

Breaking down barriers to Inclusive Design

A workbook for students



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This workbook supports Delft University of Technology's Industrial Design Engineering students starting with an Inclusive Design project.

This workbook provides information on Inclusive Design that you will process reflectively and iteratively through exercises in this workbook during your Inclusive Design project.

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This chapter can be filled in after the start of your project; the introductory session.

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This chapter can be filled in after the start of your project; the introductory session.

Introduction to Inclusive Design

In this chapter, you will explore what inclusion means to you. This way, you will discover what Inclusive Design is because defining is often already the first barrier for students during an Inclusive Design project.

You can read this chapter and make the exercises even before you will start with your Inclusive Design project. However, you can also choose to do this after your first session.

What is inclusion?

In this chapter, you will first explore what inclusion and exclusion is since this is the foundation of Inclusive Design. We will first start with two short exercises to get you to emerge in the situation.

EXERCISE

Can you remember a situation in which you or a loved one were excluded, and how did you deal with it? Describe or draw this situation.

EXERCISE

What does “being included” mean to you?

Nearly everyone has experienced exclusion and can recognize it when it occurs. Exclusion universally has the same meaning for everyone. It occurs when you are not a participatory member (Holmes, 2020), but when and why does exclusion happen to people?

As designers, we tend to create designs based on existing knowledge. For this, we often use our own abilities and biases as a starting point. As a result, we end up designing for people with specific abilities and assume that all abilities and senses are fully available all the time. Consequently, we ignore the wide range of human diversity. Therefore, people will be unintentionally excluded. This exclusion can occur at cognitive, social and physical levels (Microsoft, 2015).

It is not always noticed when exclusion occurs because people have the ability to adapt themselves to situations, which is why not everyone notices when they are excluded at certain moments.

Can you imagine a situation where you or someone else adapted themselves to avoid being excluded?

Therefore, products should be adapted to people instead of asking people to adapt to products. To prevent exclusion, we must strive for inclusion. Inclusion means that everyone can participate in their own desired way. However, inclusion is still ongoing, never perfect, and there is always a place for improvement (Holmes, 2020). As Adobe Spectrum (n.d.) stated:

“Inclusion is something that never has a perfect endpoint. But this doesn't mean we shouldn't engage or improve upon the ways we have practised design up to this point.”

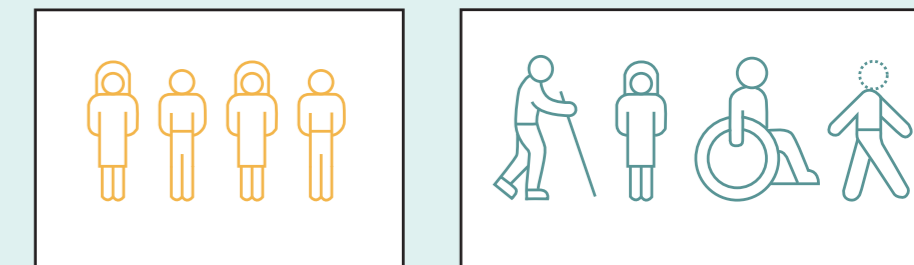
Two stages between inclusion and exclusion are sometimes still confused with inclusion: integration and segregation. In these cases, individuals can participate, but not in the desired way or in a modified form. The overview on the next page shows how the project views these four stages.

Exclusion



Exclusion happens when diverse groups or individuals are denied participation in society, directly or indirectly.

Segregation



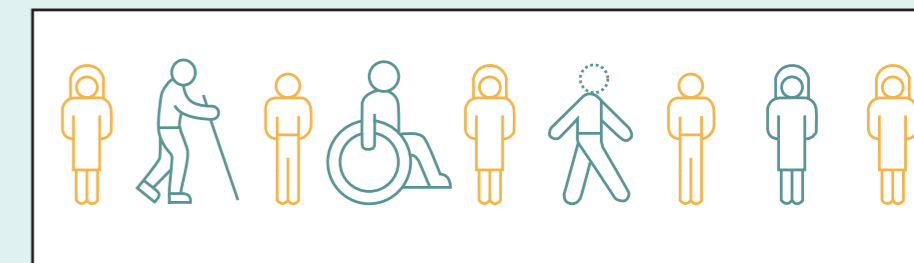
Segregation happens when diverse groups or individuals are placed in separate environments designed or used to respond to their differences.

Integration



Integration happens when diverse groups' or individuals' needs are met by employing policies. However, these people are often in the mainstream experience but treated as the “diverse” group.

Inclusion



Inclusion means groups or individuals are accepted, welcomed, and equally treated. This way, everyone can participate in their desired way.






Permanent, temporary and situational disabled

A disability can be permanent; about 15% of the population has a disability (World Health Organisation, n.d.). In addition, a disability can also be temporary. A temporary injury or the context can impact people's interactions with the environment. A disability can also depend on the situation because every environment has a different impact on a person's abilities (Microsoft, 2015). The overview on the right presents an overview of examples of when permanent, temporary and situational disabilities can occur.

This recognises that Inclusive Design is not only beneficial for people who have a disability but that it can also be beneficial for a larger group of people who are, for example, temporarily or situationally excluded. This leads to the conclusion that a person can be disabled by their environment, allowing a designer to create an exclusion with each choice they make in the design process. In other words, a designer can create a disability with their design because a disability happens when individual characteristics do not match the context. A person is thus disabled by his or her environment and therefore excluded from equal participation in society (van Houting, 2019; Microsoft, 2020; Adobe Spectrum, n.d.).

EXERCISE

Can you finish this overview?

Permanent	Temporary	Situational
 One arm	 Arm injury	 New parent
 Blind		
 Deaf		

What is Inclusive Design?

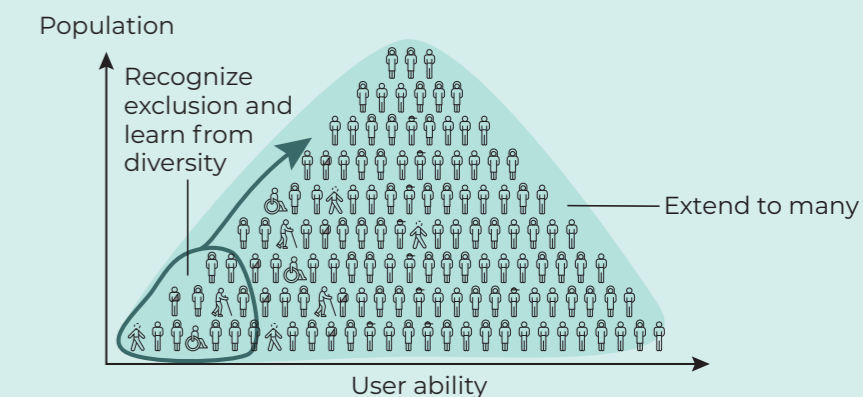
By designing inclusively, products, services, environments, and experiences will become accessible to people with a wide range of abilities.

Inclusive Design is still often confused with designing for people with disabilities. However, the basis of Inclusive Design is not accessibility, but the starting point is the exclusion that people experience when mismatches between them and their environment happen. Including these people in the design process will benefit a much broader group, such as those who are temporarily or situationally disabled.

The overview on the right and next page describes the term Inclusive Design from the project's point of view. In addition, the concepts of Universal Design and Accessible Design are also discussed in this overview; these terms are often confused with Inclusive Design because these approaches also focus on lowering barriers so that the broadest possible audience can use products (Joyce, 2022; Persson et al., 2015).

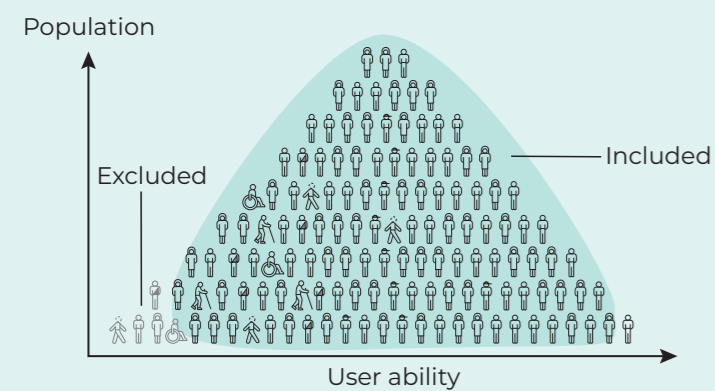
Inclusive Design

Inclusive Design is an approach in which the designers partner up with people while considering the full range of human diversity to design for their desired participation in society (Inclusive Design Lab, 2020; Heylighen & Bianchin, 2018; British Standard Institute, 2004). Inclusive Design does not mean designing one thing for all people but designing a diversity of ways for people to participate so everyone has a sense of belonging (Khazanchi, 2018).



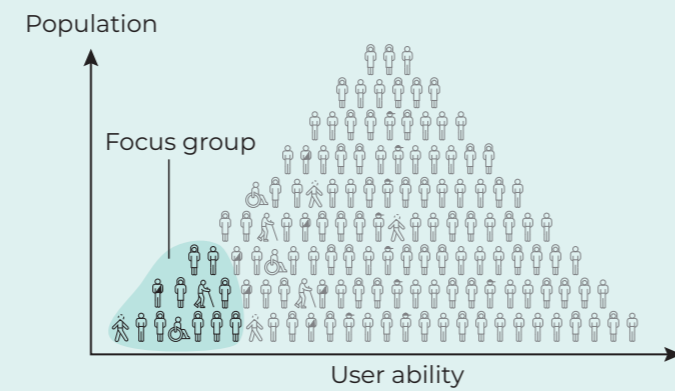
Design for All / Universal Design

The definitions Design for All and Universal Design can be used interchangeably. These methods aim to design products accessible by all people, to the greatest extent possible, without the need for adaptation or specialised design (National Disability Authority, n.d., a.). This is equal to Inclusive Design, but in contrast, Universal Design is based on seven universal design principles and on creating one solution that can be used by as many people as possible (National Disability Authority, n.d., b.; Persson et al., 2015). Lastly, Universal Design focuses on identifying the most suitable target market and making selections to maximise the “Product performance indicators” for that target market (University of Cambridge, n.d.).



Accessible Design

Accessibility is focused on the outcome of a design project in which the needs of people with disabilities are specifically considered, so products, services and facilities can be independently used by people with various disabilities (Chapman, 2020; DO-IT, n.d.). These products can be made available via a medical model (reimbursement). This emphasises the disability more, but it creates equality. Another option is that people with disabilities have to buy these products themselves. So people with a disability must finance it themselves, creating inequality because not everyone can afford it (Chung, 2020).



EXERCISE

Give an example of a product for each of the three design approaches described on the previous pages.

Inclusive Design

Universal Design

Accessible Design

How to do Inclusive Design?

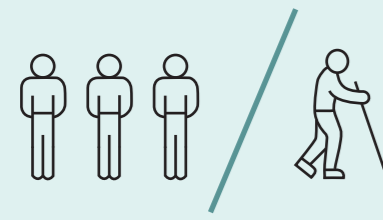
Principles of Inclusive Design

Inclusive Design is an approach, and no set predefined methods or steps can be followed precisely for this. However, there are three principles that Microsoft has established for an Inclusive Design process. These principles can help designers in order to master the basics of Inclusive Design.

These principles are explained in the overview below.

Recognise exclusion

It is essential to recognise exclusion; who is being excluded? Moreover, is this intentional, unintentional or structural? (Adobe Spectrum, n.d.; Microsoft, 2020).



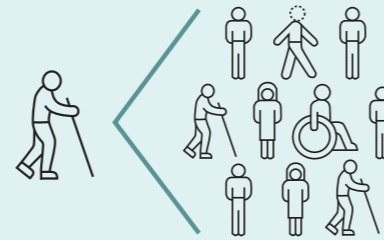
Learn from diversity

Including people in the design process and putting them in the centre provides many insights into their experiences and how they adapt to their environment (Bhat, 2021; Microsoft, 2020).



Solve for one, extend to many

Designing products that solve problems for an individual with a permanent disability could also benefit others (Bhat, 2021; Microsoft, 2020).



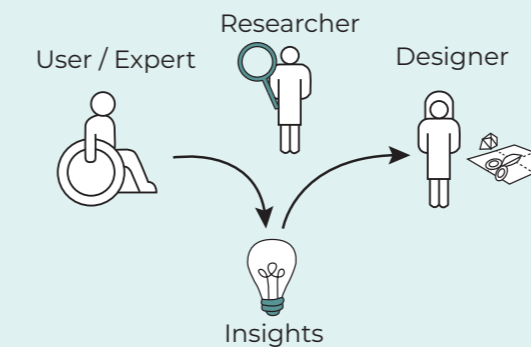
Co-designing

To understand and include needs, values and experiences of people with various abilities in the design, these stakeholders want to be involved in the process. They want to be considered co-designers and given credit for their input and perspectives (Betts, 2019; Adobe Spectrum, n.d;

Sanders & Stappers, 2012). Thus truly designing together rather than simply listening to them. The overview below gives more information about co-designing. Users are experts in their own experiences. Therefore, they will also be referenced as experts in this report.

Classical designing

In the classical user-centred design process, the researcher researches the user and passes this knowledge to the designer. The designer creates ideas, concepts, etc (Sanders & Stappers, 2008).



Co-designing (Inclusive Design)

In co-designing, also called participatory design, the user is considered an 'expert of his/her experience'. Therefore, the designer and researcher collaborate on the tools for ideation, and these tools support the expert for ideation and expression (Sanders & Stappers, 2008).



Tools for Inclusive Design

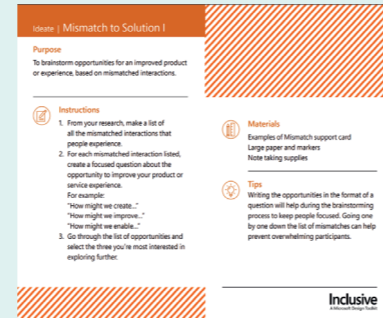
So there are some principles to consider when doing Inclusive Design, but there is no fixed step-by-step plan on how to do Inclusive Design. However, there are tools available to support designers with Inclusive Design. On the right, there are a number of tools that can be useful during your design process.

However, all these tools do not intentionally include emotional aspects when designing for inclusion (Boyuklieva, 2021). While this emotion and feeling are essential when doing Inclusive Design.

There is one dominant tool: The Microsoft Inclusive Design Toolkit. It is often used as a starting point in projects on Inclusive Design, including during projects at TU Delfts Industrial Design Engineering. This toolkit was released in 2015, and in 2023 they expanded their collection of tools and released a guidebook, worksheets and case studies primarily focused on cognitive exclusion.

Microsoft Inclusive Design Toolkit

A manual with information about Inclusive Design and activity cards



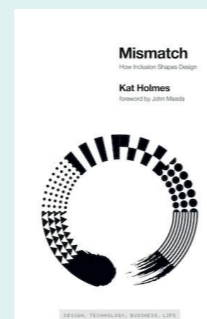
Microsoft Inclusive Design Cognitive Exclusion

A guidebook, worksheet, screeners and case studie about cognitive exclusion



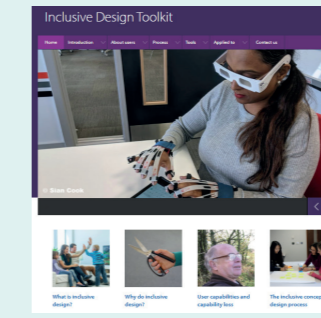
Mismatch by Kat Holmes

A book with information about Inclusive Design



Cambridge Inclusive Design Toolkit

A design method with tools to simulate disabilities



Adobe Inclusive Design Workshop

Three booklets with information and exercises about Inclusive Design



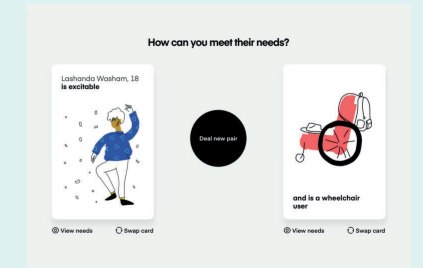
Bridgeable Inclusive Co-Design Toolkit

A toolkit to guide designers with co-design with people with language barriers



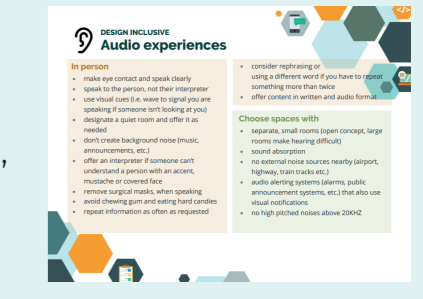
Cards for Humanity

A tool to design for different needs



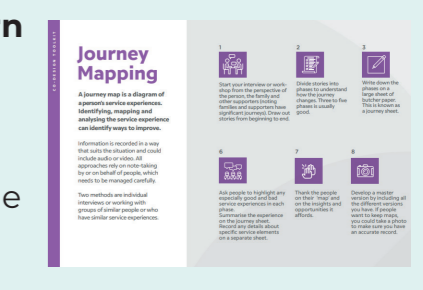
Government of Ontario Guideline cards

Guidelines for different levels of exclusion (audio, visual, thought, etc.).



Government of Western Australia Training Toolkit

Training toolkit on how to co-design with people with a disability

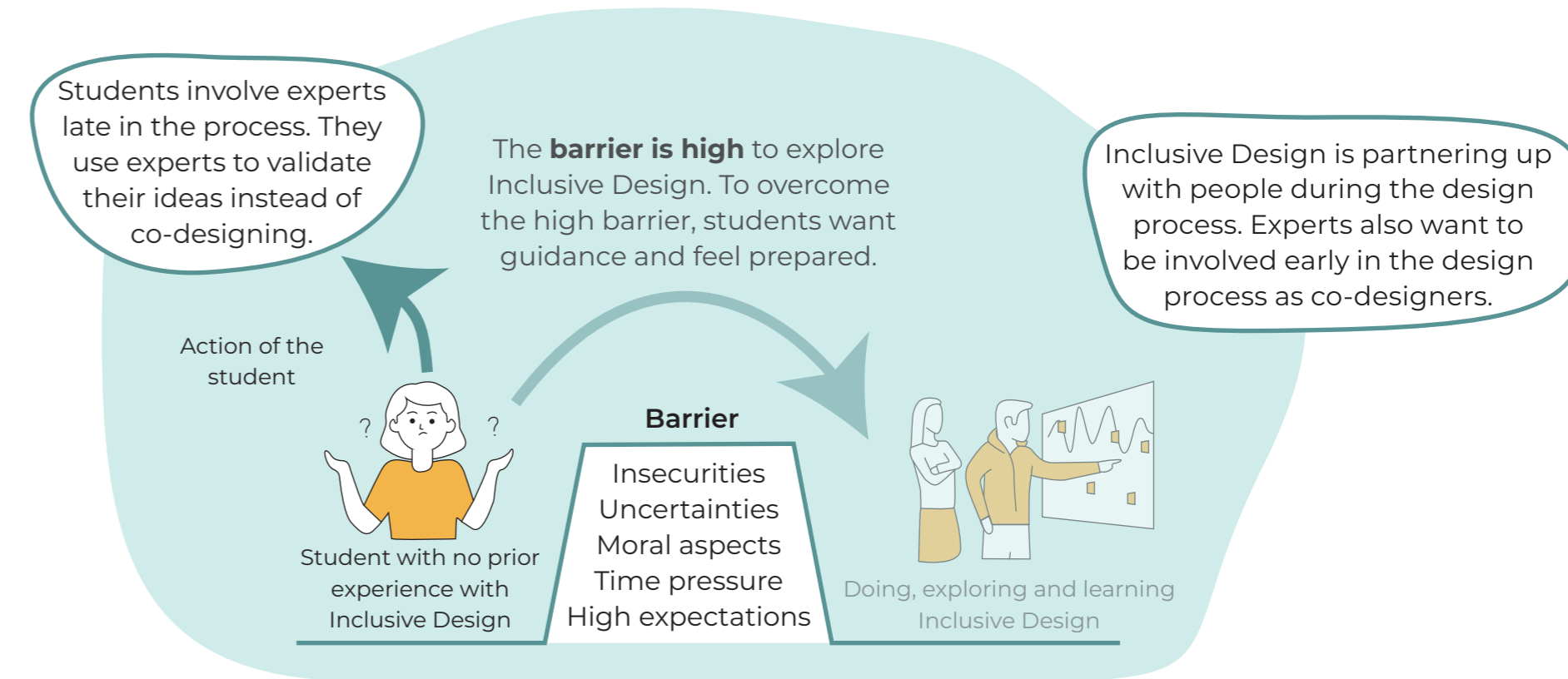


Barriers to Inclusive Design

This chapter discusses the barriers that former Inclusive Design students experienced during an Inclusive Design process. These barriers are first presented in an overview, and then all barriers will be discussed individually.

This chapter can be filled in after the start of your project: The introductory session.

Overview of the barriers



Barriers

In conclusion, there are a number of factors that together result in the barrier being experienced as too high for students to explore Inclusive Design. On the right, these factors are briefly explained, and supported by quotes from students who participated in an Inclusive Design course.

Insecurities

Students are insecure about their skills and competencies, they are still learning to design.

“ We are expected to build on skills we should have gained earlier. But I am still learning these basics. ”

Uncertainties

Students find it challenging to have many uncertainties at once.

“ I find it scary to approach people immediately when I still have little knowledge. I want to prepare well. ”

Moral aspects

Students experience moral aspects playing a role during Inclusive Design activities.

“ I was very nervous, for example, I was afraid I might say the wrong things and offend them. ”

Time constrains

Students experience time constraints when applying Inclusive Design.

“ Now it felt rushed to find a solution as fast as possible while there was still so much to discover. ”

High expectations

Students have high expectations during the Inclusive Design. This is also due to students often focusing on the outcome rather than the process.

“ A high level was expected. But we had no experience with inclusive co-design sessions. ”

Tools and guidance

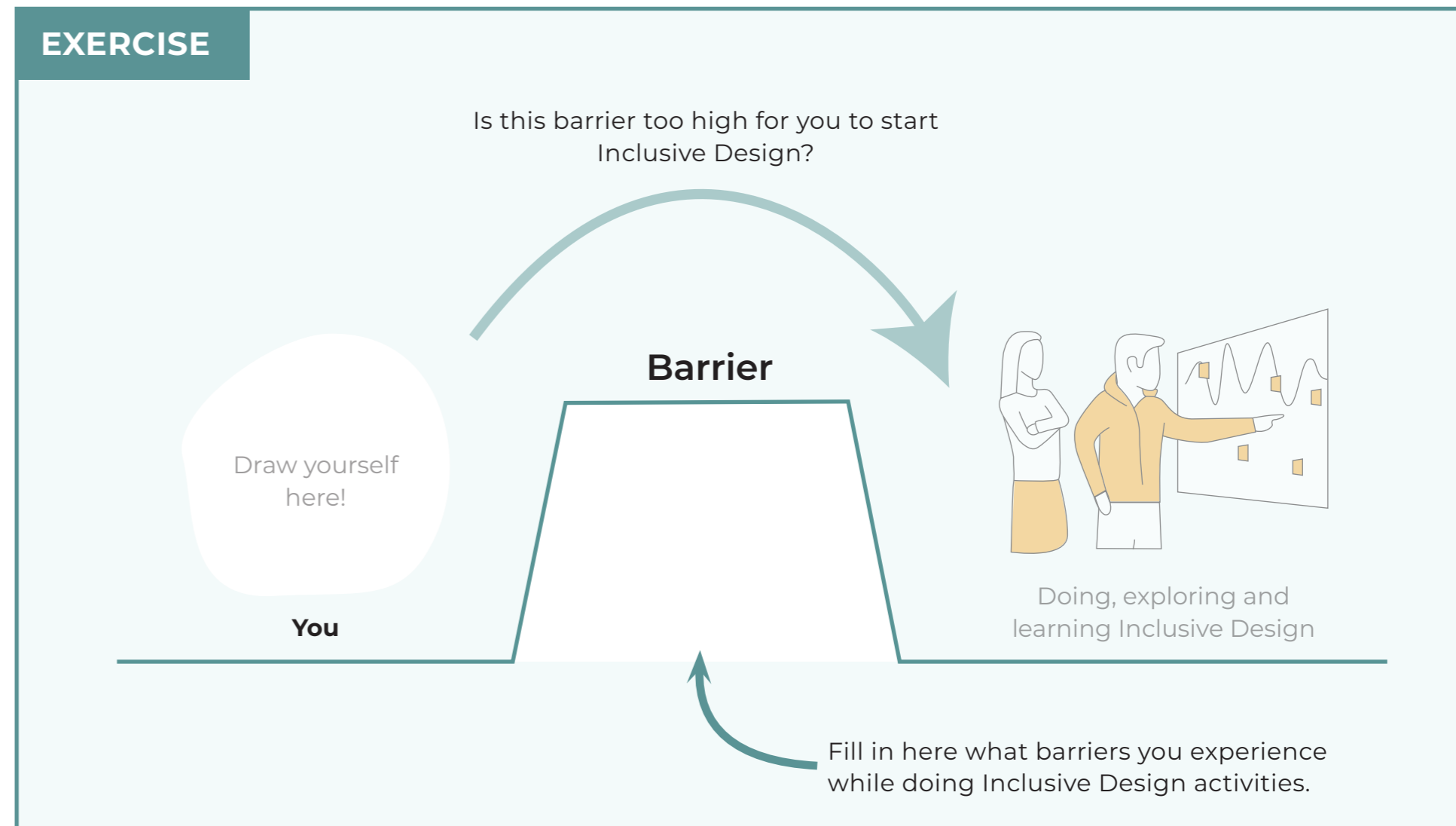
Students want tools/guidance to apply Inclusive Design. They work based on that information instead of experiencing it by trial and error.

“ The papers/toolkits don't explain how to do inclusive co-design sessions. ”

How do you experience these barriers?

Do you recognize these barriers during your own Inclusive Design project? Or do you experience other barriers? Do the exercise on the next page, and fill in which barriers you experience when starting with your Inclusive Design activities.

Having clarified for yourself what are your barriers to Inclusive Design, you can start working on them. It also already helps that this is now clear to you, and you can, for example, discuss it with your teacher and team members. The next chapter discusses how you can lower the barrier.



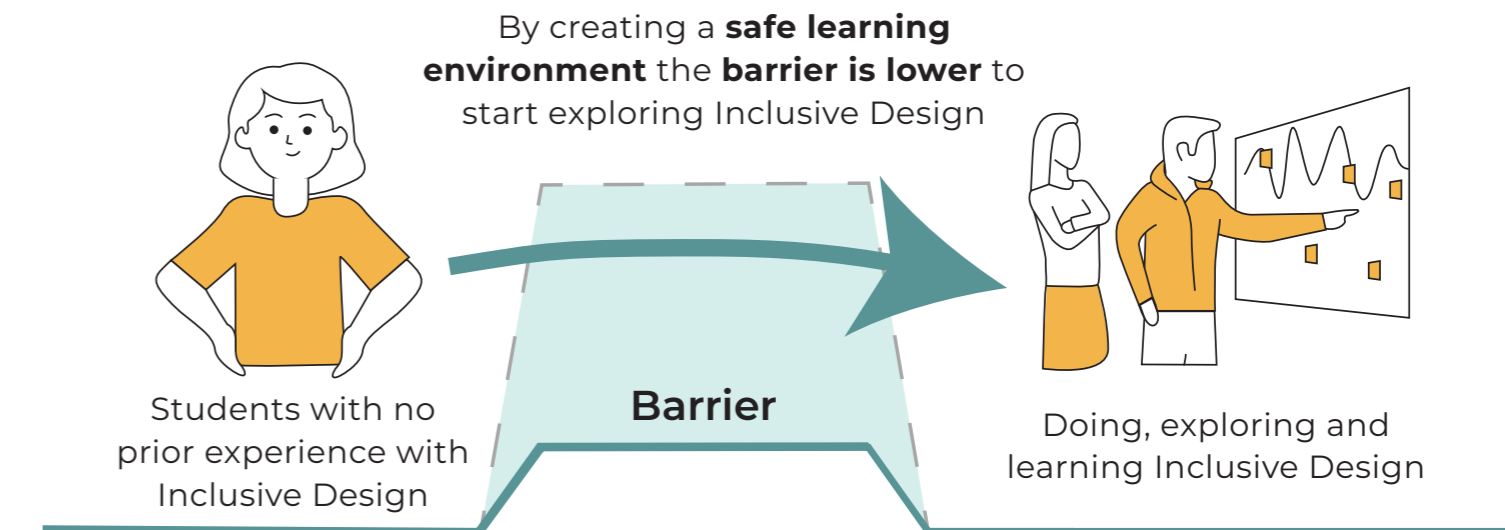
Breaking down barriers to Inclusive Design

This chapter describes how the barriers can be lowered. This will be achieved by making you aware of the barriers and giving you insight into how experts experience an Inclusive Design process. Finally, it describes the actions you can take to create a safe learning environment to lower the barrier.

This last chapter can be filled in after your introductory session.

Creating a safe learning environment

We aim to lower the barrier for you to let you explore Inclusive Design. This can be achieved when students experience safety as they look ahead to the session; this will reduce their insecurities, uncertainties, moral aspects, time pressure and high expectations. So to lower the barrier, a safe learning environment has to be created.



Experts perspective

This page presents six insights on how experts (want to) experience Inclusive Design activities. Former students indicated it helped them to lower the barrier by understanding the experts' perspectives. These factors are briefly explained and supported by quotes from experts who participated in Inclusive Design activities.

Not being the centre of attention

Experts do not want themselves or their disability to be the centre of attention.

“ Do not make people with a visual impairment feel like they are special. ”

Noticing the discomfort of students

Experts notice when students feel discomfort.

“ Now there is still much discomfort during such a session. When you no longer have that barrier, it is much easier to have a conversation. I feel that students are afraid of saying the wrong thing and afraid to approach people and make it broader. ”

Preferring an informal activity

Experts prefer an informal activity instead of a formal meeting.

“ I like doing something concrete rather than sitting opposite each other. It is less formal. ”

Being a co-designer

Experts want to be a design team with the students and be seen as co-designers instead of advisors.

“ The session is more about presenting ideas, validating and checking the assumptions. ”

Being involved from the start

Experts want to be involved early in the design process.

“ Actually, everyone [the design team and the experts] should start at the same level of knowledge of the case. ”

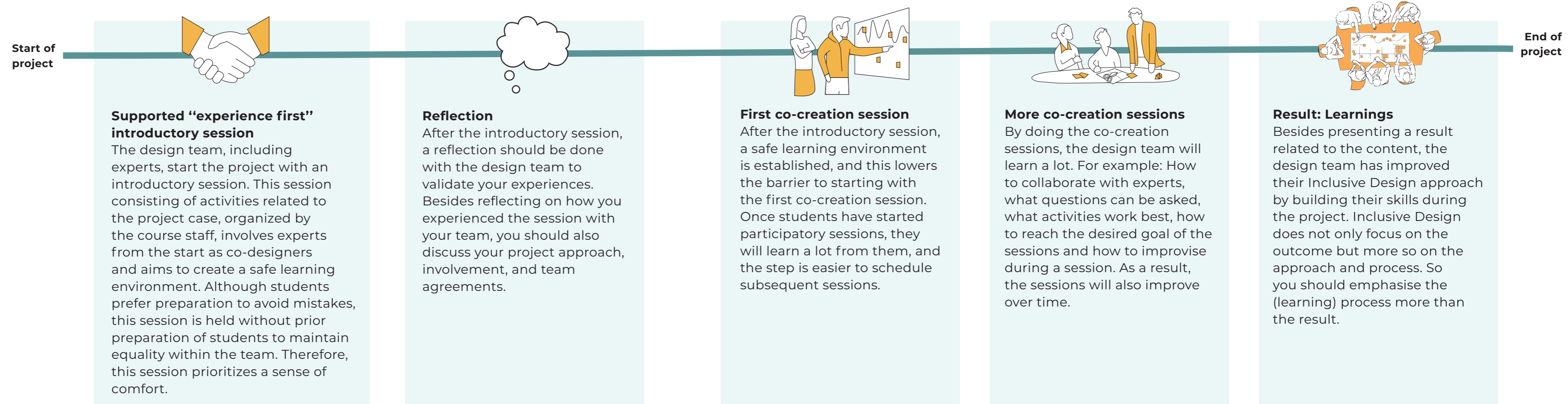
Feeling no time pressure

Experts want no time limit to connect with the design team.

“ During a project, you have such a short time. It is difficult to empathise. ”

How to create a safe learning environment?

This timeline shows which activities can be done to achieve a safe learning environment during an Inclusive Design project.



EXERCISE

Reflect together with your team members on your introductory session.

EXERCISE

What learnings did you take away from this project? And what advice would you give future Inclusive Design students?

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