INCREASING EMPLOYEES' SENSE OF BELONGING: DESIGN OF AN INTERVENTION TO STIMULATE MEANINGFUL CHATS IN OFFICES

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EXECUTIVE SUMMARY

This project aims to improve employees' social well-being in offices through informal interactions. It consists of 3 phases in total, context research, idea generation and concept development. Experiencing prototyping was mainly used in the design process.

In the first phase, observation and interviews were conducted in 2 offices in Beijing to know about the context and discover problems and design opportunities. Another round of research was carried out in Studio-Lab for verification of the insights from Beijing offices. The results, combining with the results of the literature review, led to the design goal defined.

Then the project started to focus on stimulating meaningful chats among employees to increase their sense of belonging. Ideas were brainstormed and selected, prototypes and storyboards were made to let participants evaluate the concepts through interviews. After 3 cycles of idea generation, the final concept direction was defined.

After that, 2 cycles of concept development were conducted to iterate the concept. Again, prototypes were made and interviews were done to evaluate the concept and get feedback from participants. In the end, the final design was defined, final prototypes were made and final evaluation was conducted.

Overall, it is a design project exploring solutions for solving one of employees' social problems in offices, lacking the sense of belonging.

CONTENTS

01 INTRO

**This chapter introduced t
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the main approach used i
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1.2 The approach

DUCTION

the background of this proj-
t and initial problems. Then
in the whole project was de-

1.1 THE ASSIGNMENT

Interactions and relationships with people around play an important role in human beings' health and wellbeing [1]. Insufficient social connection with other people could lead to the feeling of isolation and monotony [2]. When it comes to work, employees' need to connect with others still exists [3]. At the same time, high-quality connections help with organizational improvements [4].

However, there are problems related with social connections in current offices. For one thing, informal interactions among employees could be insufficient, especially in the current COVID-19 situation, when employees have less opportunity to interact with each other in real life. For another, open spaces in offices always lead to noise and lack of privacy [5], as a result bringing about tension in the office and worsening the interpersonal relations [6].

Therefore, the focus of this project will be on office workers who have the needs to build deeper relationships with their colleagues at work. The purpose is to contribute to the social well-being

of them by design that enhances informal social interaction, such as chit-chat, casual encounters, heart-to-heart talks, having fun together, spontaneous collaboration, etc.

The research questions that this project would focus on are:
- Which sort of employees' social issue should the solution focus on?
- How employees should feel while experiencing the concept?
- Which type of informal interaction should be triggered to enhance employees' social wellbeing?
- Where in the office is the most suitable place for employees to have the interactions?

1.2 THE APPROACH

The whole project process followed a triple diamond approach (figure 1), including 3 phases: context research, idea generation and concept development [7].

CONTEXT RESEARCH

The research was conducted in various offices to collect data through observation and interviews. At the same time, literature review was carried out to know more about the context and related theories. After that, by analysing the research results, main problems and the design direction were defined.

IDEA GENERATION

With the insights gained in the research phase, ideas were brainstormed. Then the "Experience Prototyping" method and storyboard were mainly used to know about users' preferences, based on which the concept direction was defined.

CONCEPT DEVELOPMENT

"Experience Prototyping" was continued to be used in this phase. By letting the users try the prototypes out, the selected concept was iterated for a few times based on users' feedback. In the end, the final solution was delivered with a high-fidelity prototype.

This report was structured based on the whole approach. Chapter 1 introduces the assignment of the project. Chapter 2, chapter 4 and chapter 6 discribe the processes of the 3 stages: context research, idea generation and concept development. Chapter 3, chapter 5 and chapter 7 state the results of the previous chapters, which are the design goal, concept direction and the final design. As the end, chapter 8 concludes the whole project.
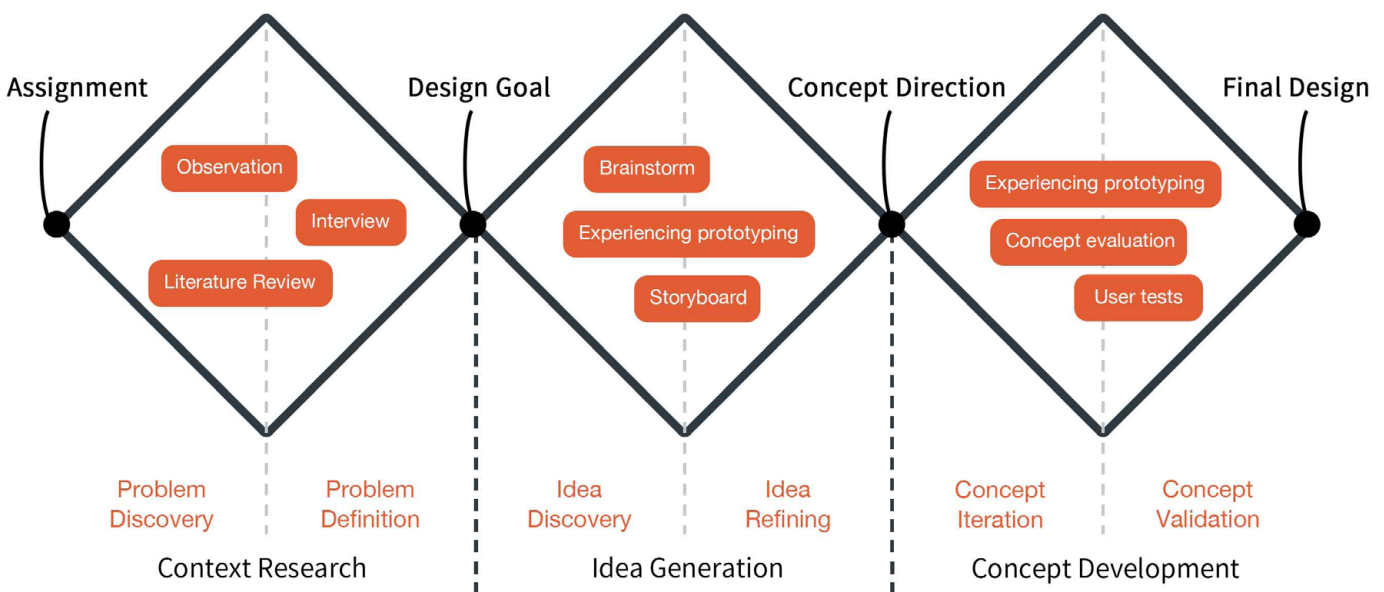
Figure 1: Triple diamond approach

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EARCH

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StudioLab of TU Delft. Also,
know about social issues in
mmon problems were found
potential solution was de-**

observation
interview

What are the problems related to social well-being?

How could solve the problems?

When & where should the problems be solved?

RESEARCH IN
BEIJING

ideation
interview

Do the results apply to StudioLab?

Who have the problems?

Requirements for solution

RESEARCH IN
STUDIOLAB

Do the results apply to other offices?

Requirements for solution

LITERATURE
REVIEW

Design goal

Figure 2: Overview of the context research stage

2.1 RESEARCH IN BEIJING

Initial research was conducted in two offices in Beijing. Three main goals of the research were as follows:

- Have an understanding of the context of the project, including the physical environment of current offices and current informal interactions of employees there.
- Know about how the interactions are related to employees' well-being.
- Discover the problems and design opportunities.

Observation and semi-structured interviews were used in the research. Based on them, some insights and the interaction map were gained.

2.1.1 INTRODUCTION OF THE OFFICES

The two offices, BNUX and Jingdong are different in scale, space type, working mode and the occupations of the employees.

BNUX OFFICE

BNUX is a StudioLab of a design research community, which has around twenty people working in a small office. Among them, five to ten people are teachers, who have their own desks in one room, and the rest are design students, who do not own their desks and should randomly get a seat to work there. For the rooms, 1 office, 6 laboratories and 3 meeting rooms are used as workspaces. Leisure spaces include the lobby, coffee corner and the corridor (figure 3).

JINGDONG OFFICE

Jingdong is a Chinese e-commerce company with more than 300 thousand employees in total. The research was in one of its office buildings in Beichen, Beijing. On every floor, there are several rooms for employees to work. Each room contains around 200 employees, and each employee has his/her own desk. The lounge area and coffee corner are together in one room used as a leisure space. Besides, the corridor and lift lobby are also leisure spaces for people to interact (figure 4).

2.1.2 METHODS

Observation and semi-structured interview were chosen to conduct the research in the offices. With observation, it was aimed to know about the physical environments of the offices and employees' daily interactions with each other. The reason for choosing this method was that the data could be collected fast and accurately, especially for employees' behavior, which would
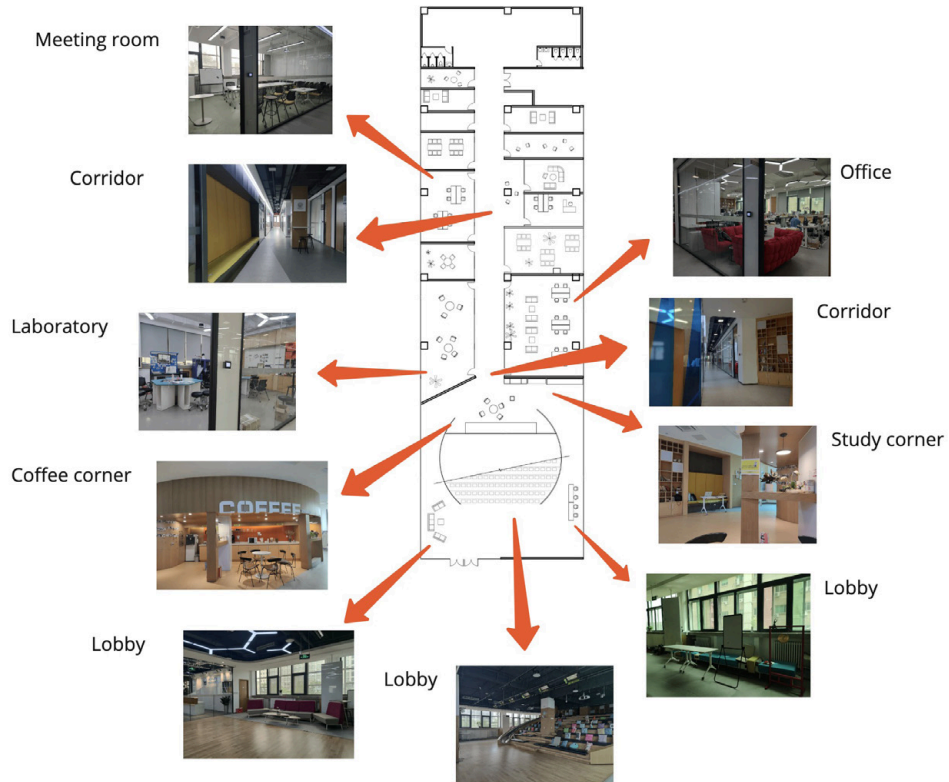
Figure 3: Photos of BNUX office
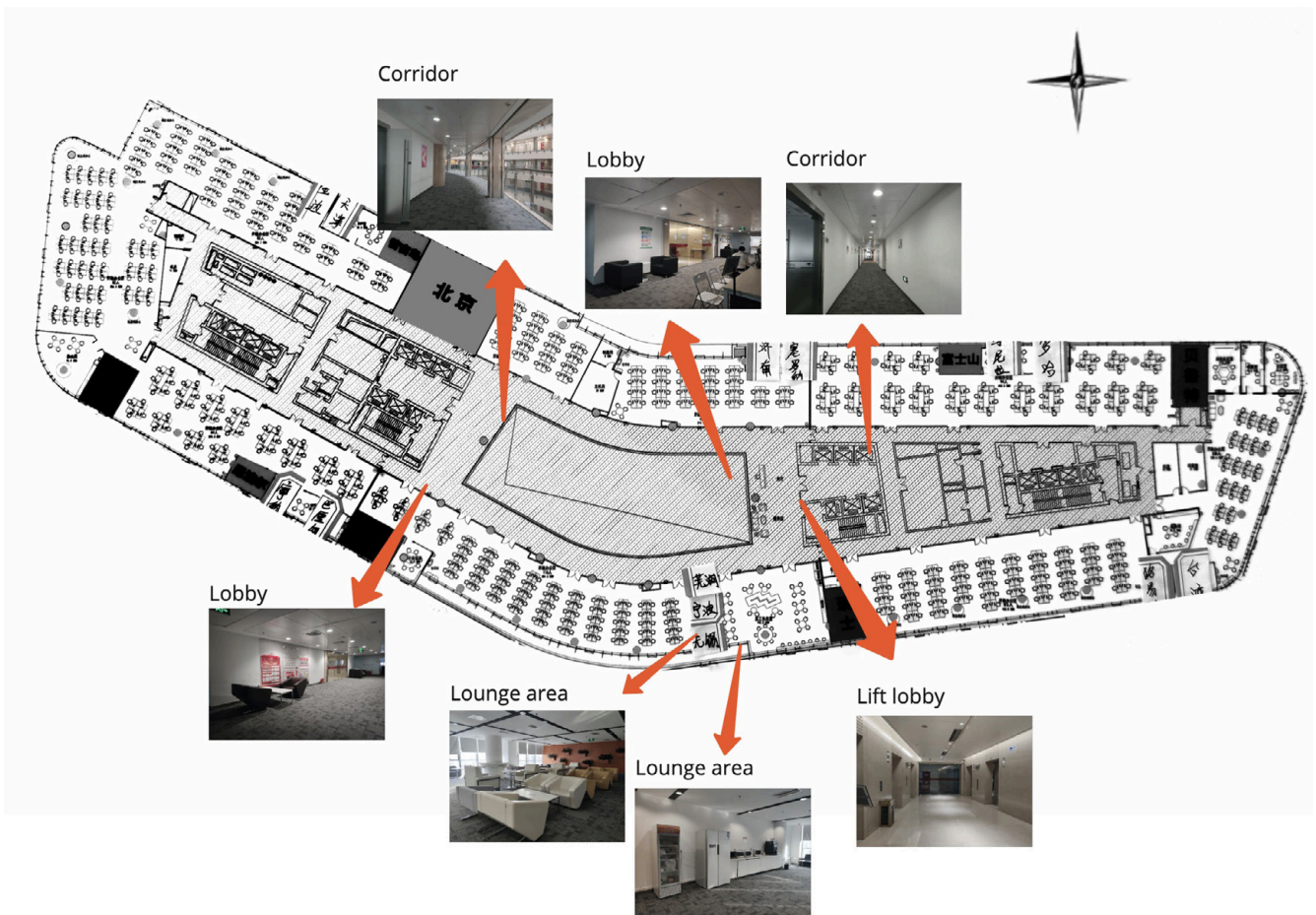
Figure 4: Photos of Jingdong office

be natural enough since the employees would not be interrupted during the process. Besides the observation, since employees' daily interactions needed to be explored further and how the interactions were related to employees' well-being should be discovered, the semi-structured interview was conducted. With this method, the reasons behind the results of the observation and relations between the factors could be learned by asking questions to participants. Also, it could give participants freedom to share

more things related to the topic. Combining and analyzing data collected from observation and the semi-structured interview, the social issues and design opportunities were aimed to be discovered.

2.1.3 OBSERVATION

The observation lasted for 30 minutes each time and 2 times in total for each office. Informal interactions in leisure spaces were mainly
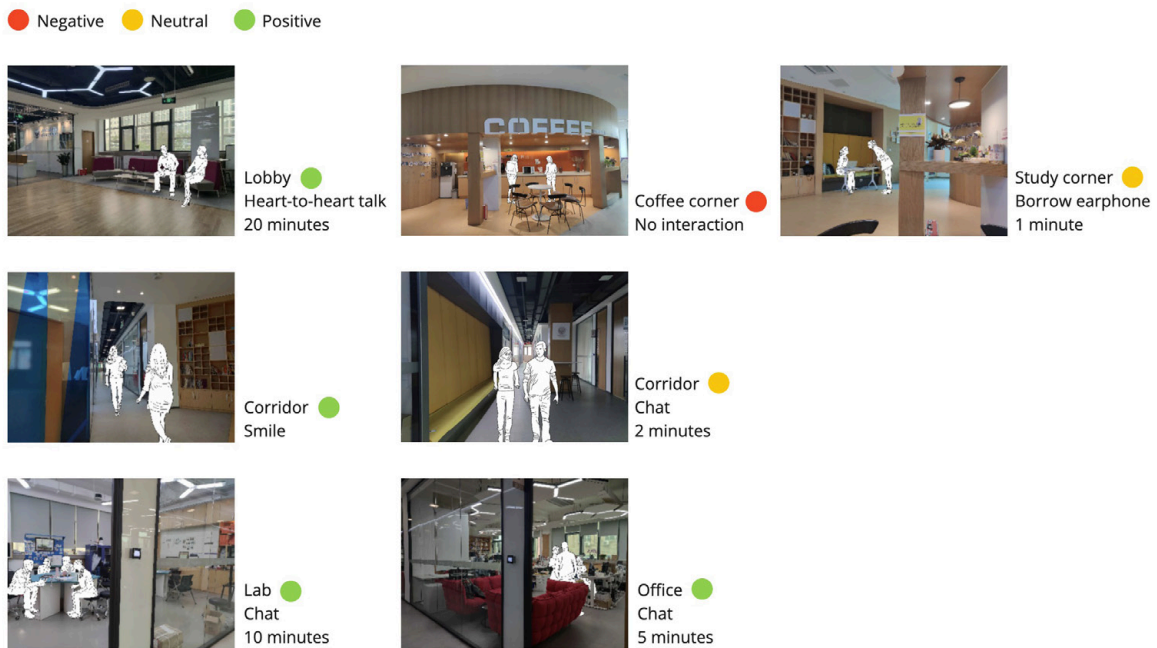
Figure 5: Observation results in BNUX office
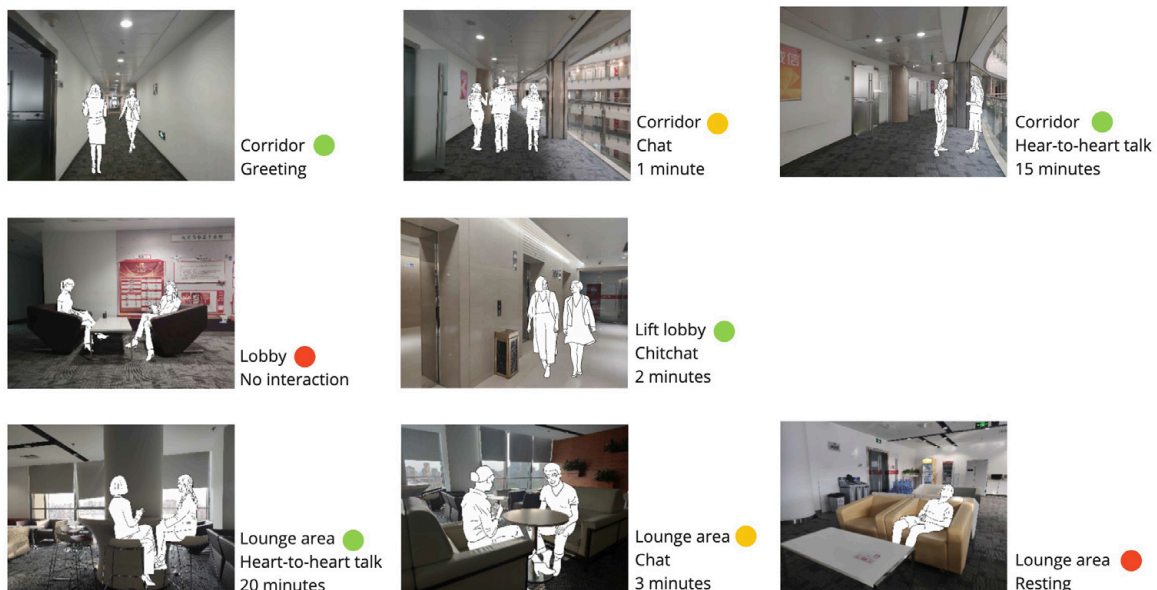
Figure 6: Observation results in Jingdong office

observed and recorded, including the types of the interactions, how long they lasted for, how many people were included, and whether they were positive or negative. Among them, whether an interaction was positive or negative mainly depended on the following criteria:

- Positive interaction: people smile, start the conversation quickly and naturally, speak with a gentle tone and keep communicating for a long time.
- Negative interaction: people have unhappy facial expressions, communicate passively, speak with an unhappy tone and try to end the conversation.

RESULTS

From the observation (figure 5,6), the core results are:

- People came to the coffee corner of BNUX frequently, but not so many interactions happened here.
- In the lounge area of the Jingdong office, some people would like to interact with others, but some do their own things.
- There were longer and more positive chats when people had a place to sit.
- There were longer communications in a wider corridor.
- People never interact with strangers.

REFLECTION

What should be mentioned here is that the reliability of the observation results should be further discussed because of the reasons below:

- The results of both the 2 offices are not reliable enough since the observation did not last for a long time.
- The results and insights gained from Jingdong are more reliable than BNUX, since an internship had been done in it for 4 months, hence could the results of the observation could be more accurate.
- Whether the interaction is positive and negative was quite subjective, which might be different from the fact, since sometimes it is hard to see from the appearance whether an interaction is positive or negative. For example, when a person is talking about sad things to another one, it might look like the conversation is negative, but expressing negative feelings could be seen as a positive interaction since it could improve a person's well-being.
- Therefore, the insights need to be further verified in following research to serve as the basis of the design.

2.1.4 SEMI-STRUCTURED INTERVIEW

6 people were interviewed in total. 3 of them were from BNUX, and the other 3 were from Jingdong

Participant	Gender	Age	Occupation	Nationality	Extra Info
1	female	23	master student	Chinese	Always work in the open space.
2	male	24	master student	Chinese	Prefer to work in a specific studio.
3	female	23	master student	Chinese	Always sit with the same people.
4	male	25	programmer	Chinese	1-year work experience.
5	male	27	product manager	Chinese	3 year work experience.
6	female	26	designer	Chinese	New commer.

Table 1: Information of participants

(table 1). Each interview lasted for about 40 minutes. To compare the situation and interactions of different work modes, 3 students from BNUX were chosen, who worked in a flexible mode, and 3 interviewees from Jingdong all worked in a more traditional way, owning their own desks in the office. Besides, to ensure the universality of the results, interviewees from Jingdong had different occupations: programmer, product manager and designer.

The questions were mainly to know about interviewees' daily interactions, their emotions triggered by the interactions and their opinions on the leisure spaces from the perspective of interaction. The detailed questions could be seen in the appendix B.

Following are the results of the interview:
- People lack the sense of belongingness in a flexible office.
- Chat in a private space is longer than in an open space.
- There will be more interactions in a space where people have more opportunities to move.
- Interactions give people the feeling of belonging to a group.
- People need some private space in the open leisure area like the lobby and lounge area so that they wouldn't be disturbed easily.
- Giving people the feeling that it's okay to interact with others is important.
- People tend to go to a space without work to have some rest.
- People tend to interact with acquaintances to deepen the relationship.
- People interact to get out of their own bubble.
- People need topics to talk about.

2.1.5 KEY TAKEAWAYS

From the observation and interview, the interactions were mapped (figure 7,8).

Besides, following are the main insights of the research in Beijing offices:

Problems and design opportunities:
- People who work in the flexible mode lack the sense of belonging.
- People easily interrupt each other in the open leisure space.
- The design can also help to connect strangers in an office.
- There is an opportunity to improve the coffee corner to increase informal interactions.
- Creating the feeling that people are okay to have an interaction is important.
- The design should help to start the conversation.

Employees' aims of informal interaction:
- Gain the feeling of belonging to a group.
- Get out of their own bubble.
- Deepen the relationship with others.

Since the insights were all gained from the 2 offices in Beijing, it was not sure yet whether they would fit into other offices. Therefore another round of research was done later in the Netherlands to verify the existing insights.
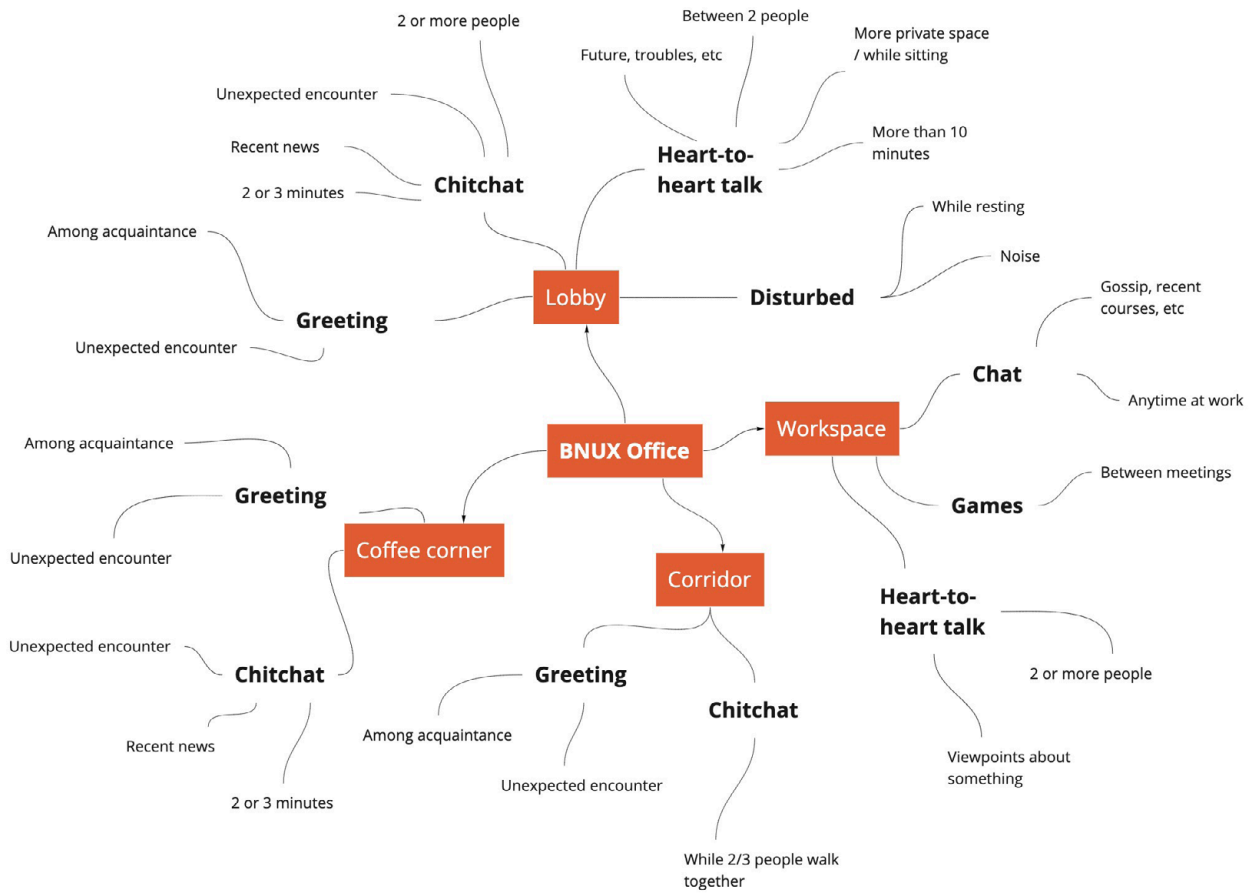
Figure 7: Map of interactions in BNUX office
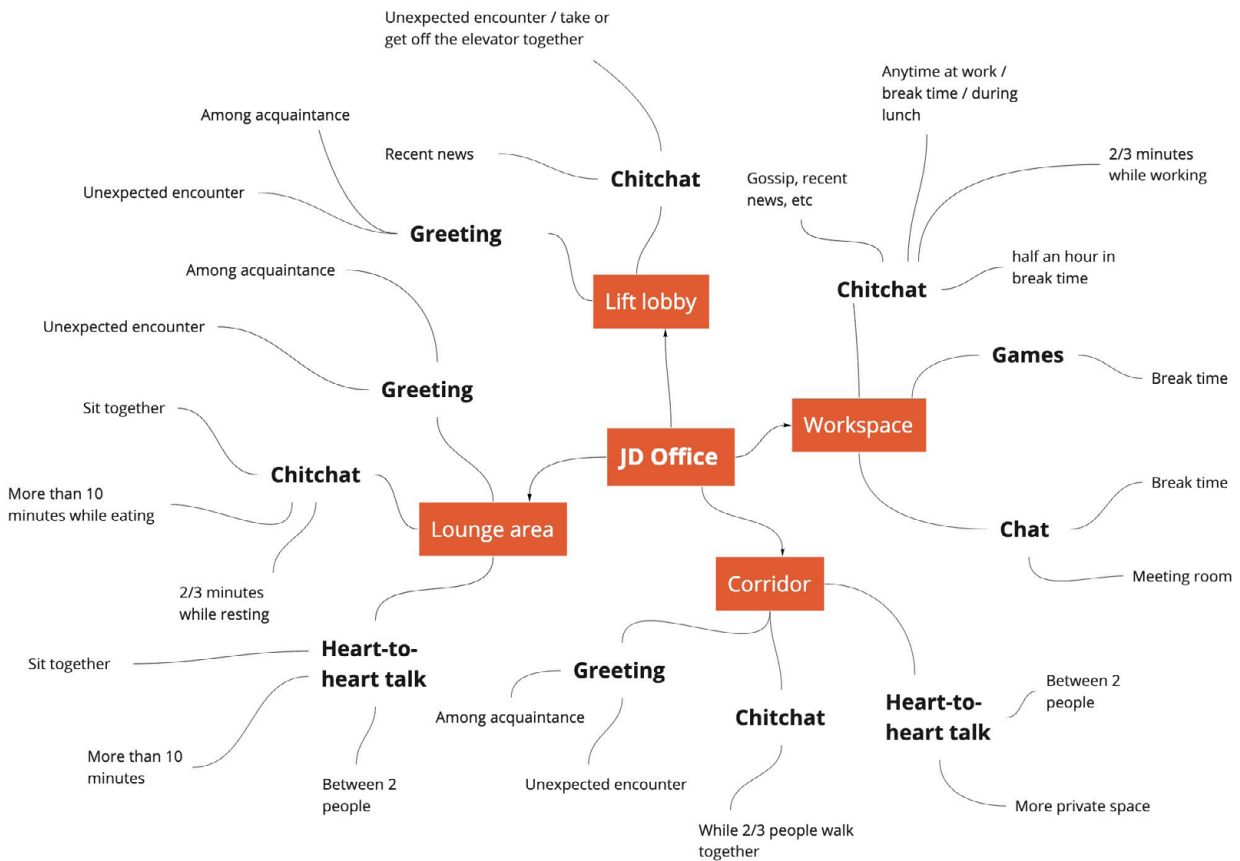
Figure 8: Map of interactions in Jingdong office

2.2 RESEARCH IN STUDIOLAB

The second cycle of context research was conducted in StudioLab. The main objectives of the research are as follows:

- Verify the results of the previous research.
- Know about employees' social situation in StudioLab.
- Define a clear design direction.
- Know about users' prefered design elements so as to prepare for the idea generation phase.

A brainstorm session was first carried out to generate initial ideas. Then with the ideas, some employees in StudioLab were interviewed.

2.2.1 PREPARATION FOR RESEARCH IN STUDIOLAB

To help with the idea generation phase, some initial ideas were planned to be shown to the interviewees to know about their preference. Thus before the research, there was an ideation phase based on the previous research as a preparation.

BRAINSTORM SESSION

A brainstorm session was held to generate initial ideas for the design [7]. The reason for choosing this method was that richer ideas could be generated with various participants' experience and creativity.

4 people were invited to the session, and all of them were design students. The whole session was held online and lasted for 1 hour. Miro and Zoom were used for showing ideas and discussion. Before the session, the link of the Miro board with the introduction part and the questions was sent to the participants so that they could know about it beforehand and sensitize them to the topic. In the session, the background of this project was firstly introduced so that participants could understand the context and generate ideas in the context. Then participants started to brainstorm ideas on the Miro board. For each question, there were 10 minutes in total. 5 minutes were used for participants to brainstorm ideas, and after that the ideas would be discussed together for 5 minutes.

From the results of the previous research, there were mainly 5 problems discovered:

- Employees lack the sense of belonging.
- Employees always disturb each other in an open space.
- Few informal interactions happen between strangers.
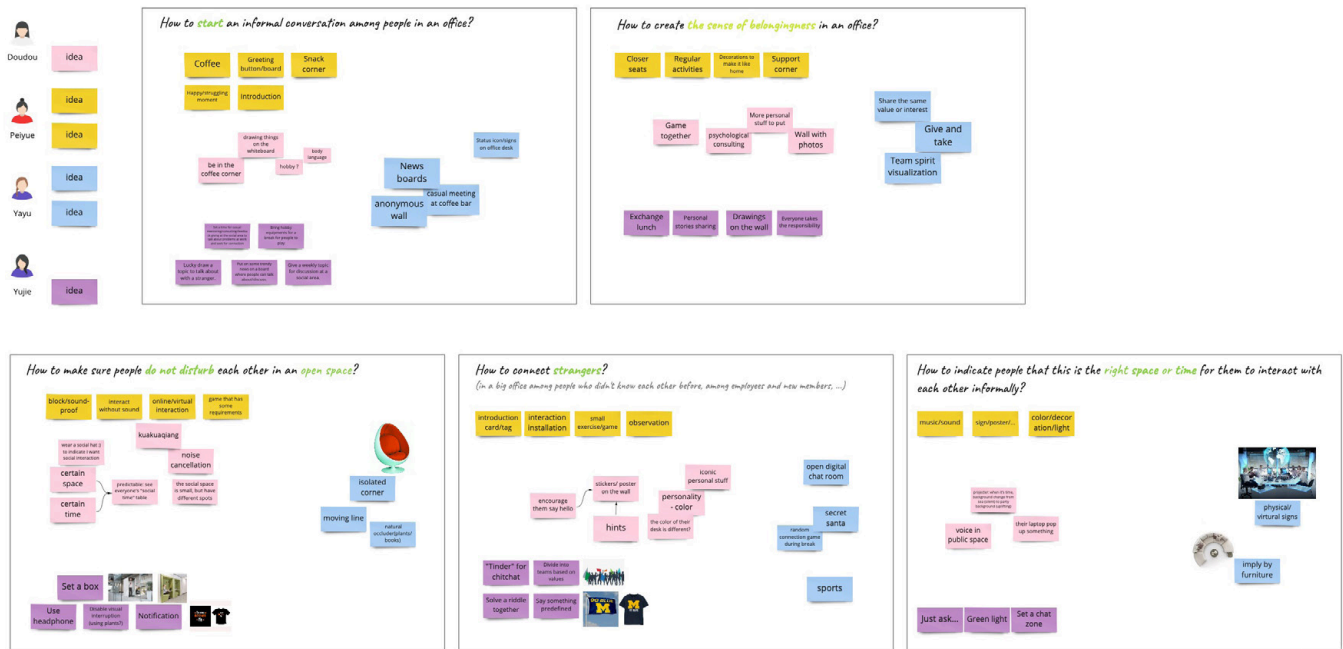
Figure 9: Results of brainstorm session

Some employees have the difficulty to start the interaction.

Employees are not always sure whether it's the right place and time to interact with others.

Therefore in the brainstorm session, there were 5 questions in total, which were based on the 5 problems:

- How to create the sense of belongingness in an office?
- How to make sure people do not disturb each other in an open space?
- How to connect strangers?
- How to start an informal conversation among people in an office?
- How to indicate people that this is the right space or time for them to interact with each other informally?

The results of the brainstorm session could be seen in figure 9.

IDEA CLUSTERING AND SELECTING

After the brainstorm session, all the ideas were firstly clustered (see appendix C). From different categories, some more potential ideas were chosen. Besides, since the next research was also intended to get participants' opinions to find out what kind of interaction users need and which position in the office the design should be in, the selected 6 ideas covered various interactions and positions in the office. What should be mentioned here is that the feasibility of the ideas was not considered because the main purpose of the next research was to discover which factors of the concepts users would prefer so that some insights could be gained for the idea generation phase. The selected 6 ideas could be seen in table 2.
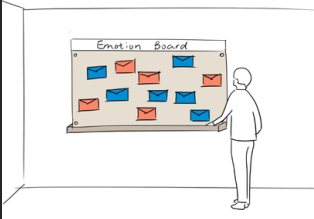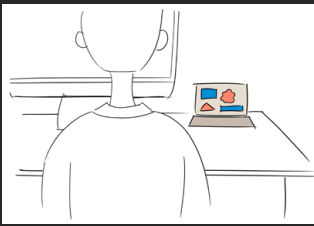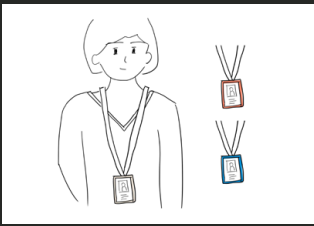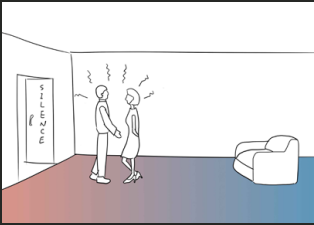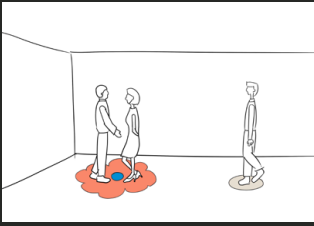
Idea Name	Sketch	Description	Interactions	Positions
Emotion Board		Employees write down their happy and struggling things without names, and put them in the envelopes. People can read and answer the letters.	Heart-to-heart communication, asynchronous interaction	Any space
Personal Tags		Each employee has a card on their desk with stickers on it. Their interests and values are shown on the stickers so that people can know more about each other and find their common things.	Chat	Workspace
Colorful ID Card		The frame of the ID card could change the color according to the schedule of the employee. Yellow means I am not busy now, you can talk to me. Red means I am very busy, don't talk to me right now. Blue means I am having a rest and would be happy to have a talk.	Chat, avoid being disturbed	Any space
Interactive Poster		There would be some news or riddles on a poster near the coffee corner so that people there have some topics to talk about. If people are not interested in it, it will change to the next one automatically, or it could also be changed by clicking the button on it.	Chat	Coffee corner
Interaction Indication		The floor could change the color to indicate people where to talk. It would adjust the color according to the employees' positions and activities. Blue means it is a good place to talk. Red means it's better to be quiet here.	Chitchat, chat, avoid being disturbed	All spaces
Interaction Visualization		Everyone has a bubble on the floor with him. If people interact with other people, some visualization shows on the floor, for example, bubbles change into a big flower. The more positive the interaction is, the more beautiful the flower is.	Greeting, chitchat, chat, heart-to-heart talk	All leisure spaces

Table 2: 6 initial ideas

2.2.2 INTRODUCTION OF STUDIOLAB

Due to the corona situation, it was hard to find an official office in the Netherlands to do the research. Therefore the StudioLab of IDE was chosen to be the context to do the following research and user tests of the project.

StudioLab is a Design Research Community at the Industrial Design Engineering faculty of the Delft University of Technology. People here are professors, lecturers, research staff, PhD and MSc students from various research groups of the Human Centered Design department.

The office (figure 10-16) is on the second floor of the Industrial Design Engineering building of Delft University of Technology. It consists of 2 main rooms for people to work: Studio Mingle and Studio Dream. Each room contains around 20 people, and each person has a specific desk for work. Besides, Studio Write is used in the same way, but containing less than 5 people.

Also, there are other rooms for people to hold meetings and other activities, including Studio Say, Studio Do, Studio Make, Studio Talk, Studio Join, Studio Hatch, Studio Show and Studio Tell. There is also a corridor connecting each room, called Studio Hallway. The social space in the office includes mainly 4 parts: the corridor with the sofa in the corner, the Studio Pantry near the toilet which contains the coffee corner, the lounge area in the corner of Studio Dream where people always have lunch together and the lounge area in the corner of Studio Mingle with sofa and the kitchen cabinet.

The office had changed after the pandemic. The main difference was that much fewer employees choose to work in the office physically everyday. Most of the employees had been taking a hybrid approach to work, both from home and the office. Therefore, the amount of the employees who were in the office physically had decreased, and when an employee went to the office, he/she was always not sure whom he/she would encounter in the office.
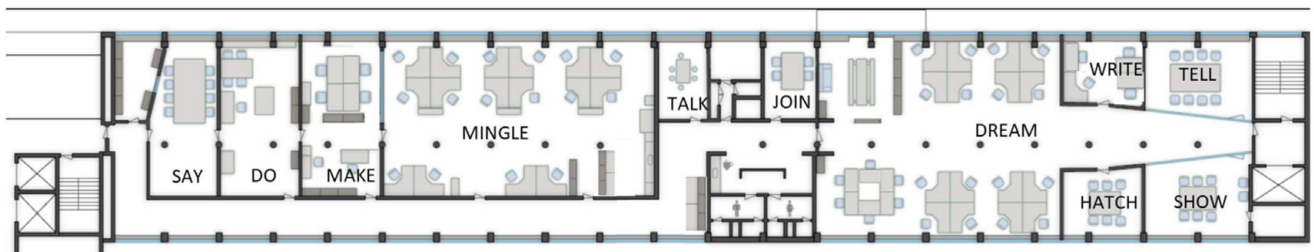
Figure 10: Plan of StudioLab

Figure 11-16: Photo of Studio Dream, Studio Mingle, Studio Join, Studio Write, Studio Hallway and Studio Pantry. Retrieved from studiolab.ide.tudelft.nl

2.2.3 INTERVIEW

The research aimed to see whether the results from the previous research also fit into Studio-Lab and know about people's opinions towards the ideas generated from the brainstorm session. Interview was chosen to conduct the research since it worked better in learning how participants think and feel.

The interview included 2 parts. Sketches of 6 initial ideas were firstly shown to the participants to let them choose the ones they like and dislike the most, and the reasons for the choices were asked. After that, some questions were asked related to their current social situation in the StudioLab and their opinions about the social spaces. The detailed questions could be seen in appendix C.

To make the results as representative as possible, 4 different kinds of people were interviewed, with different educational backgrounds, work positions and frequencies of coming to the office (table 3). However, since only 4 people were interviewed, meaning not all kinds of employees in the office were covered in the interview, the insights might be limited.

RESULTS
People's opinions towards the 6 ideas could be seen in table 4.

2.2.4 KEY TAKEAWAYS

Some previous insights of research in Beijing got verified in this research in the StudioLab:
- The design should provide topics for people to talk about.
- People need the indication for the right time to interact with each other.
- People might be bothered in an open space.
- It's harder for newcomers to interact with other employees.

Some new insights are:
- People who do not come to the office often lack the sense of belonging in the StudioLab.
- People who always come to the office in the corona time also lack the sense of belonging and need more social interactions with others because of the decrease of people.
- Compared with a heart-to-heart talk and chitchat, an informative or a supportive chat would help with employees' well-being better in an office context.

Besides, according to the interviews, 3 personas [7] were created to help with the idea generation phase (figure 17). It could be seen from the personas that different sorts of office workers have different social needs at the time, many of them were related to the sense of belonging. It would be evaluated in the end whether the final solution could meet all the needs of different types of personas.

Participant	Gender	Age	Occupation	Nationality	Extra Info
1	female	22	master student	Chinese	Do not come to the office often.
2	female	25	student assistant	Korean	Come to the office everyday. Work in Studio DREAM.
3	male	24	master student	Italian	Come to the office everyday. Work in Studio MINGLE.
4	male	29	PhD	Chinese	Come to the office everday. Work in studio WRITE. 4-year experience.

Table 3: Information of interviewees

Idea Name	Strong Points	Weak Points
Emotion Board	The communication would be deeper.	- Users have to make more efforts to use it. - Not fancy enough to attract people. - Not direct compared to writing down on the board. - Emotion is too personal to share, especially with colleagues.
Personal Tags	- It helps to know more about the person so that they have the topic to talk about. - It helps to show users themselves to others.	Prefer to write things down directly on the board, which is more free.
Colorful ID Card	Help to communicate the availability.	Still lack the topic to talk about.
Interactive Poster	- It helps to decrease the awkward moments since there is something to talk about. - News is meaningful to talk about.	- May not always want to socialize when in the coffee corner. - Do not connect with the situation strongly. People might not notice it. - Too intervening. - Expect more interesting topics like jokes.
Interaction Indication	- It's good to visualize the indication. - It is clear which position is more appropriate for people to have the interaction.	
Interaction Visualization	- Real-time feedback. - Feel encouraged to interact with people. - Nice-looking. - It's subtle so that it would not bother people. - It's not intervening so that people will	- Changing the bubble is not attractive. - Need something more meaningful and useful rather than visual.

Table 4: Interviewees attitudes towards the 6 ideas

New comer

Name: Adam
Age: 24
Occupation: Programmer
Personality: introverted, insecure

Situation:
Adam works in a big internet company with more than 10 thousands employees. He is in an apartment with 20 people in total. He just came here lask week, and feel it **a bit difficult to fit into the team** since people don't come to the office often in the corona time.

Needs:
1. Know more information about employees here so that he can have more things to communicate with them;
2. Know when is an appropriate time to talk with other people;
3. Have something to trigger the interaction when he is with other employees.

Flexible worker

Name: Brain
Age: 29
Occupation: Architect
Personality: organized, free

Situation:
Brain has been working in an architecture design studio for 1 year, which has 30 employees in total. Because of the corona virus, he and his colleagues sometimes work from home, especially when he needs to concentrate on some work. As a result, he **don't feel the sense of belongingness** when he works in the office.

Needs:
1. Feel more sense of belongingness when he works in the office;
2. Have more connections with colleagues he hasn't seen for a long time because of the hybrid work mode during corona time.

Senior staff

Name: Laura
Age: 35
Occupation: Accountant
Personality: outgoing, sociable

Situation:
Laura has worked in an accounting firm with almost 100 employees for 3 years. The employees are split into several rooms. After the beginning of the pandemic, there are far less people working in the office. She **misses the time when she had more connections** with the other colleagues.

Needs:
1. Build more new relationships with people at work;
2. Have stronger connections with colleagues from another office room.

Figure 17: 3 personas

2.3 LITERATURE REVIEW

Literature review was conducted to learn more about current office context and employees' well-being in it, especially under the influence of the pandemic. Also, some results from the research in offices in Beijing and StudioLab were going to be validated.

Therefore, the research questions include:
- What are current offices like?
- What social issues do employees have today?
- Is lack of belonging a common issue for the employees?
- How to increase the sense of belonging in offices?
- What kind of interaction could help with employees' social well-being?

2.3.1 OFFICES AS THE CONTEXT

Currently, based on the differences of the architectural and functional features, there are 7 types of offices in total: cell office, shared room office, small open plan, medium-sized open plan, large open plan, flex office and combined office [8]. According to the definitions, Jingdong office is one with the large open plan, BNUX office is a combi office containing individual workstations and flex workspace, and StudioLab is also a combi office consisting of flex and the medium-sized open plan workspaces.

2.3.2 SOCIAL PROBLEMS IN OFFICES

From the social perspective, strengths and weaknesses of different types of offices are apparent according to existing research. It is indicated that there is more communication in open offices [9]. There are also more face-to-face contacts in combi and flex offices compared with in cell and shared room offices, but the duration of the contacts is shorter [10]. However, although employees communicate more, lack of privacy is one of the big problems of open offices [11]. More than half of the employees in open offices are frequently disturbed by noise when they are working, including telephones, conversations, air conditioning systems and office automation [12]. For combi and flex offices, even though there is also less privacy and more distractions,

the enclosed back-up spaces provided could be an advantage compared with the open offices [13]. Besides, since the cell and shared room offices are more enclosed, employees working here are more satisfied with the privacy [14], but enclosures can also hinder the ability for employees to communicate at the same time [10]. In general, no matter what the type of the office is, about 40% of the employees feel isolation at work, according to [15]. Furthermore, because of the coronavirus, more and more employees have been working from home recently, which not only causes physical isolation but also mental issues like loneliness [16].

2.3.3 BELONGINGNESS OF EMPLOYEES

It is stated in Maslow's Hierarchy of Needs [17] that belonging needs are necessary for human beings (figure 18). According to [18], feeling the sense of belonging in a community is one of the inherent psychosocial needs of human beings. When it comes to the office context, with the sense of belonging, employees would have a 56% higher level of job satisfaction, 75% decrease in applying for sick days, and 50% decrease in turnover [15]. Therefore, feeling the sense of belonging is important for employees.

According to [19] and [20], belongingness is the sense of satisfaction when people feel embedded in a meaningful community. Feeling the sense of belonging could mean feeling a sense

of community, affective and normative organizational commitment and group cohesion. Among them, to feel the sense of community, employees should be able to feel inclusion, importance and mutual benefit, as well as shared emotions with their colleagues at work [21], meaning social interactions. It is also stated in [18] that social interactions, together with office structures, hierarchies and job content are the elements that influence employees' sense of belonging in offices. Therefore enabling positive social interactions in offices could contribute to employees' sense of belonging.

For social interactions, communication is a major element of it, which is defined as "purposefully and actively exchanging information between two or more people to convey or receive the intended meanings through a shared system of signs and (symbols)" [22]. [23] states that positive social interactions should provide emotional and instrumental social support. In summary, exchanging information and providing emotional support are two vital elements of positive social interactions.

Figure 18: Maslow's Hierarchy of Needs. Retrieved from simplypsychology.org

2.3.4 REQUIREMENTS FOR INTERACTIONS

Interactions at work include formal and informal ones. The difference between them is whether the communications are work-related. In the past, informal interactions were seen as a distraction at work. However, the value of them has been found today. [24] and [25] state that informal interactions could help with cooperation

and innovation of employees, thus are crucial in management.

Besides, although there are plenty of virtual interactions at the moment since employees work remotely, it is suggested that face-to-face physical interactions may be most effective in meeting the core social needs, social belonging included [26]. The reason is that this sort of interaction provides more unlimited and richer information, and with body language it is less likely to be misunderstood, compared with synchronous virtual interactions and asynchronous interactions.

Another important element of the interactions should be that the employees who are talking could control the "boundaries of the conversation", which is the affordance of privacy according to [24]. This means that employees should be sure that the conversation would not be overheard by others and they could control when to interact with other people.

To conclude, enhancing real-time physical informal interactions among employees could be an effective and potential way to tackle social problems.

2.3.5 CONCLUSION

Combining all the knowledge gained in this literature review section, it could be concluded that lacking the sense of belonging is a common problem of employees. To tackle this problem, positive real-time physical informal social interactions could be stimulated among employees. For a positive interaction, employees should be able to exchange information and get emotional support from it. In addition, employees should not worry about privacy issues in the interaction and should be able to decide when to interact with others.

03 DESIGN

On the basis of the results
sign goal, interaction visio
fined in this chapter, for the
on.

DIRECTION

of the research phase, the de-
n and requirements were de-
e later design phases to focus

THE DESIGN GOAL IS
TO STIMULATE MEANINGFUL CHATS AMONG EMPLOYEES IN THEIR SPARE TIME IN THE OFFICE, TO INCREASE THEIR SENSE OF BELONGING.

In a meaningful chat, the employees should either get new information (about their colleagues, news, etc) or feel supported (mentally or physically).

INTERACTION VISION

The interaction should be like playing instruments in a jazz band (figure 19).

CAREFREE

Carefree: users do not worry about the lack of privacy and disturbing the other person or colleagues around.

EXPRESSIVE

Expressive: users feel motivated to have a conversation with each other.

CONNECTED

Connected: users feel connected with other employees.

NATURAL

Natural: the experience is intuitive and users do not feel forced by the intervention.

REQUIREMENTS OF THE SOLUTION

Based on the research results and the design goal, the final solution should meet the requirements below:

- It should be indicated to users whether it is the right time and place to have the interaction.
- It should be free for users to choose whether and when to have the interactions.
- The design should help users to start the interaction.
- The chat triggered by the design should not disturb other employees.

Figure 19: A jazz band. Retrieved from commons.wikimedia.org

SENSE OF BELONGING

It was found out that about 40% of the employees feel isolation at work today [15]. In the first cycle of context research in offices in Beijing, the results of interviews also showed that some employees working in a flexible mode lacked the sense of belonging. To verify this issue, some questions were asked in the interviews in the second cycle of context research in StudioLab. From the responses, it was concluded that lacking the sense of belonging was a general problem of employees, even though the reason behind it and the detailed needs for tackling this problem would be different when it came to different sorts of employees. For newcomers, it seemed that the issue was more serious for them, and they needed to know more about other employees and communicate more with them to gain the sense of belonging. To achieve this, they need something to trigger the interaction between them and their colleagues, and they need the signal that when and where would be the right time and place to have an interaction with others. For flexible employees or senior staff, the biggest issue at the moment was that they had less opportunities to have interactions with other employees when most people started to work remotely since the pandemic, which led to a decrease of the sense of belonging.

> "
> **I feel more sense of belongingness in the ordinary office, sense there is always a place of my own.** "
>
> - participant from BNUX

MEANINGFUL CHATS

It was found in the interview in StudioLab that the employees had the most interactions with their colleagues when chatting, and from it they could feel the deepening of their relationships. Compared with a chat, greeting and chitchat did not work well in deepening relationships since they normally were short and not deep enough.

Heart-to-heart talk could be useful in getting people closer, but some employees tended not to have this sort of conversation during work since they could not feel relaxed in it. Also, this sort of interaction needs the other person to be the one they are very familiar with. Besides, the asynchronous interaction was considered to be not efficient enough for deepening people's relationship, even though the communication might be deep.

In addition, in the interview of both cycles, participants mentioned that in a positive communication, they expected to get information they did not know before, and knowing about other employees helped a lot with their relationship. Some participants mentioned that they once got some support from their colleagues when they were talking about their problems, which was an interaction they considered to be positive. According to [22] and [23], a positive interaction needs to provide people with opportunities of exchanging information and emotional support. Therefore, it was concluded that employees need meaningful chats when they are interacting with their colleagues. The definition of a meaningful chat is either the employee could get new information from it or they could feel supported.

> "
> **The chats made me happy because I felt that I belonged to a group. Also, it helped to deepen the friendship of me and my colleagues.** "
>
> - participant from StudioLab

TIME AND PLACE

For the time and place for the interactions to happen. It was discovered from the interview in the Jingdong office that employees tended to have very short informal communication with others while working since they wanted to go back to work as soon as possible. Therefore, it would be better for the conversation to happen in employees' spare time. It was also discov-

ered in the research in Beijing that there was an opportunity for employees to have interactions in the coffee corner, since people always came to this position when they were not busy and there would be more opportunities in this place to meet different people. Besides, this place is common in offices, and thus the final solution could be suitable for various offices. In the research in StudioLab, it was also found out that the coffee corner was a place for employees to have informal conversations during their breaks. Therefore, it would be appropriate for the experience to mainly happen in the coffee corner for the final concept.

> **I like to chat with others during the lunch break, but I am a little afraid that the chat would bother others since it's in the work space and other people might want to have some rest.**
>
> - participant from Jingdong

CAREFREE

In the interview in BNUX office, one participant mentioned that she felt freer to interact with others when she was in an open space since people were always moving. Therefore, it was concluded that users needed some signals showing that they would not disturb the other person before they started an interaction, otherwise they would hesitate. In the interview in the Jingdong office, one participant said she was always afraid of disturbing people around when she was chatting with somebody. In the interview in StudioLab, some participants also mentioned some moments when they were uncomfortable since they did not know what to talk with others and they were not sure whether the person was open for a conversation at that moment. From [24], it was learnt that ensuring people that their privacy would be protected in a chat was important, since people might have some concerns. Therefore, feeling carefree is important in the user experience of the final concept.

> **I always feel embarrassed when I meet somebody in the coffee corner since I do not know whether they would like to chat with me.**
>
> - participant from StudioLab

EXPRESSIVE

When comparing the ideas in the interviews in StudioLab, some participants liked the 2 ideas, personal tags and interactive posters, better than other ideas because they could provide them with things to talk about, and therefore they would feel motivated to communicate with others. As a result, the final concept should enable users to feel more expressive.

> **I like the fourth one the most since it provides me with topics to talk and news is something we do not always talk normally.**
>
> - participant from StudioLab

CONNECTED

Some participants also mentioned that they felt disconnected with their colleagues when they were in the office in the interview in StudioLab. Thus the feeling of connectedness should be important in the experience of the final design, which is also related a lot to the sense of belonging.

> **To be honest, I did not feel very connected with others here, mabe because I am new. Therefore, I did not come here often.**
>
> - participant from StudioLab

NATURAL

From the interviews, it was discovered that sometimes there was a lack of interaction because employees felt it was not the right moment to have it. Also, from the 6 ideas, participants tended to pick the ideas in which they did not need too much effort to interact with the intervention. Therefore, the final experience should make users feel seamless and intuitive enough.

> "
> **I do not like the first idea since I will go to chat with people directly instead of writing something and putting it in an envelope.** "
>
> - participant from StudioLab

OTHER REQUIREMENTS

In addition, some other important things were mentioned in previous research. Firstly, participants did not know when and where would be appropriate for interacting with others, especially for the newcomers (persona 1) who were still not familiar with the office and other colleagues. Hence the solution should indicate to the users whether it is the right time and place to have the interactions. Secondly, while choosing the ideas, participants mentioned that sometimes they did not want to interact with others, hence the concept should give users the freedom to choose whether to have the interactions. Thirdly, because some participants mentioned that they sometimes lacked the topics to talk with others, which was also a serious problem for newcomers (persona 1), the final solution should be able to provide topics for employees to talk about. Lastly, it was observed that in some spaces, employees' interactions could easily disturb people around who would feel it hard to concentrate or have a rest. Therefore, the solution should avoid users disturbing others.

04 IDEA GE

**To achieve the design goa
were conducted in this phas
totyped and tested with par
In the end, one concept was
some insights were collecte

ENERATION

l, 3 cycles of idea generation
se, and the concepts were pro-
rticipants to get the feedback.
s selected to proceed with and
ed for improvements.

RESEARCH IN
STUDIOLAB

idea 1　idea 2　idea 3　idea 4　idea 5　idea 6

element 1　element 2　element 3

BRAINSTORMING

IDEA
GENERATION
CYCLE 1

Light of topics　Employees' substitute　Informative ID card

INTERACTION FLOW 1　INTERACTION FLOW 2　INTERACTION FLOW 3　INTERACTION FLOW 4

IDEA
GENERATION
CYCLE 2

Chatting flower　Emotion button　Informative ID card　Topicup

INTERACTION FLOW 4

IDEA
GENERATION
CYCLE 3
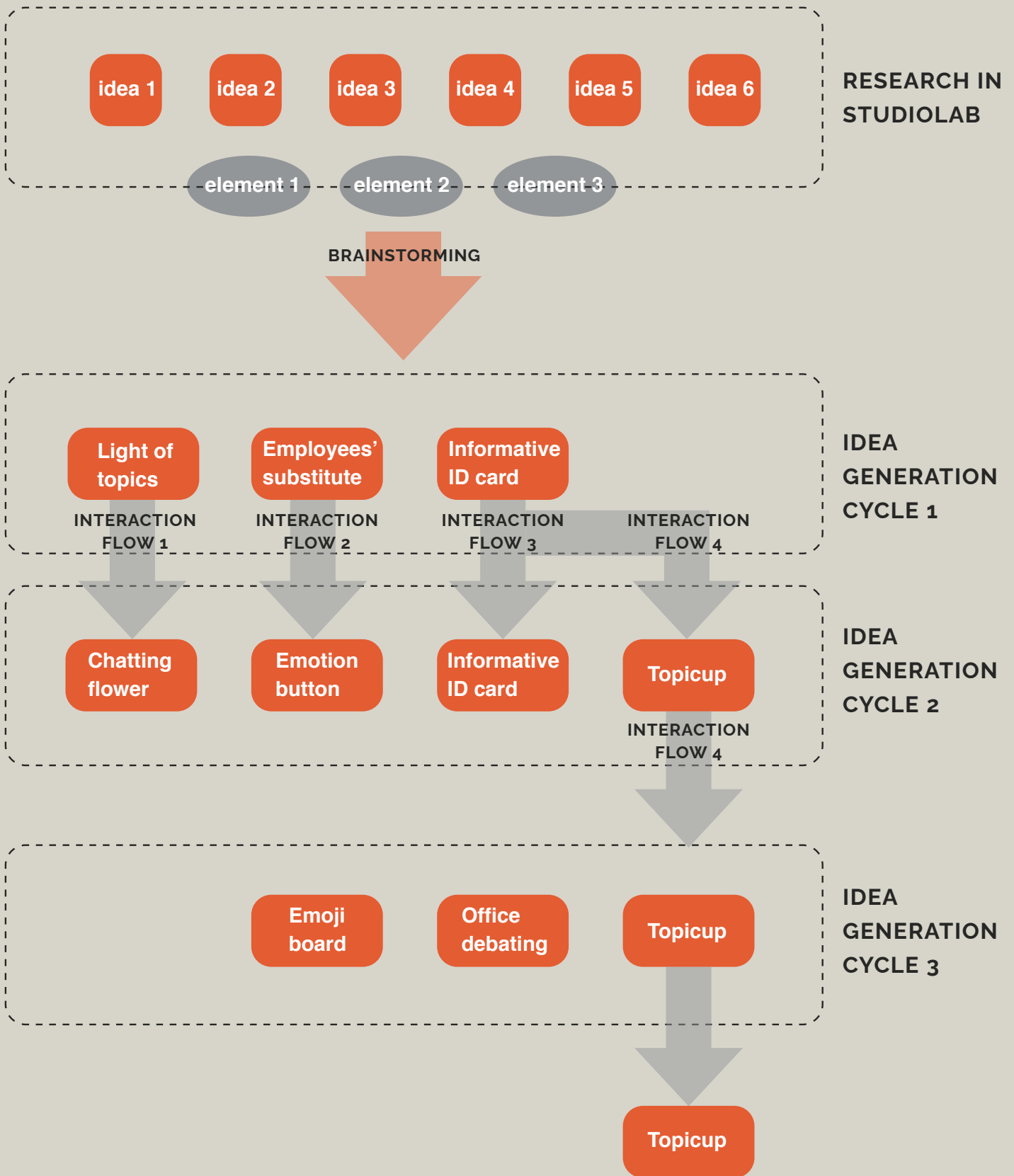
Emoji board　Office debating　Topicup

Topicup

Figure 20: Overview of the idea generation stage

In this and next stage, idea generation and concept development, the approach "experience prototyping" was mainly used [27]. In each cycle, after ideation, storyboards were drawn and prototypes were made. With these tools, participants were invited to experience the concepts and evaluate them. From the evaluations, insights were gained for iteration.

The reasons for choosing this approach were:
- From participants' side, experience could help them know more about the concept, and thus they could give more accurate feedback.
- From the project's side, creating experience for participants would need more details. Because of this, more things would be considered in the ideation and the final concept would get more completed and fit more into the context. Also, more accurate feedback from participants helped better with the iteration of the concept.

4.1 IDEA GENERATION CYCLE 1

4.1.1 BRAINSTORM

To generate various ideas, brainstorm was used in this phase (figure 21, details could be seen in appendix E) [7]. Based on the previous 6 ideas and the participants' feedback, it was found that 3 essential elements could be included in the final design, and therefore they were used as the starting points for brainstorming concepts:
- The design communicates employees' availability of having a chat.
- The design provides topics to start the conversation.
- The design encourages a positive conversation.

What should be mentioned here is that these 3 elements were mainly used to help with the brainstorming activity in the ideation phase. It is not necessary that the concepts brainstormed should include all of them. However, in the following phases, it could be considered to add the missing elements to the selected concept for its improvements.
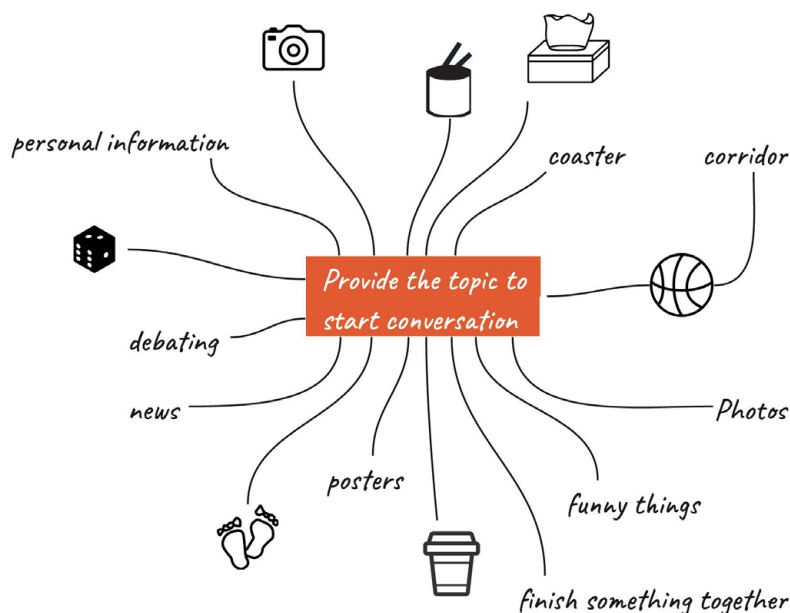

Figure 21: Part of the brainstorm

4.1.2 THREE CONCEPTS

With the ideas brainstormed, some concepts were inspired and created. Out of these concepts, 3 concepts were finally selected considering the feasibility and the desirability. Among them, the second concept was inspired by the situation of fexible workers (persona 2).

In the first concept (figure 22), there was a light on the wall of the coffee corner, which was connected with the sensors on the table near it. The light consisted of several parts, and each part was related to a specific topic. When employees put their coffee cup on the sensors of the table, the light would be activated, and then it would listen to the employees' conversation and detect the key words in it. If the employees mentioned any of the topics in their conversation, part of the light related to the topic would be turned on automatically. Besides, the light also provided hints for topics by texts sometimes.

1.1 2 employees met each other at the coffee corner.
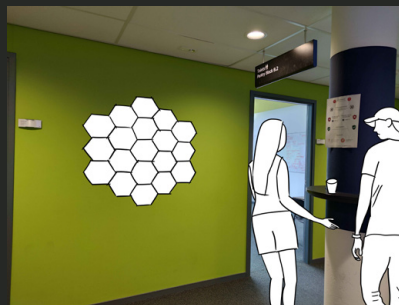
1.2 They want to have some talks and put the cups on the table. The light on the wall could react according to their conversation.
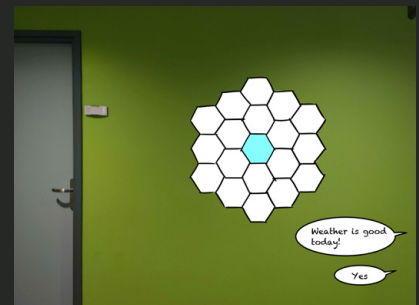
1.3 Once one topic is talked about, one light would be turned on automatically.
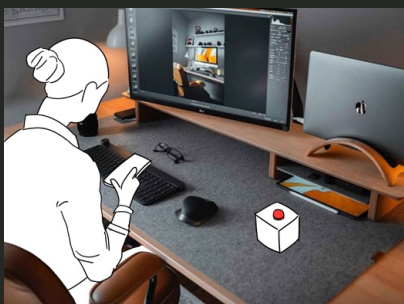
2.1 The employee who works at home will have one robot both on their desk in the office and at home.
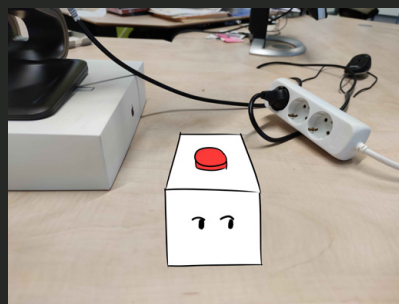
2.2 When she starts her work, the robot are switched on with a face on them. If somebody passes by, the eye of the robot will move. The robot at home will react the same.
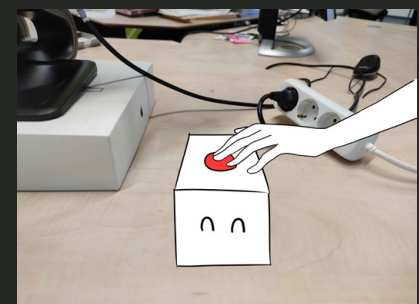
2.3 The other employee comes to press the button on the robot. The robot smiles. The other robot at home also smiles at the same time.
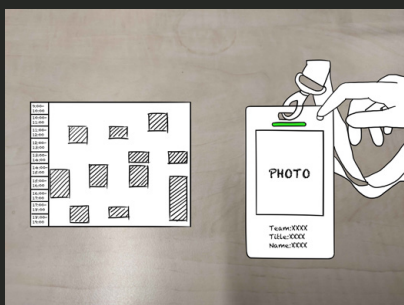
3.1 New employee will get an ID card of the office. There is a light on the card showing the status of the employee according to the schedule. He/she can also switch it by themselves.

3.2 The employee also needs to upload some photos of themselves showing their interests.
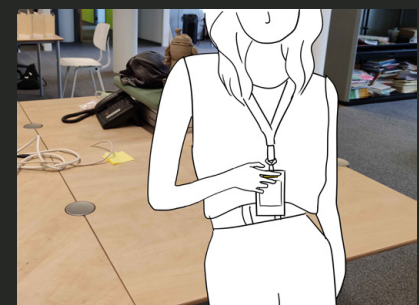
3.3 After working, the employee changes the light into yellow.

The second concept (figure 23) was to connect employees working at home with those working in the office. Employees working at home would have a little robot on the desk of both the office and home. The robots provided the employees at home with interactions that were similar to those when they were in the office, to ease their isolation. Besides, the robot would give positive feedback after each interaction.

In the third concept (figure 24), each employee had an ID card. They could upload their photos showing their interests on a platform at any time. The photos then would be shown on their ID cards. When 2 employees sharing the same interests met each other, both the 2 ID cards would switch to the specific photo automatically. Additionally, there was also a light on the ID card, the color of which could change to show whether the employee was available for a chat.

1.4 Each light is related with one specific topic.
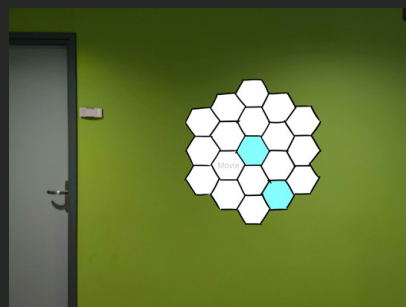
1.5 The light that was not turned on will show the words to prompt them.
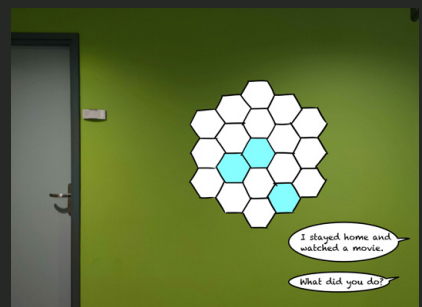
1.6 When they talk about something related with the prompt, the light will be turned on.

Figure 22: Storyboard of the first concept - Light of topics

2.4 The other employee long press the button and speak to the robot.
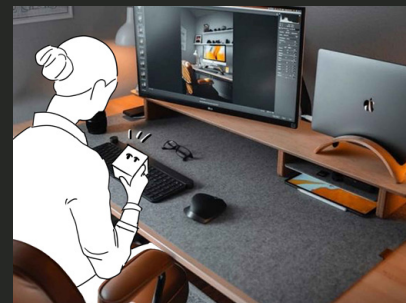
2.5 The employee at home can hear her speaking and reply to her.
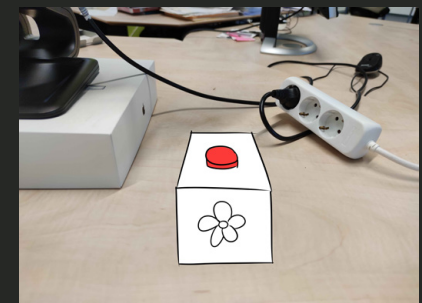
2.6 After a conversation, there would be a flower on the robot.

Figure 23: Storyboard of the second concept - Employees' substitute

3.4 She meets another employee who is at the coffee corner. The ID cards sense each other.

3.5 The photos change to show that they have the same interests.

3.6 They start to talk after knowing that they have the same interests.

Figure 24: Storyboard of the third concept - Informative ID card

4.1.3 CONCEPT EVALUATION

The evaluation aimed to know people's opinions towards the 3 concepts. For each concept, there were some research questions related to its features:

First concept:
- Is it appropriate to use the texts as the hints for topics to chat?
- Will People chat more to explore the light?

Second concept:
- Will positive feedback motivate people to chat?

Third concept:
- Do people like to avoid being disturbed by showing their busy status to others?
- Do interests work for stimulating a chat?
- Does matching people with the same interests make people more motivated to chat?

PREPARATION

Besides the storyboards, slides and prototypes were also prepared for the evaluation. The slides were made to sensitize the participants to the context of the concept at the beginning of the interviews. Prototypes were made to show the concepts to participants more directly and for them to try the interactions (figure 25). The detailed slides and prototypes could be found in the appendix E. Due to the limit of time, the easier ways were chosen to make the prototypes, as long as the concepts were expressed clearly.

The prototype of the first concept (Light of topics) was a digital one. When participants mentioned one topic in the test, the related light would be turned on through Wizard of Oz.

The prototype of the second concept (Employees' substitute) was made with cardboard. The screen on it is an Arduino OLED display. When participants touch the sensor on the top of it, the face on the screen will switch to a smiling one. If participants talk to the sound sensor of the prototype, a heart gif will show on the screen.

The prototype of the third concept (Informative ID card) was made with cardboard and a string. Several photos were printed, and the photo on the physical ID card was switched through Wizard of Oz in the interview.

INTERVIEW

Four employees in StudioLab were interviewed (table 5). The interview included 5 steps:
- The project was introduced to the participants, including the background and design goal.
- The context of the concept was shown by the slides, and the participant was invited to play a role in the context and interact with the prototype.
- The whole experience and functions of the concept were explained with the storyboard to the participants.
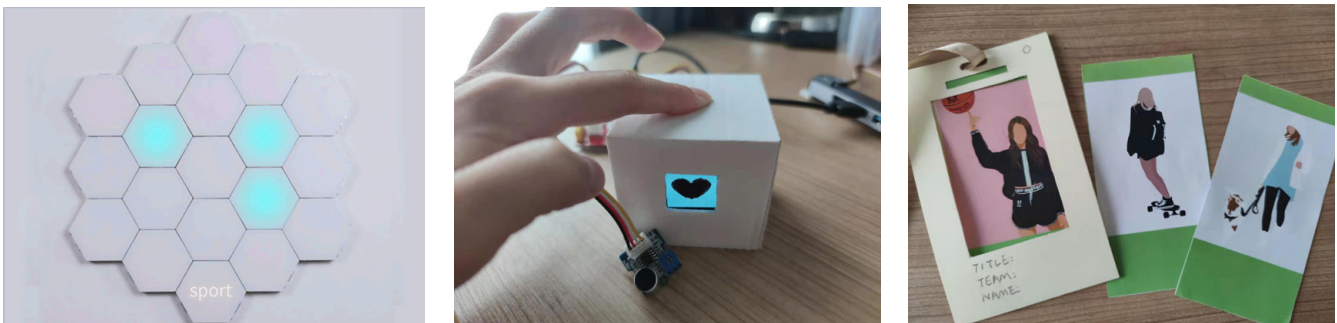- The participants gave their feedback on the concept, including their feelings about the

Figure 25: Prototypes of 3 concepts

Participant	Gender	Age	Occupation	Nationality	Extra Info
1	female	22	master student	Chinese	Do not come to the office often.
2	male	29	PhD	Chinese	Come to the office everday. Work in studio WRITE. 4-year experience.
3	female	25	student assistant	Korean	Come to the office everyday. Work in Studio DREAM.
4	male	24	master student	Dutch	Come to the office everyday. Work in Studio DREAM.

Table 5: Information of participants

concept and their suggestions for improvements.

■ After repeating the last 3 steps for all the 3 concepts, the participants were asked to score each concept for the 3 qualities of the interaction vision (relaxed, connected and natural) on a scale of 1 to 7.

4.1.4 RESULTS

Among the 3 concepts, the third one (Informative ID card) was prefered by participants, which could be seen not only from the feedback but also from the scores. The average scores of each concept could be seen in figure 26. The detailed scores could be seen in appendix E. What needs to be explained here is that at this phase, the interaction vision was not the final version, therefore the qualities were different from the final ones stated in chapter 3. To see the iteration of the interaction vision could go to appendix D. Also, some key opinions towards the 3 concepts from the participants are as follows. In addition to them, some other feedback is more detailed and practical, which might not be useful at this stage.

CONCEPT 1 - LIGHT OF TOPICS
■ The light would distract employees' attention when they were having a conversation.
■ Participants doubted whether more topics mean the conversation is more meaningful.
■ Using texts as hints for the topics was too

direct for participants.
■ Some participants liked the idea of showing the data of employees' chats on the wall.

CONCEPT 2 - EMPLOYEES' SUBSTITUTE
■ Participants would like the robot to show more information such as their emotions and working status so that they could express themselves.
■ Participants worried that talking to the robot in the working space would disturb other colleagues.
■ Participants also would like to have the opportunity to have a group chat through the robots.

CONCEPT 3 - INFORMATIVE ID CARD
■ The light used to show status was useful for participants since it was a polite way to refuse others to have a chat when they were busy.
■ Interest was a good way to trigger a conversation, but there might be a better topic to serve as a conversation starter.
■ It was important in this concept that the photos could always update since there would be a lack of topic soon if the photos were always the same when two employees run into each other each time.
■ Too many real-time interactions with other people could be stressful. Therefore some participants would like to add some asynchronous communication to the concept.
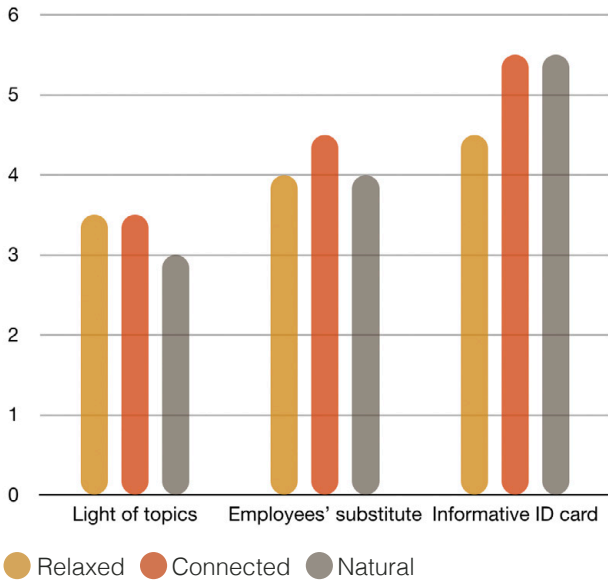
Figure 26: Average scores of 3 concepts

4.1.5 KEY TAKEAWAYS

- The design should not distract users from their conversation.
- People needed a more natural kind of hints for topics rather than texts.
- Visualizing other aspects of a chat rather than the amount of the topics might be more helpful to encourage employees to have a meaningful chat.
- People would like to show others signals that they were busy at the moment.
- It needed to be considered whether interest

would be the best way to stimulate a chat.

- Positive feedback and matching people with same interests motivated people to chat. People liked the

4.1.6 REFLECTIONS

The main goal of the project was to stimulate a meaningful chat among employees. However, the ideation phase and some of the concepts focused too much on the extra requirements, for example encouraging the employees to chat more through gif on the screen in the second concept (Employees' substitute). Also, in the interview phase of the tests, even though the qualities of the interaction vision were used as the criteria to see at what level the concepts met the requirements of the project, the design goal was kind of missing for evaluation. Therefore, the next cycle of ideation should consider more about the design goal, and whether or at what level the concepts achieved the design goal should be found out in the interviews.

In addition, this phase was to define a concept direction for the design goal. However, the concepts in this cycle were so concrete that the details of them would influence people's choices. Therefore, the next cycle should try to get feedback for concepts from the interaction level.
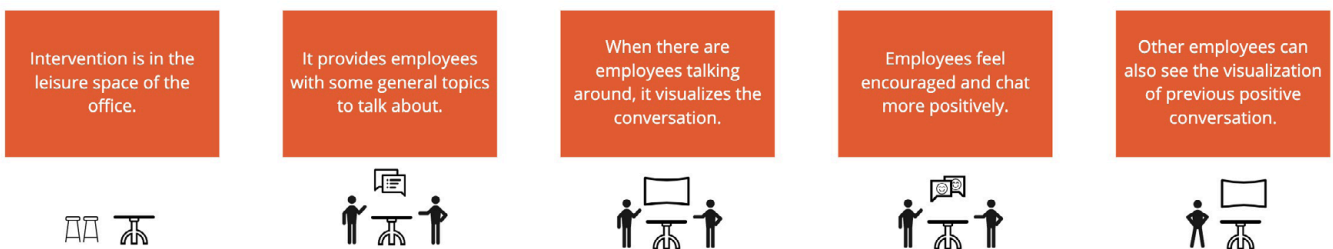
Figure 27: First interaction flow
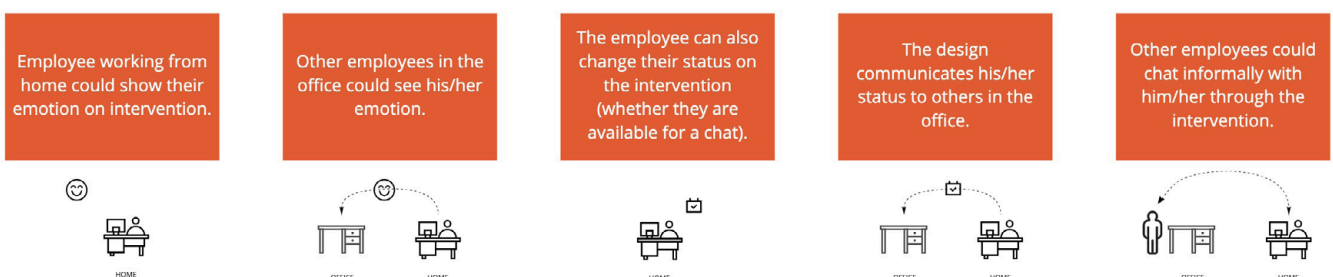
Figure 28: Second interaction flow

4.2 IDEA GENERATION CYCLE 2

4.2.1 INTERACTION FLOWS

To avoid that the details of the concepts would influence participants' preference, the 3 concepts from the last cycle were simplified and turned into 3 interaction flows. Based on them, considering the feedback from the last cycle, the interaction flows of the first 2 concepts were improved a little bit (figure 27,28). For the 3rd concept, since there were no opinions about interactions towards it, the interaction flow of it was kept the same (figure 29). Furthermore, a new interaction flow was created based on the 3rd one (figure 30). The main difference between interaction flow 3 and 4 was the sort of trigger for the conversation, to see which would be a better way to motivate users to chat.

4.2.2 FOUR CONCEPTS

Based on the interaction flows above, 3 new concepts were generated. The details of them were inspired by the qualities of the interaction vision. Besides, since interviewees preferred the 3rd concept in the last cycle, it was kept in this cycle to see whether it would still be the most

popular one. Furthermore, to focus on the design goal, stimulating a meaningful chat among employees, the concepts in this cycle used different elements as the trigger for the chat, so that it could be found which would be the best way of stimulating a meaningful chat.

The first concept (figure 31) was based on the first interaction flow, which visualized employees' chats on the screen of the coffee corner. On the screen, there was a pot of flowers visualizing the chats employees had had around it. The longer the conversation was, the more and bigger the flowers would be. Also, if laughter was detected, the plant would grow faster. In addition, there were words people mentioned the most frequently in the chats, and the more frequently the word had been mentioned, the bigger the word would be on the screen.

The second concept (figure 32) was based on the second interaction flow, related to employees' emotions. Employees working from home could get a button with them. They could choose their current emotion through their phone, and press the button to turn on the light to show that
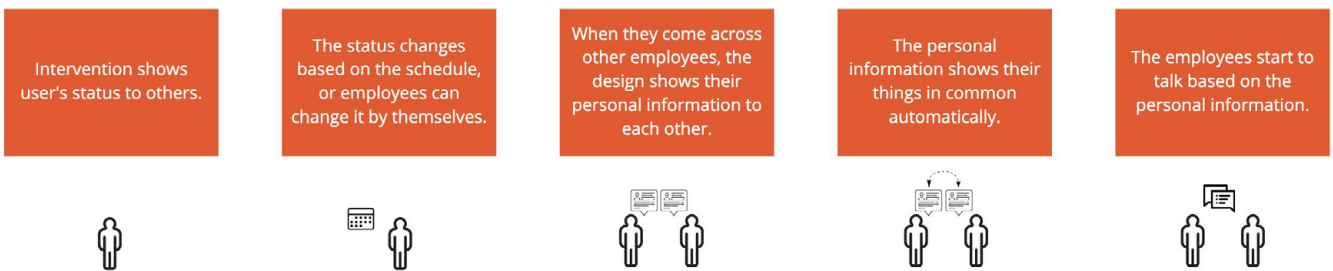
Figure 29: Third interaction flow

Figure 30: Fourth interaction flow

they were available for a casual chat at the moment. The emotion and the light would be shown on the wall of the office so that employees working in the office could choose to have a chat with the employees working from home.

The third concept (figure 24) was the same as the last cycle, and linked with the third interac-

tion flow. In this concept, each employee had an ID card. They could upload their photos showing their interests on a platform at any time. The photos then could be shown on their ID cards. When they run into another employee who shared the same interests with them, both the 2 ID cards would switch to the specific photo automatically. Additionally, there was also a light

1.1 2 employees met each other at the coffee corner.

1.2 They saw the screen on the wall.

1.3 There is a pot of flowers on it. With some words that are frequently spoken around it on the pot.
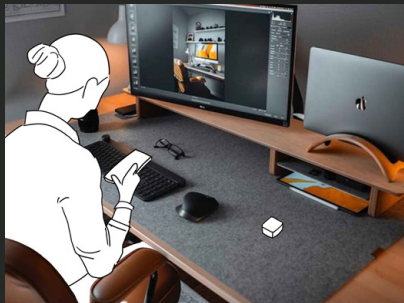
2.1 The employee worked from home this day, with a button on her desk.

2.2 She chose her emotion through the app and it was shown on the button.
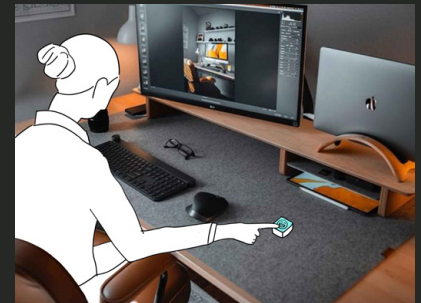
2.3 The employee pressed the button to make it light when she was having a rest and would like to have a chat with employees in the office.
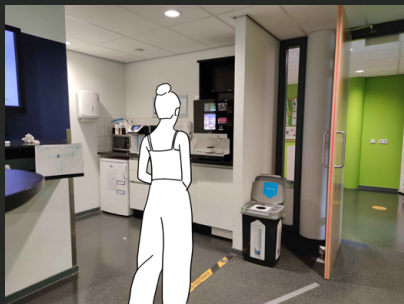
4.1 The employee went to the coffee corner and would like to have a cup of coffee.
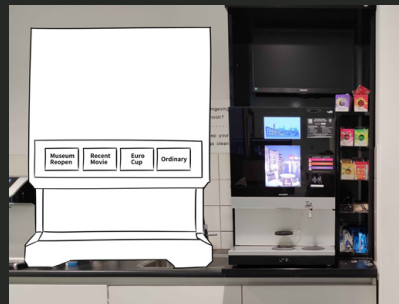
4.2 There is a machine near the coffee machine for people to get their coffee cup. There are several themes related with recent news for employees to choose, and an ordinary one.

4.3 The employee chose the Euro Cup one.

on the ID card, the color of which could change to show whether the employee was available for a chat.

The fourth concept (figure 33) was based on the fourth interaction flow. There was a machine for employees to get their cups from it. There were 3 topics which were all recent news. If an employee chose any of them, he/she would get a cup with a random image on it related to the topic selected. Another button on the machine was for employees to get an ordinary cup. For the cups with the images, they had 2 layers, and thus could be rotated to show employees' working status to others. Besides, the topics on the machine would always be updating.

1.4 Employees started to talk about them.

1.5 The flower started to grow when they are chatting.

1.6 The flower grew faster when they laughed.

Figure 31: Storyboard of the first concept - Chatting flower
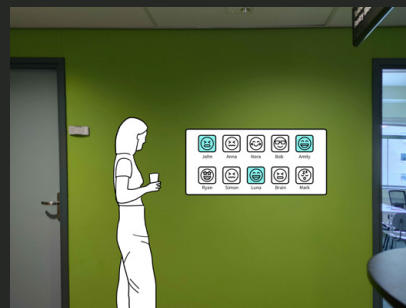
2.4 The other employee was in the leisure space of the office and saw the screen with all the emotions and status of the employees who worked from home.
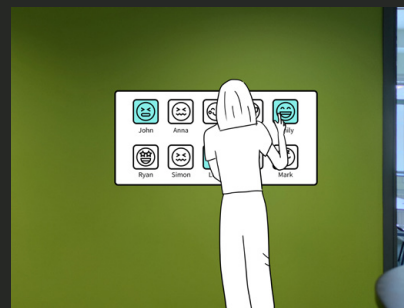
2.5 The employee pressed the button of the other employee.
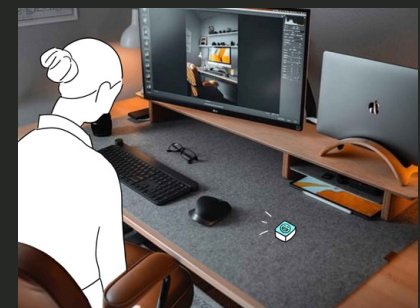
2.6 They started to talk based on the emotion.

Figure 32: Storyboard of the second concept - Emotion button

4.4 She got a cup with the picture of a football player.

4.5 With this cup on her hand, employees she run into talked with her about it.
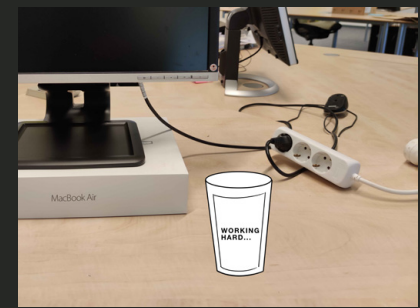
4.6 When she was busy at work, she rotated the cup and it showed the WORKING HARD words.

Figure 33: Storyboard of the fourth concept - Topicup

4.2.3 CONCEPT EVALUATION

The new round of evaluation had 4 objectives:
- To find out which interaction flow would people like the most, and which part of the flow contributed to it.
- To know what kind of topic motivated people to talk the most.
- To know which detailed concept people would prefer and which part of it contributed to it.
- To know how people defined "a meaningful chat".
- To see whether and how the concepts contributed to the design goal.

PREPARATION

Besides the storyboards, slides and prototypes were prepared for the evaluation (figure 34). The slides were made to sensitize the participants to the context of the concepts at the beginning of the interviews. Prototypes were made to show the concepts to participants more directly and for them to try the interactions.

The prototype of the first concept (Chatting flower) was digital. With Wizard of Oz, the flower started to grow when the interviewee talked about the popular topics on the flowerpot.

The prototype of the second concept (Emotion button) was physical. Pressing the button could turn the light on. Paper was used to make the application to choose the emotion. After the participant selected his/her emotion, the emotion which was also made with paper would be shown on the button by Wizard of Oz.

The prototype of the third concept (Informative ID card) was the same one from last cycle. The physical one was made with cardboard and a string. Several photos were printed, and the photo on the physical ID card was switched through Wizard of Oz in the interview.

The prototype of the fourth concept (Topicup)
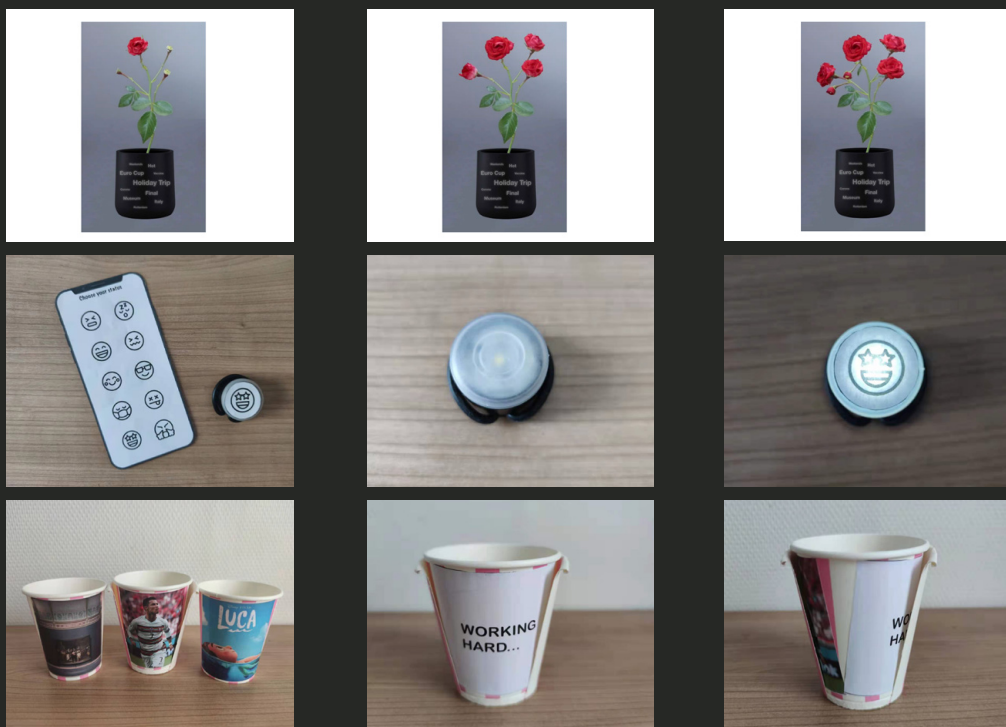
Figure 34: Prototypes

was also physical. Several cups with printed images pasted on them were prepared. After the participant selected the recent news he/she was more interested in. A cup with the image related to the news would be given to her. The cup could also be rotated to show others that they were busy at the moment.

INTERVIEW

4 participants were interviewed, detailed information could be seen in table 6. The interview included steps below, questions could be found in appendix F.
- The project was introduced to the participants, including the background and design goal.
- The 4 interaction flows were shown to participants, and then their opinions towards the flows were asked.
- The context of the detailed concept was shown by the slides, and the participant was invited to play a role in the context and interact with the prototype.
- The whole experience and functions of the concept were explained with the storyboard to the participants.
- The participants gave their feedback on the concept, including their feelings about the concepts and their suggestions for improvements.
- After repeating the last 3 steps for all the 4 concepts, the participants were asked to score each concept for the 5 qualities of the interaction vision and design goal (care-

free, expressive, connected, natural and meaningful) on a scale of 1 to 7, and some questions were asked to get their opinions towards the concepts from the perspective of the design goal.

There were 2 main things that were different from the interviews in the last cycle. Firstly, the interaction flows were firstly introduced in this cycle. The interaction flows were mainly used to know people's opinions towards the concepts at the level of interactions, and leave the space for participants to imagine so that they could have more opinions when they saw the detailed concepts, which might be different from what they thought. Besides, in the last step, in addition to the qualities of the interaction vision, "meaningful" was also evaluated by participants as the core element of the design goal. After that, question like "do you think the concepts will stimulate meaningful chats?" and "how do you think the concepts will contribute to your sense of belonging in the office? '' were asked so that participants could evaluate the concepts from the perspective of the design goal.

4.2.4 RESULTS

3 out of 4 participants preferred the fourth concept (Topicup) to the others. To conclude, the reasons were as follows:
At the level of interaction flow:
- It provided various topics so that there could be various things to chat about and it was more likely they could get the cup with the

Participant	Gender	Age	Occupation	Nationality	Extra Info
1	female	28	DFI student	Chinese	5-year work experience before master.
2	female	22	DFI student	Chinese	Have done 2 times of internship before.
3	female	23	Engineer student	Indian	Doing an internship at the moment.
4	female	24	SPD student	Italian	1 internship experience.

Table 6: Information of participants

topic they were interested in .

- The topic was always updating. Therefore they always had new things to talk about.
- The chat could happen anywhere in the office, which meant there would be more opportunities to stimulate the chats.
- People could show their working status with it in a polite way so that they wouldn't be disturbed when they were busy.

At the more detailed level:

- The picture worked better in stimulating a chat since it was abstract and thus various people would be triggered by various aspects of it.
- It provided users with a sense of surprise since they did not know what they would get after selecting one topic. This would also motivate them to interact with the machine.
- It was intuitive enough that people could easily understand how to use it.
- The cup was not always with people so that they did not always feel the stress of socializing with others.

For the first concept (Chatting flower), participants liked the idea of visualizing the chats, and it would encourage them to chat more to see the flowers growing. However, there would be a loss of security since the design was always listening to their chats. For the second concept (Emotion button), some participants would not show their negative emotions to their colleagues even though personal emotions might be most useful for making people closer. The third concept (Informative ID card) was still popular in this cycle. But compared with the fourth concept (Topicup), participants were less interested in talking about their interests which were more limited.

Besides, the average scores for the qualities could be seen in figure 35, and scores from each person could be seen appendix F. Getting a high score for some qualities might be because of the original interaction flow of the concept or the details. Some participants felt more carefree when the conversation could only happen in the leisure area, since they were

more sure that it would not disturb others, like in the concept, chatting flower. But some participants felt less carefree in the experience of this concept because of the lack of privacy. For the sense of connection, participants felt it more when they could have an overview of other employees' information, like the popular topics of other employees in the first concept (Chatting flower), and know others' personal things, like the emotions in the second concept (Emotion button). In addition, It was more natural for participants when they did not need to take too much effort to start a chat in the experience. Therefore, for the second concept (Emotion button), they gave the lowest scores for the natural quality, since it was harder for them to ask about others' personal emotions in an office.
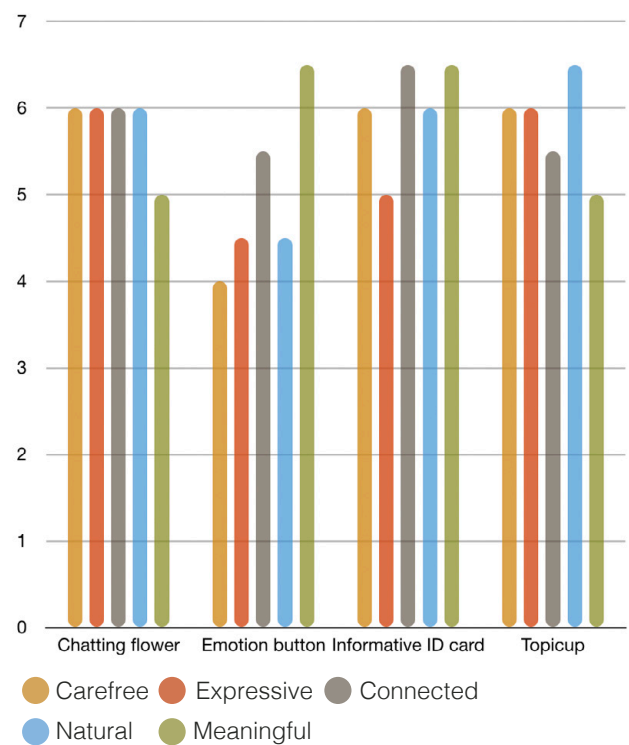

Figure 35: Average scores of 4 concepts

4.2.5 KEY TAKEAWAYS

For the interaction flow, following are the elements preferred by participants:

- The working status of the employees were shown.
- Hints were provided for what employees could talk about.
- Users could have an overview of other em-

ployees' information, such as topics they like and their emotions, so that they could feel a sense of belonging.
- The chat had the potential to happen in any place of the office.
- The topics should always update so that the intervention could work in the long term.

The fourth concept (Topicup) was the one participants liked the most. The details of it participants thought would help with achieving the design goal are as follows:
- It would be nice if some topics were things that they usually might not talk about in the office or they were not familiar with, which helped them to learn new things.
- Images worked better in triggering a conversation compared with words, because people might think about different things when they see a picture.
- Providing users with the feeling of surprise motivated them to interact with the intervention.

For the sort of topics that the design should use to stimulate a chat, it was found that general topics (like the news) motivated people to talk more, but personal topics (like the emotions and personal interests) built a stronger connection between people and contributed more to a meaningful chat. Therefore it was a bit contradictory, and there should be a balance between the quality "expressive", and the qualities "meaningful" and "connected", in the final design.

For the definition of a meaningful chat, the following 4 points were mentioned in the interviews:
- The chat should be personal.
- The chat should help to build or deepen connections among people.
- New things could be learnt from a chat.
- The chat could provide emotional support for people.

Therefore, the previous definition of a meaningful chat that people could either get more information or feel supported in the chat was verified

to be appropriate.

For the design goal, interviewees agreed that the concepts could help to build and deepen the relationship among employees and increase their sense of belonging, since they provided a more reasonable way for employees to have chats and it made it faster for them to get to know each other.

4.2.6 DISCUSSION AND REFLECTIONS

Some results from the tests are interesting to be discussed. Besides, although this cycle of idea generation and evaluation were improved compared with the previous cycle, there were still things that could be better.

First of all, it could be seen in the figure 35 that the third concept (Informative ID card) got the highest scores overall. But the results of the interviews showed that most interviewees thought the fourth concept (Topicup) would be better for the design goal. Since the scores were given only for the five qualities of the design goal and interaction vision, it could be translated that the fourth concept (Topicup) was preferred by the participants as a whole, which might also include some elements that were not so related to the specific qualities. Therefore, it would be better to proceed with the fourth concept (Topicup) and add good elements from other concepts to it.

Besides, even though it was concluded that there was a contradiction between the quality "expressive" and the qualities "meaningful" and "connected", since general topics could motivate people to talk more and personal topics made the chat more meaningful and thus connected people more strongly, it could still be discussed further. In the interviews, participants gave their feedback immediately after they were introduced about the concepts, which meant the scores were given quite soon. But whether a chat would be meaningful should be assessed

when it was finished. Therefore, the scores could not be accurate enough. From this perspective, for the fourth concept (Topicup), although the topics were recent news which were general, the chat could easily get more personal since the topics were firstly chosen based on employees' interests, and the news, at least in the storyboard, could easily carry over into users themselves. For example, if a user got a cup from the topic "museum reopening", with the picture of a famous painting on the cup, he/she could easily tell others whether he/she liked this painting, what he/she liked or disliked about it, and which paintings he/she liked the most. Those contents were all personal and could increase the meaningfulness and connectedness. Therefore, to conclude, considering the whole chat rather than the starting point, a concept providing topics related with recent news had a big potential to meet all the 3 qualities ("expressive", "meaningful" and "connected").

In addition, to reflect the second cycle of idea generation and evaluation, there were some weak points that could be improved. Firstly, as it was said before, the chat did not really happen during the interview, the comments of the participants were all based on what they thought the chat would be like. To let participants have a conversation based on the design might help better with the results. Secondly, the interviewees were people who do not work in the StudioLab, although the situation of the office was explained to them at the beginning of the interview, there could be some inaccuracy in the results since they might easily consider the offices they were more familiar with to be the context when they were giving the feedback. Thirdly, the interaction flow was not made good use of. In this cycle, it was true that introducing the interaction flows before the detailed concepts could help the participants to have their own imagination in mind at the beginning, which made the feedback of the concepts richer. However, if the interaction flows could be firstly used to brainstorm with the participants, there might be richer ideas, and the final concept inspired from

these ideas might be more promising to achieve the design goal.

4.3 IDEA GENERATION CYCLE 3

Based on the results of previous idea generation cycles, a final interaction flow was defined. In this cycle, the aim was to define the final concept direction, since with the same interaction flow, adding different details to it could lead to different concepts. Therefore a brainstorm session was held to brainstorm ideas on the basis of the final interaction flow, and then 2 new concepts were generated and evaluated together with the fourth concept from last cycle. As a result, based on the final intearction flow, the concept with the details that participants thought would work best for the design goal was selected as the final concept direction.

4.3.1 INTERACTION FLOW

Through the previous 2 cycles of idea generation and evaluation, a final interaction flow was defined (figure 36), which was basically the interaction flow of the fourth concept (Topicup) from the last cycle, but with some changes:

- In the third step, knowing some information of other chats were added, since participants mentioned that from the data showing the hot topics in the first concept of last cycle (chatting flower), they could know what their colleagues were interested in and talking about, which made them know more about them and feel the sense of belonging in the office.
- In the last step, the concept should always be updated in the future. This was based on the feedback from the participants towards the fourth concept from last cycle (Topicup) that topics and images on the cups' updates would keep them using the intervention and

help them to know more aspects of their colleagues.

Among the interactions, there was a contradiction about the positions of the conversation. If the chat only happened in the leisure space, people would feel more carefree because they were sure to not disturb other employees. However, if the chats had the potential to happen anywhere in the office, there would be more possibilities for users to connect with each other. Also, from the perspective of desirability, interviewees liked the latter one more. After balancing between the 2 directions, it was decided that the final concept should have the potential to trigger chats in anyplace of the office, but the coffee corner would be the main place for interactions to happen.

4.3.2 BRAINSTORM SESSION

A brainstorm session was held with Miro and Zoom (figure 37). 4 participants were invited to the session, all of whom are DFI students. Before the session, the background information and the questions for brainstorming were put on a Miro board, and the link of the Miro board was sent to each participant so that they could sensitize themselves to the context and questions in advance.The session included 2 steps. The background was firstly introduced to the participants for them to understand the questions more and brainstorm ideas that fit more into the context. Then 5 questions were asked, and participants had 5 minutes to brainstorm ideas for
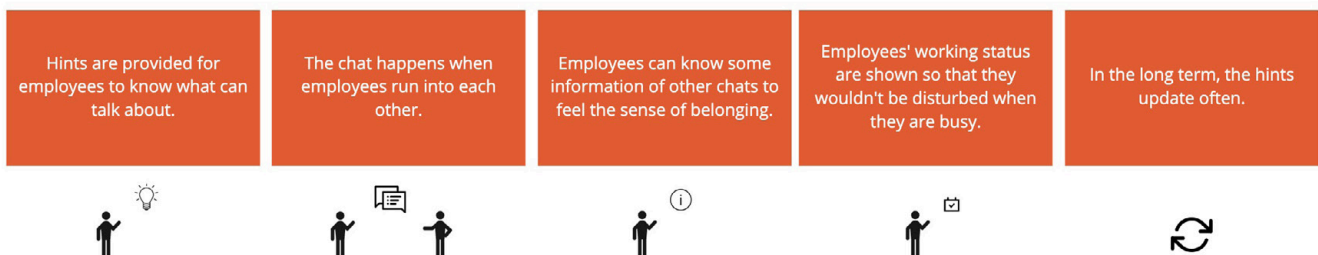
Figure 36: Final interaction flow

| Hints are provided for employees to know what can talk about. | The chat happens when employees run into each other. | Employees can know some information of other chats to feel the sense of belonging. | Employees' working status are shown so that they wouldn't be disturbed when they are busy. | In the long term, the hints update often. |

Figure 37: Results of brainstorm session

each question. After showing the ideas on the Miro board for each question, participants had another 5 minutes to explain and discuss the ideas.

Among the 5 questions in the session, the first 4 were asked based on the defined interaction flow, so that some new concepts might be inspired on the basis of the interaction flow after this session. The last one question was to let participants generate ideas on how to achieve the core goal of the project, stimulating a meaningful chat. The questions are as follows:

- How to indicate what to talk about in an office?
- How to make the chat possible in any place of the office? / What kind of intervention could always update?
- How to show the information of others' chats to employees? / What information of the chats could be shown to other employees?
- How to show employees' status? (Busy with work / Not so busy / Glad to have a chat)
- What can trigger a meaningful chat / How to ensure the chat to be meaningful? (Employees either get information or feel supported in the chat)

After clustering the ideas from the brainstorm session (appendix G), 2 new concepts were generated on the basis of them.

4.3.3 CONCEPTS

In the first concept (figure 38), each employee had a bracelet showing their working status by the color. On the wall of the office, there were several screens. If more than 1 employee who was not busy at the moment standing around a screen, it would be activated, on which employees could see emojis showing the popular topics people talked about the most th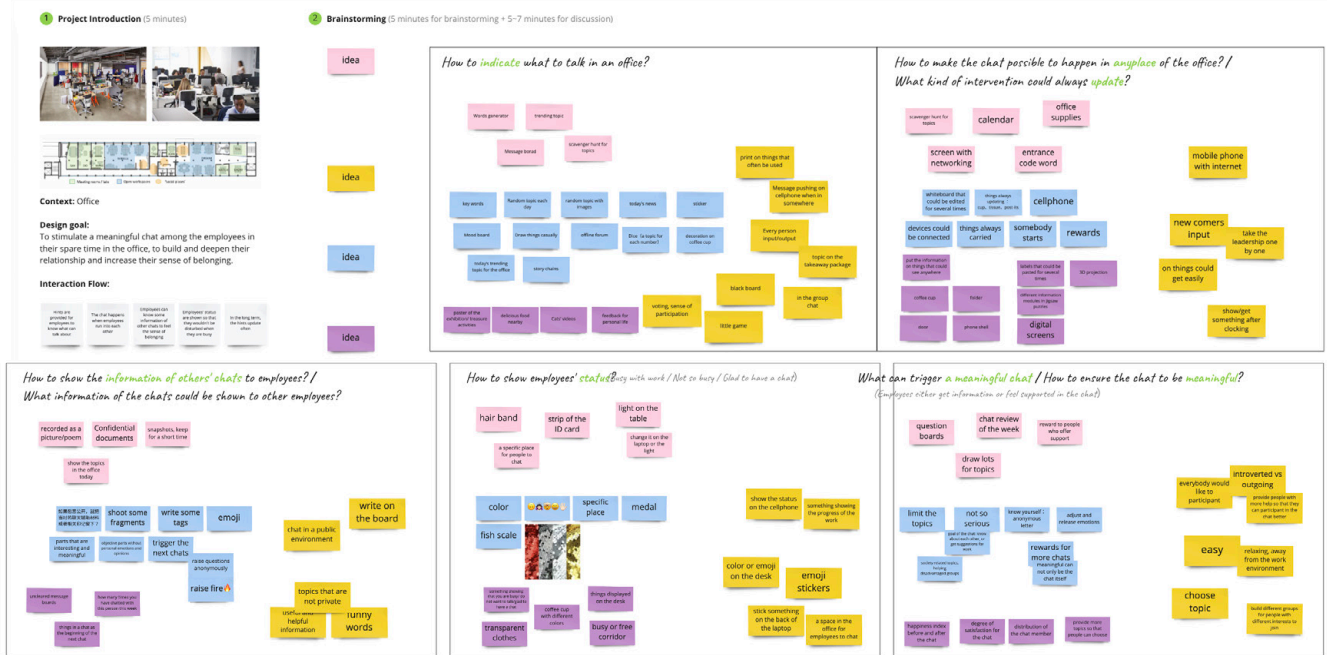is week. If they talked about some topics already on the screen, the emoji would get bigger. If they talked about something new, there will be a new emoji related appearing.

In the second concept (figure 39), employees' working status would be shown by the color of the strip of their ID cards. There would be one topic displayed on the wall of the office each day. After selecting an opinion by clicking on a button, the employee's opinion would also be shown on the ID card. As a result, employees could know each other's opinions towards the day's topic if they encountered each other. The ratio of different opinions would also be shown on the wall.
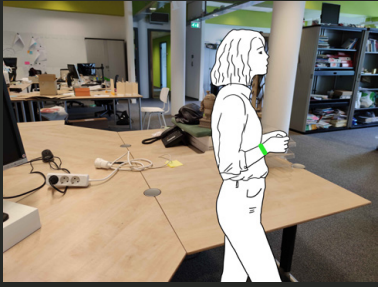
Every employee has a bracelet showing their status with color. Green means they are not that busy at the time.
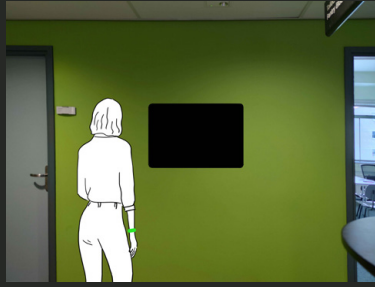
The employee walks to the coffee corner and see a screen on the wall.

After another employee comes, the screen is activated. There are emojis on the screen, showing what the employees are recently talking about around it.

The two employees start to have a chat based on the emojis on the screen. Any topic on the screen that is talked about by them becomes bigger.

Then the chat extends to some new topics.
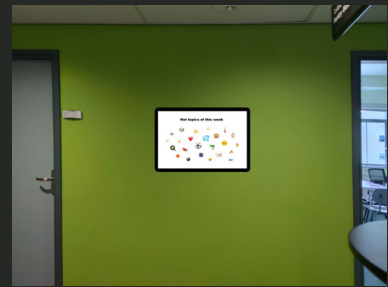
The new topic is also shown on the screen with an emoji. The emojis would maintain so that other employees could still see them.

Figure 38: Storyboard of the first concept - Emoji board

Every employee has an ID card. The color of the strip of it changes according to the employee's status. Green means she is not busy at the moment.
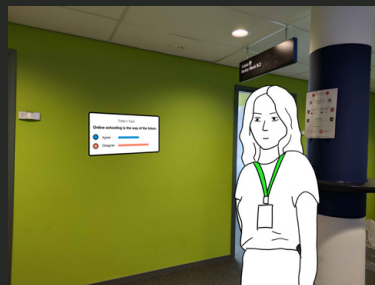
When the employee goes to the coffee corner, she notices something on the wall.

It's a debating topic of that day and anyone can choose his/her stand by pressing the button.
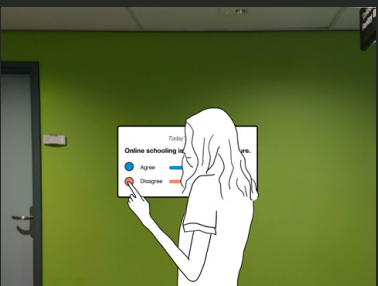
The employee pressing the disagree button.
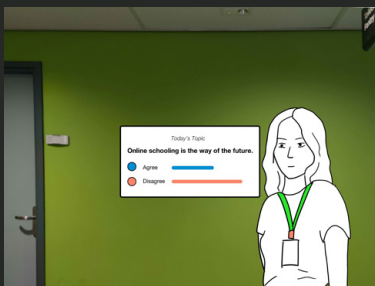
One part of her ID card turns to red after she pressing the button.

When she runs into another person with a different color shown on the ID card, she knows they have different opinions for the topic. Then they start a discussion.

Figure 39: Storyboard of the second concept - Office debating

Figure 40: Setting up experiments in StudioLab
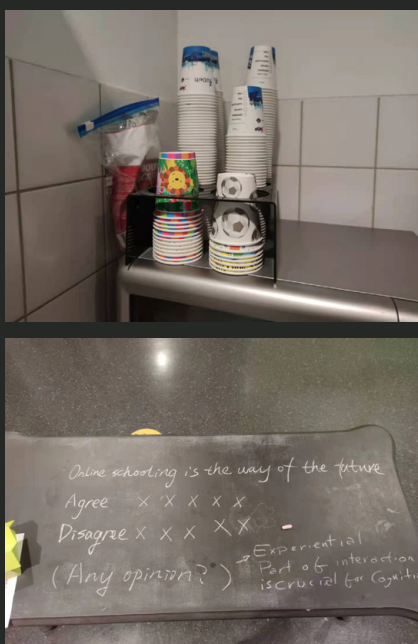
Figure 41: Results of experiments in StudioLab

4.3.4 EXPERIMENT AND EVALUATION

The 2 new concepts together with the third concept which was also the most popular concept of the last cycle (Topicup) were tested to define the final concept direction of the project. Also, it was aimed to find out which sort of trigger might be the most appropriate to be used to stimulate a meaningful chat. Both experiments and evaluation were conducted to get richer results.

EXPERIMENT

For the first concept (Emoji board), papers were printed with title and emojis on it. Then they were pasted on the wall of the coffee corner and in the lunch space. Observation was conducted to see whether people would notice the papers and talk about the emojis on it.

For the second concept (Office debating), some debating topics were written on the whiteboard of some studios and the blackboard on the table in the corridor, and they were updated each day. Whether people would show their opinions on the boards was observed.

For the third concept (Topicup), cups with various images were put in the coffee corner. The aim was to see whether people would like to select cups they like and use them and whether the cups would trigger conversations.

Pictures of the experiments could be seen in figure 40 and figure 41.

EVALUATION

At the same time, 4 people in the StudioLab were interviewed so that their opinions towards the concepts could be learned. With the results as the basis, the final concept direction could be defined and iteration could be conducted later on.

4 participants were interviewed in total, the de-

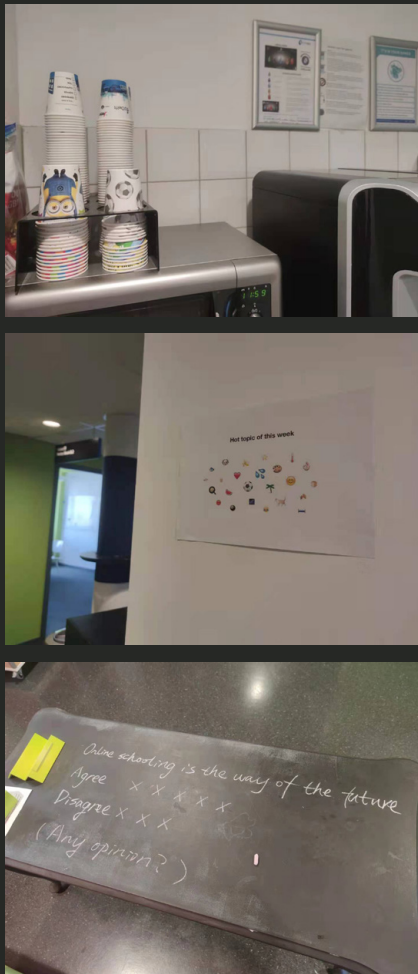| Participant	Gender	Age	Occupation	Nationality	Extra Info
1	female	25	student assistant	Chinese	Do not come to the office often.
2	female	22	master student	Korean	Come to the office everyday. Work in Studio DREAM.
3	male	29	PhD	Chinese	Come to the office everday. Work in studio WRITE. 4-year experience.
4	male	24	master student	Dutch	Come to the office everyday. Work in Studio DREAM.

Table 7: Information of participants

tailed information of whom could be found in table 7. The interview included 3 steps:

- The project was introduced to the participant first, including the background, the design goal and the current procedure.
- The concepts were described to the participants with the storyboards. Then the opinions towards the concepts were asked.
- Some questions were asked to let the participant evaluate the concepts from the perspective of the design goal and interaction vision. The detailed questions could be seen in appendix G.

4.3.5 RESULTS

According to the observations and interviews, it was learned that employees in StudioLab were glad to use the new cups and would have some chats about it. Also, they were interested in the second concept (Office debating), since some questions were answered actively by voting agree or disagree on the boards, and some employees even wrote their reasons down besides the questions. However, employees did not have much reaction towards the printed papers for the first concept (Emoji board). There might be two main reasons according to the observation:

- Employees always focused a lot on things they were doing or the conversation they were having with other employees, and thus the paper did not draw their attention at all.
- The emojis on the paper were too general and abstract, which made it hard to spark a chat.

From the interviews, it was discovered that the third concept (Topicup) was the one participants preferred rather than others. Following were the main reasons:

- It combined with people's daily routine very well.
- It worked better in sparking an open conversation.
- It had the potential to trigger chats in any place of the office.
- They thought it was more likely that their colleagues would like to chat with them about the images on thier cups since the cups were selected by the colleagues themselves while getting the cup.

Besides, there were also some parts of the concept could be improved from the feedback of the interviewees:

- The concept could also try to improve the process of the chat to ensure the chat to be meaningful.
- The concept could also consider sustainability since the cup should be changed every day, which was not environmentally-friendly enough.
- Instead of only receiving the intervention passively, some interviewees also would like to input things to the design.

For the first concept (Emoji board), participants liked it that their chats could serve as an input to the intervention, but the emojis were a little difficult to understand. For the second concept (Office debating), participants liked the physi-

cal interactions with it, for example writing down opinions with chalk on the blackboard, and it could be easier to trigger employees to have a conversation when they had their strong opinions. But there was a worry that it would cause conflicts.

From the scores (figure 42), it could be also seen that some participants gave the second concept (Office debating) more scores than the third concept (Topicup) for some qualities. Following are the reasons according to feedback in the interviews:

- Some people tended to speak more to defend themselves when they have a stand for a debating topic. In this situation, they are more expressive in the experience of the 3rd concept.
- Some people would feel more connected with others if they shared the same stand. Thus they gave more scores to the second concept.
- Some people think debating would help them to know more about other people's values, which made the chat more meaningful.

Therefore the strong points of the second concept could be absorbed later on.
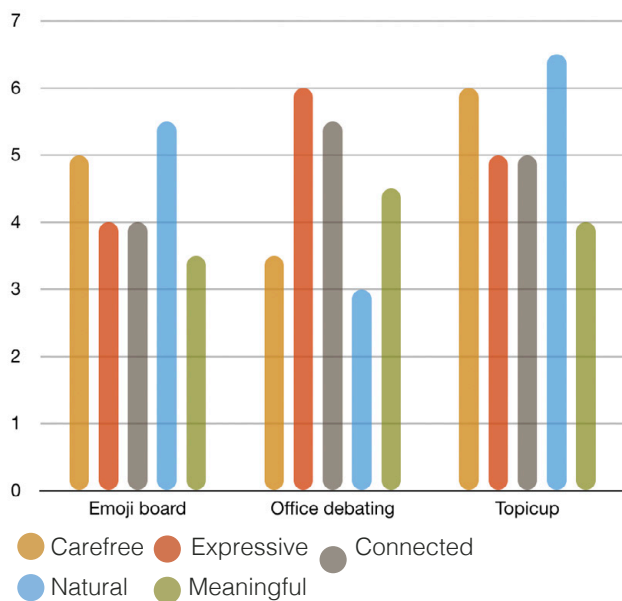
Figure 42: Average scores of 3 concepts

4.3.6 TAKEAWAYS
- The final interaction vision was defined in this

cycle (figure 36).
- The final concept direction was defined in this cycle (Topicup).
- Compared with other triggers used to stimulate a meaningful conversation such as emotion, interests, popular topics and debating topics, news was the most useful.
- Compared with words and emojis, images worked better in triggering a rich and open chat.

4.3.7 REFLECTION
During the interviews, it was learned that participants had different translations for the word "meaningful". Some subconsciously thought that a meaningful chat should be deep and profound, without considering the context. As a result, their scores for the meaningfulness of the concepts were not accurate enough. But if they thought carefully, they also agreed with the definition of "meaningful" in this project: people should either get new information or feel supported through the chat. Therefore, in the following tests, to evaluate the quality "meaningful" of the concept, a clear definition should be explained to the participants in advance, so that the results could be more accurate and reliable.

05 CONCEPT

Based on the previous phas
was defined in this chapter
to achieve the design goal

T DIRECTION

ses, the final concept direction
r. How the concept could help
was explained.

5.1 CONCEPT

Based on the results of previous 3 cycles of idea generation and evaluation. The concept, Topicup, was decided to be the final direction, reasons were as follows:

- From the perspective of feasibility, it was easy and intuitive to be put into use, and worked well in achieving the design goal.
- From the perspective of desirability, most participants preferred this concept to the others and thought it could work well in achieving the design goal.
- From the perspective of viability, it could also run well in the long term.

As it could be seen in figure 43. In the coffee corner of the office, there is a machine for employees to get their cups from it. On the screen of the machine, there are 3 options which are all recent news or events. If an employee chooses any of them, he/she will get a cup with a random image on it related to the topic selected. Another button on the machine is for employees to get an ordinary cup. Each cup with a related image has 2 layers, and thus could be rotated to show the user's working status to others. Besides, the topics on the machine update regularly.
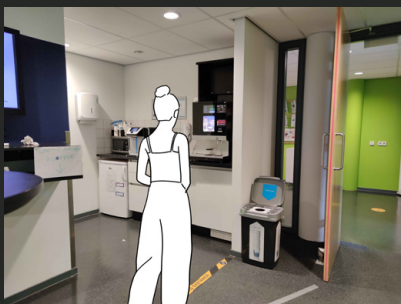
The employee went to the coffee corner and would like to have a cup of coffee.

There is a machine near the coffee machine for people to get their coffee cup. There are several themes related with recent news for employees to choose, and an ordinary one.

The employee chose the Euro Cup one.

She got a cup with the picture of a football player.

With this cup on her hand, employees she run into talked with her about it.
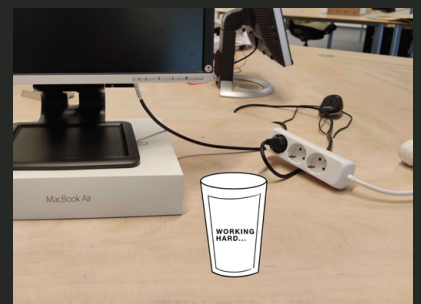
When she was busy at work, she rotated the cup and it showed "working hard".

Figure 43: Storyboard of the final concept direction

5.2 FEATURES

CAREFREE

Since the cup could show employees' status, users will not worry that they might disturb the person when they start the chat.

EXPRESSIVE

General news on the cup motivates employees to talk to each other especially because they have chosen the one they are more interested in. Besides, the image could help to stimulate different chats since people might pay attention to different aspects of the image.

CONNECTED

The cups make it possible for more chats to happen. The communication will increase the connectedness among the employees.

NATURAL

It is intuitive for employees in the office to use the design since people always should get a cup for their coffee. Besides, people always take the cup to go to various spaces of the office, which makes it more possible for employees to have a chat based on the cups.

MEANINGFUL

The images of the news and events on the cup stimulate chats related to them, which helps users to get new information. With this as a starter, the conversation might carry over into other contents, like some personal topics, which might make the users know more about each other and even get support if they need.

06 CONCEPT D

The concept selected from
for 2 times in this chapter
user tests were conducted

DEVELOPMENT

previous phases was iterated
. Prototypes were made and
to get users' feedback.

TOPICS

recent news

FORMS

form 1   form 2   form 3

form 4   form 5   form 6

STATUS

serious texts

ONLINE PLATFORM

online platform

MORE TOPICS

MORE APPROPRIATE FOR DESIGN GOAL

MORE RELAXING

CLEARER

CONCEPT ITERATION CYCLE 1

recent news

funny topics   life-related

form 1

serious texts   relaxing texts

emoji   meme   illustration

online platform

MORE PERSONAL

CLEARER AND RELAXING

EASIER TO READ

CONCEPT ITERATION CYCLE 2

recent news

funny topics   life-related

form 1

relaxing texts

online platform
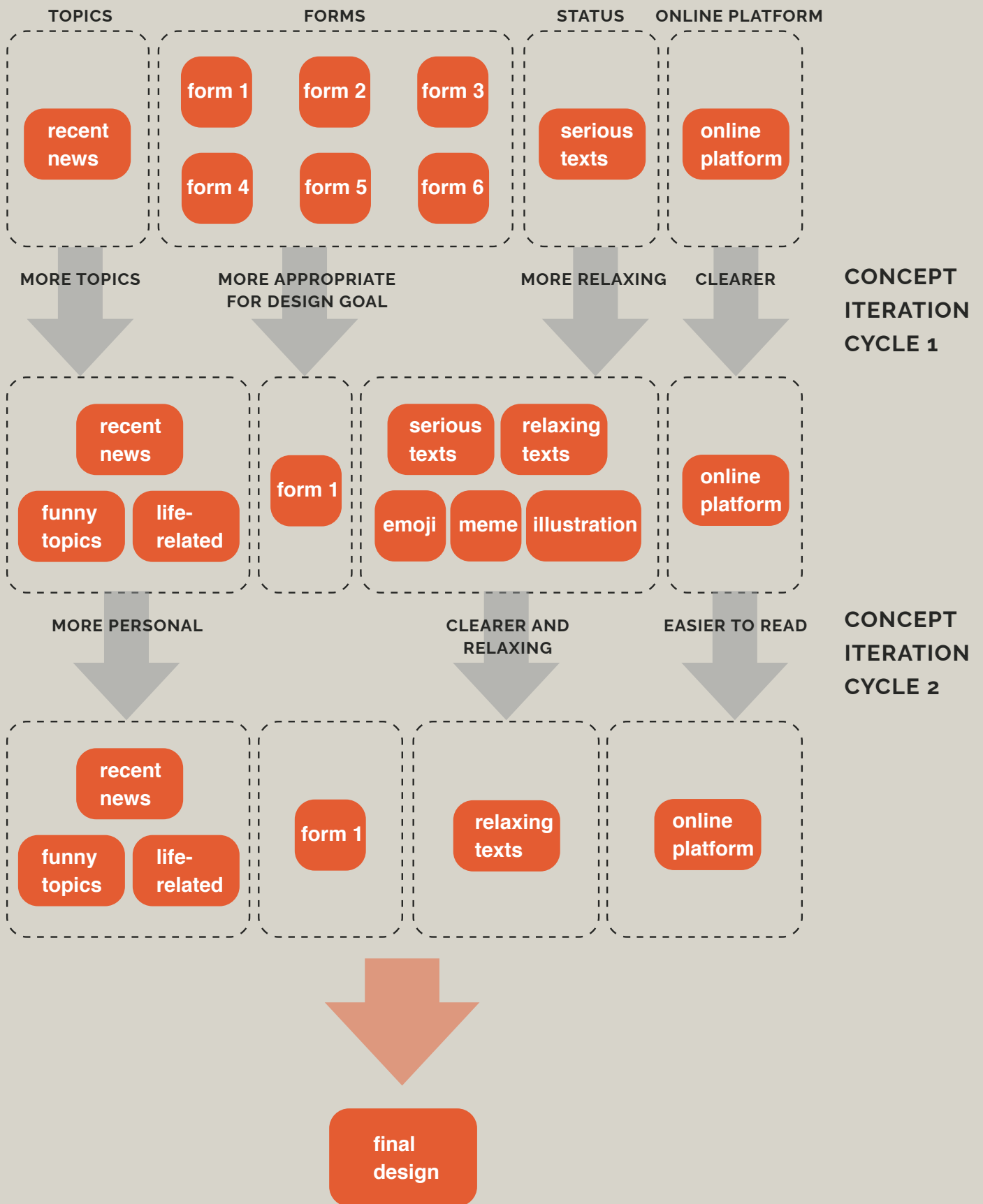
final design

Figure 44: Overview of the concept development stage

6.1 CONCEPT ITERATION CYCLE 1

6.1.1 DESIGN & PROTOTYPING

Some feedback from previous tests and interviews was summarized (appendix H). Considering the feasibility and the design goal, some were selected to be tested in this cycle of interaction, which are listed below. Among them, some were participants' suggestions for improvements of the selected concept direction, and some were the strong points of the other concepts. They would be used to iterate the defined concept direction:

- Participants tended to have an overview of other colleagues' choices so that they could know them better and have the sense of belonging.
- Participants would like to input something to the intervention, instead of reacting to the intervention passively.
- Some people would like to learn new things from the experience.
- Some participants would like to recreate something on the intervention.

Besides, below are some details of the concept should be defined:

- What should be a better way to show people's working status?
- Would there be any other sort of topics users would like to select in the experience of the concept?

To iterate the concept based on the points listed above, considering the feasibility, an online platform was added to the concept. In the concept, users could scan the QR code on the cup to access the online platform. The prototype of it was made with Figma (figure 45), and people could interact with it by clicking on the buttons. The online platform has 3 pages in total. After opening the platform, users would first see the detailed information of the image on the cup so that they could learn new things from the intervention. At the same time, it was assumed that some more content might be useful in stimulating a meaningful conversation. At the bottom of the page, they could also choose to write their comments on it or see other people's comments. The ratio of the choices for the topics were shown on another page so that users could have an overview. Besides, users could vote for the topics of next week so that they had the option to decide the content of the intervention, which might help to ensure that the topics were ones users would like to chat about.

4 different cups were prototyped with paper to decide the form of the cup. The outside layer of cup A (figure 46) was full of patterns, so that people could always see the image on the cup even when it was showing a busy status. Cup B (figure 47) had a white outside layer, which meant when the user rotated the cup to the busy side, other people would not know what topic he had selected for the cup. Cup C (figure 48) had a white coffee cup sleeve outside. Users could rotate the sleeve to see the image or the busy status. Because the sleeve was shorter than the cup, the image on it was also smaller than the first 2 cups. Cup D (figure 49) was a normal cup, and users could get different coffee cup sleeves from the coffee corner, on which there would be a random image of the topic or texts showing the busy status. While using the cup, users could change the sleeves to show status.

6.1.2 EVALUATION

There were 4 main goals of the evaluation:
- To define a form of the coffee cup.
- To know whether people could understand and would like the online platform.
- To find out if people would like some other topics besides recent news or events.
- To know if there are some other ways to show users' busy status rather than text "hard working...".

Figure 45: Prototypes of online platform

4 people participated in the evaluation. The information of them could be found in table 8. The evaluation included 6 steps, which are listed below. The complete interview questions could be seen in appendix H.

The project was introduced to the participant at the beginning, including the background and design goal.

The storyboard of the concept was shown to the participant so that they could be sensitized to the context.

The 4 cups were provided to the participant and he/she was asked to interact with them. The process of the interaction was observed.

Some questions related to the cup were asked, including the participant's suggestions for the cup form, the busy status and the topics.

The online platform was provided to the participant and he/she was asked to interact with it. The operations were observed.

Some questions related to the online platform were asked, including the prticipant's opinions, whether they understood the information and whether they would scan the QR code to access it.

6.1.3 RESULTS

The main feedback from the tests is as follows:

- Cup A was preferred by participants. From the perspective of the design goal, it still showed other people their interests for the topic even though the user was busy, which showed their kindness to others and helped other colleagues to know more about them.

- The information on the online platform was not clear enough, and therefore users did not really know the intention of the pages. But after explanation, they would like to use it especially because they could participate in voting for the next topics. Also, they were satisfied with the simplicity of the platform.

- Some participants would also like to have some topics related to emotions or life, apart from the recent news and events.

- Participants would like to show their busy

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Figure 46: Prototype of Cup A

Figure 48: Prototype of Cup C

Figure 47: Prototype of Cup B

Figure 49: Prototype of Cup D

status in a more relaxing and playful way.

■ Some participants would not write their comments online and preferred to talk with other people physically.

6.1.4 KEY TAKEAWAYS

■ The form of cup A should be used in the final design, which showed the image on the cup as much as possible, therefore creating more possibilities for a chat.

■ The online platform should be maintained in the concept. But the content of each page should be clearer so that users can understand them better.

■ A more relaxing way of showing people's busy status should be thought about.

■ It should be researched in the next step that whether increasing some life-related and emotion-related content would be nicer to the concept.

■ The function of writing comments on the platform would not be used too much by the users and should be removed.

Participant	Gender	Age	Occupation	Nationality	Extra Info
1	female	25	DFI student	Chinese	Work in StudioLab, but do not come often.
2	female	22	student assistant	Korean	Work in StudioLab and come everyday.
3	male	25	DFI student	Chinese	Have done 4 months of internship before.
4	female	24	DFI student	Chinese	Doing an internship at the moment.

Table 8: Information of participants

6.2 CONCEPT ITERATION CYCLE 2

6.2.1 DESIGN & PROTOTYPING

Based on the results of the last cycle, some adjustments were made to the concept:

- The QR code was put at the bottom of the coffee cup, with explanations of what the user would see after scanning it.
- The commenting function on the online platform was removed.
- The titles were added on the pages of the online platform so that people could know clearly what the contents are.

Evaluation would be conducted with participants to see whether the adjustments above were appropriate for the design goal.

Besides, to define a sort of busy status, different cups were prototyped with various ways of showing the status (figure 50), including serious texts ("working hard..."), relaxing texts (as busy as a bee), a funny meme, an emoji and an illustration.

In addition, two more topics were added to the concept, funny topic and life-related topic (figure 51,52). Two cups with the images related to them were prototyped.

Cups were still made with paper and the online platform was made with figma (figure 53).

6.2.2 EVALUATION

This cycle of evaluation aimed to both get opinions towards the concept and evaluate the usability of the prototypes. Under the 2 main goals, the small goals were as follows:

- To see if there should be funny topics or life-related topics for users to choose.
- To find out how people feel about the online platform and whether people would like to use it.

- To define a sort of busy status to be shown on the cups.
- To see how the concept could help people to get emotional support from the chat since it could contribute to the meaningfulness of a chat in the project goal.
- To see whether people can use the cup and the online platform seamlessly.

4 participants took part in the evaluation, in table 9 the information of whom could be seen. The test included the steps below, the completed interview questions could be found in the appendix I.

- The project was first introduced to the participant, including the background and design goal.
- The storyboard was shown to the participant so that he/she could be sensitized to the context.
- The cups were provided to the participant and he/she was asked to interact with the cup. How the participant interacted with the cups was observed.
- Some questions related to the cup were asked, including the participant's opinions towards the funny and life-related topics, and his/her preference of the busy status.
- In case that the participant did not notice the QR code, or he/she did not scan it, the online platform was provided to the participant, and he/she was asked to operate it. The operation was observed.
- Some questions related to the online platform were asked, to know about their opinions towards the online platform and what other things they would like to add to it.

6.2.3 RESULTS

- People would like to have life-related and funny topics in the concept. Life-related topics would lead to users talking about their

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Figure 50: Prototypes with various busy status

Figure 51: Prototype with a joke
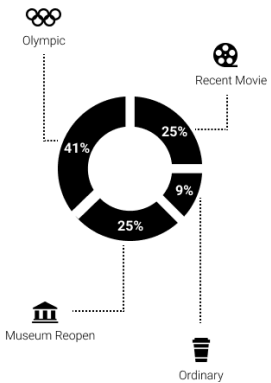

Figure 52: Prototype with life-related image

Figure 53: Prototypes of online platform

Participant	Gender	Age	Occupation	Nationality	Extra Info
1	male	24	DFI student	Dutch	Work in StudioLab everday.
2	male	29	PhD	Chinese	Come to the office everday. Work in studio WRITE. 4-year experience.
3	female	22	DFI student	Chinese	Work in StudioLab, but do not come often.
4	female	24	Engineer	Chinese	Have worked for 1 year.

Table 9: Information of participants

personal things, which might help with the connectedness. Funny things would help employees get relaxed and could be used as a conversation starter.

- Relaxing texts were better to be used to show busy status since they were more suitable for an informal situation. Also, from the perspective of functionality, it was easier for other colleagues to notice it from a distance, and it was harder for them to misunderstand the meaning especially compared with an emoji and an illustration.
- People would like to scan the QR code on the cup when they saw the explanation about what they would get.
- The QR code at the bottom was hard for people to notice and scan, which could also be seen in tabe 10 that 3 out of 4 participants failed to discover and scan the QR code.

The online platform was easy for people to understand and operate. Some would like the information page easier to read.

6.2.4 KEY TAKEAWAYS

- Funny topics and life-related ones could be added to the concept.
- The best way to show the status was relaxing texts.
- The QR code should be put on another position of the cup.
- The online platform was basically easy to be understood by users, but some small adjustments could be made.

6.2.5 REFLECTION

In the interviews, the questions asked to the participants were more about whether they liked or disliked the idea, instead of whether it worked for

Partici-pant	Step 1: rotate the cup	Step 2: understand the status side	Step 3: scan QR code & open online platform	Step 4: understand the info page	Step 5: get to other 2 pages and understand them	Step 6: click to vote for next topics
1	green	green	red	green	green	green
2	green	orange	red	green	red	green
3	green	green	orange	green	green	green
4	green	orange	red	green	green	green

- green: User performs task quickly and without any trouble
- orange: User can perform task, but has some struggles
- red: User can not perform task

Table 10: Usability evaluation of the concept

the design goal. As a result, some participants felt it hard to select their preference since there was a lack of criteria, especially for the form of the cup. At the same time, the core thing of the tests, to see whether the design goal could be achieved through the intervention, was missing.

Even so, since participants found it hard to assess according to their desirability, they would try to think about it from the perspective of the design goal. As a result, the feedback also fitted into the design goal. For example, the cup form with the patterns outside meant other colleagues could always know about the person's interests, which contributed to the understanding and relationship between people, and later on they could always have the opportunity to talk about the topic when they were both not busy.

However, asking the questions from the perspective of the design goal directly might help to get more useful feedback and increase the efficiency of an interview. Therefore, questions asked in the interviews should be adjusted next time.

07 FINAL

**After iteration, the concept
were introduced in this chap
made and the final evaluati
in StudioLab.**

L DESIGN

**was defined. The details of it
pter. Then the prototypes were
on was conducted with users**

7.1 FINAL CONCEPT

7.1.1 TOPICUP

In the coffee corner of the office, there is a machine for employees to get their cups from it. 3 options are on the screen of the machine, which are all recent news or events and the topics update regularly. If an employee chooses any of them, he/she will get a cup with a random image on it related to the topic selected. Another button on the machine is for employees to get an ordinary cup. Each cup with a related image has 2 layers, and thus could be rotated to show the user's working status to others. On the body of the cup, there is a QR code. After scanning it, the user could get to the online platform to read detailed information of the image and vote for the topics of next week (figure 54).

7.1.2 CONCEPT FEATURES

STIMULATE A CHAT

- The topics for employees to talk about are on the image on the cups, which are always taken by the employees. Therefore, when an employee encounters his/her colleagues, they could notice the images and have a chat based on that.
- The concept provides new topics to the employees, which avoid the lack of topics when they tend to chat with each other.
- The topics are voted by employees and the cup is related to the topic the employee selected, and thus it is more likely that he/she is interested in it and would like to have a chat with others about it.

Level of qualities

- Carefree
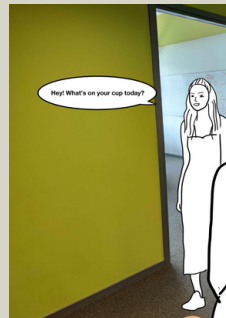- Expressive
- Connected
- Natural

0
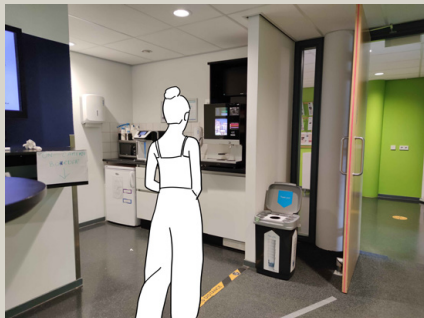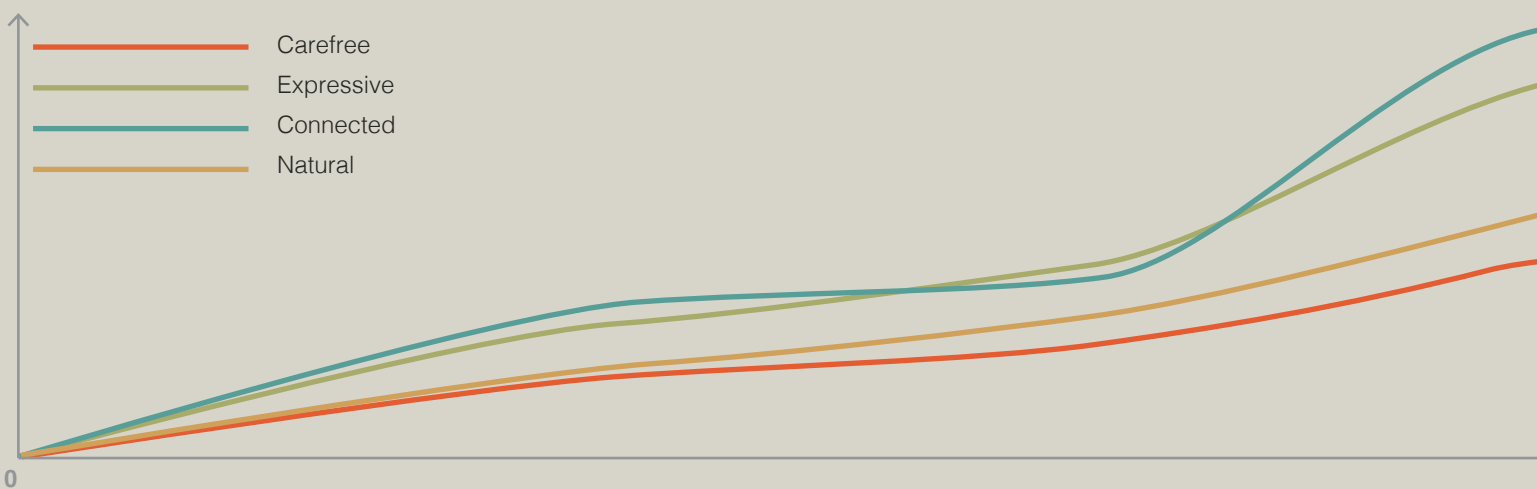
An employee goes to the coffee corner to get a cup of coffee.

She selects a topic she is more interested in on the cup machine, also noticing the ratio of people's choices on the screen.

A cup with a random image related to the topic she selected drops down.

When she takes the into a colleague, about it.

Figure 54: Assumed experience of the final concept

MEANINGFUL CHAT

- Some topics are recent news and events, which makes the chat easier to provide employees with new information.
- The intervention serves as a conversation starter. When the conversation gets deeper, the employees will get to know each other better and even feel supported by each other.
- A funny topic could help to start a relaxing conversation, which might provide employees with emotional support.

CAREFREE

- Employees could show others they are busy with the cup. As a result, employees would not worry too much that they would disturb a colleague when he/she does not rotate the cup to the busy side.

- Employees will only have a chat at the time they would like since the cup with a busy status could help them to refuse others' interruption.
- Employees could rotate the cup to the "do not disturb" side when it is not an appropriate place to have a conversation. Therefore they will not worry about disturbing colleagues around.

NATURAL

- Most employees use the cup everyday and always take the cup with them, which means the concept combines well with employees' daily routines.
- Employees could choose the ordinary cup or do not always take the cup with them. Therefore they will not feel forced to use the concept.
- Rotating the cup to show different sides is an
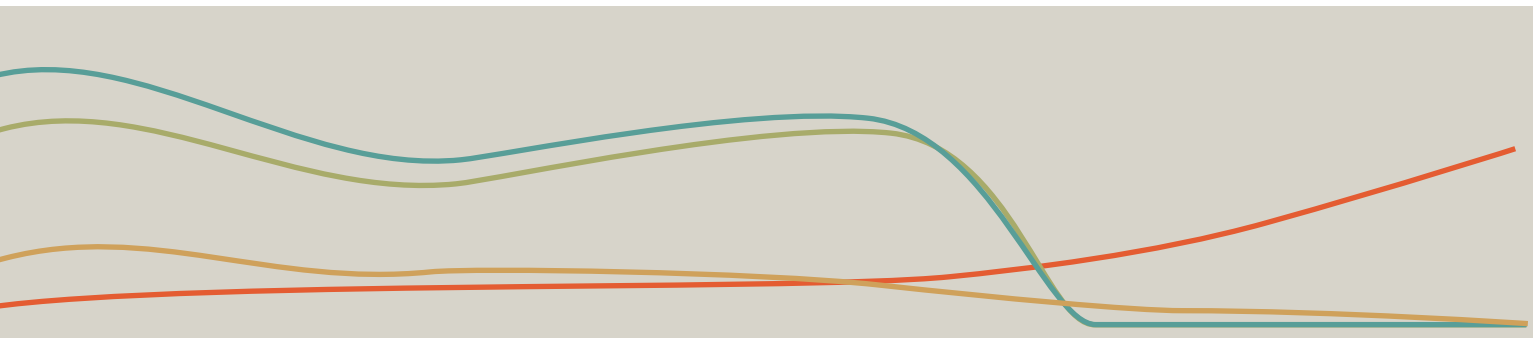
Experience

he cup and runs they start to talk
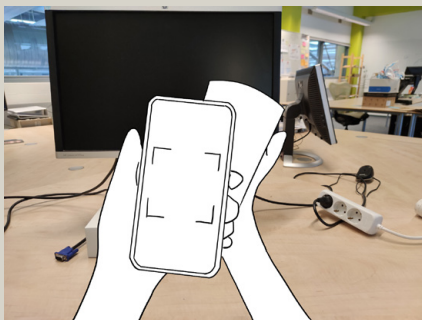
She scans the QR code on the cup to get to the online platform to read detailed information about the image.
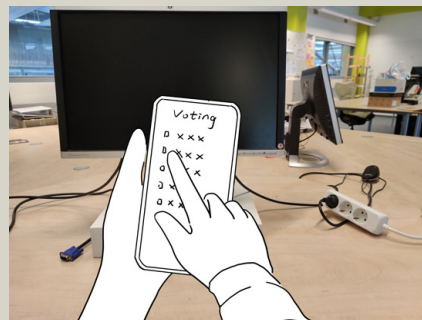
She goes to another page and votes for the topics of next week.
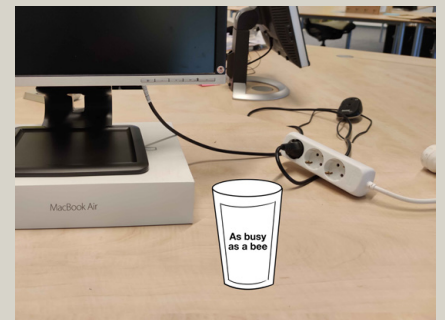
When she is busy with working, she rotates the cup to show the side of busy status.

intuitive interaction.

CONNECTEDNESS AND SENSE OF BELONGING

- The concept helps to increase the chats among employees, which will deepen the relationships and contribute to the sense of belonging.
- Employees choosing the same topic might feel more connected with each other.
  The ratio of the choices employees made for the topics let the employees have an overview of their colleagues' interests and know more about them.
- Voting for the next topics provides employees with a sense of participation in the organization, and hence increases the sense of belonging.

7.1.3 SERVICE DESIGN

The cup machine and cups will be provided by the cup company. After employees have voted for the topics of next week, the company will start to produce related cups. The top-

ics for employees to select from are chosen from some social media or news website. At the beginning of each week, the staff of the cup company will provide new cups for the offices, and the cleaner will get the cups to put them in the machine. The rest cups from last week will be sent to be recycled. The storyboard could be seen in figure X.


The cup company provides the offices with the cup machine and coffee cups.

Each week the cup company selects hot topics from news website /social media.

Employees in the office could vote for the topics of next week.

The cup company produces the cup with the images of the popular topics.

The cleaners change the cups in the offices each week.

The rest of the cups from last week is sent to be recycled.

Figure 55: Storyboard of service design

7.2 FINAL PROTOTYPING

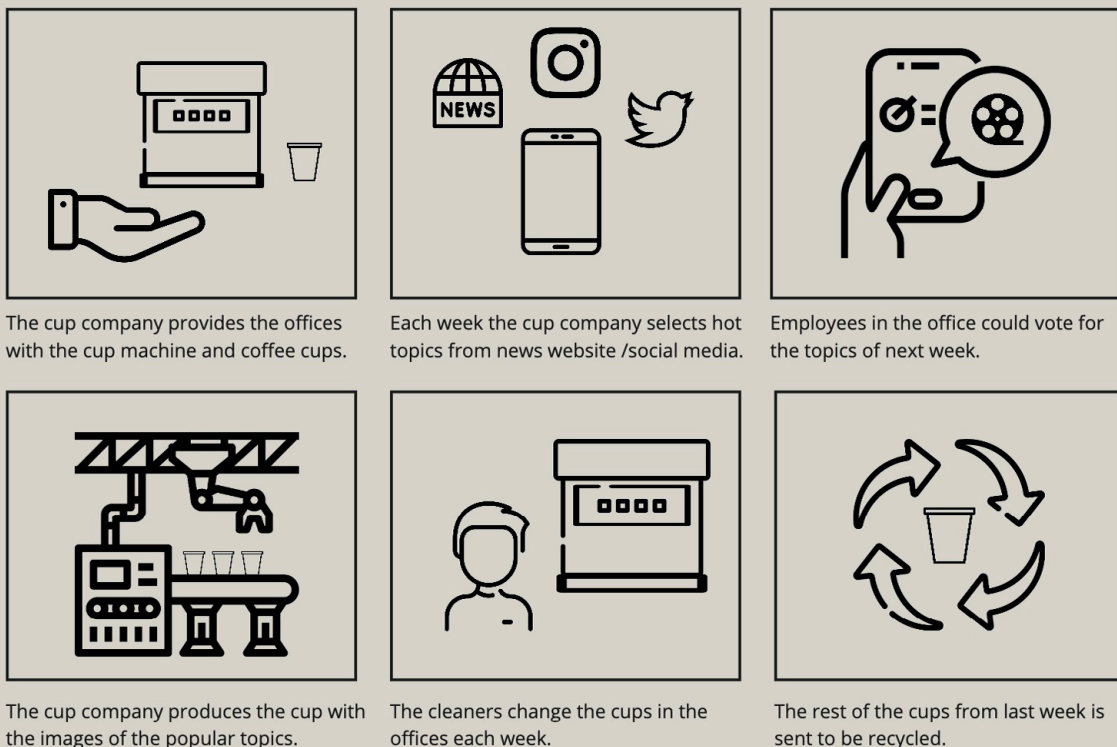10 cups were finally prototyped with 3 topics, movie, pet and joke (figure 56). The cups were made with normal cups and printed paper. Each cup had 2 layers. The inside layer consisted of the image related to one topic and the texts "as busy as a bee". A QR code with explanation was also printed on the inside layer. The outside layer had the same image as the inside layer, with a hole on it. Users could rotate the outside layer so that different things could be seen from the hole. When the texts were shown through the hole, it meant the user was busy at the moment. When the image was shown, it meant the user was open for a chat.

4 cup dispensers were bought to prepare for the final tests. On the bodies of 3 dispensers, Names of topics were printed to be glued onto the bodies of 3 dispensers (figure 57). Users could pick up the cups from the top of the dispensers.

By scanning the QR code on the cup, users could get to an online platform (figure 58). The initial page would present the detailed information behind the image of the cup, with titles, pictures and headlines. Another page showed the real-time ratio of topics selected by employees. Besides, users could click the options to vote for the topics of next week on the third page. The options were classified into 4 categories. First one was recent news and events, the second one was related to life. The third one was the funny topic. The fourth one was work-related. By clicking on the uploading icon beside, users could upload images related to their own work so that they could be printed on the cup later and shared with colleagues.

The online platform was made with Figma. Users could click on the bottom navigation bar to see different pages. Also, the voting function was prototyped so that users could vote and see the result of the voting.

Figure 56: One of the cups

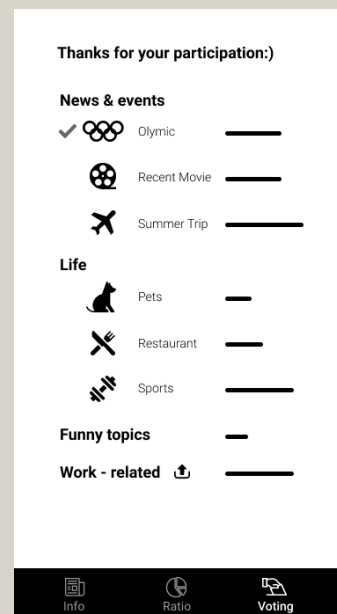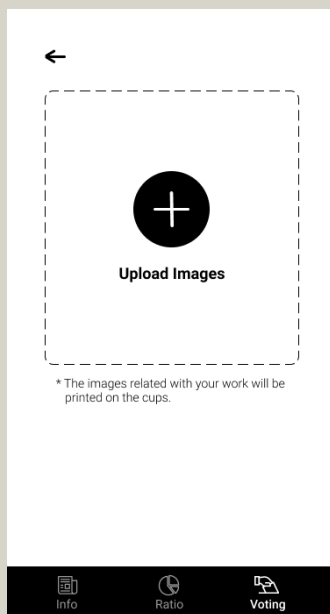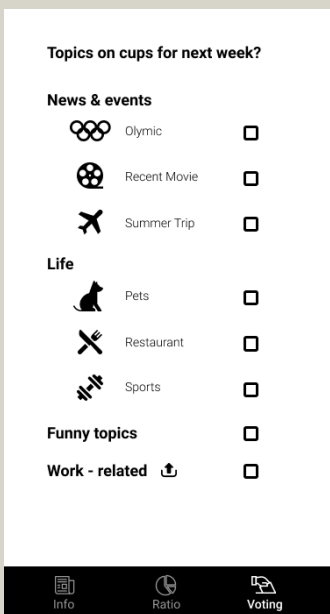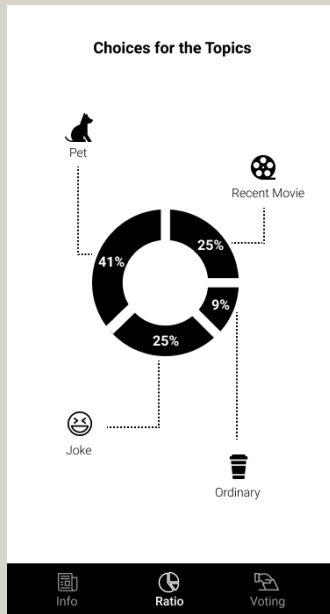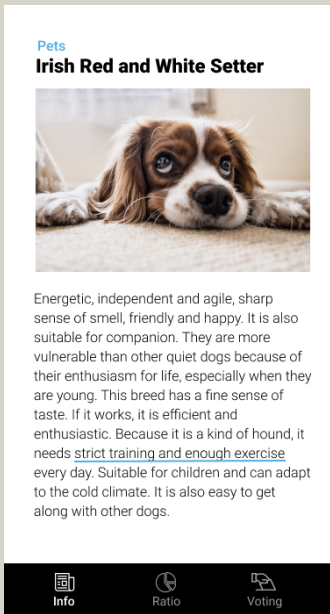Figure 57: One of the cup dispensers

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Figure 58: Prototypes of the online platform of the final design

Figure 59: Tests setting up

Figure 60: Participants of the final evaluation

7.3 FINAL EVALUATION

7.3.1 PREPARATION

4 cup dispensers were put in the coffee corner of StudioLab. Since there were not so many prototypes, some regular cups were firstly put in the dispensers, and on the top were the cup prototypes (figure 59). Users were able to pick the cups up directly from the top. Before the tests, an email was sent to the members of StudioLab to inform them about the tests.

7.3.2 USER TEST

The whole evaluation lasted for 4 days. The first day was for users to try and explore the prototypes by themselves. Observation was conducted in the Studio Join, which was close to the coffee corner. The main purpose was to see whether people would notice the prototype and be attracted to use the cups, and whether they would try the functions (having chats with colleagues based on the cups, showing busy status and scanning the QR code to go online) and understand them without instruction. On the following 3 days, 6 employees in StudioLab were invited to take part in an interview (figure 60), the information of whom could be found in table 11. The interview included 5 steps, which were described below. Detailed questions could be found in appendix I.

- The project was introduced to the participant, including the background and the design goal.
- Some questions were asked to know about some general information of the participant as the employee in StudioLab.
- The whole user experience was explained to the participant with the prototype and storyboard in case the participant did not try the prototype on the first day or did not use or understand all the functions.
- Questions related to the concept were asked to get the participant's opinions from the perspective of the design goal.
- The participant was asked to give scores from 1 to 7 to the qualities of the interaction vision both with and without the concept, so that it could be seen whether the concept would help with increasing the scores.

7.3.3 RESULTS

In one day, 5 out of 9 cups were used by the employees in StudioLab. Among them, 2 cups were used by the same employee. Some participants picked the cups up to have a look but did not use one. Some had their own cup to use therefore did not pay attention to the paper cups. Some came to the coffee corner when they were busy doing other things like having a phone call,

Participant	Gender	Age	Occupation	Nationality	Duration of working in StudioLab
1	male	30-40	Engineer	Dutch	6 years
2	male	40-50	Associate professor	Scottish	8 months
3	male	20-30	PhD	Chinese	5 years
4	female	20-30	Master student	Chinese	1 year
5	female	30-40	PhD	Dutch	10 years
6	male	20-30	PhD	Dutch	4 years

Table 11: Information of participants

thus also did not pay attention to the cups. During the lunch break, 3 employees chatted in the coffee corner about the cups and dispensers. It could be concluded from the observation and interviews that employees who needed a paper cup were interested in the prototypes and would like to use them, and some participants chose the ordinary cups because they did not know whether they were allowed to use the prototypes since they were different from the ordinary ones.

EVALUATION OF DESIGN GOAL AND INTERACTION VISION

When it came to the experience, different types of users varied a lot. For employees who had some social issues in StudioLab, the concept worked in stimulating a meaningful chat, and it also worked in providing the carefree, expressive and connected feeling (figure 61), even though the score for them were not increased too much compared with the situation without the concept. It was considered to be normal because the concept's effect did not rely on one small talk, but should occur in a longer time. However, for those who did not have social problems, the concept did not make much change for them. In addition, since the tests only lasted for a few days, it was hard to see the change in employees' sense of belonging. But from the interviews, it could be concluded that with meaningful chats increasing, employees would feel more sense of belonging in the future. Overall, participants thought the concept natural to experience, except for some functions making it not that seamless like scanning the QR code.

EVALUATION OF FEASIBILITY, DESIRABILITY AND VIABILITY

The feasibility of the concept was well achieved. Employees intuitively used the cup prototypes in the coffee corner and had some chats with colleagues based on them. Some participants tried the online platform and could easily understand and operate it. However, even though the cups could be rotated to the other side, participants did not understand the function of the busy sta
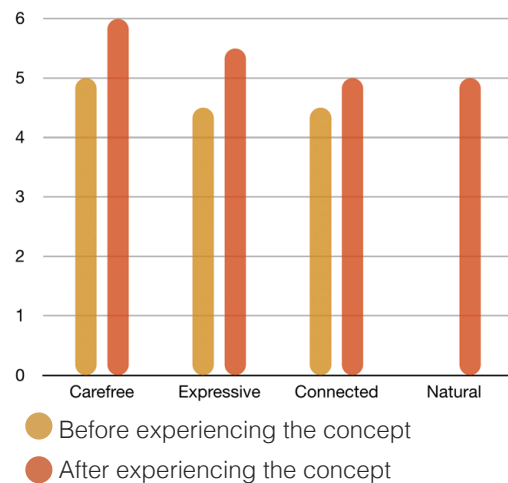
Figure 61: Average scores of qualities

tus, therefore from the concept level, this function did not work well.

Desirability of the concept varied among participants. To conclude, for those who had the need to connect with their colleagues, it was achieved well. But for those who already felt a high level of sense of belonging, it was not achieved since they did not think they needed it.

Since the concept was based on the paper cups employees needed every day, participants would like to use it for a longer time. But it only worked for those who did not have their own cups. Whether the cups still would trigger conversations in the future depended on whether the topics were ones they were interested in, according to some participants. Since with the voting function, the topics would be the most popular ones among employees, it was very potential that the cups could continue sparking conversations among employees.

EVALUATION OF CORE FEATURES

Stimulate a chat

The final solution achieved this feature well. Among the participants, 3 of them tried the cups. They all used the images on the cups to have a conversation with other employees. Either they started the conversation or their colleagues asked them about the cups. However, for cups with images of pets and jokes, the chats

seemed to be not that successful, but movies worked well. Therefore, whether a chat could be stimulated well relied very much on the contents. Without explanations, it would be hard for images like a bunny to stimulate a chat, since not every user could think about pets with the bunny picture.

> **Assumed conversation:**
> - Here is a bunny on the cup.
> - Yes, I had one before.
> - What happened to it then?
> - …

> **Real conversation:**
> - Here is a bunny on the cup.
> - Yes, very cute.
> (End)

A meaningful chat

The definition of a meaningful chat was to either get new information or feel supported in the chats. In the final evaluation, this feature was proved to be achieved well, especially for providing new information to employees, but the design could not guarantee to let employees always feel supported in the chats.

- New information
  In a conversation started with a movie, participants could get new information from the chat. Either the movie interests of the other colleague or more information about the movie was got from the chat.
- Emotional support
  Like the pets topic, it was also hard to have a longer conversation with a joke. Therefore to provide emotional support through the chat could be hard. Besides, one participant mentioned that emotional support could only be gotten when the employee needed it. Maybe it would work when one of the employees was feeling down. Furthermore, if a conversation was started with something irrelevant, there still could be an opportunity for users to talk about their emotions later in the conversation, then they might feel sup-

ported. But it was hard to see how the conversation would go. Therefore, It was only potential for the concept to stimulate a chat supporting the employees emotionally.

> **Two colleagues asked me what was on my cup, then we talked a bit about the movie.**
> - participant 3

> **I tried to tell one colleague about the joke on the cup, he did not react too much.**
> - participant 2

Carefree

It was concluded that users could feel carefree due to the topic provided by the design in the experience, but the busy status to ensure employees not being interrupted failed to provide the carefree feeling. From the concept level, participants agreed that the busy status could help employees feel more carefree. But in reality, they did not use the side or they did not understand the meaning of the side. Also, some participants thought showing they were busy would not stop others from disturbing them, and some participants thought the function was not useful since there already were some signals showing that they were busy, for example, when they were wearing headphones. In addition, with the cup, users did not need to think about what to talk with others since the images on the cup could help to spark a conversation naturally. This made participants feel more carefree.

> **I think even though I turn the cup to this side, people will still disturb me anyway.**
> - participant 5

Natural

Overall the participants thought the experience was quite natural because the cup would be used often. But for those who had their own cups, they gave it a lower score because they would not use the prototype a lot. Also, some participants were not used to scanning QR code with their cellphones and did not like to do things online. Therefore this part made the concept not natural enough for some participants. Besides, one participant thought the rotating interaction was not smooth enough, which decreased the score.

> "
> **I never scan QR code and do not like to use digital things. It would be better to put the things online directly on the cup and machine.**
> "
>
> - participant 1

Connectedness and sense of belonging

It was concluded from the interview that it was hard to evaluate this feature since for users to feel connected and the sense of belonging, longer time would be needed. But most participants agreed that with more chats generated with the concepts, there would be more sense of belonging. Besides, using the same thing together with colleagues and having the opportunity to vote for next topics could provide some participants with a sense of belonging.

> "
> **I would feel connected with others if I share the same special things with my colleagues, like the cups.**
> "
>
> - participant 4

> "
> **If I continue using the cups, I think I would feel more sense of belonging.**
> "
>
> - participant 6

FEEDBACK OF OTHER FEATURES

Compared with the cup machine in the concept, with which users do not know what cup they would get, the prototype gave participants the opportunity to choose the cup they liked. It seemed to be better according to the observation and interviews because employees would have a cup with the image they were more interested in which would work better in triggering a chat.

Scanning the QR code was a step that most participants would not like to do especially after the first time. It would be better if the platform was connected with something they would use often, like the StudioLab website. Otherwise too much effort would stop them from using the functions.

EVALUATION OF PERSONAS

According to the interview, different results were gained from employees stayed in the office for different durations.

- For employees worked in StudioLab for more than 6 years, it turned out in the interviews that they did not have problems socializing with their colleagues and they already felt a high level of sense of belonging. Therefore, the scores of the qualities did not increase compared with the original socializing experience in StudioLab.
- For employees worked in StudioLab for around 5 years, the scores for carefree, expressive and connectedness did increase after having the intervention in the office, although not increased a lot.
- For employees worked in StudioLab for less than 1 year, there were some differences. Maybe because of the influence of nationality, occupation and frequency of working in StuioLab, the 2 interviewees gave different scores for the qualities. One gave quite high scores for original experience in StudioLab, and only felt more expressive with the concept. The other one gave quite low scores for the original social experience, and the concept worked well in helping to increase them.

Based on the conclusions above, looking back on the personas created in the context research phase (figure 17), some needs of the personas could be evaluated.

New comers:

- Need 01: knowing more information about colleagues was met.

  Participants did use the cup to have chats with colleagues and knew about colleagues' information or information behind the image in the chat. The limit was that it seemed only the movie topic could work in the tests.

- Need 02: knowing when is an appropriate time to talk with others was not met.

  The busy status function aimed to meet this need. But from the results, it was found that employees did not understand this function and thought there was no need to use it in daily life.

- Need 03: haveing something to trigger the chat was met.

  With the images on the cup, conversation did be triggered among the employees.

Flexible workers:

- Need: having more connections with colleagues was met.

  Since conversation did be triggered in the tests, as long as the two employees could meet physically in the office, there was the opportunity to have more connections between them.

Senior staff:

- Need: building more new relationships with people was not met.

  In the interviews, it was found that the senior staff in StudioLab was satisfied with the social situation of him/her in the office, meaning that they did not have the needs or desire to contact new employees. As a result, they did not feel motivated to use the intervention.

> "
> **Because I have been in this office for quite a long time, I do not have any problem with socializing with other people.** "
>
> - participant 5

It could be seen that some needs were not met because part of the concept needed to be improved. But some was because the original needs were not fitful for the participants. For the first situation, some suggestions would be proposed in the future development part.

7.4 FUTURE RECOMMENDATIONS

Images on the cups should be those can easily trigger association.
Since the pets topic did not get satisfying results in the final evaluation. Thinking about the reason, it could be the image on the cups were stock photos of the animals which made it hard for people to think about pets. Therefore, no matter what the topic is, images should be the ones more representative for the topic.

Remove the busy status.
Since participants did not tend to use this function in the tests, and it did not help a lot with the design goal, the cup could be a simple cup with an image on it triggering chats.

Put information directly on the cup.
It was also discovered in the final evaluation that people did not feel motivated to go online for browsing the information. Therefore, the information could be shortened to several sentences and printed on the cup directly. This not only made it easier for people to get information but also could provide users with more instructions on the topic the image belongs to.

Link the voting page with websites employees always use.
Since participants did not feel motivated to scan the QR code to go to the online platform, the most important function of the online platform could be linked to some websites employees always use, so that it will not take them too much effort to interact with it.

Make the voting function physical.
It was also discovered that compared with interaction online, participants preferred physical interactions more. Therefore, something could be set up on the cup machine for people to vote directly.

Make the cups sustainable.
Some participants tend to use their own cups because it is more environmentally-friendly. In the final concept, employees need to change the cup every day and there might be lots of cups thrown away without being used since the topics should be updated each week, which is not sustainable at all. Therefore, the material of the cup could be changed into something that could be used for a long time, or the images could be directly printed on users' own cups, so that the concept could be better for the environment.

08 CONC

**The whole project was summ
ing contributions, limits, dis
of the process.**

LUSIONS

marized in this chapter, includ-
scussion and some reflections

8.1 PROJECT CONCLUSION

8.1.1 CONTRIBUTION

This project includes 2 main parts: research and design. In the research phase, common social issues of employees in offices were discovered, and one way to increase employees' sense of belonging, stimulating meaningful chats among employees, was proposed. In the design phase, an intervention was finally generated to solve the belonging problem of employees.

Since the problem discovered in the research phase is a common problem, the final solution is not only limited to StudioLab, but could also be applied to other offices. Especially after the outbreak of coronavirus, the work mode of employees has changed a lot. The hybrid mode starts to become popular, with which employees spend more time working at home than before, and this mode might proceed after the pandemic. However, this mode could lead to the increase of employees' social needs since there are less informal interactions among employees when they work more remotely. Therefore, the solution proposed in this project has the potential to also play a role in offices in the future.

8.1.2 LIMITATION

CORONAVIRUS

Because this project was conducted during COVID-19, at the beginning, it was hard to find an office that was open physically to do the research and tests. As a result, StudioLab was chosen to be the main context of the project, and therefore some master students doing graduation projects in StudioLab were invited to participate in the tests. However, since master students could be different from employees who get money from their work, the evaluation results might not be accurate enough. Also, because of the coronavirus, throughout the research and design phase of the project, there were not so

many people in StudioLab, which led to the limitation of the amount of people participating in the evaluation and tests. Furthermore, since the final evaluation was carried out after the beginning of the new semester, there were a lot more people in the office compared with before. As a result, participants' needs for social interactions could change, and the evaluation results could be inconsistent.

TIME

Because of the limitation of the time, each cycle should be conducted fast. Therefore, the prototypes made were rough and simple. There could be the possibility that the prototypes did not express the concept accurately, and thus got inaccurate results in evaluation.

EVALUATION METHD

In the design phase, the evaluation was mainly conducted through interviews. As a result, participants could only give feedback based on imagining the experience. Hence the feedback might be different from the real situation. This could be seen in the final evaluation. When interviewing participants about the busy status function before, people thought it was a good way to avoid being interrupted. However, while experiencing the prototypes in the final test, employees did not use the function at all. Therefore, experiencing prototypes in the real context would help better with the accuracy of the evaluation results.

8.1.3 DISCUSSION

First of all, the design goal included two parts, stimulating meaningful chats and increasing the sense of belonging. For the first one, it is an immediate thing and could be observed and interviewed in the final tests. But for the second one, it was hard to be verified in a short time. As most participants said, it was too big and the result could not be shown yet. Therefore, the evalua-

tion results of the belonging goal mainly relied on participants' assumptions for the future in the final evaluation.

Besides, as an intervention designed for offices and aimed to be used in the offices for a long time, there could be differences between when people first used it and after a long time. Employees might be motivated to try it because of curiosity in the beginning, but might also lose interest after using it several times. At the same time, people might be not used to it at the first time, but could use it seamlessly after several times. Therefore, if the test was conducted for a longer time, the results might be different. Also, as one participant in the final evaluation mentioned, if a design aimed to be used for a long time and have impacts on people, it might be better if it was combined with some rules that people were used to obey, for example, the week opening of StudioLab, which required members to join every week to have a meeting to discuss things together. For this project, even though the test results showed that participants did not and would not use the cup to show people they were busy, if the office had a rule that people should use it in this way and people could only interrupt colleagues that did not show the busy side on the cup, after longer time, people might form a good habit to respect those who need their own space.

For the effect of this project on employees' relationship, it could be guessed that the intervention works the most effectively when employees are not familiar enough with each other, and the effect might be the slightest when employees are very familiar with each other, although it still might provide users with topics they do not talk by themselves. Furthermore, it could fasten the deepening process of the relationships, but how close employees will be with each other in the end might not be influenced by the intervention, which means as long as the time is long enough, relationships among employees can always achieve the deepest. Similarly, if two employees are not going to have a deep relationship because of their personalities, values, etc, the intervention can also not change the fact.

8.2 PERSONAL REFLECTION

COMMUNICATION

During the process, sometimes there are some misunderstandings occurring between me and my supervisors. As a result, some steps had to be repeated again. For example, the usage of the interaction flow was misunderstood by me when my chair proposed it in one meeting. Hence after the explanation in the next meeting, an extra cycle had to be conducted to use the method correctly. Also, because English is not the mother language of us, sometimes in the meeting, quite some time was used to correct the word. To solve this, more active communication should be conducted so that the project could proceed more successfully.

LACK OF CRITICAL MIND

While doing the research and tests, I easily accepted the quotes of participants, without doubting or asking why to know about the reasons behind. It also showed when I was doing literature review, during which I easily used sentences online to prove things, without suspecting the accuracy. Also, during meetings with supervisors, I always followed their thoughts and opinions without arguing. To reflect on this, I think it may be because it is hard for me to distinguish sticking to myself and stubbornness when I am communicating with others. To solve the problem, I need to try to practice the critical mind in my daily life and use it at the right moment.

LOSING THE KEY POINT

While doing this project, I considered too much in the context of employees' socializing. Therefore, even though I had my design goal proposed, I still tried to solve other relevant things. As a result, too many elements were shown in my final solution. Even though I think it would be more like a graduation project, standing in others' point of view, too much information will actually cover up the really key things.

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Image references

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MASTER THESIS

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