know your expectation and values. She needed an open conversation with her teammates to get to know each other's values and have a common ground on the team, in which the toolkit could bring values. Here is a part of the conversation between P1 and P4.

*“P4: I think really like when you are in the cultural setting, you are like expect other people, like how would they behave in that specific cultural setting? But when you get out of this cultural setting, you don't have any specific expectations from others because you know you are different, you are from different backgrounds. So yeah, you don't assume other people would understand your specific, uh, how*

*to say like requirements. You just try to open and communicate with them and try to let them know where your ideas come from so that everyone has a common ground.*

*P1: Yeah. I think that's what this tool kit could be very useful. By the end of the session, Oh, okay. these are personal values. Where are the values of the point? How are we gonna build from here? Like the body could be being open, um, the body could be we reward innovation. And like, what are the things that we have in common then people don't feel attacked later on, as Laura said that we're talking about the same thing over and over again, but we don't go anywhere."*

We can learn from the conversation that participants need a space to share their experiences and cultural backgrounds that shaped their behaviors and worldviews. Therefore, they can get to know each other's values and expectations, which would be helpful for them to build a common ground in collaboration. It can also be concluded that the toolkit cannot help participants know a culture and the differences between cultures but can help participants know each other individually. Hence, it was hard to say the differences discovered during the workshop were cultural differences. They were more about individual differences shaped by participants' cultural backgrounds and past work experiences.

### 5.3.2 Discovering the differences and reflection

The toolkit can reveal participants' thinking processes of how to approach different scenarios (ways of thinking) and values and help them discover the differences between each other in their behaviors and ways of thinking at work. When dealing with Hofstede's cultural-dimension-based scenarios, participants' ways of thinking and values surfaced. For instance, in the mistake-based scenario, P1 (Spain) and P2 (Canada) were uncomfortable when the manager pointed out their mistakes in front of other group members. They felt the manager had crossed their boundaries. They expected the manager to point out their mistakes privately instead of in public. P1 told the other participants, *"I feel a bit anxious, especially since the feedback was given in a group meeting. I would have preferred a one-on-one or received feedback in a group meeting but not pointing at individual mistakes"*. On the other hand, P3 focused on reflecting on her mistake and thinking of how to fix it. She indicated, *"(I would) reflect if it's a mistake and why it happened, and find a way to fix it"*.

In the uncertainty scenario, P1 (Spain) and P2 (Canada) were reluctant to take the metaverse project since they knew very little about the subject, and P1 expected to set a clear boundary before joining the project. She said, *"I feel like when asking people to join a new project, clear boundaries need to be established, workload, expectations, what would be the reaction of the company if nobody joins? what are the benefits? why this new project?"*. However, P3 (India) and P4 (China) were willing to take the project because they considered it an opportunity for self-development. P3 also expressed her interest in innovation projects. The metaverse project is relevant to innovation; thus, she was excited about the opportunity.

The reflection cards helped participants to discover the differences between each other regarding their behaviors and ways of thinking. During the workshop, they were also asked to

collaboratively fill in a reflection card after sharing how participants would approach different scenarios. The reflection card triggered participants to discover the differences in how they think and deal with the scenarios. For example, in the reflection card of uncertainty scenario, participants discovered they had various attitudes toward dealing with uncertainty and setting boundaries. It was also written that some were *“excited about new opportunities”* and some preferred *“unknown territory, innovation”*.

In the post-questionnaire, all the participants agreed they had discovered the differences in their behaviors and ways of thinking. For the mistake-based scenario, P1 reflected that *“some of my teammates were a lot more comfortable with dealing with mistakes”* and P3 wrote, *“they(P1 and P2) had clear boundaries and expected the manager to respect them”*. Moreover, in the post-questionnaire, participants also pointed out their differences in dealing with the uncertainty scenario. For example, P1 declared that *“some are more excited to deal with uncertainty and trust the group”* and P3 reflected that *“they had clear boundaries and expected the manager to respect them”*. Hence, Hofstede’s cultural dimension-based scenarios can surface participants’ behaviors and worldviews (i.e., ways of thinking and values) and help participants discover the differences.

The toolkit allows participants to reflect on themselves and consider how their cultures and personalities shaped their identities. Meanwhile, participants started to realize how cultures shaped their behaviors, ways of thinking, and values. The reflection part of the toolkit gave participants a chance to reflect on how their cultures and personalities influence the differences discovered in step 3 (see 4.3), which helped them realize how culture shapes their behaviors, ways of thinking, and values. For instance, P1 reflected that her culture made her fear uncertainty since Spain has a high employment rate. She explained the reason why she was fearful of taking the metaverse project was that she was scared of losing her job. She came from Spain, and the unemployment rate in Spain was extremely high. Since metaverse was a new topic for her, she worried she could not do it well, which may make her lose her job. P1 also reflected that anxiety and unhealthy work environments made her have trust issues. *“They complement each other, lacking of trust and fear of losing secure positions”*. She explained that she cared about not crossing boundaries because she used to work in small companies, and the managers there always disrespected her and crossed her boundaries.

Moreover, P3 (India) reflected that the culture she came from focused more on others and had fewer rigid boundaries. Also, her previous work experience at a large international company made her assume respecting each other’s boundaries is a standard for everybody, so she did not worry about the boundary issue. She said, *“my culture shapes me, and the work culture I experienced shapes my outlook on the world”*. P4 (China) also reflected that people valued group benefits over individual benefits in her home country. She mentioned that if she works in her home country and the metaverse project would benefit the whole team/company, she would consider her group benefits first and take the project because it is good for the team. Therefore, the reflection part can help participants reflect on how culture influences their behaviors, ways of thinking, and values.

Additionally, in the post-questionnaire, all the participants commented they had seen the influence of culture on their behaviors and ways of thinking during the workshop. For instance, P1



reflected that her culture gave her a lot of fear of unemployment. Besides, she mentioned her personality also shaped her behaviors and ways of thinking. P4 shared the lesson learned in this workshop - *“when you are in that cultural setting, you will act kind of the same as other people, e.g., when you’re in China, you do similar social activities but when you go out of the setting, you are shaped by your personalities mostly with the value you have”*.

In summary, Hofstede’s cultural dimension-based scenarios can help participants discover the differences in their behaviors, ways of thinking, and values. However, only two scenarios were tested in the user testing. More scenarios need to be tested to evaluate whether the toolkit can help participants discover the differences in participants’ ways of communication. The reflection part of the toolkit made participants reflect on how their cultures and personalities influence the differences discovered in step 3; therefore, they started to realize the influence of culture on their behaviors, ways of thinking, and values.

### 5.3.3 Building common ground for collaboration

The toolkit can help participants understand everyone’s values and expectations, which plays a positive role in building common ground in collaboration. In the toolkit, participants were asked to deal with different cultural-dimension-based scenarios. In the process, participants’ values and expectations in collaboration were revealed. For instance, in the uncertainty scenario, P1 and P2 hesitated to take the project. When P1 explained her decision, her expectation of having a clear boundary in collaboration was revealed. P1 said, *“I feel like when asking people to join a new project, clear boundaries need to be established, workload, expectations, what would be the reaction of the company if nobody joins? what are the benefits? why this new project?”*. P3 and P4 also declared what they valued when working on a project. P3 said she would take the project because the project was an unknown world for her with many to explore. She also thought metaverse is related to innovation and preferred innovation projects. P4 explained that she would join the project because it was a good opportunity to learn new technology and develop herself. In the reflection card, participants were asked to discover their differences in how they approached different scenarios. They discovered that P1 and P2 expected to have a clear boundary in collaboration, P3 preferred innovation, and P4 valued new opportunities and self-development.

In the workshop discussion session, participants reflected on the strengths of the toolkit. All of them agreed that the toolkit could help them understand the values of each other and build a common ground for collaboration. For instance, P1 claimed,

*“I think what I got from this session is if I had to work with the people on this session. Yeah. I already know what is a good start. Like I like that Nancy said she values innovation. Yeah. So I would bring it in, oh, maybe Nancy needs to take care that our project is innovative. And we’re gonna put her in charge of that, or I think Judy shared that she liked this new opportunity aspect as well. So maybe they work well together in that innovation aspect. And then they also know that they can’t communicate with me more clearly their intentions because I share I had a bit of trust with this innovation. So I think. Okay.*

*It helps me in a general sense that I will be more culturally aware. Yeah. But I feel more the immediate effect of if you put me tomorrow to work with them, we would work better.”*

P3 continued,

*“Yeah. I feel really strongly about that. I think more than anything, what the session has done is given me the opportunity to know these people a lot better and a lot more, what do you say in a very wholesome way? So if we were to work together now, that would create a really good solid base for us to be able to communicate, make decisions, uh, all of that.”*

It can be concluded that the toolkit has a positive impact on collaboration. Specifically, it helps everyone on a team know each other and may build a common ground for collaboration. In the final evaluation, what common ground in collaboration means and to what extent the toolkit helps build a common ground for collaboration will be investigated.

#### 5.3.4 Improvements

According to the feedback from participants on the toolkit, it can be concluded that the toolkit helped participants know their teammates better, particularly about each other’s cultural backgrounds and past work experience. The toolkit also allowed participants to have an open conversation about each other’s expectations for collaboration. Moreover, participants’ values and ways of thinking were revealed when they made assumptions about different scenarios and discussed how to approach them. On the other hand, some parts of the toolkit can be improved. Table 6 summarizes all the improvement points for different steps of the toolkit.

Table 6. Summary of the improvement points for the toolkit

Stage of the toolkit	Suggestions for improvement
General	<ul style="list-style-type: none"><li>- A timer is needed for each stage of the toolkit</li><li>- Giving a scope of culture at the beginning of the toolkit</li><li>- Mentioning how you will use the data collected in the toolkit; otherwise, some people may be scared of expressing themselves</li></ul>
Step 1	<ul style="list-style-type: none"><li>- Having a session to ask participants introduce the country they are from (like where it locates, food, and language of the country) because some countries may not be well-known</li></ul>
Step 2	<ul style="list-style-type: none"><li>- Specifying the number of questions that need to be done in the given time frame</li></ul>
Step 3	<ul style="list-style-type: none"><li>- Specifying the number of scenarios that need to be done in the given time frame</li><li>- Assigning each scenario a number so that participants can easily refer them back when filling out the reflection card</li></ul>

	<ul style="list-style-type: none"> <li>- Making the scenario card bigger</li> <li>- Reducing the length of scenarios and using simple sentences; if possible, having a standard structure on describing the scenarios</li> <li>- For the metaverse project, it's better not to mention "metaverse" because some people may don't like "Metaverse", which may influence their decisions in the scenario</li> <li>- For the mistake-based scenario, please specify the mistake</li> </ul>
Step 4	<ul style="list-style-type: none"> <li>- Needing more time for discussion</li> </ul>

All the improvement points were generated based on the data from the observation and post-questionnaires. In general, a timer is needed during the workshop. Otherwise, participants may spend much time on one exercise. Some participants were confused about the scope of culture in this toolkit since there are many definitions of culture. Thus, the scope of culture for this toolkit needs to be specified at the beginning of the toolkit. A participant also suggested mentioning how I will use the data because some may worry their data will be shared with third-party companies or groups. To create a free and open space for conversations, "the data will be kept anonymously" will be addressed at the beginning of the toolkit.

Some participants also suggested asking people to introduce the country they are from in step 1. There might be a case that new participants come from a small country or an unfamous country that people know little about. Hence, it would be better to ask everyone to introduce their countries, such as where it is located, the typical food in the country, and what language people speak. Participants also advised specifying the number of questions/scenarios to be done in step 2 and step 3. Since both exercises asked participants to pick up as many cards as possible in the given time frame, specifying a suggested number of cards can help participants better control the time.

Most advice was collected for improving step 3. All the participants suggested assigning each scenario a number, making it easier for them to refer back to the scenario when filling out the reflection card. The current scenario card was too small, and the print quality was not good. Therefore, the size of the scenario card will be bigger, and the quality will be improved in the final evaluation. Some participants also reflected that the length of some scenarios was too long. They had to check the scenario card several times when answering the questions on the card. In the final evaluation, the length of scenarios will be reduced, and I will avoid using complex sentences when describing a scenario. Participants also gave specific advice on the two scenarios they did. For the mistake-based scenario, it would be better to specify the problem since participants will approach the scenario based on the size and severity of the problem addressed in the scenario. In the final evaluation, I will specify the problem of the mistake-based scenario. However, I will also intentionally keep some scenarios open or ambiguous so that participants will make assumptions about different scenarios, reflecting their values and ways of thinking. For the metaverse scenario, some participants recommended replacing "metaverse" with "a niche technology" because "metaverse" is also the name of a company. Some people may have a bad

impression of the company, influencing their decisions and behaviors. During the observation, I found the discussion in step 4 took longer than 10 minutes. Hence, the duration of step 4 will be extended to 15 minutes. All in all, the toolkit will be improved based on the suggestions summarized in Table 6.

## 5.4 Discussion

In this user testing, the usability and the effectiveness of the toolkit were investigated. In general, the toolkit allowed participants to share their cultural backgrounds and experiences that shaped their behaviors and worldviews. All the participants agreed that the toolkit helped them know each other better. However, the toolkit cannot help participants to understand a culture. In addition, all the participants reflected that the toolkit positively affected cross-cultural collaboration. Specifically, the toolkit made participants know everyone's values and expectations of collaboration, which may have an advantage of building a common ground (i.e., shared goals and values for collaboration and mutual respect and trust in each other) for collaboration. The final evaluation will evaluate if the toolkit can help cross-cultural teams build a common ground for collaboration.

It turned out that cultural-dimension-based scenarios and the reflection part of the toolkit seemed practical to help participants understand the influence of culture on their behaviors, ways of thinking, and values. However, the results did not show much evidence of the impact of culture on participants' ways of communication since it depended on the scenarios that participants chose. In particular, Hofstede's cultural dimension-based scenarios and the reflection cards can make participants recognize the differences between each other regarding their behaviors, ways of thinking, and values. Some participants were surprised how people can think differently in the same scenario. Step 4 (the reflection session) gave participants a chance to reflect on how their cultures and personalities play a role in the differences discovered when dealing with scenarios. As a result, they started to realize how culture and their personalities shaped their behaviors, ways of thinking, and values. Due to the positive feedback of cultural-dimension-based scenarios and the reflection part (i.e., step 4), the current structure of the toolkit will be kept.

In the next stage, the toolkit will be improved based on feedback from the study (see Table num). The final evaluation will focus on investigating whether the toolkit can make participants realize the influence of culture on their behaviors, ways of thinking, values, and communication styles and whether the toolkit can help participants build a common ground for collaboration, specifically the following research questions will be answered:

- To what extent will the toolkit help designers understand each other's cultural backgrounds and past experiences in collaboration?
- To what extent will the toolkit raise the awareness that culture will shape people's behaviors, ways of thinking, communication styles, and values?
- To what extent will the toolkit help a cross-cultural design team build a common ground for future collaboration?

For the final evaluation, the toolkit will be tested with interns from the LEGO Group at LEGO headquarter. The toolkit will also be tested in a workshop through observation and questionnaires.

## 6. Final evaluation

In this chapter, the toolkit will be improved based on the feedback collected from the user testing. The improved toolkit will be finally tested to evaluate if the toolkit can achieve its goals. Ultimately, the main research question will be answered.

### 6.1 Toolkit improvement

Before the final evaluation, the toolkit was improved based on the feedback collected in user testing (see Table 6). In 6.1, it would address how the toolkit has been improved. The illustration of the final toolkit can be found in Appendix.

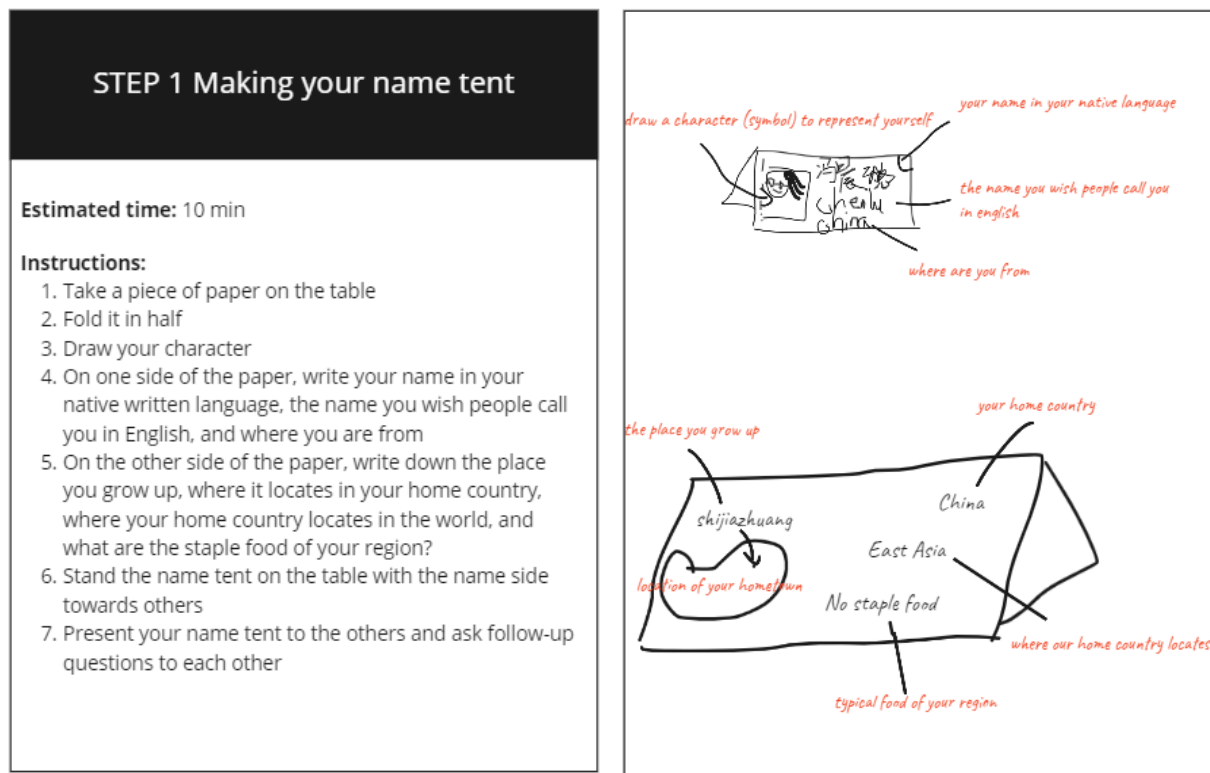
The overall structure of the toolkit has not been changed. Some usability issues would be solved. In user testing, participants were confused about the scope of “culture” in this toolkit since “culture” was not officially defined. Also, the toolkit did not explain how the data generated during the workshop will be processed. Some participants mentioned people might behave differently during the workshop if any other third parties share the data generated in the workshop. Thus, an introduction was added before step 1 of the toolkit. It would address the scope of culture, the toolkit’s purpose, and how data will be collected. Fig 15 shows the illustration of the introduction.

Fig 15. The illustration of “introduction”

Introduction	Scope of culture
<p>This is a collaborative toolkit to help everyone in the team to get to know each other's culture and past experience when collaborating with others. Hope you can build a common ground for collaboration after the session.</p> <p>Please respect each other and no judgement. Feel free to show your opinions. The data will be kept anonymously.</p>	<p>Let's first define the scope of culture in this toolkit.</p> <p>Culture: are the shared values, beliefs, behaviors, and norms of <b>a group of people (e.g., region, country, female, male...)</b> that guide people on how to think and react to a given situation.</p>

In user testing, some participants also suggested asking people to introduce the country they are from in Step 1. Since some people may come from not well-known countries, it would be better to ask everyone to introduce their countries, such as the location, the official languages, and typical food of the country. Moreover, it was observed that participants would ask each other questions about their backgrounds and cultures due to curiosity, which was an excellent way to know the other participants' cultural backgrounds. Therefore, in Step 1, besides introducing their names, participants were also asked to introduce the places they grew up and their countries, specifically about the location and typical food. In addition, participants were encouraged to ask each other questions regarding their backgrounds after introducing their name tents. Fig 16 presented the updated version of Step 1.

Fig 16. illustration of "Step 1"



Some participants also advised providing a suggested number of question cards or scenario cards to pick in Step 2 and Step 3, so they would not spend much time on one question card or scenario card. Hence, the suggested number of cards was given in Step 2 and Step 3. In the user testing, some participants reflected some questions or scenarios in Step 2 and Step 3 were too abstract. It was observed that the abstractness might be suitable for discussions since participants' values and thoughts would be revealed when making assumptions. Therefore, participants would be encouraged to make assumptions if some questions in Step 2 or some scenarios in Step 3 were a bit abstract. Fig 17 presented the instruction of Step 2, and Fig 18 showed the instruction of Step 3.

Fig 17. The illustration of Step 2

**STEP 2 Get to know each other**

**Estimated time:** 15 min

**Purpose:**  
To help everyone get to know each other and their cultures

**Instructions:**

1. shuffle question cards
2. ask a team member to pick up a card randomly
3. read the question aloud
4. everyone writes down the keywords of your answer on a post-it
5. share your answers with everyone
6. pick up 3-4 more cards!

PS: If some questions are too vague to answer, please make an assumption by yourself

Fig 18. The illustration of Step 3

**STEP 3 Discover differences**

**Estimated time:** 30 min

**Purpose:**  
To help us recognize and understand the differences between each other in terms of our values, attitudes, and ways of communication

**Instructions:**

There are list of scenario cards. Imagine if you were the person in the scenario, how would you deal with the situation.

1. shuffle scenario cards
2. ask a team member to pick up a card randomly
3. read the scenario aloud
4. everyone writes down your answer on a post-it
5. share your answers with others
6. As a group, write down the differences between each other in terms of how you think and deal with the situtaion on reflection cards
7. try to pick up 2-3 cards

PS: Make an assumption based on your past experience if a question is too vague to answer

During the user testing, some participants mentioned the scenarios were too long and complex to read. They suggested reducing the length of scenarios and using simple sentences to describe a scenario. If possible, it would be better to describe all the scenarios in a standard structure. Due to time limitations, the length of scenarios was reduced, and the scenarios were depicted simply. The modified scenarios can be found in Appendix 3. In the user testing, the discussion of Step 4 took around 15 minutes, which took longer than expected. As a result, the given time frame in Step 4 changed from 10 to 15 minutes.

The user testing found that the takeaway message of the toolkit was vague and hard to make participants understand. It was reframed to address the importance of respecting and embracing the differences among teammates. Here is the reframed takeaway message:

***Everyone is different. We all have different ways of thinking, communication, and values, which are shaped by our cultures and past experiences. Embracing the differences, understanding and respecting each other's cultural backgrounds are necessary for cross-cultural collaboration.***

The complete version of the final toolkit can be found in Appendix 7.



## 6.2 Method

The final evaluation aims to investigate if the collaborative toolkit can achieve its goals. The main research question will be answered based on the insights from the final evaluation. The goals of the collaborative toolkit are

- to create an open and free space for designers on cross-cultural teams to have a dialogue about their cultural backgrounds and work experience that shaped their behaviors and worldviews
- to make designers aware of how culture will share their behaviors, thinking processes, values and communication styles during the cultural dialogues
- to help designers share their expectations on collaboration and build a common ground for collaboration.

To evaluate whether the toolkit achieved the goals, three sub-questions were asked, which were similar to the evaluation questions of the user testing, except Q3 was specified to evaluate the effect of the toolkit on building a common ground for collaboration.

**Q1: To what extent will the toolkit help designers understand each other's cultural backgrounds and past experiences in collaboration?**

**Q2: To what extent will the toolkit raise designers' awareness that culture will shape their behaviors, ways of thinking, values, and communication styles?**

**Q3: To what extent will the toolkit help a cross-cultural design team build a common ground for collaboration?**

The toolkit was tested in a one-hour workshop with four participants through observations. At the end of the workshop, participants were asked to fill in a questionnaire. The details of the study design were addressed below.

### 6.2.1 Participants

The project is in collaboration with the [LEGO Group](#). The final evaluation was decided to be conducted in the LEGO Group to test if the toolkit can achieve its goals in industry settings and the values it can bring to the LEGO Group. The four participants were recruited through convenience sampling. They were user experience (UX) research interns at the LEGO Group, and all had design experience at school.

The participant group consists of one from the Netherlands, one from Denmark, and one from Sweden. All of them have worked together for four months. They have already known each other for a bit, which is one of the drawbacks of the final evaluation.

### 6.2.2 Procedure

The final evaluation was conducted at the headquarter of the LEGO Group at the beginning of June 2022. First, the toolkit was tested in a workshop with four participants. The workshop took around 1.5 hours.

Since the toolkit has concrete instructions for each step, participants navigated each step of the workshop by themselves during the workshop. I only intervened in the workshop when participants encountered problems or had questions about the toolkit. As an observer, I took notes about participants' reactions and behaviors in each step and the content they discussed during the workshop. The reflection part of the workshop was recorded. After the workshop, participants were asked to fill in a questionnaire.

Fig 19. A picture of the final evaluation



### 6.2.3 Questionnaire design

The purpose of the questionnaire is to get participants' opinions about the toolkit and answer the sub-questions listed at the beginning of Session 6.2. There are three sub-questions.

The first sub-question explores whether the toolkit can help participants understand each other's cultural backgrounds and their past collaboration experiences that shaped their behaviors and worldviews. To answer the sub-question, two statements were generated:

- "The toolkit helps me better understand my teammates' ways of thinking and communication, and values"
- "The toolkit helps me understand my teammates' cultural background"

Participants were asked to rate the statements in 5-Likert scale, explain their answers, and how they think so.

The second sub-question investigates whether the toolkit can help participants realize that culture will influence people's behaviors, ways of thinking, values, and communication styles. The

questionnaire prepared questions for each scenario in step 3 of the toolkit to answer the sub-question. For each scenario, participants were asked if they had discovered the differences in how they dealt with the scenario. Participants were also asked how culture would influence the differences. Here is an example of questions for one scenario:

In step 3, scenario 4 is about dealing with embarrassment. Have you discovered some differences in how your teammates deal with such situations compared with you?

- If so, what are the differences?
- From your perspective, how does culture influence the differences?

Moreover, participants were asked if they had seen the influence of culture on their behaviors, ways of thinking, values, and communication styles during the workshop and gave an example to explain their answers.

The third sub-question tests whether the toolkit can help participants build a common ground for collaboration. To answer the sub-question, participants were asked to explain common ground in collaboration. Then, they were asked to rate the following statements:

- “The toolkit helps the team build a common ground”
- “The workshop helps me improve my collaboration skills”
- “The workshop makes me confident to collaborate with other people attending the workshop”

Again, after rating the statements, participants were required to explain their answers and gave examples to support their answers.

Other than these specific questions, some general questions were also asked in the questionnaire. Participants were asked what they had learned in the workshop and their opinions and feedback on improving the toolkit. The complete version of the questionnaire can be found in Appendix 6.

### 6.3 Data analysis

The data for the final evaluation consisted of participants’ answers towards dealing with different scenarios during the workshop, the reflection cards they filled in, recording of the reflection part (i.e. step 4 of the toolkit, see 4.3), notes regarding participants’ behaviors during the workshop, and questionnaires. Thematic analysis was chosen to analyze the data. First, the recording was manually transcribed by me. All the data were coded based on the goals of the final evaluation (see 6.2) and organized in spreadsheets. Relevant codes were grouped as a theme. Each spreadsheet represents a theme. In total, four themes were generated: *improve communication of a team*, *surface differences and reflection*, *build a common ground for collaboration*, and *improvements*.

### 6.4 Findings

In 6.4, the findings of the final evaluation would be presented. All the findings are based on the data collected during the workshop with the 4 participants and their answers to the questionnaire.

Two scenarios (scenario five and scenario 8) were chosen during the workshop. Here are the contents of the two scenarios:

**Scenario 5:** Your company starts a new project with a popular technology. However, nobody in your company has experience with the topic. Your manager asks who would like to lead the project. How do you perceive the project? Assuming everyone has the same level of seniority, will you take it or not, and why?

**Scenario 8:** You are a new junior member of your team. You take three projects at a time to grow faster in promotions. You have two deadlines this week. How will you deal with the situation?

The two scenarios would be mentioned when addressing some findings. Four themes were come up with: *improve communication of a team*, *surface differences and reflection*, and *build a common ground for collaboration* and *improvements*. The highlights/takeaways of each theme were summarized in the table below. The details of each theme would be addressed in the following sessions.

Table 7. The summary of findings in the final evaluation

Themes	Highlights/takeaways
Improve communication of a team	<ul style="list-style-type: none"> <li>- Created an open and free space for dialogues</li> <li>- Enables participants to share work-related and personal experiences that shaped their behaviors and worldviews at work</li> </ul>
Surface differences and reflection	<ul style="list-style-type: none"> <li>- Hofstede's cultural-dimension-based scenarios revealed participants' thinking process of how they would approach work-related scenarios (ways of thinking), values, and communication styles</li> <li>- Reflection cards helped participants to discover the differences in how they think and approach work-related scenarios</li> <li>- Reflection session of the toolkit gave participants a chance to reflect on their behaviors, ways of thinking, values, and communication styles, and how culture and personality influenced their worldviews at work</li> <li>- Raised participants' awareness that a person's experience, personality, and culture may influence their behaviors and ways of thinking at work.</li> </ul>
Build a common ground for collaboration	<ul style="list-style-type: none"> <li>- Reflection cards (asking participants to discover and deal with differences in their behaviors and</li> </ul>

	<p>worldviews) helped participants understand and embrace the differences between each other</p> <ul style="list-style-type: none"> <li>- Reflection cards helped participants convert differences into benefits for the team</li> </ul>
Improvements	<ul style="list-style-type: none"> <li>- Leaving more time for discussing scenarios and the reflection part</li> <li>- Reducing the length of some scenarios and making some scenarios explicit</li> <li>- Asking more questions related to culture in the toolkit</li> <li>- Due to time limitation, participants cannot experience different types of scenarios</li> </ul>

#### 6.4.1 Improve communication of team

The toolkit improved the communication of a team by creating an open and free space for participants to have a conversation and get to know their teammates. In the questionnaire, all the participants reflected that they felt comfortable sharing their opinions and experiences that shaped their experiences during the workshop. P1 mentioned, *“the toolkit and questions are very focused on no-judgment communication style, which made it very easy to open up and share experiences and mindset.”* P4 also commented, *“I do find it easier for me to express when it’s put into structure like this.”*

Some participants indicated that the toolkit created an opportunity for them to ask questions to their teammates and get to know them better. P4 said, *“I sometimes find it difficult to ask questions to my colleagues, even though I am very curious about them. So I think the toolkit helped me ask those interesting questions to realize new things about my teammates. I think it works very well to both hear my teammates’ answers, reflection but also to see how they interact when others are speaking”.*

Moreover, the toolkit enabled participants to share their work-based and personal information that shaped their behaviors and worldviews at work. In the last part of the workshop, participants were given chances to reflect on how culture and their personalities influence how they approached different scenarios. In this phase, some participants shared how they perceived their cultural backgrounds and how culture influenced their behaviors and worldviews. For instance, in scenario 8, P1 (Sweden) was uncomfortable asking for help from her colleagues. She explained, *“reflecting on the culture where I came from. It’s very important that you don’t lose your face and like you are not embarrassing yourself. So I reflected on that. That’s why I have a hard time asking for help because you have to be strong, independent, and like not, uh, yeah. So that is the culture”.*

Most participants also shared their previous work experiences and reflected on how their past work culture influenced their behaviors and worldviews. For example, in scenario 8, P2 planned to be honest with his colleagues about his progress and let his colleagues set realistic expectations on when he

would finish all the deadlines. P2 indicated that he valued transparent communication in collaboration. He demonstrated that his previous work experience shaped his professional identity and said:

*“like how my previous work has changed how my professional identity, uh, has formed. And I think of less effective teams that I've been part of that I noticed how important communication was. Um, and if it's not transparent enough, then, conflicts are very easy to occur. So to say, uh, that expectation management is very important. Um, let others know what they can expect of you and I dunno, um, it always really helps to see the perspective of someone else mm-hmm and that always creates some sort of trust and understanding. And I think that's so important. And if I look at the difference between the culture and our past experiences, I noticed that our past experiences always have been, and it found that you have learned from them”*

Likewise, P4 reflected that her previous work culture made her uncomfortable asking for help from other colleagues in scenario 8. She explained that she did not want to cause trouble and that she could rely on others when collaborating with someone who has different expertise from her. She told other participants during the workshop:

*“I can see that in my past work, I have either been working in fields with people who are very close to me in skills, and that can cause anxiety in a way of being stressed that you keep comparing yourself, or I have been working in companies where I have been working all alone. Like, I was the graphic designer. Mm-hmm, and it actually brings something good for me to work in a team where we are different because you can't compare yourself with people because you are so different, but you rely on people. So you still have to step it up.”*

However, the toolkit did not give participants many chances to share their cultural backgrounds. The only time that participants started to think of their cultural backgrounds was in the reflection part, where they were asked to reflect on how culture influenced their behaviors, ways of thinking, values, and communication styles. In the questionnaire, P2 mentioned, *“some questions told me little about their culture but more about their personality which was just partially formed by their culture.”*

#### 6.4.2 Surface differences and reflection

The toolkit can surface participants' thinking processes of how they would approach work-related scenarios (ways of thinking), values, and communication styles. Since the scenarios used in the toolkit were real-life scenarios that could happen in workplaces, participants' behaviors and the reasons for approaching a scenario were revealed when they shared their thoughts and how to behave in the scenario with others. For instance, when dealing with scenario 5, P3 and P4 were anxious about the new technology. P3 said, *“(I would) propose the group investigate and learn more about this technology to ensure everyone has a good base understanding.”* Otherwise, she would not lead the project. Whereas the focus point towards the scenario was different for P2 and P3. P2 was more focused on the leadership part. He would take the project because he was interested in managing people and learning about seeing the big picture. He did not show any anxiety about the technology part. Likewise, P1 was not

anxious about the unknown project and showed her do-it mindset. She already dived into how to lead the project and told the other participants, *"I would be the person suggesting to structure the project, team build, keep the group up, and make sure everyone feels good."*

Similarly, when approaching scenario 8 (several deadlines), participants' ways of thinking, values, and communication styles were revealed. P1 showed her do-it mindset again. She would work hard and try to finish all the deadlines on time. Likewise, P4 said, *"I think it's unwise to take too many projects, but I always do it. The right thing will be to ask for help, but I would probably just work like crazy to get it done"*. On the other hand, P3 would focus on the big picture first and then see how to finish all the deadlines efficiently. *"(I would) create a structure for herself, map each task out, and have a to-do list."* Participants also had different attitudes towards asking for help from their colleagues. P2 said he was comfortable asking for help from his colleagues. However, the other participants were uncomfortable asking for help. P1 did not want to lose face. She told the other participants:

*"Reflecting on the culture where I came from. It's very important that you don't lose your face and like you are not embarrassing yourself. So I reflected on that. That's why I have hard time asking for help because you have to be strong, independent"*.

P4 explained she did not want to cause trouble. In her previous work experiences, she always worked alone, and she would compare herself with others if she collaborated with people with the same expertise. Thus, she had difficulty trusting other colleagues and asking for their help. In scenario 8, P2 would also proactively communicate with his colleagues about his progress and let them have realistic expectations of him. He explained being transparent is very important for him in collaboration, which can help him avoid conflicts. He added, *"the expectation management is (also) very important. Let others know what they can expect of you, and I dunno, um, it always really helps to see the perspective of someone else and creates some sort of trust and understanding"*. Even though other participants did not mention this point, they all agreed that being transparent is very important in collaboration during the discussion of scenario 8.

The toolkit's reflection cards helped participants discover the differences between each other in their behaviors and ways of thinking in a scenario. After sharing how to approach a scenario, participants were asked to collaboratively fill in a reflection card (see Fig 10), which motivated participants to discover the differences in how they approached the scenario. For instance, in the reflection card of scenario 5, participants recognized they had various anxiety levels about the unknown situation. In the reflection card of scenario 8, participants spotted the differences in how they perceived asking for help from others. And they mentioned some people had the do-it mindset, and some focused more on the big pictures. Some participants pointed out the differences they discovered during the workshop in the questionnaire. P2 commented, *"some people are more thinkers, and others are more doers"*. P4 also reflected, *"I think there was a difference in how natural it comes to us to jump into new things."* Hence, the toolkit can help participants figure out the different ways of thinking about the same scenario.

The toolkit has made participants reflect on themselves and how their cultures and personalities impact their behaviors and worldviews. In the last part of the toolkit, participants reflected on their behaviors, ways of thinking, and how their culture and personality influenced their behaviors and worldviews at work. For instance, during the workshop, P1 reflected on how her culture and past work experience have made her who she is. She said:

*"Reflecting on the culture where I came from. It's very important that you don't lose your face and like you are not embarrassing yourself. So I reflected on that. That's why I have a hard time asking for help because you have to be strong, independent, and like not, uh, yeah. So that is the culture part. but my past working experience from being on hyper island and being on Lego, um, has made me open to more fail or experiment and fail, and also seeing the interesting findings you get in failing. Like, and what's interesting to share your fail with others to see how you can go further"*

P2 also thought about what made her keep comparing herself with others at work, and she shared her past work experience with the other participants. She reflected,

*"But I can see that in my past work, I have either been working in fields with people who are very close to me in skills. And that has caused some sort of anxiety in a way of being stressed that you keep comparing yourself. Or I have been working in companies where I have been working all alone like I was the graphic designer. And it actually brings something good for me to work in a team where we are different because you can't compare yourself with people because you are so different, but you rely on people. So you still have to step it up."*

The toolkit has also raised participants' awareness that a person's experiences, personality, and culture may influence their behaviors and ways of thinking at work. Some participants had never thought that culture would influence a person's behaviors and perspectives. During the workshop, they started to be aware that everyone is different in their ways of thinking and values, and people's culture and experiences would impact their behaviors and worldviews. For example, at the end of the reflection part during the workshop, P1 reflected,

*"After like Lucy (the researcher of this project), when you have explained about this workshop and everything, I have started reflecting more on my education because everyone is from different cultures in our class. And I didn't think about maybe some conflicts could appear because of culture. And I don't think everything has appeared because of it, but I think it could have been like the effectiveness in cultures, definitely."*

Participants had problems distinguishing the influence of culture and the influence of personality on their behaviors and ways of thinking. In the reflection part of the workshop, P1 and P4 claimed that it is difficult for them to distinguish between the impact of culture and their personalities. For instance, P1 said, *" I find it really hard sometimes to understand, is this a like personality trait or is it a culture"*. Some participants had difficulties seeing the influence of culture in this workshop. In the questionnaire, P2 reflected he did not see the influence of culture on people's behaviors and worldviews because the



cultures that participants belonged to are similar, and he did not see a great distinction. P2 told the other participants during the workshop,

*“it's really hard to understand what your own culture had sort of an influence. So I'm really not aware. You can only compare it to others, like some cultures are less direct and others are more direct, and one is more masculine or more feminine. So it was really hard for me to think, um, how my culture has influenced anything without comparing myself to others.”*

All the participants of this workshop are from northern European countries, and their cultures are somehow similar; as a result, participants cannot see significant cultural differences between each other. Therefore, it might be difficult for them to reflect on the influence of culture on their behaviors and worldviews. Subsequently, they did not see the influence of culture on their behaviors, ways of thinking, and values.

#### 6.4.3 Build a common ground for collaboration

In the questionnaire, participants were asked what a common ground means for them in collaboration. For P1, common ground means having a common goal and core values on how to trust and respect each other on a team. P2 commented, *“having guidelines, values of the team, and trust to share honestly and not afraid of judgment”*. P3 claimed that the team agreed on values and approaches that should be. Having a common goal was the most crucial for P4 in collaboration. Even though everyone had a different interpretation of common ground in collaboration, there were similarities in their answers. In summary, common ground in collaboration can be concluded as having a common goal and agreed values and trusting and respecting each other on a team.

The toolkit played a positive role in building a common ground for collaboration by asking participants to discover and deal with the differences between each other in how they approached various work-related scenarios. During the workshop, when dealing with different scenarios, participants were asked to collaboratively fill in a reflection card, which helped them discover the differences and motivated them to discuss how to deal with the differences on a team. In this process, participants started to understand and embrace the differences between each other, which helped them convert the differences into benefits for the team instead of conflicts. For instance, when dealing with scenario 5, participants discovered that everyone had different anxiety levels toward uncertainties. To deal with the difference, participants proposed having back and forth communication on the team to find how everyone could be more comfortable working on the team. They wrote on the reflection card that *“(the differences) could be a conflict due to vulnerability. Trust is required”*.

In scenario 8, participants figured out that some people worked hard and some worked smart. When asked how to deal with the differences, they said they would create awareness of them and manage the balance of the two work models. They also discovered that different person has various attitudes toward asking for help from others. To deal with the difference, they would work on trust building and create opportunities for receiving aid. In the reflection card, they also reflected, *“we could be complementary, but (we) should manage and communicate well. Otherwise, (there) could be conflict”*.

In the questionnaire, all the participants reflected that the toolkit helped them become more open-minded and gave them a chance to deal with the differences between each other in how to approach work. For example, P1 wrote, *“I think the toolkit helped us understand how we could benefit from each other’s differences instead of creating a conflict. In my opinion, the conversation also got interesting when we started to talk about how common ground in a project has to do with the motivation of the project. That made us find a common ground”*. P4 additionally added that the toolkit could make her spot the differences between each other before they start working, and the toolkit could be used to work on their differences. Moreover, participants addressed that the toolkit is a good start in developing their collaboration skills. P1 told me,

*“It helped me develop my collaboration skills because we discussed how we should tackle each other’s differences in different situations. That helps me understand how my teammates want to be treated during a project. I think it helped that the questions were formulated accurately to a “real-world-situation” that very likely could be happening.”*

P2 declared, *“improving such (collaboration) skills requires more time than one workshop but it (the workshop) is a great starting point”*. Lastly, the toolkit made participants confident to work with each other attending the workshop. Even though participants have already known each other for a while, participants claimed the toolkit would also work well for new teams. P4 said, *“I already trust the people I have collaborated with during this workshop. But I also think it would help me in future collaborations”*. P1 also thought the toolkit worked well. She suggested doing the workshop regularly to keep an open-minded mindset.

#### 6.4.4 Improvements

Overall, all the participants were satisfied with the toolkit; however, some feedback was also collected to improve the toolkit. First, it was observed that the icebreaker exercise and step 2 of the toolkit (see 4.3) took longer than expected. Since step 3 (cultural-dimension-based scenarios) and step 4 (reflection part) are the toolkit's core, more time is needed for the two steps. P1 suggested combining some questions in Step 2 of the toolkit (see 4.3) into a longer scenario.

Moreover, P1 claimed some scenarios in Step 3 (see 4.3) were too long. It was difficult for her to remember all the elements when dealing with the scenario. Thus, she advised reducing the length of some scenarios in Step 3 of the toolkit. Also, P3 thought some scenarios were too vague, so it got more difficult for her to give a clear answer. She recommended specifying some scenarios.

Additionally, it was observed that the toolkit did not give participants many chances to share their cultural backgrounds. Likewise, P2 suggested asking more relevant questions about culture; otherwise, it would be difficult for him to see the influence of culture during the workshop. P2 indicated that the current toolkit was a bit boring for him. He recommended increasing the playfulness of the toolkit. Lastly, P4 advised taking a break during half of the workshop; therefore, she could be more focused in the second half of the workshop.

Besides, the workshop did not allow participants to experience different scenarios. Due to time limitations, participants only experience two scenarios during the workshop. It might be an opportunity for participants to do the workshop regularly to experience different scenarios and keep an open mindset.

## 6.5 Answer to the research questions

The final evaluation aimed to evaluate if the toolkit can achieve its goals. Three sub-research questions were answered in 6.5. Based on the insights from the final evaluation and the user testing (see 5), the main research question was answered in this session as well.

The first sub-research question is, *“To what extent will the toolkit help designers understand each other’s cultural backgrounds and past experiences in collaboration?”*. Based on the findings in the final evaluation, it can be concluded that the toolkit creates an open and free space for participants to have a dialogue and share their opinions and experiences. All the participants reflected that they felt comfortable opening up and sharing their stories with others; in particular, P1 preferred the non-judgment communication style created by the toolkit. In the process, participants can get to know each other better. Specifically, P2 had problems asking questions to her colleagues even if she was curious about them. The toolkit helped her ask these interesting questions to realize new things about her teammates. Moreover, in the reflection part of the toolkit, participants had opportunities to share their past experiences in collaboration and their cultural backgrounds that shaped their behaviors and worldviews. However, there were few relevant questions regarding cultures; thus, participants did not share many of their cultural backgrounds during the workshop. Only P1 expressed how her culture made her scared of losing face.

In summary, the toolkit built an open and supportive space for participants to have a conversation with their future teammates. The toolkit also allowed participants to share their mindsets, past experiences in collaboration, and cultural backgrounds, which helped participants get to know their teammates. However, there were few relevant questions regarding participants’ cultural backgrounds. Participants can dive into their cultural backgrounds that shaped their behaviors and worldviews in the reflection part of the toolkit.

The second sub-research question is *“How will the toolkit raise designers’ awareness that culture will shape their behaviors, ways of thinking, values, and communication styles?”*. The results in 6.4 have shown that the toolkit can surface participants’ ways of thinking, values, and communication styles. Meanwhile, participants can discover the differences between each other in either their behaviors, ways of thinking, values, or communication styles. According to participants’ discussion contents during the reflection part of the toolkit, it can be concluded that the toolkit helped participants reflect on themselves and consider how their cultures and personalities impact their behaviors and worldviews (i.e., ways of thinking, values, and communication styles). P1 even shared how she perceived her culture and how her culture shaped her scared of asking for help from others.

The reflection part of the toolkit can also provide evidence that it has raised participants' awareness that a person's behaviors and worldviews could be different due to their cultural backgrounds and past work experience. However, it was difficult for participants to distinguish the influence of culture and the influence of personalities on their behaviors and worldviews. In the reflection part of the toolkit, P4 said, *"I sometimes find it difficult to see, is it a culture? Or is it a personality?"*. In the questionnaire, P2 and P4 claimed they had a hard time seeing the influence of culture on people's behaviors and worldviews during the workshop. P2 explained the cultures that participants belonged to are so similar, and there was not a great distinction; therefore, it was hard for him to reflect on the impact of culture on his behaviors and worldviews.

Overall, the toolkit surfaced participants' ways of thinking, values, and communications, and participants can discover the differences during the workshop. The toolkit also helped participants reflect on themselves and how their cultures and personalities shaped their behaviors and worldviews. Some participants already know that a person's culture and personality could shape their behaviors, ways of thinking, values, and communication styles. On the other hand, some participants had problems seeing the influence of culture on their behaviors and worldviews since participants' cultures are so similar, and there were few cultural-relevant questions in the toolkit.

The third sub-research question is *"To what extent will the toolkit help a cross-cultural design team build a common ground for collaboration?"*. In the questionnaire, participants were asked what common ground means for them in collaboration. According to their answers, common ground in collaboration can be summarized as having a common goal and agreed values and trusting and respecting each other on a team. From the evidence provided during the workshop and in the questionnaire, it can be concluded that the toolkit can help participants build a common ground for collaboration. In step 3 of the toolkit, participants were asked to discuss how they would approach different scenarios and fill in a reflection card. The reflection card helped participants discover the differences between each other. It motivated them to deal with the differences, which played a positive role in building a common ground for collaboration. P1 even commented, *"In my opinion, the conversation also got interesting when we started to talk about how common ground in a project has to do with the motivation of the project. That made us find a common ground"*. In the questionnaire, all the participants agreed that the toolkit helped them feel confident to work with other participants in the future. Also, the toolkit was a good start for them to improve their collaboration skills to work with new teammates. Hence, the toolkit helped participants build a common ground for future collaboration.

The main research question of the research is ***"How can a collaborative toolkit support designers on cross-cultural teams to raise their cultural awareness?"***. To answer the research question, an in-depth interview was conducted to explore the cultural awareness of designers in design contexts and cross-cultural collaboration and to discover the problems and needs to raise cultural awareness of designers on cross-cultural teams. Based on the in-depth interviews' insights, the goals of the toolkit have been defined. The toolkit aims to create an open and free space for designers to have a dialogue with their teammates and share their cultural backgrounds and past experiences that shaped their

behaviors and worldviews. The toolkit also aims to raise designers' awareness that culture may shape people's behaviors, ways of thinking, values, and communication styles and enable participants to share their expectations and build a common ground for collaboration. The toolkit was developed based on insights from ideation activities (see 4.1), the cultural iceberg model (see 2.2), and Hofstede's cultural dimensions (i.e., individualism-collectivism, uncertainty avoidance, and power distance). Then, user testing (see 5) and the final evaluation (see 6) were conducted to answer the main research question.

According to the results of the user testing and the final evaluation, it can be concluded that the toolkit can create an open and supportive space for participants to have a dialogue with each other and share their cultural backgrounds and past experiences that shaped their behaviors and worldviews. In the process, participants can get to know their teammates better. However, in the core of the toolkit (step 3 and step 4), only step 4 (the reflection part) asked participants questions about cultures; that is, participants were not given enough chances to share their cultural backgrounds in step 3 (i.e., dealing with cultural-dimension-based scenarios).

In addition, the toolkit helped participants reveal their ways of thinking, values, and communication styles, and participants could discover the differences between each other when using the toolkit. The reflection part of the toolkit triggered participants to reflect on themselves and consider how their cultures and personalities influence their behaviors and worldviews (i.e., ways of thinking, values, and communication styles). In user testing, participants can easily reflect on how cultures influence themselves. All the participants mentioned that they had seen the influence of culture on their behaviors and worldviews. In the final evaluation, participants had difficulties distinguishing the influence of culture and the influence of personalities on themselves; some participants indicated they could not see the influence of culture on their behaviors and worldviews during the workshop. The results suggested that the toolkit can somehow raise participants' awareness that culture may shape a person's behaviors and worldviews. The effectiveness of this function may depend on the group organization. In the user testing, all the participants are from different cultures: someone is from North America, someone is from Europe, and some are from Asia. Participants can see the distinctive differences between each other's cultures, which helps them easily reflect on the influence of culture on their behaviors and worldviews. On the other hand, the participants of the final evaluation are from similar cultures. Most of them are from north European countries, making it hard to see the distinctive differences between each other's cultures. As a result, participants had difficulty reflecting on and seeing the influence of culture on their behaviors and worldviews.

Lastly, the toolkit can help participants share their expectations on collaboration and build a common ground for collaboration. This goal was mainly tested in the final evaluation. However, in user testing, some evidence can be revealed as well. All the participants in user testing reflected that the toolkit helped them know each other better. If they are put together to work tomorrow, they can work better than without using the toolkit. Also, some participants shared their collaboration expectations while discussing the cultural-dimension-based scenarios. And a participant mentioned the toolkit could help them build a common ground for collaboration. In the final evaluation, the common ground can be defined as having a common goal and agreed values and trusting and respecting each other on a team.

In the questionnaire, all the participants agreed that the toolkit helped them build a common ground for collaboration, especially when they discussed how to deal with the differences on the team. They all reflected the toolkit made them feel confident to work with other participants in the future. Moreover, the toolkit was a good start to improving their collaboration skills. A participant also suggested conducting such workshops regularly to keep an open mindset.

## 7. Discussion

In chapter 7, some insights and the limitations of the project will be discussed. At the end of the chapter, some recommendations will be given for future research.

### 7.1 General discussion

The previous chapters have described the process of designing the toolkit and the roles of the toolkit in raising the cultural awareness of cross-cultural design teams. This session will discuss some findings, values of the toolkit, and the study design of some sub-studies.

First, the toolkit cannot help participants understand a culture. Still, it created a space for collaborators to share their work-based and personal information before collaboration, which allows everyone on a team to know each other better. Particularly, Hofstede's cultural-dimension-based scenarios surfaced participants' ways of thinking, values, and communication styles in workplaces, which enables participants to acknowledge each other's interests and strengths at work and helps participants distribute tasks and roles in collaboration (Schadewitz, 2009). The reflection part gave participants a chance to reflect on how their cultures and personalities influence their behaviors and worldviews and subsequently share their past experiences and cultural backgrounds that shaped their behaviors and worldviews. P4 of the final evaluation shared she had problems asking questions to her teammates even though she was curious about knowing them. This toolkit helped her ask these interesting questions to her teammates and understand them better.

Second, the toolkit plays a positive role in expectation management for collaboration on a team. As Grossman et al. (2021) acknowledge that miscommunication and conflict can always happen in cross-cultural teams since culture influences people's conceptualizations of collaboration. To reduce the likelihood of miscommunication, Grossman et al. (2021) and Schadewitz (2009) suggested asking collaborators to share how they perceive collaboration and their expectations in collaboration. Hofstede's cultural-dimension-based scenarios and the reflection cards gave participants opportunities to share the things they valued in collaboration and their expectations of collaboration. Since most scenarios in this toolkit were real-life scenarios that might always happen in workplaces, participants' expectations of collaboration were revealed when dealing with the scenarios. Then, the reflection card asked participants to deal with the differences they discovered in approaching the scenarios, which helped participants build a common ground for collaboration. Originally, in the reflection card, one question was, "What are the differences in how you think and deal with the situation?". The question aimed to ask participants to discover the differences in how they think and deal with the scenarios. However, in the final evaluation, participants interpreted the question as discovering the differences in how they think and considering how they will deal with the differences between each other. It turned out the misunderstood question performed well for building a common ground for collaboration. Therefore, the misunderstood question was kept in the published version of the toolkit (see Appendix 7).

Moreover, the toolkit was originally designed for cross-cultural design teams. Since the scenarios designed in this toolkit were general scenarios that may happen in any field, the toolkit might be effective for expectation management for collaboration on any team that is not specific to design teams. Therefore, future research may employ the toolkit in teams in other fields. In addition, during the in-depth interview, some participants reflected that miscommunications can always happen in multi-disciplinary teams since people may have different ways of expressing the same things, and the thinking processes of people in different fields are diverse. Because the toolkit had the advantages of surfacing people's ways of thinking, values, and communication styles and managing expectations in collaboration, the toolkit might be effective for multi-disciplinary teams to understand each other and reduce miscommunications. Thus, more studies may also look into the use cases of the toolkit in multi-disciplinary teams.

Reflecting on the results of the user testing and the final evaluation, it seemed that a person's past collaboration experiences, personalities, and cultures would influence their ways of thinking, values, and communication styles at work. In particular, the reflection part of the toolkit gave participants opportunities to reflect on themselves and consider how these factors would influence their behaviors and worldviews. The toolkit was an eye opener for some participants since they had never thought culture would influence their behaviors and worldviews. Participants also indicated it was easy for them to reflect on the influence of their past work experiences and personalities on their behaviors and worldviews. However, it was difficult to reflect on the influence of culture in the final evaluation because participants' cultures were so similar, and they could not see the distinctive differences caused by cultures. Some participants claimed that personality and culture are interconnected with each other. Even though they had a hard time seeing the influence of cultures during the workshop, they understood their personalities were partially affected by their cultures. What we can learn from the findings is that culture and personality are interconnected; thus, it is hard to separate them individually. And people might be easier to reflect on and see the influence of culture on their behaviors and worldviews when they have seen the distinctive differences between each other due to cultural differences.

Moreover, since the project was in collaboration with the LEGO Group, the values that the toolkit can bring to the LEGO Group will also be discussed. The LEGO Group is a Danish multinational toy company (Lego Group, n.d.). It has 42 offices worldwide, and based on my experience there, people from different offices always collaborate online to work on a project. Therefore, (online) cross-cultural collaboration often happens at the LEGO Group. According to the research results, the toolkit brings value to cross-cultural collaboration. The toolkit made participants comfortable sharing their past work experiences and cultural backgrounds with their teammates, which helped everyone get to know each other individually. Studies have shown that culture will influence how people conceptualize collaboration and, therefore, their behaviors in collaboration (Bosley, 2009; Gelfand et al., 2007; Grossman et al., 2021). This toolkit allowed participants to express their expectations in collaboration and agree on the shared goals and values of collaboration on the team. Additionally, the toolkit raised participants' awareness that culture may influence a person's behaviors and worldviews, and participants started reflecting on themselves. Lastly, the toolkit played a positive role in building trust and support on a team. "High-trust environments correlate positively with high degrees of personnel involvement, commitment,



and organizational success” (Reina & Reina, 2011). Hence, the toolkit may improve the team performances of the LEGO Group.

Furthermore, in the in-depth interviews, it is found that a designer’s cultural awareness in design contexts may be associated with their professional experiences. The results reflected that designers with more experience designing for users from different cultures were more culturally conscious and empathetic in design processes. Since most participants of the in-depth interview study are design students, over 90% of them mentioned that they never considered cultural aspects in their design work, which might be a missing subject in design education. Hence, it is interesting for future research to explore how design education in different countries deals with the subject of “culture” in their education.

Reflecting on the study design of the in-depth interview, I concluded that the part of investigating participants’ cultural awareness in design contexts could be improved. Since the in-depth interview was chosen to study the subject, all the results and findings were derived based on participants’ subjective answers, which may generate bias. In future research, it might be better to provide participants with a design task and evaluate their cultural awareness through observations and how participants solve the design task. The suggested method can lead to objective findings and reduce the artificiality of in-depth interviews.

Lastly, although the toolkit is not directly relevant to raising the cultural awareness of designers in design, the toolkit aims to make designers realize the impact and importance of cultures. There is a possibility that participants will connect the lessons learned in this toolkit to their design process. Therefore, the user testing also tested “To what extent will help acknowledge the importance of culture in design contexts?”. To answer the sub-question, a pre-questionnaire with questions related to design was designed (see Appendix 4). Participants were asked to fill in a pre-questionnaire before and after the workshop. Then, the answers before and after the workshop were compared to see if there were any significant changes due to the workshop. It turned out that participants’ answers have not significantly changed after the workshop, which means the toolkit may not affect raising cultural awareness in design. Moreover, the current study design was based on participants’ subjective responses, which might bring bias to the results. In future research, it is suggested to complete a design task before the workshop and see if participants will make any changes to the design task after the workshop.

## 7.2 Limitations

There are some limitations to this project. First, the results of the research were not generalizable. Three sub-studies were conducted in this research; all are qualitative studies, meaning all the findings were based on participants’ subjective responses. Besides, the toolkit was tested in observational studies of workshops. “The validity and interpretation of observational studies is less clearer than experimental studies” (Hess & Abd-Elseyed, 2019). Although, as an investigator, I tried not to intervene with participants during the workshops, my involvement would still increase the possibility of bias. Therefore, the research results were not statistically representative and may have been biased by me. In addition,

the sample size of the three sub-studies was relatively small and not representative. Most participants took their design education in European countries; the results may only provide insights for designers who take design education or work in Europe. Moreover, most participants were females and design students. Thus, the results cannot represent all the designers around the world. Overall, the research was not statistically representative or generalizable. Therefore, more quantitative studies need to be conducted. Also, future studies should include more designers from different ethical groups and with various design experiences.

Moreover, most participants in the three sub-studies are not from the same cultures as me. Since people in different cultures may have various ways of thinking, my culture may subconsciously influence me to interpret the participants' answers and behaviors. However, avoiding the errors caused by perception differences between cultures was difficult.

Third, the language barrier influenced some participants to express themselves during the interview. The researcher of the study is from China. Due to language differences, most participants answered the interview questions in English. Since English was not the participants' mother tongue, some participants had difficulties expressing themselves in English when answering some questions. One of the Chinese participants answered the second half of the interview questions in Chinese. It turned out the Chinese participant could better show her opinions in Chinese. Thus, the language barrier may affect some participants to explain their answers.

For the user testing (see chapter 5) and final evaluation (see chapter 6), some participants already knew each other before the workshop, which created a supportive environment for discussions. Participants in the user testing reflected that the environment would influence how people behave during the workshop. Participants were willing to share their experiences, values, and thoughts in a good environment. If changing to a new setting, participants may behave differently. It is suggested to test the toolkit in an environment where everyone does not know each other in future research. Lastly, the toolkit was only tested in workshops of four participants. To know the optimal range of participants that the toolkit is suitable for, more tests with various numbers of participants need to be done.

### 7.3 Future work

In this session, some recommendations will be given for future research. First, in the final evaluation, some participants did not see the influence of culture on their behaviors and worldviews during the workshop. They reflected that there were few relevant questions regarding culture in the core parts of the toolkit. Only the reflection part asked participants to reflect on the influence of culture. Thus, adding more culture-related questions in the scenario part and on the reflection card is suggested to give participants more chances to share their cultural backgrounds and explicitly see the influence of cultures on people's behaviors and worldviews.

Second, there are nine scenarios provided in the toolkit. Only three scenarios were tested in the user testing and the final evaluation. More tests need to be conducted in the future to investigate the effectiveness of the other scenarios. Other than that, more scenarios are recommended to be created to increase the diversity of the toolkit. Besides, the scenarios of the toolkit were designed based on individualism-collectivism, power distance, and uncertainty avoidance of Hofstede's cultural dimensions. The other cultural dimensions (i.e., long-term orientation, masculinity-femininity, and indulgence-restraint) may also be effective for surfacing people's ways of thinking, values, and communication styles. Thus, future research may create scenarios based on these untested cultural dimensions and evaluate their effectiveness.

Moreover, the toolkit was only tested in workshops with four participants in this project. More tests with diverse numbers of participants need to be conducted to determine the optimal range of participants for the toolkit. Lastly, the original rationale of the project was to create a collaborative toolkit for designers on cross-cultural teams to raise their cultural awareness; therefore, the toolkit was only tested with designers. Since most contents of the toolkit were about collaboration in general, the toolkit may also work for expectation management and building a common ground for collaboration on general or multi-disciplinary teams. Hence, future research may conduct case studies of the toolkit for teams in different fields and multi-disciplinary teams. In addition, the toolkit was only tested in physical environments. Due to Covid-19, working from home has become a new norm (Ciotti et al., 2020). The toolkit may be applied in an online environment. Thus, future studies may also evaluate the toolkit in online environments.

## 8. Conclusion

This research aimed to explore how a collaborative toolkit can support designers on cross-cultural teams to raise their cultural awareness. To answer the research question, a collaborative toolkit was designed. First, through reviewing past relevant literature, some key terminologies were defined, and two theoretical models (i.e. cultural iceberg and Hofstede's cultural dimensions) were selected to operationalize cultural dimensions in the toolkit. Then, an in-depth interview study was conducted with 14 participants to explore designers' cultural awareness in design contexts and cross-cultural collaboration, in which the problems and needs of raising designers' cultural awareness were discovered. As a result, the goals of the toolkit were defined. The toolkit was developed based on the two theoretical models and ideas from ideation activities. The toolkit was tested in two iterations (i.e., user testing and the final evaluation) and improved based on the feedback from the user testing. The main research question was answered based on the findings from the user testing and the final evaluation.

According to the results from the user testing and the final evaluation, it can be concluded that the toolkit can create an open and free space for participants to have a dialogue and share their past experiences and cultural backgrounds that shaped their behaviors and worldviews. The toolkit also surfaced participants' ways of thinking, values, and communication styles through dealing with Hofstede's cultural-dimension-based scenarios, and participants can discover the differences between each other. Moreover, the toolkit allowed participants to reflect on themselves and triggered them to consider how their cultures and personalities shaped their behaviors and worldviews. Some participants raised the awareness that culture could influence a person's behaviors and worldviews. Lastly, the toolkit played a positive role for participants to share their expectations in collaboration and build a common ground for collaboration.

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# Appendix

## Appendix 1: interview protocol of the in-depth interview

Session	Questions
Warm-up	How are you? What is the main highlight of your day?
Basic background	<p>Can you please introduce yourself?</p> <ul style="list-style-type: none"> <li>- Which country are you from</li> <li>- Where are you based in</li> <li>- Would you mind disclosing your age?</li> </ul> <p>Can you describe your current job? (Can you describe your experience in design)</p> <ul style="list-style-type: none"> <li>- How long have you been working as a designer (considering school experience for design student)</li> <li>- Which industry have you worked in <ul style="list-style-type: none"> <li>- How long have you been in the industry</li> <li>- How often do you collaborate with others <ul style="list-style-type: none"> <li>- Who do you always collaborate with <ul style="list-style-type: none"> <li>- Are they always from the same culture as you? Or cross-culture?</li> </ul> </li> <li>- Who do you design for? Global audience? Or country-specific? Kids? Adults?</li> </ul> </li> <li>- Do you always design for end-users from one culture or multi-cultures?</li> <li>- Do you work on designing IT services? Or toys? Or a process?</li> </ul> </li> </ul>
Culture and design	<p><b>Values:</b></p> <p>What is important to you while designing a product/service/etc?</p> <ul style="list-style-type: none"> <li>- Why does it matter to you?</li> <li>- Can you walk me through your typical design process when you design a product/service/etc?</li> </ul> <p>What is important to you when you collaborate with your team?</p> <ul style="list-style-type: none"> <li>- Why do you think so?</li> <li>- Can you give me a specific example of when you have a good collaboration with your team? <ul style="list-style-type: none"> <li>- Why do you think it is a good collaboration?</li> </ul> </li> </ul> <p>As you mentioned, you always collaborate with cross-cultural teams. (optional)</p> <p>What is important to you when you collaborate with cross-cultural teams?</p> <ul style="list-style-type: none"> <li>- Why?</li> </ul>

	<p><b>Cultural differences</b></p> <p>Can you describe your cultural background?</p> <ul style="list-style-type: none"> <li>- In your opinion, what characterizes your cultural background?</li> </ul> <p>Based on your experience and background, have you ever experienced any cultural differences?</p> <ul style="list-style-type: none"> <li>- Can you give me a specific example?</li> <li>- In your opinion, how would you define cultural differences?</li> </ul> <p>Have you ever noticed cultural differences between you and your target users in your previous design experience?</p> <ul style="list-style-type: none"> <li>- Can you give an example? <ul style="list-style-type: none"> <li>- To what extent do the cultural differences between you and your target users influence your design? <ul style="list-style-type: none"> <li>- Did you do something to handle the cultural differences between you and your target users in your design? <ul style="list-style-type: none"> <li>- If so, how?</li> <li>- If not, why?</li> </ul> </li> </ul> </li> </ul> </li> </ul> <p>In your opinion, is it important to acknowledge cultural differences in the design process?</p> <ul style="list-style-type: none"> <li>- Why</li> <li>- How has it happened in practice at the moment? <ul style="list-style-type: none"> <li>- Have you done something to acknowledge cultural differences</li> </ul> </li> </ul> <p>Have you ever considered the cultural aspects of your end-users?</p> <ul style="list-style-type: none"> <li>- If so, can you give an example? <ul style="list-style-type: none"> <li>- In which specific case would you consider the cultural aspects of your target users?</li> <li>- Which aspects of culture would you always consider?</li> <li>- How often do you consider the cultural aspects of your target users in your previous experience?</li> </ul> </li> <li>- If not, why <ul style="list-style-type: none"> <li>- Which aspects of culture do you think can be incorporated into the design for improvement? (i.e. needs, environment, usability, creativity...)</li> </ul> </li> </ul> <p>When you design for target users from multiple cultures, will the target users' cultures influence your design?</p> <ul style="list-style-type: none"> <li>- If so, how? <ul style="list-style-type: none"> <li>- how would you handle cultural differences in the design process?</li> </ul> </li> <li>- If not, why?</li> </ul> <p>In your opinion, to what extent will your culture influence your design?</p>
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	<ul style="list-style-type: none"> <li>- If so, how do you think so? <ul style="list-style-type: none"> <li>- what do you think of the influence <ul style="list-style-type: none"> <li>- What are the advantages and disadvantages of the influences?</li> </ul> </li> </ul> </li> <li>- If not, why do you think so?</li> </ul> <p>In your opinion, to what extent will your culture influence cross-cultural collaboration?</p> <ul style="list-style-type: none"> <li>- If so, how do you think so? <ul style="list-style-type: none"> <li>- what do you think of the influence <ul style="list-style-type: none"> <li>- What are the advantages and disadvantages of the influences?</li> </ul> </li> </ul> </li> <li>- If not, why do you think so?</li> </ul>
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## Appendix 2: questions for step 2 of the toolkit

Category	Questions
Growing environment (or family atmosphere)	<p>Can you tell us a very memorable activity you once experienced as a child with (part of) your family? why do you think this is a memorable activity for you?</p> <p>Where did you grow up?</p> <p>Do you have any siblings? Are you the eldest, middle or youngest kid?</p>
Personality	<p>What do you consider as one of the most exciting parts of your job and/or study? Why?</p> <p>What is your favorite color? Why do you like it?</p> <p>What is your idea of a perfect day?</p> <p>What's your number one travel destination? Why this is your number one travel destination?</p> <p>If you had an extra hour per day, what would you do and why?</p>
Surface culture (e.g., food, music, movie, book, language)	<p>What is your favorite food? Why do you like it? If possible, show a picture of this food to the other</p>

	<p>participants.</p> <p>What's your favorite Radio or TV show? Can you try to explain why you like it that much?</p> <p>What is your favorite movie? Can you try to explain why you like the movie?</p> <p>What would you say is the most commonly held misconception about people of your country? What is it like in reality?</p> <p>What language do people speak in where you are from?</p> <p>Have you ever felt confused by the actions of someone from another culture? If so, tell us an example and explain why you are confused.</p>
Design habit	<p>What motivates you to do design?</p> <p>What is considered as "good design" in your country or at your school? If possible, show an example to the other participants and explain why this is a "good design".</p> <p>What is your favorite design style? If possible, show an example of your favorite design to the other participants and explain why you like it.</p>
Collaboration habit	<p>When you are at work, what is considered as a good collaboration for you? Please give an example and explain why you think it is a good collaboration.</p> <p>What is your way of communication when you work with others and why? For example, <i>I am direct and I will get to the point when I speak.</i></p>

### Appendix 3: Scenarios in step 3

**Scenario 1:** You made a mistake due to miscommunication with your colleagues. Your manager pointed out your mistake and gave you feedback during the group meeting. How did you feel when you received the mistake-based feedback? What will you do after the group meeting?

**Scenario 2:** Your colleague has been working on a product for a month. She is proud of her work. When her work has almost been finished, she shows it to everyone on the team. You figure out some critical flaws. What would you do and why?

**Scenario 3:** Your manager has assigned you many tasks that are out of your scope. What would you do and why?

**Scenario 4:** Imagine that you are traveling in another country as a tourist and you are the only person from your country in the city you are currently visiting. While visiting a restaurant in this city you knock your full glass of red wine onto the floor. It shatters and the wine goes everywhere. Everyone in the restaurant sees this. How do you feel at the moment? What will you do and why?

**Scenario 5:** Your company starts a new project of a new and popular technology. However, nobody in your company has experience with the topic. Your manager asks who would like to lead the project. How do you perceive the project? Assuming everyone has the same level of the seniority, will you take it or not and why?

**Scenario 6:** Your company recently opened a new office in a new country. They need a person from your office to go there and take charge of it. You know nothing about that country. Assuming you have the level of seniority, will you choose to go to the new office or not? And why?

**Scenario 7:** There is a new member in your team. What will you do to welcome the new member and why?

**Scenario 8:** You are a new junior member of your team. You take 3 projects at a time to grow faster. You have 2 deadlines this week. How will you deal with the situation?

**Scenario 9:** You are working on an important project but the deadline of the project is really tight. You only have 1 day to finish the project. How do you perceive the situation? What will you do and why?

#### **Appendix 4: pre-questionnaire for Chapter 5**

1. Based on your experience, is it necessary to consider the cultural aspects of your target users and why?
  - a. If so, in which situation will you consider cultural aspects?
2. Have you ever considered the cultural aspects of your target users and colleagues in previous design experience? How? Please give an example

#### **Appendix 5: post-questionnaire for Chapter 5**

1. What have you learned from the workshop?

2. Step 3 consists of some scenarios with uncertainty. Have you discovered some differences in how your teammates deal with uncertain situations compared with you?
  - If so, what are the differences?
  - From your perspective, will culture shape the differences? And How?
3. Step 3 also consists of some scenarios about making mistakes and interacting with managers. Have you discovered some differences in how your teammates deal with such situations compared with you?
  - If so, what are the differences?
  - From your perspective, will culture shape the differences? And How?
4. When you work with these people in the future, what would you do if you have different ideas/opinions?
5. Have you seen the influence of culture on our behaviors and ways of thinking?
  - If so, how?
  - If not, why?
6. After the workshop, is it necessary to consider the cultural aspects of your target users and why?
  - If so, in which situation you will consider cultural aspects?
7. What are the points of improvement in the toolkit?
8. What are the current strengths of the toolkit?

## **Appendix 6: Evaluation form for Chapter 6**

1. What have you learned from the workshop?
2. Please rate the statement “the toolkit helps me better understand my teammates’ ways of thinking and communication, and values”:
  - Strongly agree
  - Agree
  - Neutral
  - Disagree
  - Strongly disagree

Why do you think so? how?

3. Please rate the statement “the toolkit helps me understand my teammates’ cultural background”:
  - Strongly agree
  - Agree

- Neutral
- Disagree
- Strongly disagree

Why do you think so? How?

For questions 4-8, please answer the corresponding questions based on the scenarios you have done.

4. In step 3, scenarios 1, 2, and 3 are about mistakes or interacting with managers. Have you discovered some differences in how your teammates deal with such situations compared with you?
  - If so, what are the differences?
  - From your perspective, how does culture influence the differences?
5. In step 3, scenario 4 is about dealing with embarrassment. Have you discovered some differences in how your teammates deal with such situations compared with you?
  - If so, what are the differences?
  - From your perspective, how does culture influence the differences?
6. In step 3, scenarios 5 and 6 are about uncertainty. Have you discovered some differences in how your teammates deal with uncertain situations compared with you?
  - If so, what are the differences?
  - From your perspective, how does culture influence the differences?
7. In step 3, scenario 7 is about welcoming new members. Have you discovered some differences in how your teammates deal with such situations compared with you?
  - If so, what are the differences?
  - From your perspective, how does culture influence the differences?
8. In step 3, scenarios 8 and 9 are about dealing with tight deadlines. Have you discovered some differences in how your teammates deal with such situations compared with you?
  - If so, what are the differences?
  - From your perspective, how does culture influence the differences?

- 
9. While using the toolkit, have you seen the influence of culture on our behaviors, ways of thinking and communication, and values?
    - If so, how?
    - If not, why?

10. When collaborating with others, what does common ground mean to you?



11. Please rate the statement “the toolkit helps the team build a common ground”:

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

Why do you think so? how

12. Please rate the statement “The workshop helps me improve my collaboration skills”:

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

Why do you think so? how

13. Please rate the statement “The workshop makes me confident to collaborate with other people attending the workshop”:

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

Why do you think so? how

14. What are the current strengths of the toolkit?

15. What are the points of improvement in the toolkit?

## **Appendix 7: Final toolkit**

## Introduction

This is a collaborative toolkit to help everyone in the team to get to know each other's culture and past experience when collaborating with others. Hope you can build a common ground for collaboration after the session.

Please respect each other and no judgement. Feel free to show your opinions. The data will be kept anonymously.

## Scope of culture

Let's first define the scope of culture in this toolkit.

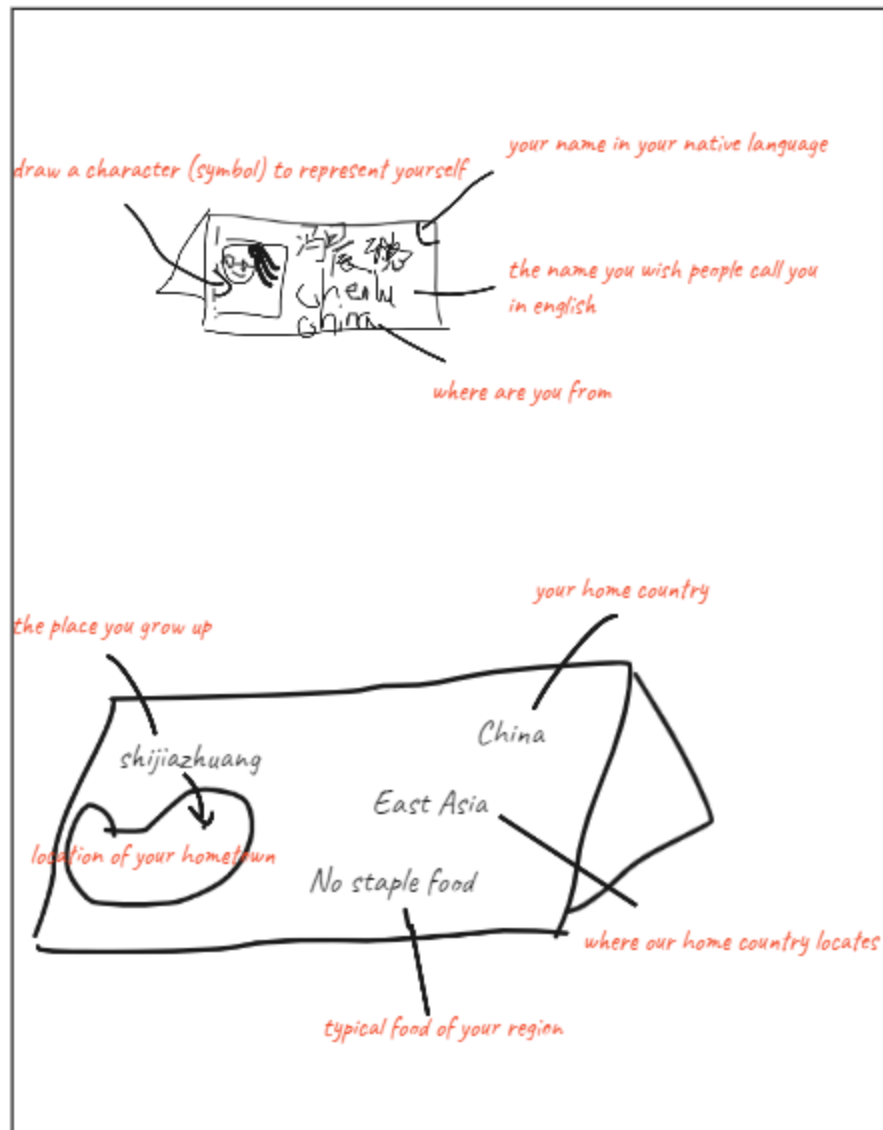
Culture: are the shared values, beliefs, behaviors, and norms of **a group of people (e.g., region, country, female, male...)** that guide people on how to think and react to a given situation.

## STEP 1 Making your name tent

**Estimated time:** 10 min

### Instructions:

1. Take a piece of paper on the table
2. Fold it in half
3. Draw your character
4. On one side of the paper, write your name in your native written language, the name you wish people call you in English, and where you are from
5. On the other side of the paper, write down the place you grow up, where it locates in your home country, where your home country locates in the world, and what are the staple food of your region?
6. Stand the name tent on the table with the name side towards others
7. Present your name tent to the others and ask follow-up questions to each other



## STEP 2 Get to know each other

**Estimated time:** 15 min

**Purpose:**

To help everyone get to know each other and their cultures

**Instructions:**

1. shuffle question cards
2. ask a team member to pick up a card randomly
3. read the question aloud
4. everyone writes down the keywords of your answer on a post-it
5. share your answers with everyone
6. pick up 3-4 more cards!

**PS:** If some questions are too vague to answer, please make an assumption by yourself

Question:

Can you tell us a very memorable activity you once experienced as a child with (part of) your family? why do you think this is a memorable activity for you?

Question:

What motivates you to do design?

Question:

What do you consider as one of the most exciting parts of your job and/or study? Why?

Question:

What is your favorite color? Why do you like it?

Question:

What is your favorite design style? If possible, show an example of your favorite design to the other participants and explain why you like it.

Question:

What is considered as "good design" in your country or at your school?  
If possible, show an example to the other participants and explain why this is a "good design".

Question:

What is your favorite movie? Can you try to explain why you like the movie?

Question:

What's your favorite Radio or TV show?  
Can you try to explain why you like it that much?

Question:

What is your way of communication when you work with others and why? For example, *I am direct and I will get to the point when I speak.*

Question:

What is your favorite food? Why do you like it? If possible, show a picture of the food to the other participants.

Question:

When you are at work, what is considered as a good collaboration for you? Please give an example and explain why you think it is a good collaboration.

Question:

What's your number one travel destination? Why this is your number one travel destination?

Question:

Do you have any siblings? Are you the eldest, middle or youngest kid?

Question:

What would you say is the most commonly held misconception about people of your country? What is it like in reality?

Question:

What languages can you speak at an acceptable level?

Question:

If you had an extra hour per day, what would you do and why?

Question:

What language do people speak in where you are from?

Question:

Have you ever felt confused by the actions of someone from another culture? If so, tell us an example and explain why you are confused.

## STEP 3 Discover differences

**Estimated time:** 30-35 min

**Purpose:**

To help us recognize and understand the differences between each other in terms of our values, attitudes, and ways of communication

**Instructions:**

There are list of scenario cards. Imagine if you were the person in the scenario, how would you deal with the situation.

1. shuffle scenario cards
2. ask a team member to pick up a card randomly
3. read the scenario aloud
4. everyone writes down your answer on a post-it
5. share your answers with others
6. As a group, write down the differences between each other in terms of how you think and deal with the situtaion on reflection cards
7. try to pick up 2-3 cards

**PS: Make an assumption based on your past experience if a question is too vague to answer**

## Reflection Cards

Scenario number

**What are the differences in how you think and approach the scenario? How would you deal with the differences between each other?**

**How do you perceive such differences?**

### Scenario 1:

You made a mistake due to miscommunication with your colleagues. Your manager pointed out your mistake and gave you feedback during the group meeting. How did you feel when you received the mistake-based feedback? What will you do after the group meeting?

### Scenario 3:

Your manager has assigned you many tasks that are out of your scope. What would you do and why?

### Scenario 2:

Your colleague has been working on a product for a month. She is proud of her work. When her work has almost been finished, she shows it to everyone on the team. You figure out some critical flaws. What would you do and why?

### Scenario 4:

Imagine that you are traveling in another country as a tourist and you are the only person from your country in the city you are currently visiting. While visiting a restaurant in this city you knock your full glass of red wine onto the floor. It shatters and the wine goes everywhere. Everyone in the restaurant sees this. How do you feel at the moment? What will you do and why?



Scenario 5:

Your company starts a new project of a new and popular technology. However, nobody in your company has experience with the topic. Your manager asks who would like to lead the project. How do you perceive the project? Assuming everyone has the same level of the seniority, will you take it or not and why?

Scenario 7:

There is a new member in your team. What will you do to welcome the new member and why?

Scenario 6:

Your company recently opened a new office in a new country. They need a person from your office to go there and take charge of it. You know nothing about that country. Assuming you have the level of seniority, will you choose to go to the new office or not? And why?

Scenario 8:

You are a new junior member of your team. You take 3 projects at a time to grow faster. You have 2 deadlines this week. How will you deal with the situation?

Scenario 9:

You are working on an important project but the deadline of the project is really tight. You only have 1 day to finish the project. How do you perceive the situation? What will you do and why?

## STEP 4 Reflection

**Estimated time:** 15 min

**Purpose:**

To help us reflect on how culture will shape our values and ways of thinking and communication

**Instructions:**

Looking back to the reflection cards, think of the following questions:

- How does my culture influence my ways of thinking and communication and values?
- How does my past work/collaboration experience influence my ways of thinking and communication and values?
- How does the answers to the first question different from the answers to the second one?

Write down your thoughts on post-its and share it with your teammates

Congrats! Hope you enjoy the session with your amazing teammates.

**Everyone is different. We all have different ways of thinking, communications, and values, which are shaped by our cultures and past experiences. Embracing the differences, understanding and respecting each other's cultural background are necessary for cross-cultural collaboration.**