

Appendix of: One size fits some

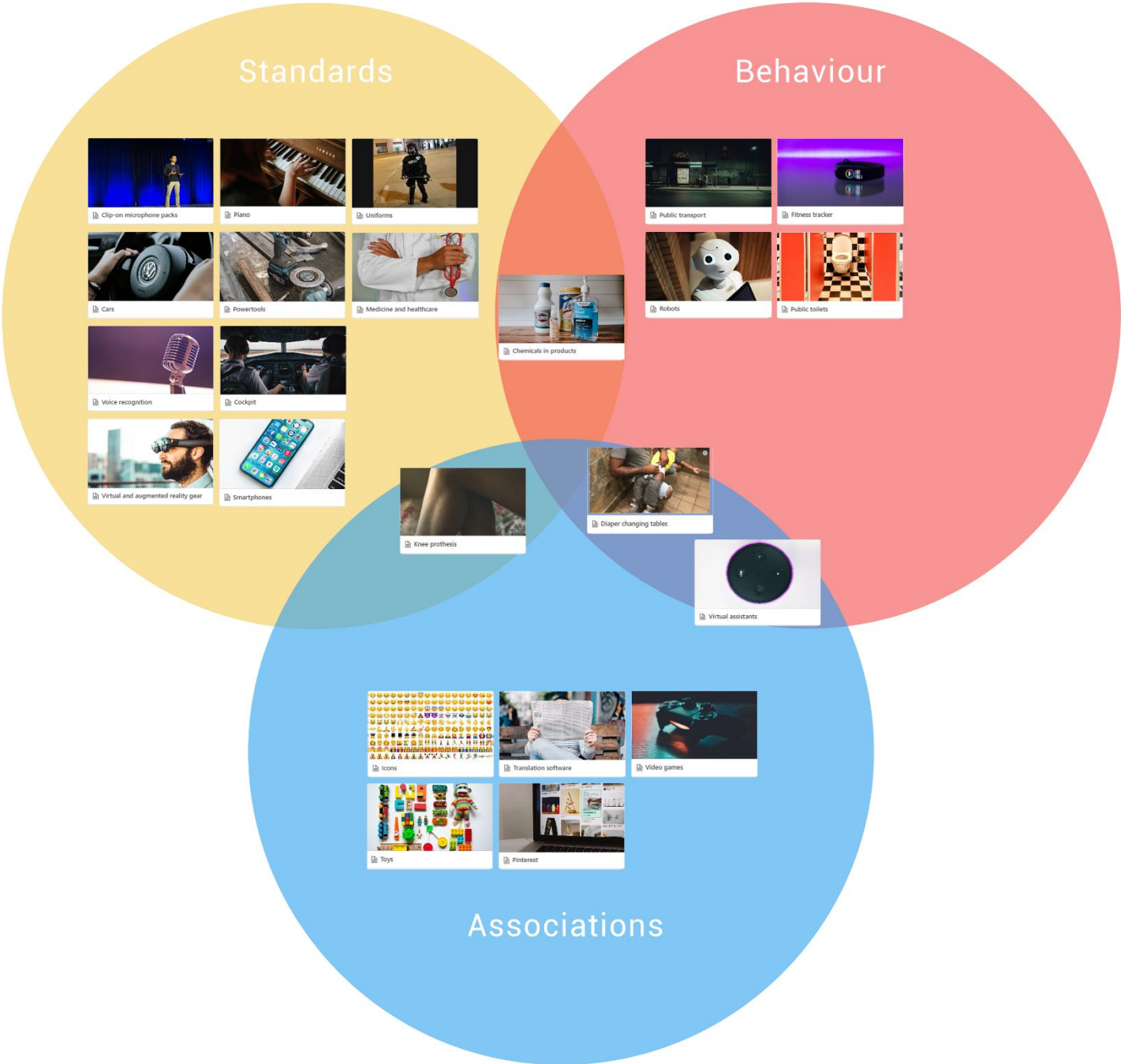
Gender bias in design and how to address
it in design education

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Appendix A: Examples of gender bias clustered three themes

The examples discussed in subchapter 2.4, are clustered in three categories: standards, behaviour, and associations.



Appendix B: A selection of interesting quotes from interviews with course coordinators

Quotes that show stereotypes of male and female

- UO:
Ik weet niet zo veel van het onderwerp. Wat ik wel merk, vooral toen ik veel met jongeren werkte, je merkt echt grote verschillen met jongens en meisjes in het onderwijs. Bv. planningscapaciteit. Daar zijn meisjes beter in. Jongens zijn weer beter in andere dingen. Daar merk je wel een vorm van gender fail, deels cultureel bepaald maar ook wel een deel biologisch. Dat is wat ik ervaren heb.
- UO:
Een meer holistische benadering van een probleem wat nu klassiek gezien nog in stukjes worden gehakt. Ik heb wel het idee dat dat voor jongens makkelijker is dan voor meisjes om het maar even bot te zeggen. Jongens negeren eerder de rubric en doen waar ze zin in hebben. De dames proberen vrij dicht te blijven met wat er is. Met Chinezen en Indiërs heb je dat ook. Niet gewend om buiten de lijntjes te kleuren. Ik denk wel dat we in de gemeenschap een soort veiligheid moeten bieden, in de bachelor en master, om dat te doen en gangbaar te maken.

Quotes that illustrate fist associations with gender and sex in design within a course:

- UO:
Ik vind het lastig om het binnen deze vak ontwikkeling naar jouw onderwerp te trekken.
- UO:
Gender en seks zit nu nog niet belegt in het vak. Ik denk dat het zit in de mensen met wie je samen werkt. Bv. Wie rondleidingen geeft bij bedrijven, en welke docent mee gaat. Daar kan ik echt aandacht aan besteden.
- UO:
Gender diversiteit in materiaal? Ik denk en hoop dat dat ingebakken zit in de mensen met wie je werkt. Bv. Erk Jan Hulkink zal veel meer masculiene voorbeelden gebruiken want dat zit gewoon in hem maar als dat één van de stemmen is in de range aan stemmen dan vind ik dat niet zo erg. Je moet verschillende soorten mensen hebben in zo'n vak die verschillende standpunten naar voren kunnen brengen.
- UO:
Ik weet niet of dat (aandacht voor gender en sex) in het vak moet zitten. Ik zou zeggen, je geeft denkgereedschap, voorbeelden en manier van omgaan met elkaar in zo'n vak. Ik vind het meer horen in de reflectie (mijn note: hier mee lijkt hij vooral een reflectie te bedoelen over wat jij als student aan de studie hebt en de studie aan jou, pas je wel in de studie, en hoe ging je eerste project). Die zouden belangrijker moeten worden. Ik weet niet of gender zo diep ingebakken moet zitten in de cursus structuur zelf, ik denk meer dat het moet zitten in hoe je met elkaar omgaat

- UD:
Bij ide academy bewust omgaan met gender. Niet alleen maar mensen die op mij lijken als sprekers. Maar dat is symptoombestrijding.
- UH:
Een algemeen beeld dat vrouwen meer getriggerd worden door sociale behoeften en mannen meer door competitie bv. Daar is wel onderzoek van dat lijkt te bestaan. Je wordt door verschillende dingen gemotiveerd afhankelijk van je sexe.
- UPE:
Ik dacht zelf gelijk aan gemengde groepsvorming. Multi diverse teams.

Quotes mentioning restrictions and obstacles of courses:

- DP1:
De vakken zitten al wel propvol met leerdoelen. We hebben er liever nu minder dan meer.
- DP1:
Ik zou zeggen dat je je een beetje moet afvragen, hoort het echt in het eerste semester in het ontwerpen zelf, of hoort het daar meer bij human. Als ik daar zelf zo over nadenk dan denk ik niet dat dat zit in dat vak van bas bv.
- DP1:
Iedereen vindt dat in het eerste semester alles moet beginnen. Als je van alles wat leert leer je misschien helemaal niks. Ligt eraan hoe je het doet, hoor. Als je naar of er bewustwording van wat ontwerpen überhaupt is kijkt, op dat niveau bekijkt, dan kan je meer dingen noemen. Maar betekent niet dat studenten daar al mee kunnen ontwerpen.
- DP1:
Je kan studenten niet vragen om alles wat ze hebben geleerd in die vier theorievakken te gebruiken in hun project want ze hebben daar maar 8 weken voor.
- UH:
Voor ieder topic is maar 1 week dus we zullen echt de basis gaan leggen.

Other interesting quotes:

- DP1:
In hoeverre is kijken naar gender in design overlappend met ethiek, in het auto voorbeeld bv. Vind ik het eigenlijk ethisch onverantwoord om voor de p50 man te ontwerpen. Bewustwording over gender bias zit richting ethiek voor mij.
- DP1:
We moeten nog heel veel aan werken om als vakken samen te werken. Word nu van ons gevraagd maar zijn nog niet veel echte plannen gemaakt.
- DP1:

We waren bezig met trainingen bedenken voor coaches omdat we een andere houding van studenten willen in het eerste jaar, en dan moet je vooral een andere houding van docenten neerzetten, want anders ga je dat nooit bereiken.

Ik dacht eraan om ook een soort van richtlijn voor coaches te maken, om ze te helpen in de wrap-up van de microprojecten. Bv. Laat het wel uit de studenten komen maar we hopen het wel dat jullie het in elk geval hebben over deze 2 of 3 onderwerpen, en in het volgende microproject weer over deze andere dingen. Zodat het niet in elk micro project gaat over de zelfde dingen. Op zo'n lijstje zou gender bias ook kunnen staan.

- DP1:
We laten nu misschien de methodes meer los. Het idee is dat ze divergeren en convergeren leren, en in meerdere fases iteratief leren te zijn. Weten nog niet of we ze gaan leren over de standaard volgorde. Eigenlijk is het wel mooi om ze daar meer vrijheid in te geven.
- DP1:
Studenten moeten beginnen met de brief zich eigen maken, eigenlijk een soort van analyse fase doen. Dan kunnen ook dingen al gender bias aan bod komen. Bij leerdoelen kan je kijken waar het in past. Bv. Een leerdoel is de brief verkennen. En in de verkenning zit natuurlijk wel hoe je kritisch kijkt naar de brief als je kijkt vanuit gender bias
- UD:
Zonder waardeoordelen over goed en slecht. Daar gaat het niet om. De politieke consequenties van gender en veiligheid consequenties van gender zijn allemaal fenomenen. Daar wil ik het graag met ze over hebben, maar ik wil ze niet wijzen op dat het belangrijk is. Wij kijken meer naar waar komt het vandaan en hoe echoot het door. We moeten ze loskrijgen van goed en kwaad.
- UD:
Ik denk dat het bij UD een ruimte kan krijgen. Ik heb goede verhalen over gender en product ontwerpen. Die van jou zou ik ook graag eens doorlezen. Bv. De magnetron. Dat is een mannen product dat wel in de keuken staat. Lijkt niet bij de keuken te horen qua ontwerp. Als het een vrouwen ding was hadden we veel meer magnetron kookboeken. Dat zijn interessante fenomenen. Daar kan je het wel over hebben. In UD zou dat wel een weekje worden. Want wij doen elke week een topic. De leeslijst mag langer worden bij ons (ook over gender), maar ik wil heel graag weg van de normen. Ik wil weg van 'denk na over gender want dan word je product beter'. Het kan een sub topic zijn understanding gender, maar kan ook verpakt zijn in understanding equality. Het fijt dat dat goed of slecht is is niet interessant. Het is interessant om cases te hebben waar je naar kan kijken om gesprekken te hebben over waar gender een rol speelt. Hoe dat er uit ziet en hoe het zich manifesteert. Maar geen argumentatie over waarom het belangrijk is om over gender na te denken. Dat is voor ons niet zo relevant.
- UD:
Bij ide academ kunnen we ook gender doen.
- UH:
Aanbevelingen van wanneer jij denkt dat gender echt van belang is en er aandacht aan moet worden geschonken van onze kant, dan zou dat fijn zijn, en als er ook

benoemd wordt wanneer gender nou weinig een rol speelt. Wanneer is het nou van belang en wanneer niet. Dat is niet altijd duidelijk voor studenten en docenten.

- UPE:
Ik kijk eigenlijk nooit naar gender in design, misschien wel onbewust.
- UPE:
Ik zie bij AED veel kansen. Zouden input heel goed kunnen gebruiken in multi-diversiteit. Inhoudelijk weten ze meer dan genoeg, maar hulp bij coachen voor team performance is wel handig. Hoe ga je van een groep studenten naar een team studenten.
- UPE:
Terughoudendheid voor het vragen naar gender is ook een dingetje, mag je dat wel vragen? Mag je dat verschil wel maken? Mensen voelen zich daar toch ongemakkelijk over. Vooral omdat er nu nog meer dan 2 genders zijn.
- UPE:
(over standaarden en data verzamelen van een groep die niet representatief is voor de doelgroep) ik merk dat dat bij onze studenten heel vaak gebeurt. Het is vaak design for ourselves. En voor wie je kent, 20 -25 jarigen.
- UPE:
Ik sta er wel open voor om jouw resultaten te gaan evalueren of testen in een vak. De resultaten van jouw onderzoek zou ik heel goed kunnen gebruiken in AED van komend jaar, denk ik. Met 3 aandachtspunten kunnen we omzetten. Mochten er problemen zijn rond dit thema, hoe kunnen we die dan tackelen. Dan gaan we gewoon opzoek naar mogelijkheden.

Appendix C: 'How to..?' session with first year's students

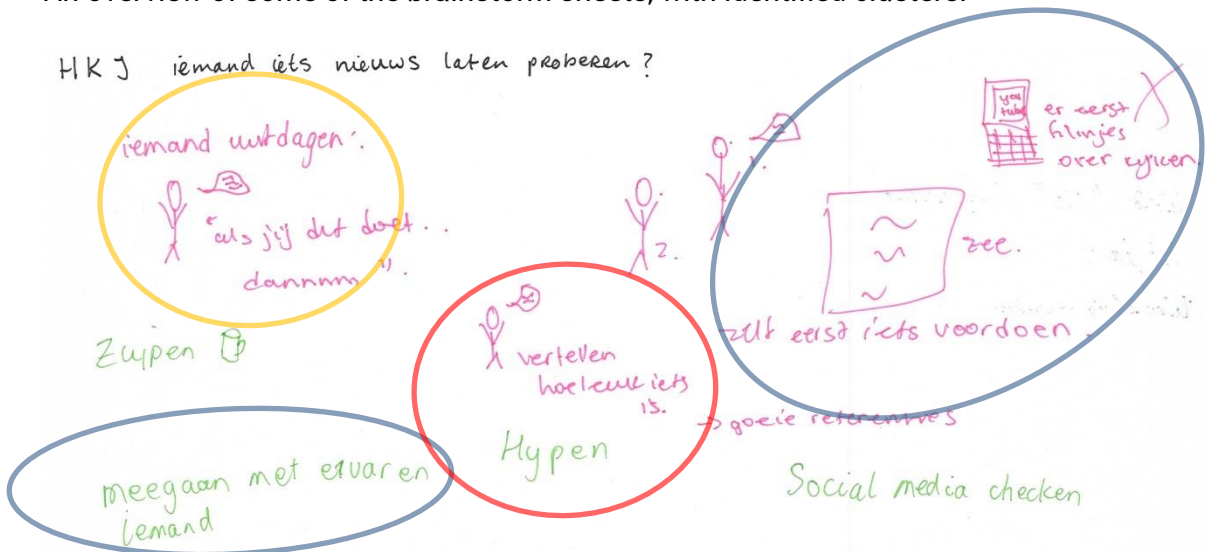


The "how to ..?" session

In order to gain inspiration a 'how to ..?' session of 40 minutes was conducted with three Dutch bachelor students of varying studies. Some of the questions asked during this session lost their relevance during the project. The results that are still relevant are discussed here.

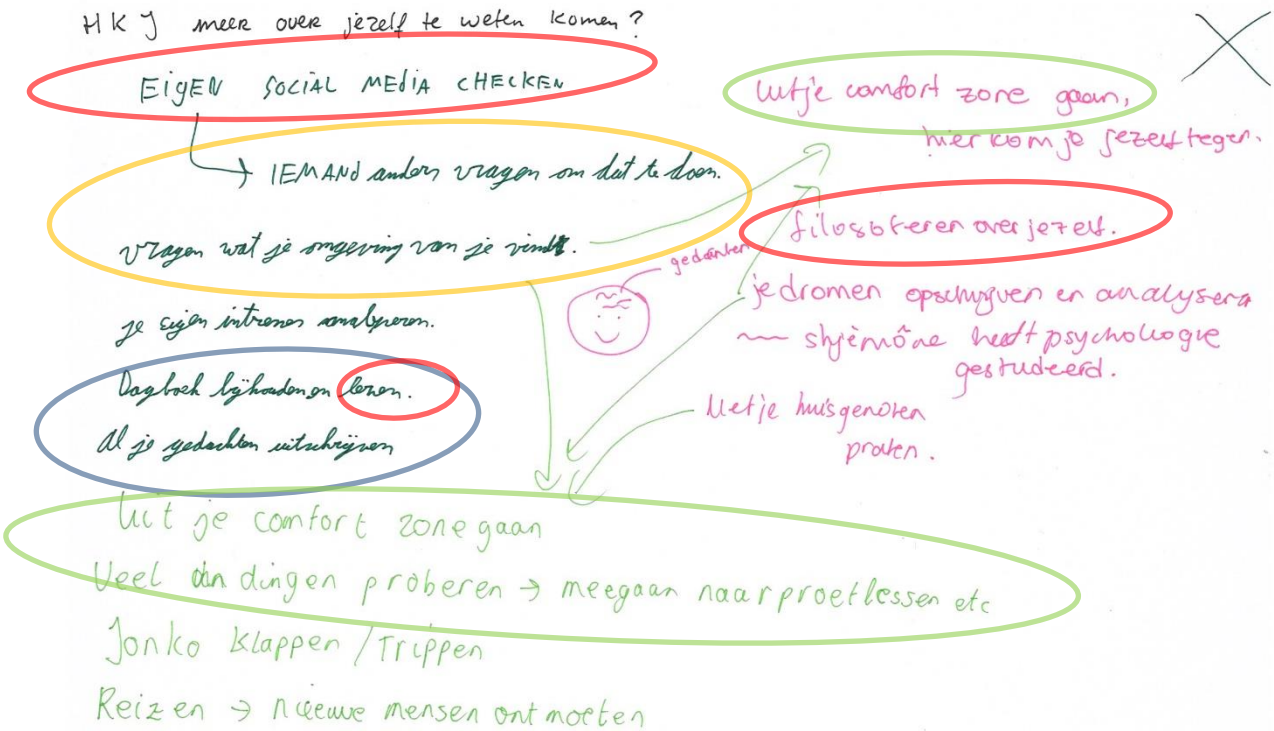
An overview of some of the brainstorm sheets, with identified clusters:

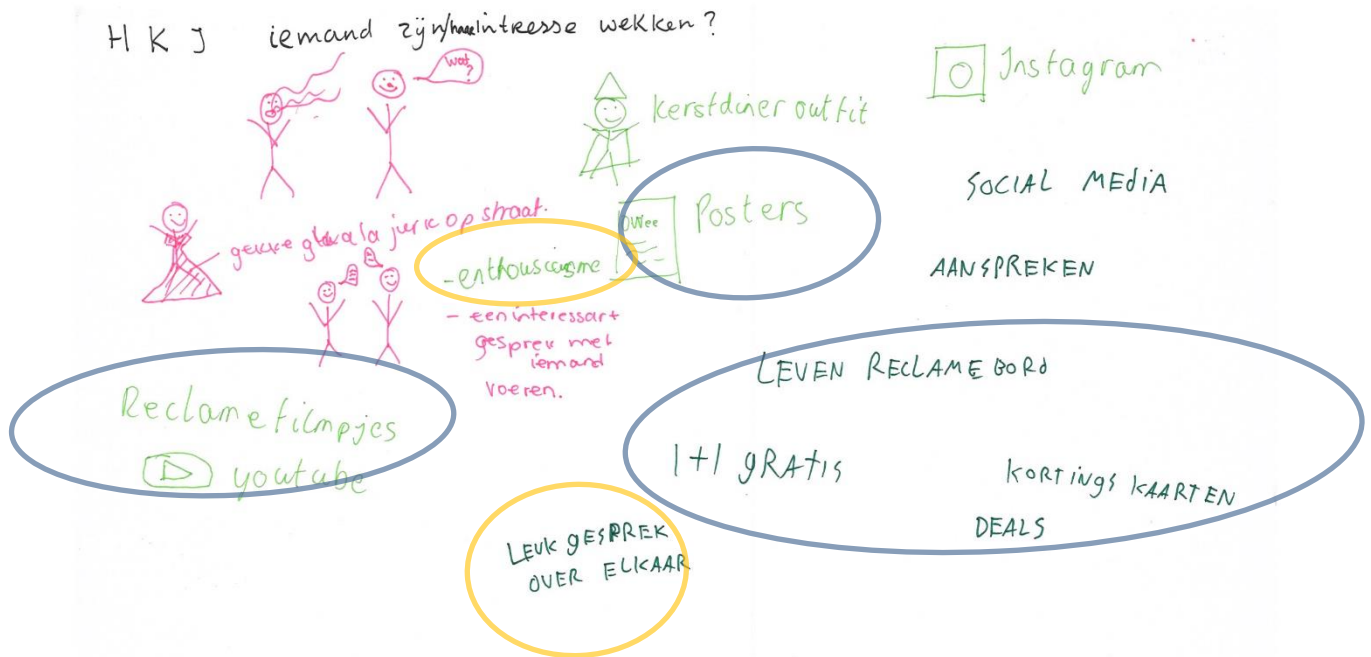
H K J iemand iets nieuws laten proberen?



- iemand iemand drogeren.
- Chantage
- geliefden ontvoeren
- Omkopen
- Zelfvaste omhoog halen, zodat persoon niet geforceerd valt
- Reputatie beschadigen zodat persoon nieuwe probeert op te bouwen.

H K J meer over jezelf te weten komen?





The interesting insights from this session, that remained relevant, where:

How to encourage someone to try something new?

- By providing an example, or show them how
- Making it attractive or exciting
- To challenge someone

How to get to know yourself better?

- Look back on what you have said or done earlier.
- Write down your thoughts (and reflect on them)
- Look at yourself from the perspective of someone else.
- Explore new experiences and perspectives

How to make someone interested in something.

- Advertising with videos/signs/posters
- Framing it as positive or exciting

Appendix D: Creative session with design students



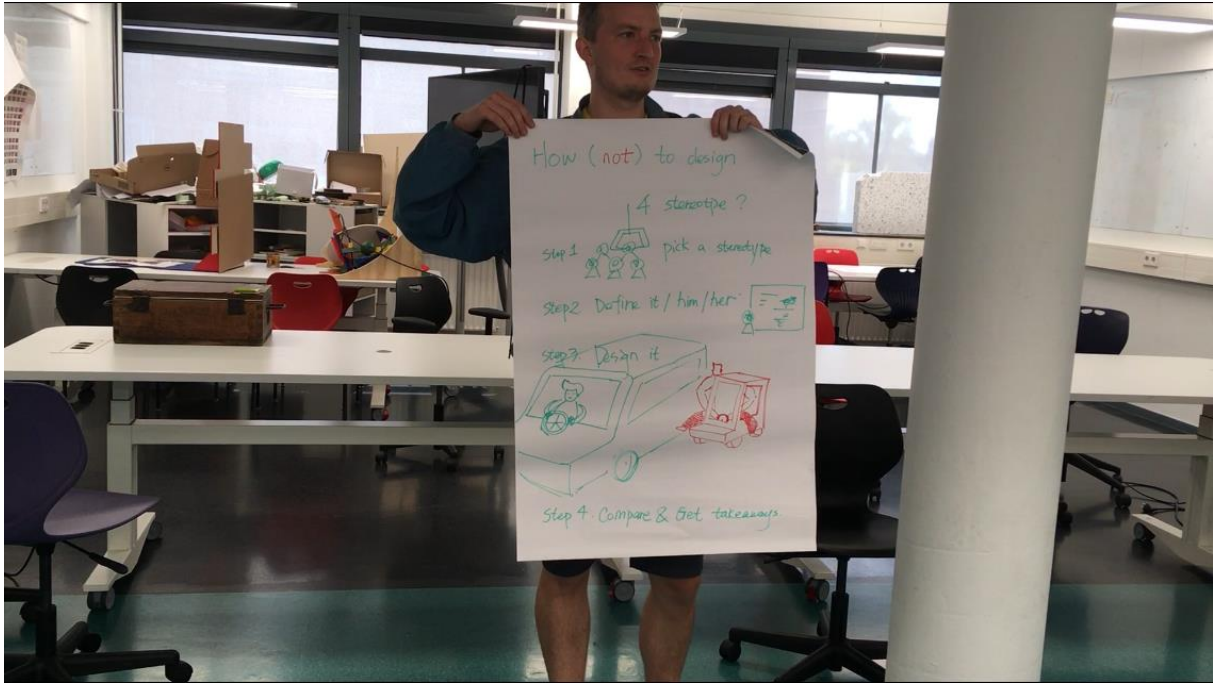
Students reflecting on gender bias

In order to gain insights in the knowledge and perspective of design students on the topic of gender bias and how this could be addressed in design education, a creative session of two hours was conducted, with four design students. The group consisted of two male and two female master students, of which three were Dutch and one Chinese. The session consisted of two parts. This first part was focussed on exploring and identifying gender biases. The second part was focused on how attention to gender could be addressed in design education.

After a short introduction on the topic of gender bias and gender in design, the participants were encouraged to explore their own experiences with gender bias by drawing it individually and discussing their answers in the group.

Then students were encouraged to do the same while focussing on their own gender biases and how they might have affected their judgement of people or situations in the past.

For the second part of the session the students brainstormed about different elements of gender bias using the 'how to..?' method. Interesting directions from this session were identified by the group and were discussed in a collective brainstorm session about how we could attract the attention of students to this topic. The participants worked out two ideas in groups of two and pitched them to each other.



The concept of group one



The concept of group two

Insights

Part one:

It was easy for the participants to come up with examples of how gender bias had affected them or people in their surroundings in a negative way. In the conversation resulting from this, frustrations about sexism and ignorance were voiced, which quite quickly led to an elaborate conversation. The conclusion of this conversation was that everyone has stereotypes which are leading in the way we think about others.

What was harder for the participants was to come up with examples of how gender bias might have positively affected their lives. A quote from one of the participants illustrated this: "it is hard to spot when I'm affected by positive bias. When is it advantageous for me to be a man? I think that is very hard to spot. When it is negative that is very easy to feel"

When the participants had to discuss their own biases, the conversation became a bit more careful. It was harder for students to voice their own biases, and when they did, they expressed feeling bad about having them.

When provided with examples of gender bias in products, the conversation became more in-depth, resulting in a philosophical discussion about the responsibility of the designer. The examples of gender bias in products were quite surprising to them. However, when the discussion didn't form a satisfactory conclusion, since the topic was perceived as quite complex, this resulted in a feeling of helplessness. Examples of successful projects where gender was considered seemed to help to reduce this feeling.

Part two:

In their concepts, both groups choose to work with absurdity to convey the message. The first group designed a workshop on how (not) to design for stereotypes. The second group designed a traumatic introduction to the bachelors. Especially the second concept seems to be inspired by a provocative approach

This approach might be inspiring for this project.

Conclusion:

The conversation about gender bias needs guidance, in order to avoid heated opinionated discussions. It is easier to remember negative things than positive things, which I might be able to use during this project. It takes time for students to realise and admit their biases. Starting the conversation with a focus on their own biases might not be wise. When students realise their biases, they feel bad about having them, suggesting they want to change this. Examples of gender bias are very useful to make the topic clear. To avoid a feeling of hopelessness, a positive end of the discussion is necessary, for instance by providing examples of successful projects where gender was considered. A critical design approach could be a possible direction for this project.

Appendix E: Concept 1, Guess who? IDE edition

The guess who? IDE edition game is a game that can be played in the studios. This game stimulates students to become aware of their stereotypes, by bringing them to light in a playful way. The game will also make clear how these stereotypes influence their judgement.

This game is inspired by the existing game 'Guess who?' where two players try to guess who the other person has in mind by asking questions about their appearance. In this version it is done a little differently.

The game includes cards, video's, and a digital overview page that can be used on presentation screens.

When students are done playing, the teacher can start a discussion about stereotyping, and the effects this can have on designer's work.

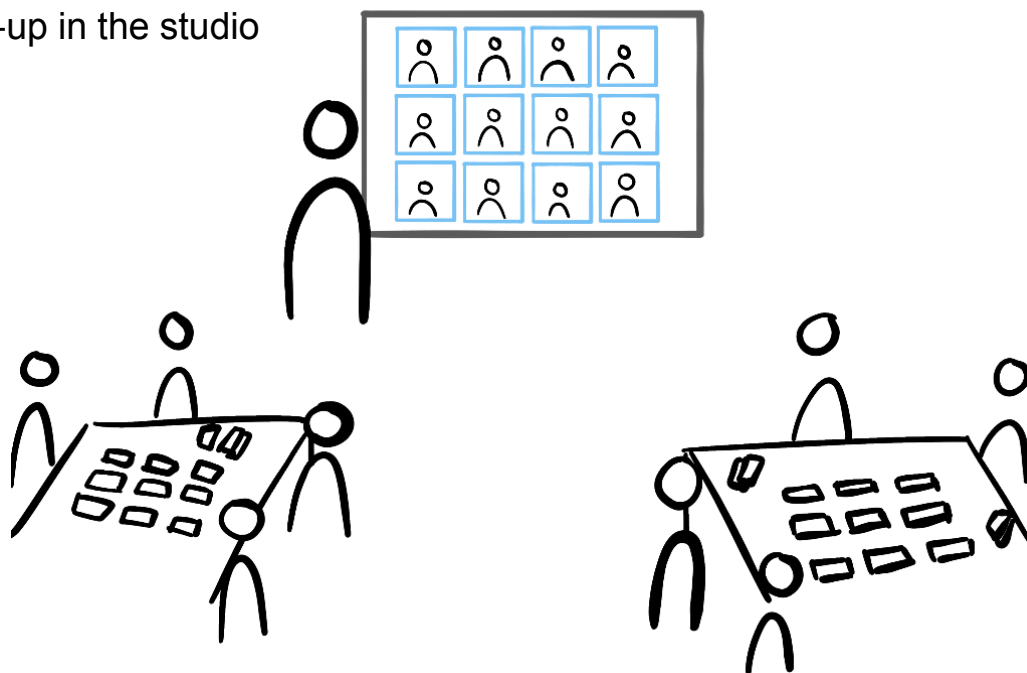
The teacher can use extra information provided on gender bias in the world around us, inspiring company projects, and an overview of the tools that can be found on the accompanying website.

How the game works:

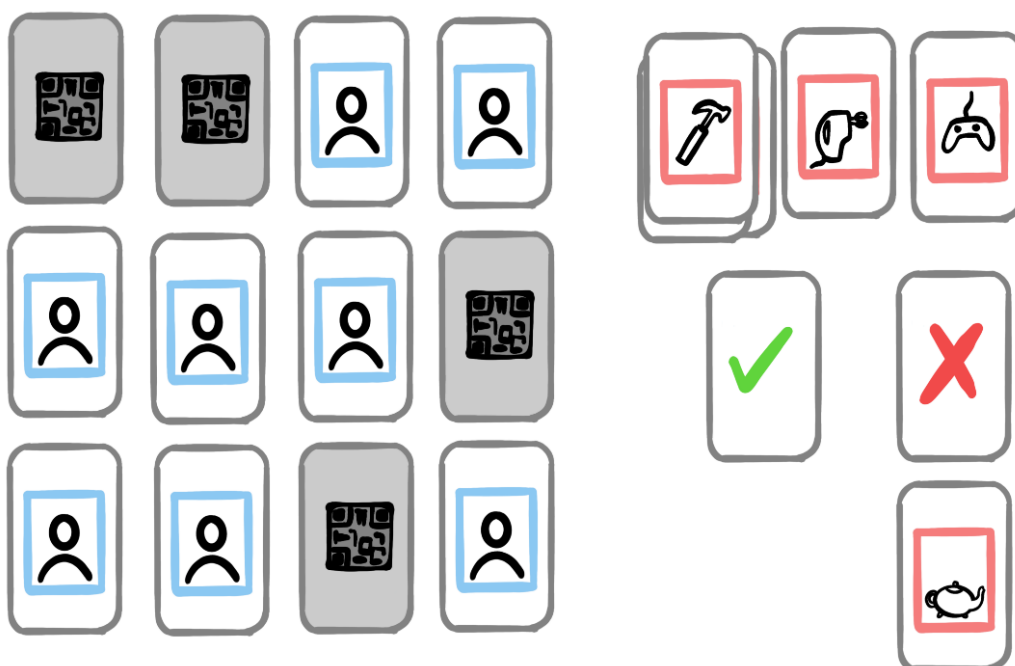
The teacher, or a volunteer will stand in front of the group, next to the screen with an overview of the faces. This person will be the leader of the game. This person privately chooses one person which the groups need to guess. The students are divided in groups of 2 to 5. The groups will compete to find out first who it is the teacher is thinking of. Each group will in turn ask a question to the teacher to find out more about this person. The teacher can only say yes, or no. Students can only ask questions using the products on the cards they are given and cannot use a product twice. They can ask questions like: 'does the person use this hammer in their free time', or 'does this person own this game console'. The group that guesses the right person first wins the game. When the right person has been discovered, the teacher will click on the face of this person to check if the collective idea that has been formed about this person matches the reality.

This game can also be played by students individually by just using the cards. Then the QR codes on the back of the cards can be used to find the video's.

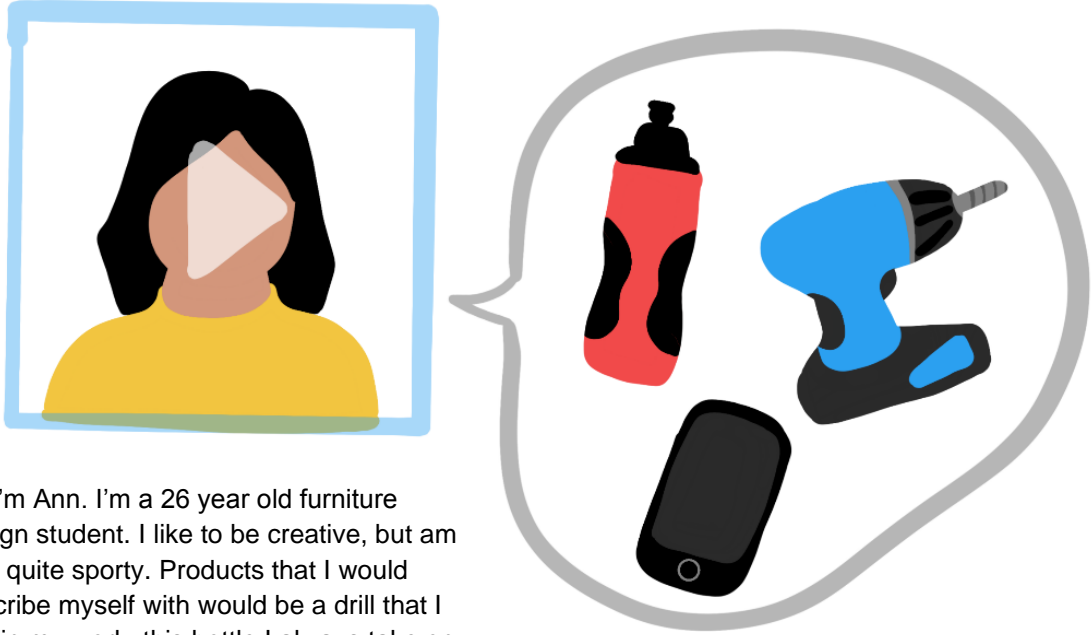
The set-up in the studio



The cards (they won't look like this)



The videos



Hi! I'm Ann. I'm a 26 year old furniture design student. I like to be creative, but am also quite sporty. Products that I would describe myself with would be a drill that I use in my work, this bottle I always take on my run, and my phone, because I'm absolutely addicted to this thing.

Pros and cons of this concept:

- + This game makes students more aware of their biases
- + This game won't take more than an hour to do
- + Students find the game fun to play
- + This concept involves the students
- The game might need an after talk about stereotyping to drive the message home

Appendix F: Concept 1 test

The game described in concept one was tested with students of several studies, in order to see how they would react to the concept, and test if biases were brought to the surface.

The game was tested in two ways. As a one to one game, and as a group game. The one to one game is discussed first.

The setup on the one to one game:



The original ide for this game was to play it with two students, just like in 'Guess who?'. Each person has a face in mind that the other has to guess using the product cards. This version of the game was very difficult. It was rare that the right person was guessed on the first try (or second or third). What I noticed is that it became a bit too accepted for the students to be openly sexist and racist. As a result, the message was lost.

The group game:



The version in which two team competed to be the first to guess the person the "game master" had in mind, had different results. When students needed to discuss with their teammates which question, they were going to ask, or which person to eliminate, they were forced to discuss and reflect on their biases. This created an interesting dialog.

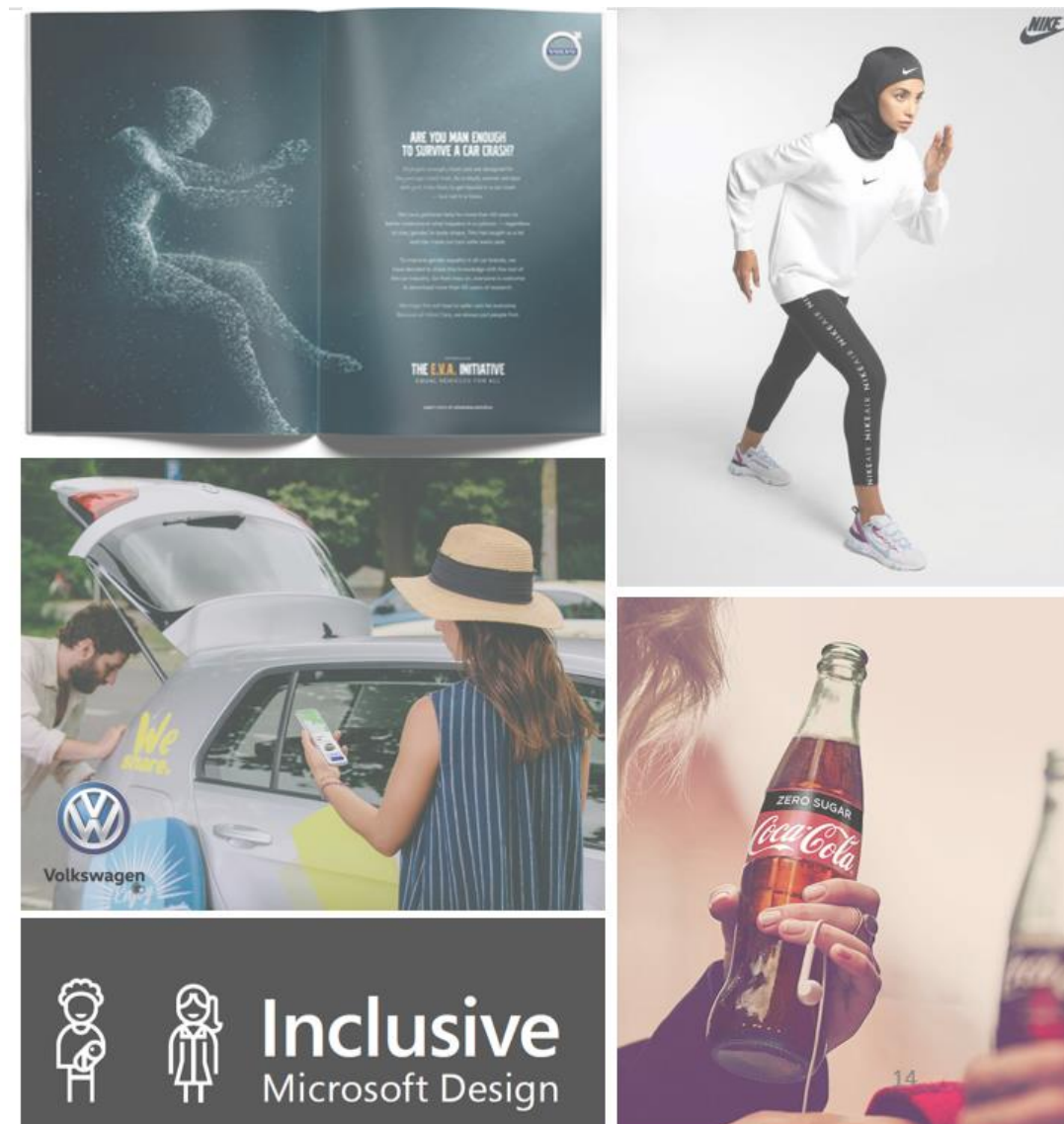
However, the game was too much fun. Although it did bring biases to light, there were not criticized enough.

Appendix G: Concept 2, a case day

The easiest way to make students think of gender in their projects at least once, is to make it the topic of a case day. By linking attention to gender and sex in design to a successful company, students will be shown that there is potential in this topic.

The case day is meant to inspire students with the opportunities that considering gender while designing, can provide. It is presented as something the world needs in the future, and designers can't fall behind. Since the case day is meant to be linked with a real company, the project feels more realistic and important.

Ideally a guest lecture of someone from a company that can tell about what they did and what it resulted in, would be given a few days before this case day. WeShare (by Volkswagen) or Microsoft would be nice candidates.



A collage of successful company projects in which gender was considered

The day will start with an introduction which can include:

More and more companies are looking at inclusion. Gender is now a hot topic, as can be seen by the attention in media, museums, and companies. Inclusion from the perspective of gender is a great opportunity.

Is gender inclusion necessary? Yes! When gender is not considered we get weird design mistakes -> reference and discussion of gender bias examples.

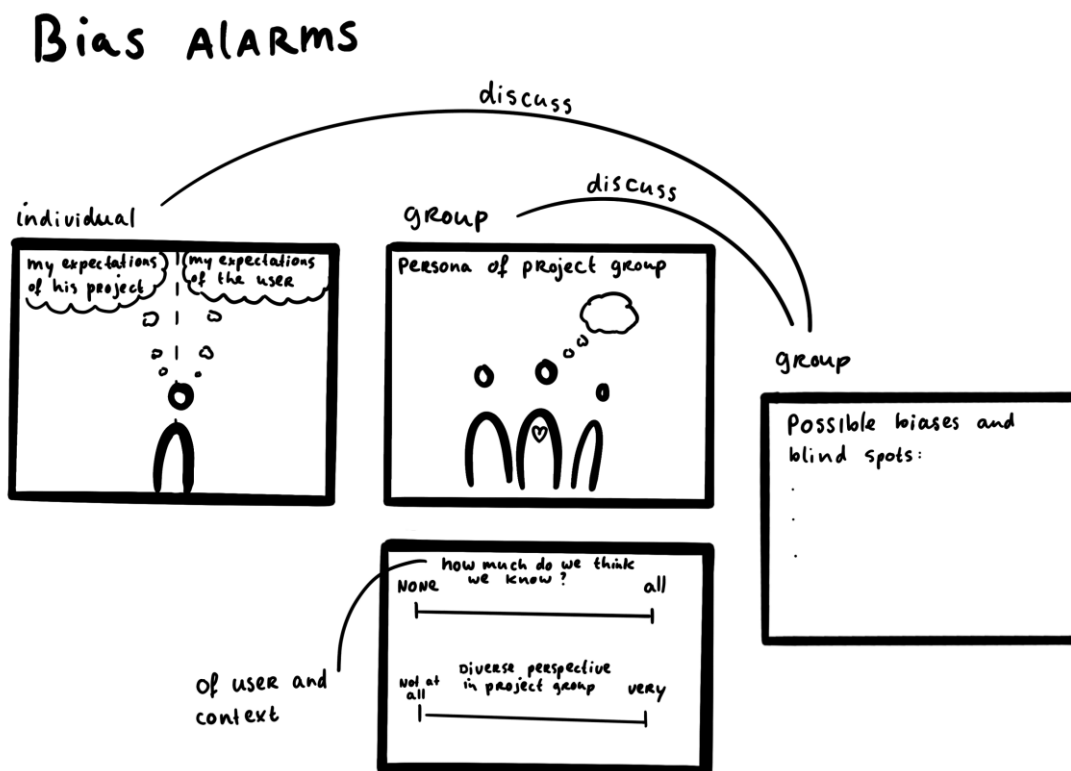
There are already companies that look at gender. This perspective provided them with new business opportunities and an extension of their target group.

As the new generation of design students we should not stay behind.

Following to the introduction the company will introduce themselves and explain the case of the day.

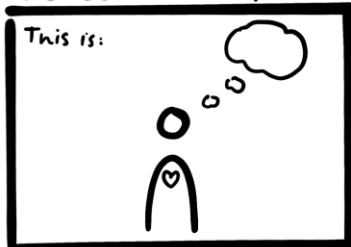
This day will be for a specific company, and with several lead users. These are the people that different groups of students will design for that day. This can be, for example, a busy single dad, or an elderly lady. During the day the student will be provided with guiding frameworks to set up a genders inclusive project. At the end of the day each group will have to present their idea to the company and their fellow students.

Suggestions for guiding question sheets:



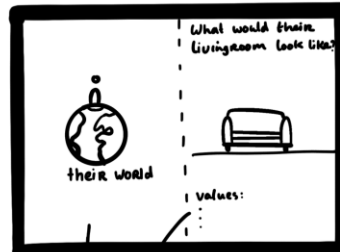
Who?

General Persona template



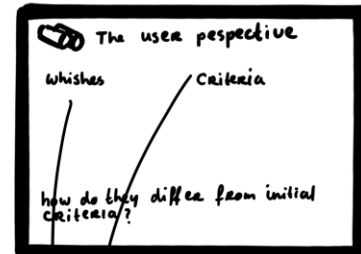
→ many versions of this already exist

explore the context of the future user



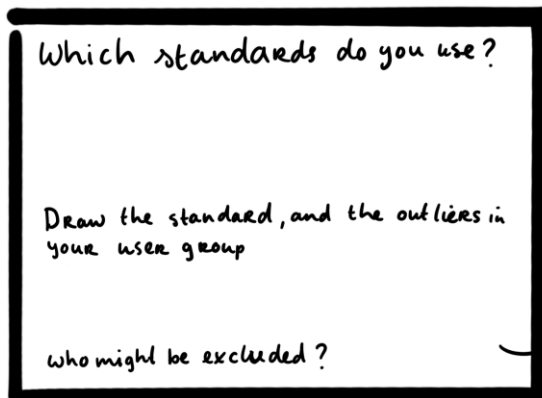
how do they see themselves and what does their context expect of them?

Wishes and criteria from user perspective



Concluded from values and insights in context.

Exclusive standards



if someone is excluded in what way/because of which reason is this person excluded?

- find new standard, or make one yourselves
(using Dined or own research)

OR

- re-evaluate user group

Pros and cons of this concept:

- + This concept makes the topic real by involving real companies
- + This concept involves the students
- + This concept gives the most guidance and is most practical
- This concept requires the biggest time (and energy) investment) and should be prepared a while in advance (it is not flexible like the other two)
- It might be had to involve real companies
- When testing with first years students how they would react to presenting the topic to them from the business opportunity perspective, I got a minimal reaction. It did not seem to interest them much. (this is discussed in appendix H)
- I cannot actually design much for this concept. It is more like writing a script.

Appendix H: Concept 2 test

The conversation with first year's students, while testing part of concept three.

In order to gain more insight in the perspectives of Industrial design students that are about to start their education, and in order to test how this group would react to an opportunity focussed approach, a session of one hour was conducted with two female students that were about to start their bachelors.

In this session the participants were introduced to the successful and inspiring projects of several well-known companies, that resulted from considering gender and sex in the research and design process. After this a conversation about their opinion on these projects, their awareness of the topic of gender bias and their experiences with gender bias was initiated.

The insights from this session where:

When the participants were not told about the common theme of gender in the examples, they did not spot this red tread in the examples. They were not aware of what gender bias was. They assumed that making products gender neutral, which they see happen a lot, as the solution to combat gender bias. They were surprised when given examples of gender bias in products. These examples helped to start the conversation. The examples of gender bias in products that fitted with their personal interests worked best to make them care about the topic. These examples lead to the most questions and interaction between the participants. They seemed to know relatively little about what industrial design means, and how a design project works.

Appendix I: Final concept, user tests

User test final concept

To evaluate the final design, user test where done with 7 IDE students, 4 male students and 3 female students. This group consisted of four bachelor students, of which two where freshmen, and three maser students.

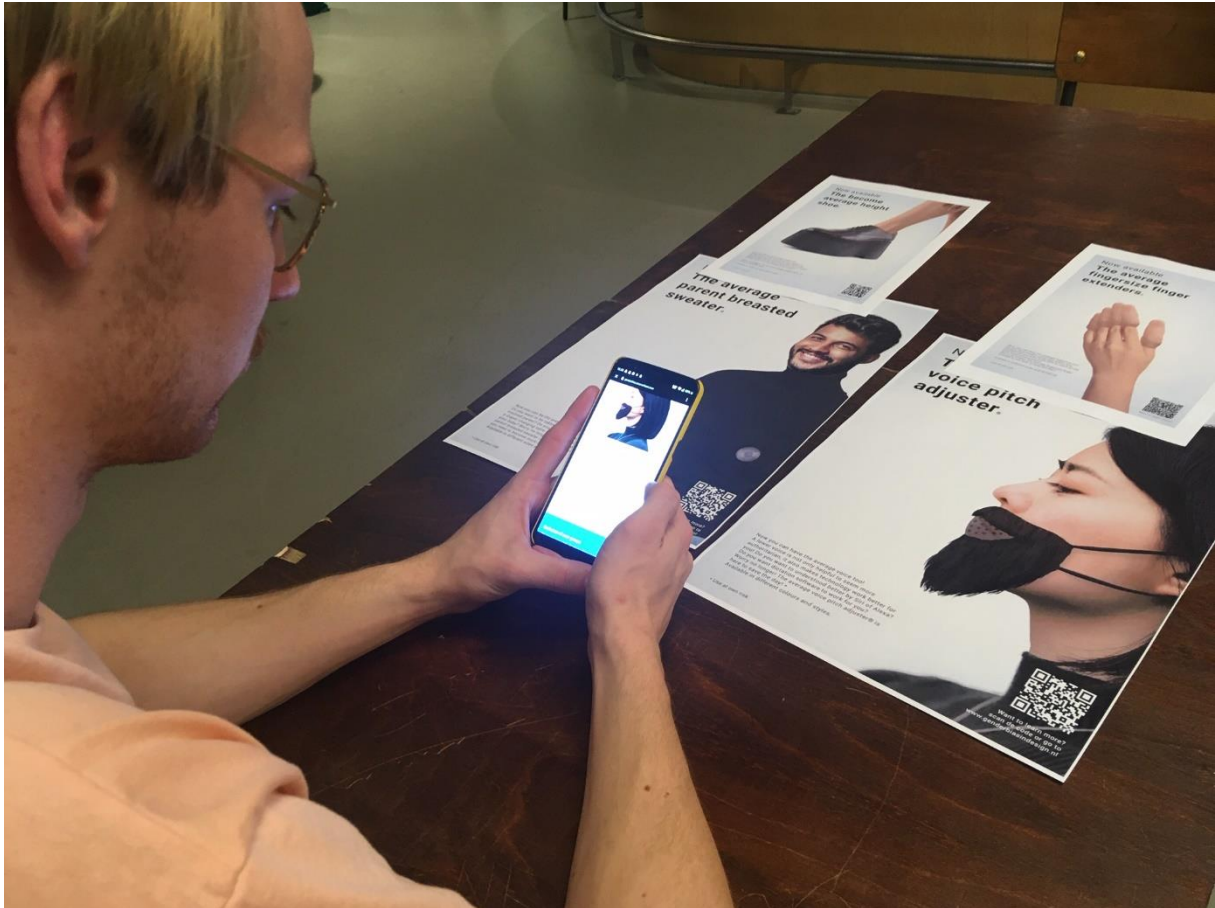
During the test the students were presented with the posters one by one, and asked what their first impressions where, and what they thought the posters where about. They were also asked if they would consider scanning the QR code and visit the website when they would encounter these posters hanging throughout the faculty.

After discussing the posters, the participants were asked to visit the website. They were given some time to explore the website and their behaviour was observed. They were asked what they thought the website was trying to convey. They were also asked to find certain information on the website to see if they could smoothly navigate through the pages. Lastly, they were asked what they had learned from this website, and if they felt they could do something with what they had learned.

Interesting insights and quotes from the participants where collected and are presented in this appendix.

Participant 1:

- Nils
- aged 22
- bachelor student at IDE
- male
- visited website on phone
- Dutch student



Interesting quotes and insights:

The participants' first impression of the posters was that they are passive aggressive, which he likes. He likes the design of the posters. They attract his attention. It is not immediately clear what the posters are about. Something about the expectations of the roles of men and women? That it is stupid that we have such strict gender roles.

The participant would not immediately scan the QR code. The code did not attract his attention. He mentioned that through the posters he thinks he understands the general idea and would not look for more information.

He was able to navigate the website smoothly.

The participant was most attracted to the voice pitch adjuster. On the website he immediately proceeded to read more information about this product. The finger extenders example attracted him least, because he did not connect to this problem.

The participant mentioned that he was impressed by the website and the project.

"Ik wist meteen waar je het over had maar ik begin nu pas te begrijpen waarom het nodig is".

"Ik vind het een vette website. Is clean, goede spacing. Leuk dat de linkjes roze zijn. "

The participant mentioned that the website was clearly to become aware and show students that they need to do something with this.

"De tips ronden het project heel goed af. Niet alleen veel informatie maar ook samengevat wat je er daarna mee moet. Dat is nice."

During the test the participants started to tell about his own experiences with gender biased design.

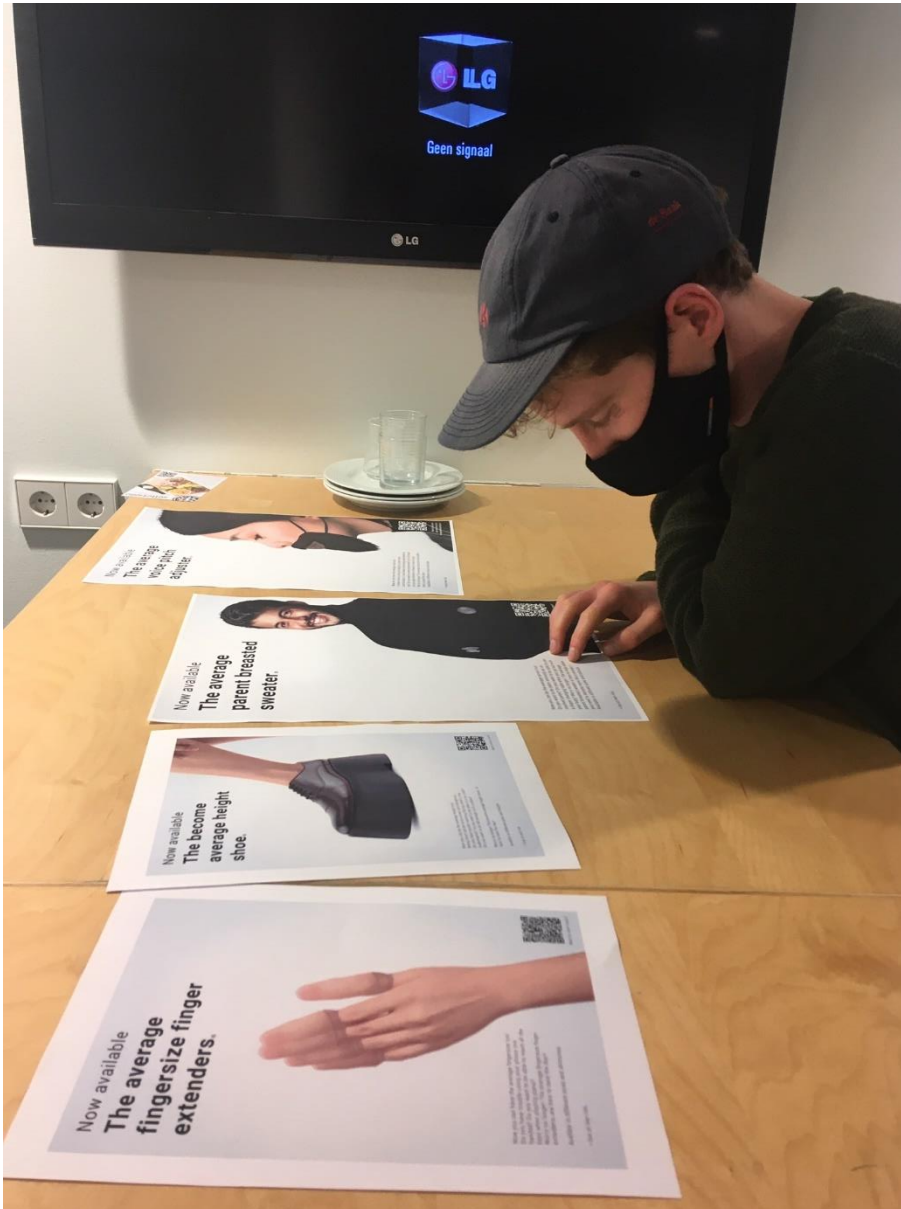
The participant mentioned that on some pages he thought there was too much text. The twitter embeds on the "about this project page" he really liked. On the "about this project page" he mentioned that he would like to see more about what this project is a part of, and what the result was. On the

The participant mentioned that he would be able to use the information provided on the website in his own design project.

"Ik vind het wel oprecht een heel interessant project, iets waar ik nog niet genoeg mee bezig ben zelf"

Participant 2:

- Jefta
- Aged 23
- Master student at IDE (master SPD)
- male
- Visited website on phone
- Dutch student



Interesting insights:

The participant his first reaction to the posters was that they thought they where funny and they made him curious.

The participant mentioned that the website link on the poster (www.genderbiasindesign.nl) already gave a lot away and made him less interested.

The voice pitch adjuster attracted him, because he recognized this problem. The average parent poster attracted his attention most.

The participant mentioned that he appreciated the style of the posters and website

The participant found the text on the posters a little bit too complex. It takes too long to read.

The participant would scan the QR code after seeing several posters.

The participant was confused about the page "gender considerate design". Initially he did not understand what the page was for. He also had trouble understanding the image about the three clusters, without reading the text.

The participant had not trouble navigating through the website.

At the "about this project" page, he wanted to see more information on why I had started this project and what the result was.

The participant did not click on the "become average" products to learn more. He thought that through the posters he already knew enough.

Participant 3:

- Merijn
- Aged 27
- Master student at IDE (master DFI)
- Male
- Visited website on phone
- Dutch student

Interesting quotes and insights:

The posters attract his attention. He thinks they are funny. It depends on where the poster would hang how much it would attract his attention.

He would not scan the QR code. Maybe during a long coffee break.

After three posters, the participant says he would become more serious and would consider scanning the code.

Mentions that it is like a provoking campaign with a bigger idea behind it.

The website link www.genderbiasindesign.com, does already give a away what the campaign is about, which makes the participant less tempted to visit the website. The tekst on the posters, explaining what the product is for, have the same affect.

The participant mentions he likes the website. He can easily navigate through the pages.

The participant was very enthusiastic about the inspiration page. "Heel cool, dat als het heel belangrijk is voor je project, dan heb je heir opeens alles waar je naartoe kan klikken om er meer over te weten en door te leren." The twitter embeds also attracted his attention.

The participant mentioned that he liked the paper references, because it proved to him that is was based on research.

Wat is het doen: je bewust te maken als design studentom wel na te denken over voor wie je nou preces ontwerpt, en ook wel een beetje inclusive design in wat je ontwerpt. En

"misschien ook een klein beetje herinnert het dat het best zo kan zijn dat je het niet expres doet. Dat het heel gemakkelijk gaat om gewoon die average man te pakken. Een soort herinnering dat je er een beetje bewust van moet zijn. Goed om in je achterhoofd te houden."

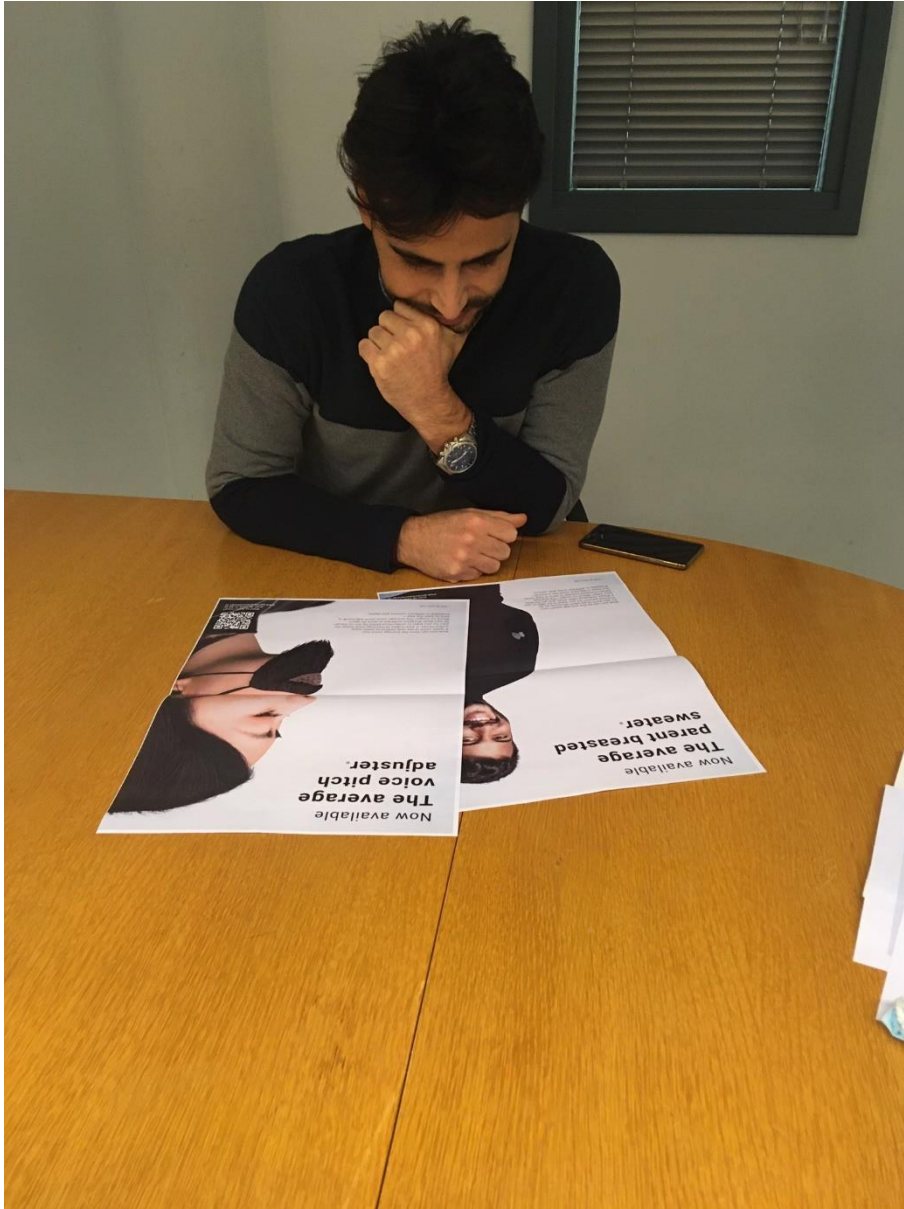
"Nu genderneutraliteit zich allemaal ontwikkeld en belangrijker wordt, moet je het gewoon meenemen in je ontwerpproces. Ik zou dan toch wel hier heen gaan als ik iets tegen kom waarvan ik me af vraag 'ga ik hier biased zijn?' ga ik hier inclusive genoeg zijn? Dan zou ik hier wel naartoe gaan, nu ik deze website weet, om te kijken of daar wat tools zijn. Normaal gesproken zou ik gewoon naar Dinet gaan, omdat dat de tool is die ik ken, maar daar staat het niet zo uitgelegd als dit. Dus dat is zeker een voordeel van deze. "

"En die 99% invisible podcast vind ik ook wel cool dus die zou ik wel luisteren. Ik vind inspiration een cool onderdeel van de website. Dat je gewoon een beetje door kan klikken en je eigen weg kan vinden. Ik hou meer van podcast en filmpjes dan van lezen dus dan zou ik heur een beetje gaan kijken wat er te vinden is."

"Ik zou niet zeggen dat ik met deze website meteen een hele andere ontwerper ben, maar het is een stukje gereedschap, net zoals Dined, dat is wel een chille wegwijzer en verzameling van informatie. Veel fijner en toegankelijker dan papers lezen. De tips kan je makkelijk gebruiken in je ontwerpproces."

Participant 4:

- Salvo
- Aged 30
- Master student at IDE (master DFI)
- Male
- Visited website on phone
- International student



Interesting quotes and insights:

The participant started to laugh about shoe posters, because he recognises problem of being too short for the high shelves in the supermarket.

"the image is super power full and the fact that it is a bit ambiguous attracts my attention. The poster makes me think, and makes me curious."

The shoe makes him more curious than the finger extenders. "I never have trouble with a phone and don't play piano. The shoe is more realistic than the hand and attracts me more."

"The text (on the posters) makes it more interesting for me. First the pictures made me think it is about something else, but then I read the text and it makes me more interested." "they are like products to enhance humans."

"I would look for more information because I'm wondering whether it is a device or whether it is something like a campaign on women's rights in the work environment, something like that."

When asked if he would scan the QR code if he came across these posters: "Yes of course!"

After scanning the code, the participant starts reading website immediately, clicks on posters and is impressed by the examples given.

"so it is indeed something to make the designer think about how to design. The responsibilities of the designers and consideration of gender indeed"

"This is to make the designer reflect during the design process, maybe between the needs and issues, a woman compared to a man might have in relation to a specific interaction for example, to make products more democratic in a way. I think it is a tool to learn how to design something that works better for everyone."

"It is also a place where you learn different stuff. And makes me reflect "wow, so far we have been designing with our eyes closed". Standards are not reflecting the needs of everyone. Makes me think that everyday objects have these kinds of characteristics that in a way are related to this kind of distinction. And perhaps we are designers that have unconsciously learned something that is wrong. Because you have been interacting for all your life with things that have been designed in a specific way."

The participant started to tell me examples he himself encountered.

"really, even the smartphone? Now everything makes more sense for me".

"okey, gender bias, wow"

The participant mentioned that he wanted to keep reading.

"There are a lot of references so this is a serious topic."

"Is there a function in which I can share with you some of my examples if I encounter them?"

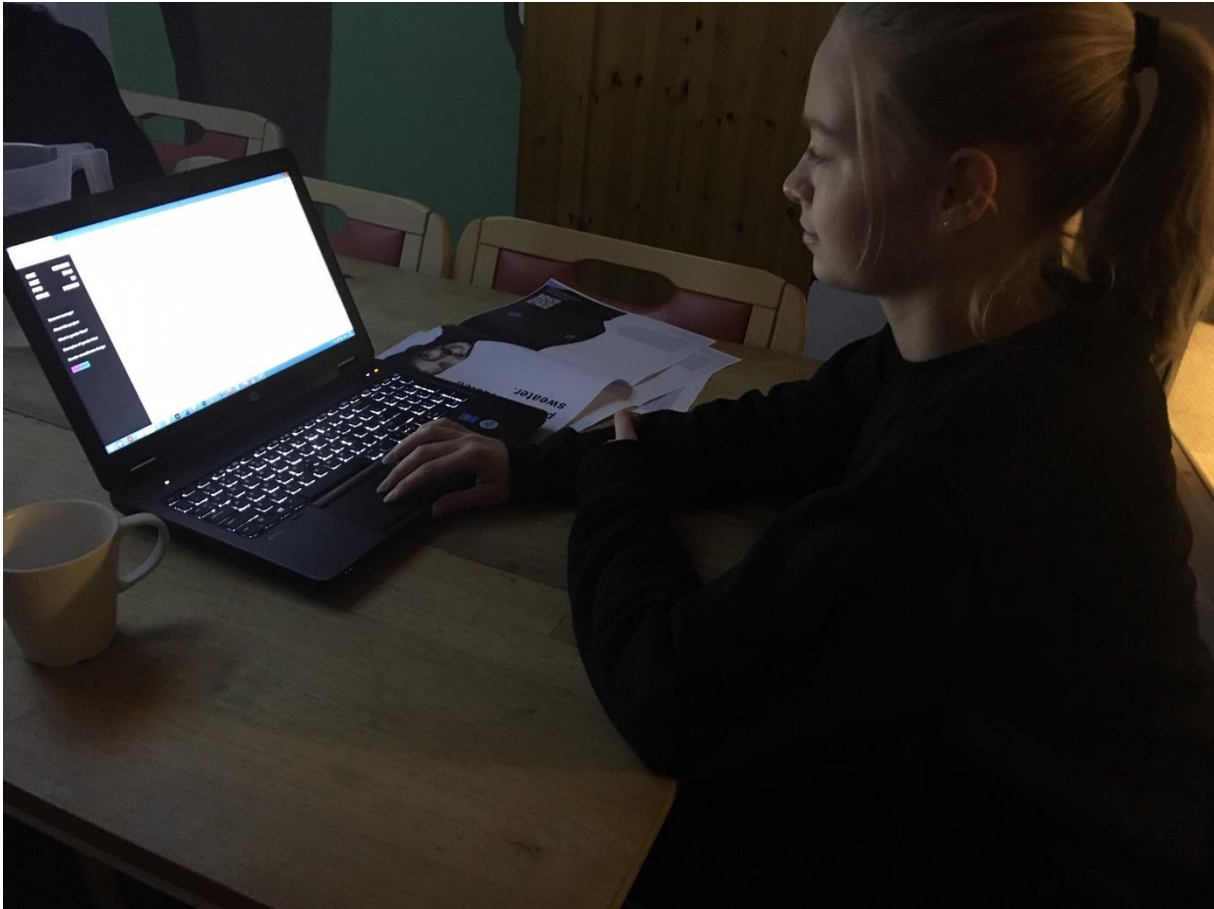
"It is really interesting, it is kind of opening your eyes for something you take for granted."

"Would be nice to have a blog element to have a discussion with you. Ask you what you think about certain projects, do you think there is a gender bias there. An ongoing conversation."

Participant 5:

- Olga
- Aged 18
- First year IDE student
- Female

- Visited website on phone and computer
- Dutch student



Interesting quotes and insights:

The posters captured her attention and made her laugh.

"Het zijn allemaal unieke plaatjes waar je wel even bij blijft hangen."

The breasted was the least appealing to her, and the shoe the most appealing

"Ik ben niet zo van QR-codes scannen. Ik zoek ook niet snel een website op."

'Ik denk dat het gaat over dingen veranderen van jezelf. Om de normale persoon te worden. Ik weet niet waar het precies voor is.'

Although the participant mention that she would never scan a QR code, she was very curious where the code would lead to.

The participant would prefer less text and more imagery on the website.

"Ik zou de home page sowieso lezen, en 'about'. Ik zou ze allemaal wel even afgaan. Ik lees het liefst iet met beelden erbij."

"Ik denk wel dat ik hier informatie kan vinden over hoe ik over gender na kan denken in mijn projecten."

Verbaasd dat gender niet alle over man en vrouw gaat en over gewicht en lenkte en gedrag.

"Het hangt ervan af waar en waardeer ik het zie of ik veel zou gaan lezen of niet. Ik weet er iet zo veel van dus zou het wel interessant vinden."

The participant mentioned that she prefers the desktop version of the website because it gives a better overview.

"De poster plaatjes trekken me vooral erg."

"Ik zou het best wel willen lezen, en vind het best overzichtelijk. Het is wel een duidelijke site"

Participant 6:

- Eunice
- Aged 18
- Second year IDE student
- Female
- Visited website on computer tested via zoom
- Dutch student

The screenshot shows a web browser window with several tabs open. The active tab is 'genderbias.oscarverbeek.com/index.html'. The website content includes a navigation menu on the left with items like 'Become average!', 'About this project', 'What is gender bias?', 'Examples of gender bias', 'Gender considerate design', and 'Inspiration'. The main content area is titled 'The 'Become Average' product line!' and features three product cards. Each card has a title, a small image, and a brief description. The first card is for 'The become average height shoe', the second for 'The average fingersize finger extenders', and the third for 'The average voice pitch adjuster'. A video call window is visible in the top right corner of the browser window.

Interesting quotes and insights:

The posters attract the participants attention, especially the one with the shoe because that one looked the most real to her. The posters make her laugh.

After seeing multiple posters, she would be curious to scan the QR code.

"Denk dat ik hier (op de website) informatie kan vinden hoe ik voor veel verschillende mensen kan ontwerpen"

"Ik heb tot nu toe nog niet veel nagedacht over of verschillen tussen mannen en vrouwen een rol spelen, maar is wel belangrijk natuurlijk. Ik denk dat nu nog veel gericht is op mannelijk gebruik en ik denk dat dat wel anders kan."

"Ik denk dat je hier wel kan vinden waar je zelf een beetje op kan letten tijdens je projecten enzo."

"Ik vind dit soort dingen best wel interessant. Dus ik zou wel verder lezen."

"Ik zou vooral kijken naar de voorbeelden. Dan kan je het makkelijker toepassen op waar je zelf mee bezig bent. En ik zou sowieso de hoofdpagina lezen en als ik tijd had zou ik naar de voorbeelden gaan. Dat is het eerste wat ik zou lezen."

"Wel fijn dat je bij inspiratie gewoon een lijstje hebt van dingen die je zou gebruiken."

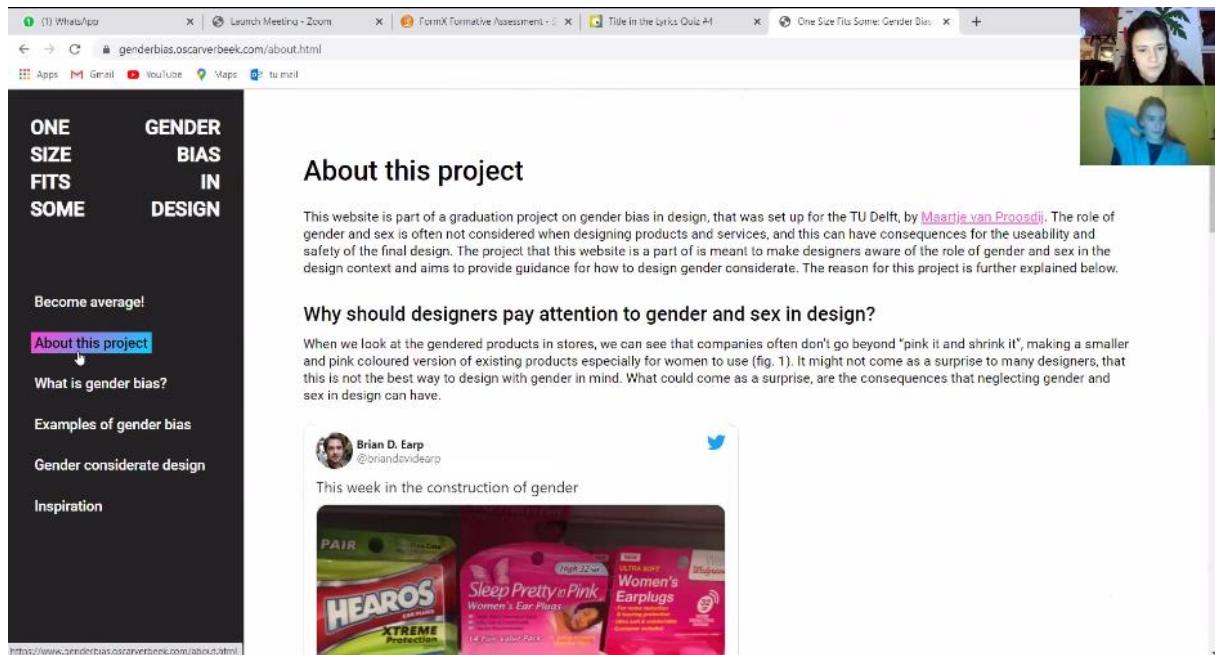
This participant thought that on the page 'gender considerate design', examples of gender considerate design would be disused, instead of advice.

"Ik denk dat dit een soort toolwebsite is om te helpen bij projecten om gender consideratie te zijn en dat je hier kan vinden wat het is en hoe je er zelf mee om kan gaan."

The participant says she would like the tools during her own project.

Participant 7:

- Wies
- Aged 18
- Second year IDE student
- Female
- Visited website on computer tested via zoom
- Dutch student



Interesting quotes and insights:

The concept with the hand attracted the attention of this participant most, because of the weirdness of this image. This sparks her curiosity. She would scan the QR code on this poster.

When browsing the website, the first thing she would look up at is the “about this project” page because she is curious of the reason of this campaign. The twitter embeds on the website caught her attention. She mentioned that this made it feel more real and relevant to her.

At the “inspiration” page, she mentioned she had expected more imagery. The different examples of gender bias caught her attention. It is possible to select information on what you personally find interesting. The pictures that came with the examples she also liked.

The participant did not explore the “become average” products further on the website, because she had the idea that she wouldn't find new information there. After being encouraged to look at one of these pages she was surprised by the information.

“Het zijn dus eigenlijk fictionele producten die wijzen op het originele design. Waar het weer op ingaat”

The participant mentioned that the tips would be useful during a design project.

“Ik zou de informatie op deze website wel gebruiken in mijn eigen projecten. Ik vind genderneutraliteit ook wel een heel interessant onderwerp. En in heel veel dingen is het mee te nemen. “

Appendix J: screenshots of the campaign website

For the final test a fully functional website was build and reviewed. Screenshots of this website are presented in this appendix, to give an impression of the website.

ONE GENDER
SIZE BIAS
FITS IN
SOME DESIGN

Become average!

About this project

What is gender bias?

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Inspiration

The 'Become Average' product line!

Why change products to fit with people when you can change people to fit their products? The Become Average® product line offers everything you need to become more like the [reference person](#) our world is designed around. Now, finally, you can be safe, comfortable, and able too, without being excluded by everyday design.

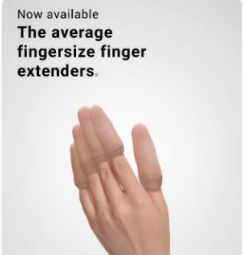
Now available
The become average height shoe.



Why average height?
From inconveniences like not being able to reach the upper shelf at the supermarket, to one of the reasons a car is less safe for you, or being excluded from becoming an air force pilot: being shorter than the 'reference man' length, as many women are, can be difficult.

[Learn more →](#)


Now available
The average fingersize finger extenders.



Why average sized fingers?
Many products are designed around the average male hand size. Think of smartphones or piano keyboards. These products, that are meant to work for a large group of people seem to systematically exclude people with small hands, which are often women.

[Learn more →](#)


Now available
The average voice pitch adjuster.



Why average voice?
A lower voice is not only helpful to seem more authoritarian, it also makes technology work better for you. Voice recognition software used for voice command systems, artificial intelligence assistants, and dictation software are better at understanding lower voices, because of the way they are programmed.

[Learn more →](#)

Now available
The average parent brested sweater.



Why average parent?
Fathers are often not considered when it comes to design for parents. There are often no changing tables in the men's toilets to change the diaper of a child, for example.

[Learn more →](#)

The become average product line

The become average product line criticizes how products unintentionally exclude groups of people. Many products are designed to fit a model of the average person, often referred to as "reference man". "Reference man" is, however, not representative for the majority of women, and is even not representing men very well. When the standards that are used to design a product are based on a model that is not representative for the target group, it can happen that the final product is not usable for everyone.

Some products are not exclusive, even based on design decisions, like weight or the physical elements, but because of cultural norms and beliefs about gender. The representation of the

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The become average height shoes®



Why average height?

The become average height shoe can help you to use design that doesn't fit with your body, for example when you struggle to reach the top shelf in the supermarket, because the shelf height was based on the reference man model (Perez, 2019). Or, when you struggle to fly a plane because both defence and civilian cockpits have traditionally been designed with specifications based on the measurements of the average male body. This resulted in a cockpit design physically discriminated against the majority of women and smaller statured men.

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About this project

This website is part of a graduation project on gender bias in design, that was set up for the TU Delft, by [Maartje van Proosdij](#). The role of gender and sex is often not considered when designing products and services, and this can have consequences for the useability and safety of the final design. The project that this website is a part of is meant to make designers aware of the role of gender and sex in the design context and aims to provide guidance for how to design in a gender considerate way.

Why should designers pay attention to gender and sex in design?

When we look at the gendered products in stores, we can see that companies often don't go beyond "pink it and shrink it", making a smaller and pink coloured version of existing products especially for women to use (fig. 1). It may not come as a surprise to many designers, that this is not the best way to design with gender in mind. What *could* come as a surprise, are the consequences that neglecting gender and sex in design can have.



We can find biased designs everywhere. Often, women's lives are negatively affected by these biases because many of the things around us are designed with the average white male in mind (Perez, 2019), or mirror outdated gender expectations.

A relatively innocent example of a problem caused by using the average man as a standard can be found in smartphone design. The most common smartphones don't fit the average woman's hands (or pockets), because they are designed for the average male hand size. The average woman is unable to use their phone one handed, reducing the functionality of the device (Perez, 2019).

It is not only women that are disadvantaged. Design that reflects outdated gender expectations can affect men too, for example, when it comes to parenting. When a father goes out with

What is gender bias?

Gender bias, gender and sex

Gender bias is the term used to describe assumptions and prejudices on the basis of gender and sex. With sex we refer to biological characteristics such as height, weight, and physiology. With gender we mean sociocultural attitudes and behaviours, that shape women's and men's behaviour, products, technologies, environments and knowledge. Attitudes and behaviours towards gender are learned, and can transform over time or with culture (Schiebinger, Klinge, Sánchez de Madariaga, Paik, Schraudner, & Stefanick, 2011-2018).

For further information on gender, sex and related terms, the [Gendered Innovations](#) website of Stanford University provides a detailed overview.

The Reign of the Reference Man

Reference man is a model person first introduced in 1975 and was originally developed for calculations in radiation exposure (Makhajani, 2008). However, reference men continued to be used as a standard in many other fields too, including design. This reference man, that is meant to represent humanity, is a Caucasian man, between 25-30 years of age who weighs roughly 70 kg and is 170 cm in height (Perez, 2019). Since men and women are different when it comes to their muscles, bones, centre of gravity, reaction to medicine, health risks, size of organs and limbs, symptoms of diseases and disorders (Perez, 2019; Schiebinger et al., 2011-2018) this reference model is not sufficient to represent the majority of women. However, reference man is not always a good representation of men either.

There are often multiple body dimensions that are relevant to the design of a product, which complicates the design process. It is very rare that a person has multiple body dimensions that match with the average of a population. Although there may be people with the average height, for example, there is no one that has the average foot size, lower leg size, upper leg size, torso size, and weight, for example, combined (DINED, 2020). In complicated products, with many relevant body dimensions, the "reference man" model becomes unreliable. Designing for a range of dimensions is therefore often the better option.

Examples of gender bias in products

Gender bias in products and services can lead to unintentional exclusion of part of the target group. On this page, you can find a selection of products and services that present a gender bias. By clicking on the topics, more information will appear. Gender bias can surface in many different contexts. This overview of examples gives an idea of the scope of this topic.



Piano

The ergonomics of the current standard piano keyboard disadvantages people with smaller hands. 87% of adult females currently own 93% of all home pianos. [View more](#)



Smartphones

The most common smartphones don't fit the average woman's hands (or pockets), because they are designed for the average male hand size. [View more](#)



VR Gear

The headsets, suits, gloves, glasses etc. used for virtual and augmented reality are often too large to work properly for the majority of women. Eye tracking headsets can have trouble when users are wearing eye makeup. The modern VR industry is overwhelmingly male, which is likely a factor in this phenomenon (The Verge, 2016). [View less](#)



Toys

The toys children play with affects their skill development and self-image. When we gender toys, we choose what skills boys and girls develop and reinforce old gender views. This can influence their education and career choice (Inman & Carolla, 2015). [View less](#)

How to approach gender considerate design?

The examples of gender bias in design, which can be found [here](#), can be summarised in 3 categories. In most cases, the use of standards led to gender biased design, in some cases the associations of the designer with what is male, or female that are reflected in the final product led to biased design, and in some cases the differences in behaviour between women or men in the target group were not considered and caused a gender biased design.

Below the three themes are visualised. The three themes can serve as a guide on how to analyse gender biased design and can be used to identify what to look out for when aiming to design in a gender considerate way.

Gender bias from 3 perspectives



Production and product standards, the behaviour of users and the associations of the designer, are all influenced by the context (time and place in which they are manifested). The context of the researcher developing the standards might be very different than that of the designer, or the target group, of the design project. The effects of the social and cultural context on a designer, researcher, or target group is hard to see but it is likely reflected in the standards, associations, or behaviour they produce. The researcher, designer, and target group are drawn in the figure as being under water, meaning that their reasoning is not visible to the outside world. What is visible is what comes out, the practices: the standards, associations, and behaviour.

Standards

This category focuses on standards that are not representative. In the design process standards are often used to improve efficiency of the design process and improve the safety and usability of the final design. The use of standards that are not representative for everyone in the target group, can lead to unintentional exclusion. In most cases it is the use of unrepresentative standards that are causing the design to be gender biased. An example of this can be seen in car safety standards or piano keyboard standards, that did not represent women adequately. Standards are formed by researchers, professors, architects etc. who are likely to have their own biases too. Their choices for the set standard, will reflect these biases.

Behavior

This category focuses on the behaviour of the target group. As a result of gender expectations, women and men behave differently. Their difference in social and cultural expectations, beliefs and obligations influence the way they perceive the world. When the context of the target group is not considered it can happen that the way users will react to a product or service might not match the designer's expectations. Examples of this include the differences in toilet behaviour of men and women that lead to big lines in front of the women's toilets, or the unforeseen gender biases with which users judge the design of robots.

Associations

This category focuses on the designer's reasoning. Designers are, just like researchers and users, influenced by biases. These biases influence the designer's perspective on a project. It can happen that the ideas that are presented in a project don't match with the context that is designed for. The associations of the designer on what is seen as male and female that

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Behavior

This category focuses on the behaviour of the target group. As a result of gender expectations, women and men behave differently. Their difference in social and cultural expectations, beliefs and obligations influence the way they perceive the world. When the context of the target group is not considered it can happen that the way users will react to a product or service might not match the designer's expectations. Examples of this include the differences in toilet behaviour of men and women that lead to big lines in front of the women's toilets, or the unforeseen gender biases with which users judge the design of robots.

Associations

This category focuses on the designer's reasoning. Designers are, just like researchers and users, influenced by biases. These biases influence the designer's perspective on a project. It can happen that the views that are represented in a product don't match with the context that is designed for. The associations of the designer on what is seen as male and female that have translated in the design, have resulted in unintentional exclusion. Examples of this include the gendered design of children's toys, or the gender bias represented in icon design.

Tips for gender considerate design

Through standards, associations, and interpretation of behaviour of the target group, gender bias can influence a design project. Attention to this should be given from the beginning of a design process, to avoid accidental exclusion of women or men. By paying attention to associations, behaviour, and standards during the design process, it becomes easier to design gender and sex considerate.

Tip 1: Consider your associations, to avoid blind spots and stereotyping.

As a designer it is useful to become aware of your own associations and biases, or even those of the design team. How might these associations affect judgement? By identifying them it might become possible to make informed decisions about how to treat them in the design process and avoid unintentional exclusion. Try to reflect and discuss with your project group on which first associations and ideas you might have of the target group and context. Is your group likely to have a similar view and similar experiences related to the project as you? Try to become aware of your blind spots and think of a strategy on how to overcome them.

Tip 2: Consider the context of the target group, in order to understand and predict their behaviour.

To get more understanding of a person's behaviour it is advisable to get a more in-depth insight in the user's sociocultural context. How might these influences affect the users beliefs, expectations and, eventually, their behaviour? Through interviews, observations, role play, personas, cultures etc. the context of the user, their social roles and expectations can be explored. This provides a better understanding of the target group and helps to more accurately understand and predict their behaviour.

Tip 3: Be critical of standards, to avoid exclusion.

When using standards, it is wise to identify who the standards are designed for. Who does this standard exclude within the user group, and in which way? There might be a different model of standards that is more applicable to the target group, or it might be necessary to create new standards for the project. For size standards you can use [DINED](#), an anthropometric database made for the by the TU Delft. You can also use your own research insights to create new standards for your project.

Discover more

[Other useful tools and ideas -->](#)

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Interesting tools

- Microsoft's [Inclusive Design Guide](#)
- Handbook for Gender-Inclusive Urban Planning and Design
- Stanford's [gender in design](#) website explores the role of gender and sex in design illustrated by examples and case studies.
- Stanford's [Gendered Innovations](#) website provides extensive information on the role of gender and sex in science, health and medicine, engineering and environment. This website also provides case studies and guidelines.
- Inholland's [Inclusive Tourism Lab](#) provides guidance for inclusive design.
- TU Delft's [DINED](#) provides designers with anthropometric data, that they can use to design inclusive products.

Inspiring content on gender bias and inclusive design

- An [episode on gender bias](#) by the 99% Invisible podcast
- MTV did a [campaign](#) to bring awareness to gender bias
- This [article](#) of NPO discusses how to recognize your preconceptions
- A BBC videoseries that discusses the effects of gender stereotyping on children. [Episode 1](#) and [Episode 2](#)
- This [website](#) about an exhibition in the 'Tropen Museum' in Amsterdam, which discusses the meaning of gender.

Companies that already did projects with gender in mind

- Design agency [Design/People](#)
- Car companies [Toyota](#) and [Volvo](#)
- Parenting website [Fatherly](#)
- Ride sharing platform [Safr](#)
- Sports brand [Nike](#)
- Piano builder [Steinbühler](#)
- Toy company [Goldieblox](#)

Appendix K: The original brief

APPROVAL PROJECT BRIEF

To be filled in by the chair of the supervisory team.

chair _____ date ____ - ____ - ____ signature _____

CHECK STUDY PROGRESS

To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair. The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: _____ EC

YES all 1st year master courses passed

Of which, taking the conditional requirements into account, can be part of the exam programme _____ EC

NO missing 1st year master courses are:

List of electives obtained before the third semester without approval of the BoE

name _____ date ____ - ____ - ____ signature _____

FORMAL APPROVAL GRADUATION PROJECT

To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **. Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

- Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?
- Is the level of the project challenging enough for a MSc IDE graduating student?
- Is the project expected to be doable within 100 working days/20 weeks ?
- Does the composition of the supervisory team comply with the regulations and fit the assignment ?

Content: APPROVED NOT APPROVED

Procedure: APPROVED NOT APPROVED

comments

name _____ date ____ - ____ - ____ signature _____

_____ project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date _____ end date _____

INTRODUCTION **

Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

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introduction (continued): space for images

image / figure 1: _____

image / figure 2: _____

PLANNING AND APPROACH **

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date _____ - _____ - _____ end date

MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge a on specific subject, broadening your competences or experimenting with a specific tool and/or methodology, Stick to no more than five ambitions.

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FINAL COMMENTS

In case your project brief needs final comments, please add any information you think is relevant.

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