Exploring the Design Space for Wellbeing in the Context of Digital Experience

A sensitizing toolkit for digital wellbeing design

Master Thesis
Design for Interaction
Chia-Ling Yeh

Graduation Project

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A sensitizing toolkit design

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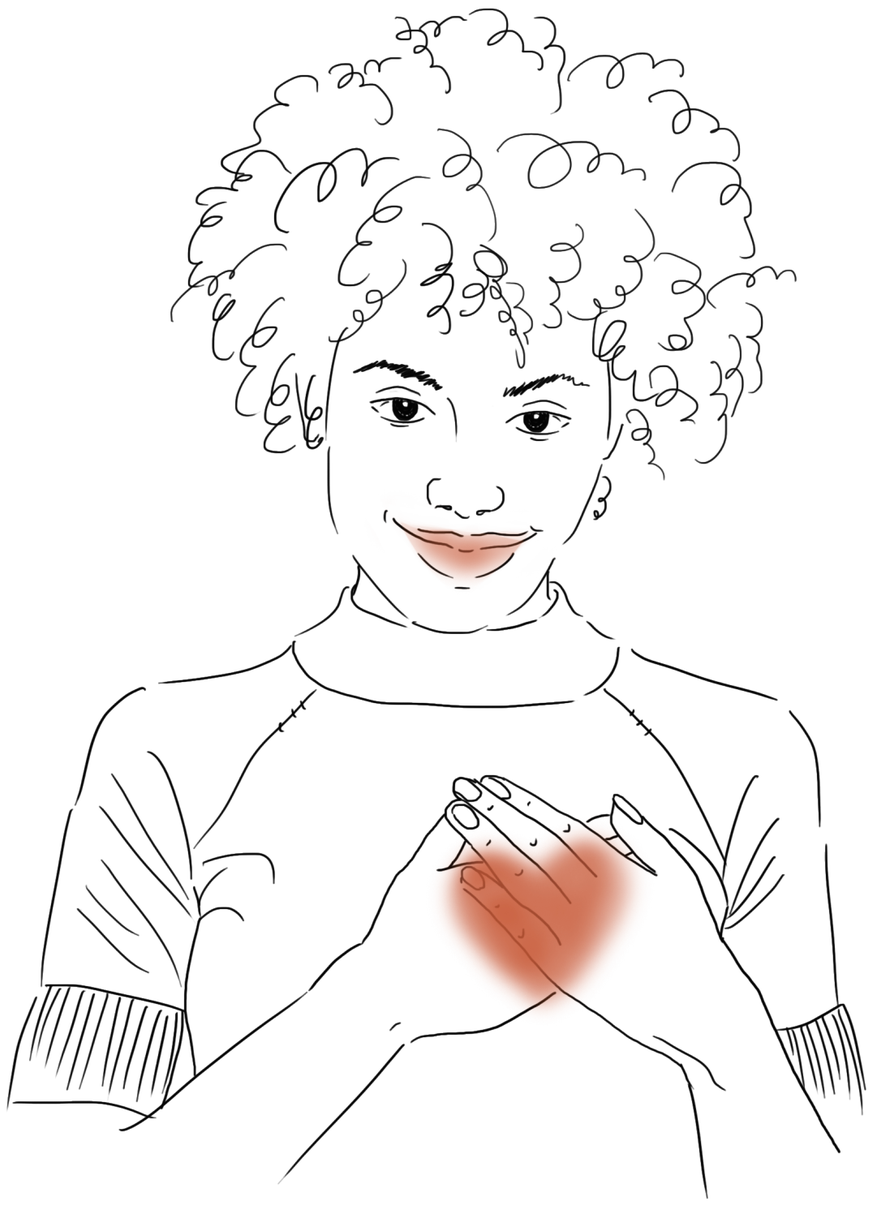

ACKNOWLEDGMENTS

This is the final project of my journey as a master design student, but I believe it will be the start point for my designer path. I am blessed to have this opportunity to work with my brilliant supervise team and conduct a project like this. I always want to invest in a project that is crucial to society, even though it might have limited business potential. I take this graduation project as the last chance since, after graduate, design project will primarily be led by the nose of business. Thus, I would like to thank everyone who took part in this journey by dreaming together with me. Without you, I would not be here.

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Thank you for listening to me when I bombard you with the project. Thank you for all the kindness and emotional supports. Thank you for participating in the research. Thank you all for just being there.

EXECUTIVE SUMMARY

AI for Wellbeing refers to the creation of an **AI system that should not only do no harm but also foster the wellbeing of people[4].** To develop a system that boosts wellbeing, establishing metrics that optimize for human values is the cornerstone. **Since wellbeing is notoriously hard to measure, we first need to explore what "wellbeing" means in a given context,** which is digital experience in this project, to create such metrics.

One possible way to understand the context is by including stakeholders and those most impacted in the design process[1]. Let them point out wellbeing factors in the context of digital experience, and designers can design based on them. However, wellbeing is difficult to make explicit because it is a vast concept with various aspects. Furthermore, digital wellbeing might not be a common topic to discuss. To enable users to share their opinion freely and meaningfully and help designers gather knowledge that informs their design issue to the next phase is the design opportunity for this project.

In this project, I developed a method for exploring the design space in the context of digital wellbeing. The method aimed to find ways to make the hidden wellbeing impacts of the digital platform – e.g., Facebook, Instagram, Google more explicit in the participatory design session and contribute knowledge of how to design a system that boosts user's wellbeing.

The outline of the report is structured in four chapters.

Chapter 1 – Understand

I present the concept of wellbeing through the lenses of ethical AI in literature, study the context of YouTube, and co-design.

Chapter 2 – Design

I provide an overview of the existing Wellbeing Card Deck and generate three card concepts toward designing a reflective tool that helps designers unveil users' wellbeing. End with concept evaluation, and I propose an initial version of the card deck.

In Chapter 3 – Analyze

I prepared two evaluation phases:

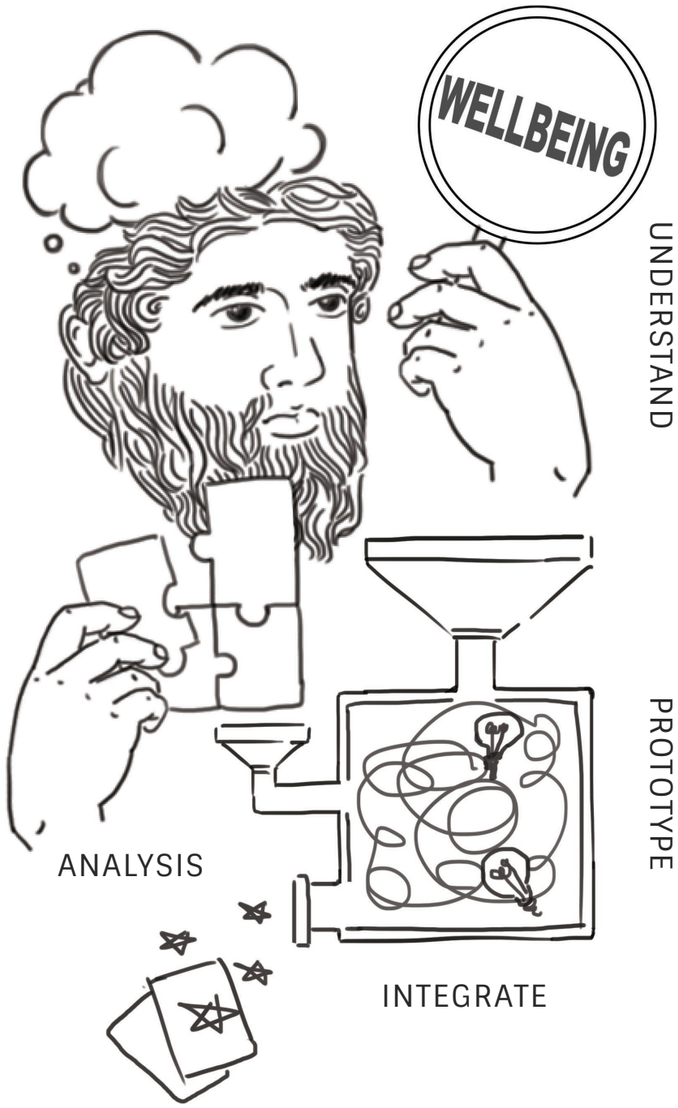
1. Interviews to evaluate the initial version of the card deck. Data collected from the interview and the findings are presented.
2. Modified the card deck into a toolkit based on the findings.
3. Host a workshop to evaluate the toolkit and present the findings.
4. Integrate findings into the final toolkit.

Chapter 4 – The AI for wellbeing toolkit

I present the toolkit developed in this research and conclude the research by reflecting on the process and provide future suggestions.

After looking at the general issue of measuring wellbeing regarding digital experience and design a method to map out the design space, **the next step is to make it more concrete and AI-related. I recommend building an AI Ideation Card Deck base on a guideline and examples provided in this research.** Future research can focus on exploring the ideation phase of the digial wellbeing domain and comprehensive the card deck.

This project has adopt the Research Design approach, meaning that design activities contribute to the generation of knowledge.



INTRODUCTION

The Netflix documentary, 'The Social Dilemma' [fig.1], has shown that ubiquitous digital platforms such as Facebook, YouTube, Amazon tend to use artificial intelligence to optimize the system for user engagement. The documentary provides an example of why metrics that optimize engagement, such as time-on-site, can be detrimental to our society. Overemphasizing current metrics resulting in manipulation, short-term concerns, and other inadvertent negative consequences [1].

OPTIMIZE FOR WELLBEING

Why do companies not optimize for wellbeing since it is in their best interest in the long-term to keep their users subscribed to their service? The answer is that it is easier and, in the short term, profitable to measure time on-site than wellbeing. In a 2016 TED talk, Tristan Harris provided an example: "Tinder(online dating app), where measuring the number of swipes left and right people did, which is how they measure success today, instead of measured the deep, romantic, fulfilling connections people created." Here, the existing metric, the number of swipes left and right, is easy to measure; conversely, the alternative, fulfilling romantic relationship, is not. However, the goal of a dating app should be to connect two individuals meaningfully; the number of swipes not equal to a positive relationship. This problem highlights the difficulty of translating human values into feasible metrics.

DEEPER QUESTION BEHIND ETHICAL AI

What if we want ethical AI, systems that can do good to people? What if we want AI value alignment [32], for instance, ensuring AI systems obey human value. According to the paper "Artificial Intelligence, Values, and Alignment.", behind each vision for ethically-aligned AI sits a deeper question. **How are we to decide which principles or objectives to encode in AI and who has the right to make these decisions?** [31]

INCLUDE STAKEHOLDERS TO REACH AI VALUE ALIGNMENT

One possible way of answering this is by including stakeholders and those most impacted in the design process[1] and combine quantitative measures with qualitative information. Columbia professor and New York Times Chief Data Scientist Chris Wiggins stated,

> *"Since we cannot know in advance every phenomenon users will experience, we cannot know in advance what metrics will quantify these phenomena" [2].*

In other words, we first need to understand the user's perspective of AI experience to be able to develop suitable metrics. Thus, **participatory design can be a way to translate human values into wellbeing metrics**

Figure 1, Social dilemma

that fit the context. In this project, we focus on wellbeing as our value.

PROJECT FOCUS

To operationalize wellbeing, we need to know which aspects of wellbeing require focus by giving users a voice to inform us of their perspectives.

This project will focus on developing a method that could operationalize well-being concept for participatory design. This methodology will be applied to sensitize end-users and allow them to share their wellbeing concern freely and meaningfully. Although the motivation of this project comes from the needs of AI for wellbeing, the project focuses on a problem that exists outside of AI alone, namely, sensitizing wellbeing. **Because to be able to design an AI for wellbeing system, we first need to enable people to talk about wellbeing.**

The scope includes a case study of YouTube and the iterative development of a sensitizing wellbeing toolkit. In the end, provide a possible way to contextualize wellbeing specific toward AI technologies for future research.

A design method that can sensitize participate with digital wellbeing in order to enable designer to explore its design space.

CASE STUDY : YOUTUBE

YouTube: A POWERFUL PLATFORM IMPACT MILLIONS OF USERS

YouTube is a leading online video-sharing platform own by Google. The system impacts millions of users. It allows users to upload, view, share, create playlists, report, like, comment, and subscribe to any accounts. The general characteristic and various functionalities provide the potential for this study.

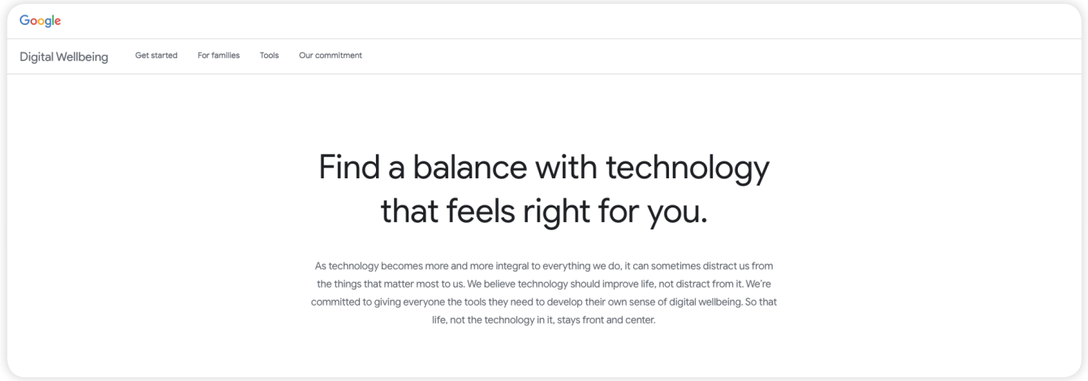


Figure 2. Wellbeing.google

GOOGLE FOCUS ON DIGITAL WELLBEING

Google states that they are a company that takes user wellbeing into account [3][fig.2]. It has a website: wellbeing. Google aims to help users find a balance with technology. Google even states that ensure all of our products support users' digital wellbeing is their ongoing commitment. They try to bring up users' awareness of overusing digital systems and gain back autonomy on their website. In the chapter about Designing for digital wellbeing, Google develops a wellbeing toolkit to help designers design a wellbeing-related product.

As their statement, "Find a balance with technology that feels right for you," their current toolkit focuses primarily on gain back autonomy. It discusses well-known technology drow backs such as destruction, weaken in-person relationships, sleep, and so on.

However, wellbeing factors are much more than autonomy and time of use. The topic is relatively limited for self-reflection compare to various factors of wellbeing. Furthermore, the issues they addressed are toward the non-maleficence AI instead of beneficence AI which should be the goal of design for wellbeing. I will further discuss this in chapter 1.

As I said in the previous chapter, we need to give users a voice to inform us of their wellbeing perspectives to know what metrics will quantify these phenomena. The Google toolkit is designed for designers. Since designers are a specific user group, the absence of other users might fixate the results with existing knowledge. Thus, designers should start with a fresh mind to understand system impact and affordance on wellbeing factors of end-user to design a better version of the system.

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01

UNDERSTAND DIGITAL WELLBEING AND THE CONTEXT

In this chapter, I review wellbeing in the context of AI, wellbeing in general, AI and digital systems, the YouTube system, and sensitizing material.

1.1 WELLBEING IN THE CONTEXT OF AI

All five principles construct the cornerstone for a "Good AI Society."

| Floridi and Luciano

AI is not a mature utility that requires regulation. It is a powerful force, a new form of intelligent agency that is already reshaping our lives, interactions, and environments[4]. In the Social dilemma [fig.1], we know that artificial intelligence(AI) can be a double-edged sword, especially when people overuse or misuse it. Hence, how to steer this force towards good use becomes the ultimate question.

In the paper a Unified Framework of Five Principles for AI in Society [4], Floridi and colleagues summarized four AI principles from six ethical AI publications and paired them with traditional bioethics principles. They add a fifth principle for network ethics reason and form a concrete moral AI network [fig.1-1].

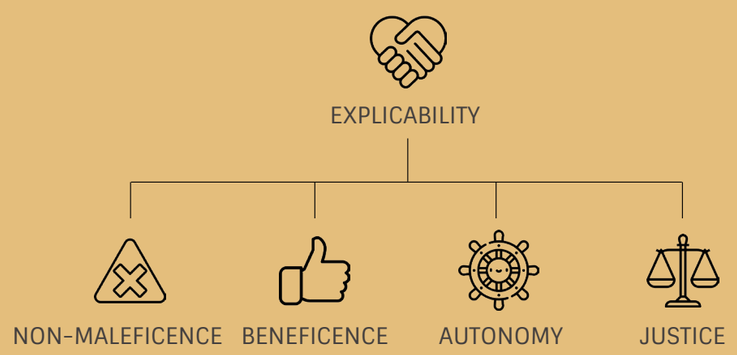


Figure 1-1. Five principles for Good AI Society

BENEFICENCE
Do Only Good

- Flourish wellbeing
- Sustain the planet
- For common good

The creation of AI technology should foster the wellbeing of people and the planet. It should be developed for the common good and empower a significant number of people.

NON-MALEFICENCE
Do No Harm

- Prevent privacy intrusion
- Caution AI capability
- Reinforce data security

The principle aims to prevent negative consequences from arising, either from the humans' intent or the unpredicted behavior of machines. Since AI can self-improve, its upper limits of capabilities should also be set.

AUTONOMY
Human has power to decide

Humans retain the power to decide which decisions to take instead of AI. In principle, human has the freedom of choice and overrides the decision made by AI.

JUSTICE
- Sharing benefits
- Preserving Solidarity

AI should empower as many people as possible and contribute to global justice[5]. Including AI for Fairness, the benefits of AI are sharable and prevent the creation of new harms. The accountability of the consequence should be clear.

EXPLICABILITY
Human AI partnership

It argues about the transparency, accountability, explicability, and intelligibility perspective of AI. This principle is the cornerstones of the other tenets. For example, to design for beneficence or non-maleficence AI, humans must first understand the bright and dark side that it is doing to society and why. For autonomy, which is to alter AI's decision, we need first to know what AI's judgment is.

This project will focus on the principles of beneficence. Since the negative side of the AI system is more well known than the positive side, we want to see where the possibilities are to foster wellbeing and redesign to enhance them. To further expand upon beneficence, wellbeing literature be reviewed.

1.2
LEARNING ABOUT WELLBEING

Wellbeing is a dynamic and fluid continuum influenced by many interconnected dimensions [6], and it dated back to the concept of Authentic Happiness [7]. In Authentic Happiness theory, happiness can be divide into three elements: positive emotion, engagement, and meaning. It attempts to explain happiness by rating people's life satisfaction. However, Seligman states," life satisfaction essentially measures cheerful mood, so it is not entitled to a central place in any theory that aims to be more than a happiology" [7] and introduces the concept of wellbeing into the field.

Seligman wrote that wellbeing is a construct, and happiness is one of the elements [7]. In other words, **wellbeing has several measurable elements, each contributing to it but not defining it.** Thus, to flourish wellbeing, enumerate elements that are in the construct is the focal point of positive psychology.

In this chapter, several theories construct by the elements that contribute to wellbeing are introduced.

" Wellbeing has several measurable elements, each contributing to wellbeing, but none defining wellbeing"

| Martin Seligman

1.2.1 PREMA

Dr. Seligman argues that positive psychology was not only about happiness and introduced the PERMA theory [7]. **This wellbeing theory has five building blocks that enable flourishing [33]** – Positive Emotion, Engagement, Relationships, Meaning, Accomplishment (hence PERMA). Each element contributes independently to wellbeing.

REMA theory cards are present in **orange color** *in the toolkit*

POSITIVE EMOTION
We feel pleasant feelings such as pleasure, rapture, ecstasy, warmth, comfort, etc. In this case, happiness and life satisfaction become one of the measurable factors under positive emotion.

ENGAGEMENT
The flow experience that people merge with the object, loss self-consciousness and sense of time during an absorbing activity.

RELATIONSHIP
It is the meaningful and healthy connections with people around us. The pursue of positive relationships can benefit the other three elements.

MEANING
It is the sense of belonging and serving something that you believe is bigger than the self—for instance, pursuing worthwhile achievements such as ethical behavior and spirituality.

ACCOMPLISHMENT
People pursuit success, achievement and do it for their own sake. Including wealth, personal growth, and academic susses, etc.

1.2.2 HAPPINESS ENHANCING ACTIVITIES

In Sonja Lyubomirsky's book 'The How of Happiness, she identifies three fundamental determinants of happiness: the genetic set point, life circumstances, and intentional activity [9].

Sonja wrote that a genetic set point determines 50% of a person's happiness; for example, some people are born to be more joyful than others. 10% determined by life circumstances, for instance, the family wealth. The rest, 40%, is determined by people's daily actions [fig.1-2].

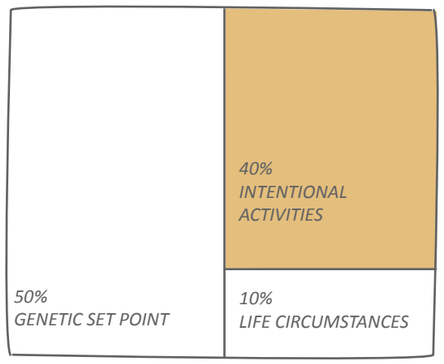


Figure 1-2. A Tree map displaying the three components of happiness from 'The How of Happiness.'

Sonja Lyubomirsky argues that we can foster our happiness by engaging in 'intentional activities.' To provide practical guidance, she introduces concrete happiness-increasing activities[9] and how they can be utilized in the human-computer interaction(HCI) domain. Figure 1-3 shows a multi-stage framework for product interaction that triggers happiness-increasing activities than fostered wellbeing [10].

Figure 1-3. The multi-stage framework for sustained wellbeing promoted by technology[10]

HAPPINESS ENHANCING ACTIVITIES theory cards are present in **blue color** *in the toolkit*

1.2.3 FLOW

Introduced by Csikszentmihalyi and colleagues in 1990, the flow theory claim that people are at the highest levels of wellbeing when they in the flow state [8]. When people experiencing the flow state means that they are fully engaging in the current activity. Joining a movement that matches one's interests and requires challenges that one's can just overcome can deliberately achieve it. As well as the progress shows immediate feedback and with a visible possible goal [8].

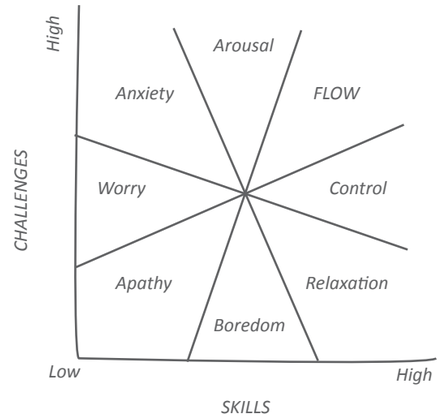


Figure 1-4. Flow state: perceived challenges and skills are above average levels[8].

1.2.4 SELF-DETERMINATION

Three universal psychological needs: **autonomy, competence, and relatedness drive intrinsic and extrinsic motivations of human beings** that support the natural propensities for growth, social development and, ultimately, foster our wellbeing [14].

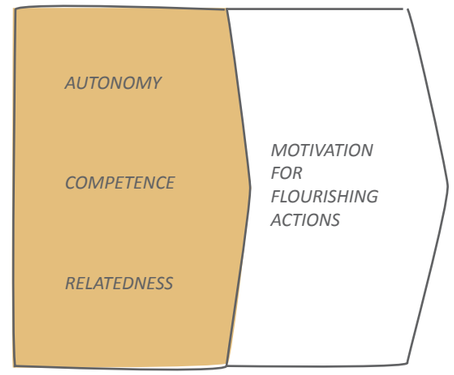


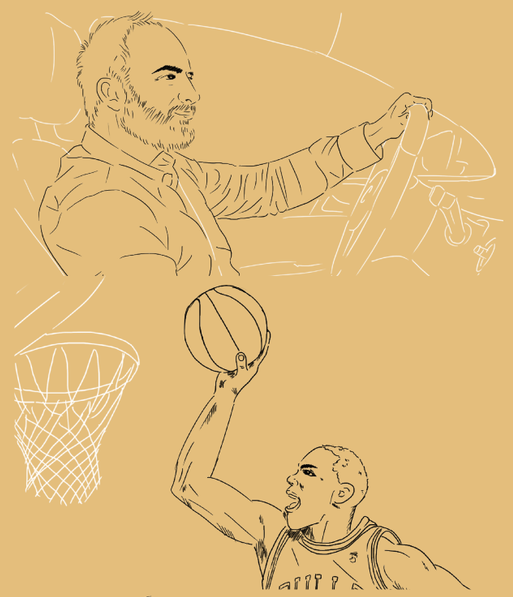
Figure 1-5. Three universal psychological needs drive motivations that support our sense of growth and, ultimately, foster our wellbeing.

Intrinsic motivation

It is a natural tendency towards seeking challenges, mastery, learning, and exploration. It is essential for cognition and social development and represents the primary source of enjoyment and vitality in a lifetime [14][15].

Extrinsic motivation

It refers to actions that are conducted due to outsources value or regulations. The motivation can range from an unwillingness to passive compliance to active personal commitment. These different mindsets reflect the differing degrees to which the value and principle of the requested behavior have been internalized [14].



AUTONOMY
The need for self-determination, have a sense of choice and be independent. One evaluates oneself by personal standards such as value and goal instead of seeking social approval.

COMPETENCE
People need to feel capable and practical, including having enough skills and knowledge to conduct the action and personal value, support the move.

RELATEDNESS
Humans need to connect to others, feeling a sense of belongingness, closeness, and intimacy.

Self-determination theory is a well-known theory that has been applied in many domains. In the AI domain, the METUX model diagram [16] is the usage. The METUX model diagram [fig.1-6] shows the basic psychological needs mediate positive user experience outcomes such as engagement, motivation. In this case, **designers design to support these basic needs through the features and contents of their systems to improve wellbeing [16]**.

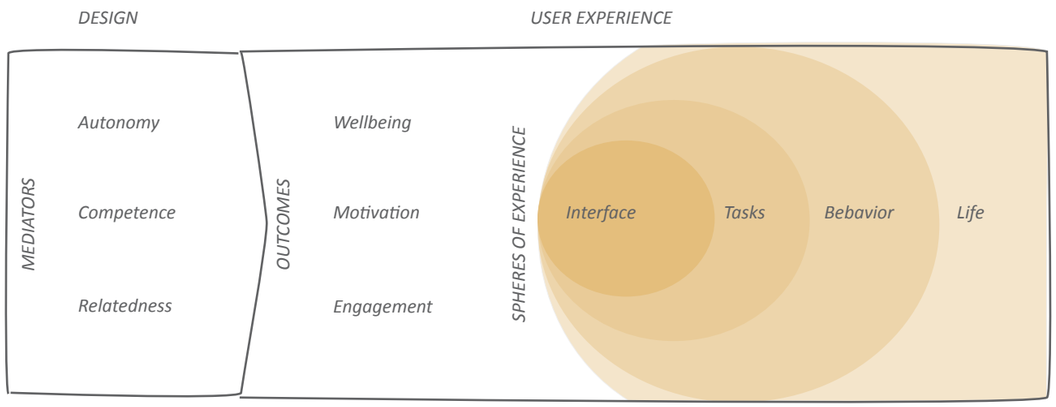


Figure 1-6. METUX model diagram

1.2.5 SIX DIMENSIONS OF PSYCHOLOGICAL WELLBEING

In 1989, Carol Ryff introduced a multidimensional model which consists of six dimensions. Six dimensions: personal growth, self-acceptance, autonomy, positive relations, environmental mastery, purpose in life. They represent the **core of positive psychological functioning in human beings** [13]. Elements such as autonomy, positive relations, purpose in life are overlapping with PREMA and Self-determination theory.

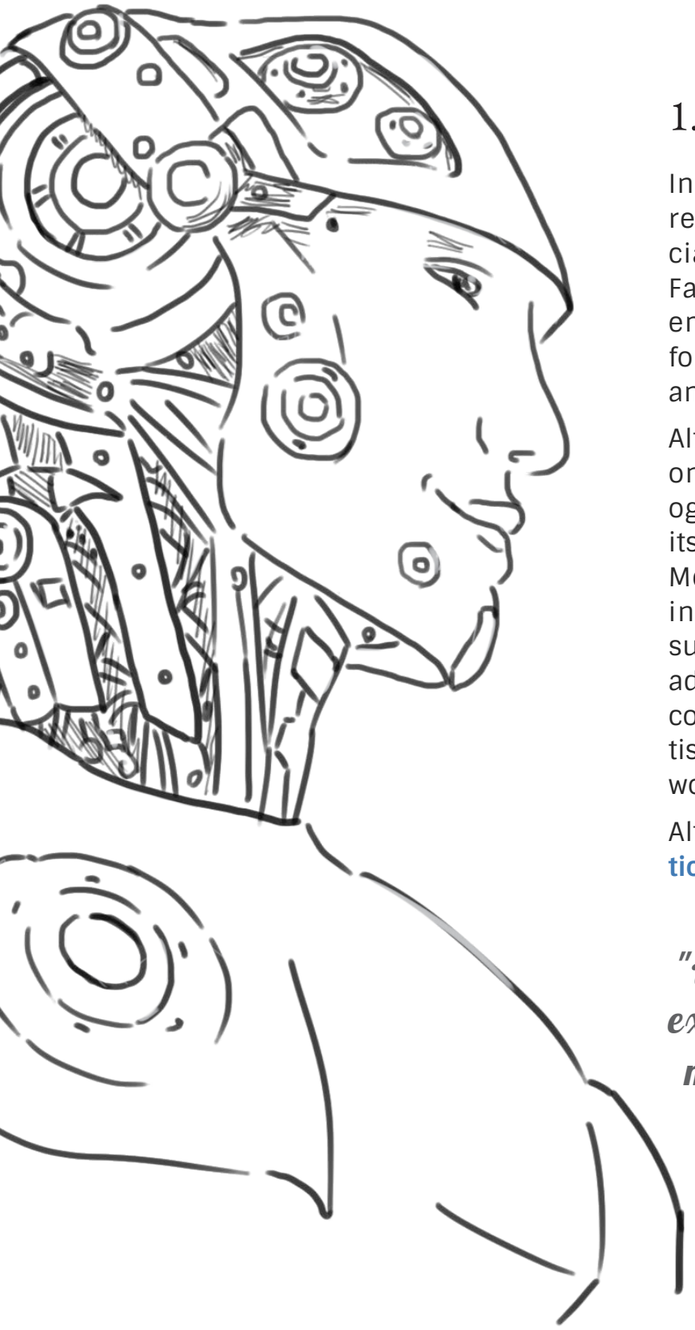
Self-determination theory cards are present in color pink in the toolkit.
Six dimensions of psychological wellbeing theory cards are present in color yellow in the toolkit.

PERSONAL GROWTH
An improvement in behavior and/or ability over time. For instance, self-realization, ongoing personal development, and fulfillment.

ENVIRONMENTAL MASTERY
An ability to seek contexts in line with personal values and needs and make good use of external opportunities.

SELF-ACCEPTANCE
Positive attitude one holds toward oneself and accept good as well as bad qualities of oneself.

1.3 LEARNING ABOUT AI AND DIGITAL PLATFORMS



1.3.1 Definition of AI

In current society, companies widely recognize the latent power of artificial intelligence (AI). Companies like Facebook, Google build an empire by embodying it into their digital platforms. It successfully changes our lives and our business model profoundly.

Although society now expects AI to be one of the most disruptive technologies, the term artificial intelligence itself has a much longer history. John McCarthy first introduced it in 1956 in his academic conference on the subject [17]. This technology has been advanced in algorithms, data volumes, computing power, and integrating statistical analysis into understanding the world at large.

Although there is **no universal definition for the term AI, it generally means:**

"A computerized system that exhibits behavior that is commonly thought of as requiring intelligence" [18].

1.3.2 Three AI categories

Since various technologies crowd the AI landscape, how can we categorize them? The most common way is to distinguish them based on their ability to mimic human behavior and intelligence.

By applying this filter, we can categorize all AI into three types: Artificial Narrow Intelligence (ANI), Artificial General Intelligence (AGI), and Artificial Super Intelligence (ASI) [19]. In figure 1-7 has a detailed description for each type. At the current stage, all existing AI belongs to ANI.

1.3.3 AI subfields

There are many subfields in AI, but which has the most use in the industry? A survey conducted by Microsoft could give us a pick on how different technologies are being used now in the AI industry [fig 1-8].

Due to the broad-scale usability, **machine learning is commonly embraced in digital platforms** and makes value in various use-cases. One of the most famous applications is the recommendation system.

80% of content watched on Netflix, and 60% of videos on YouTube came from recommendations[20].

ANI **Artificial Narrow Intelligence**
AI can mimic human intelligence and/or behaviour in some very narrowly defined contexts.

AGI **Artificial General Intelligence**
AI can mirror human intelligence and/or behaviour indististinguishablely from human. Also known as Strong AI.

ASI **Artificial Super Intelligence**
AI doesn't mirror human intelligence and/or behaviour. It exceeds capabilities to operate at a genius level.

Figure 1-7 : Three types of AI [19].

Which of the following technologies have you found to be most useful in your company's development of AI?
Machine Learning and smart robotics found to be the most useful.

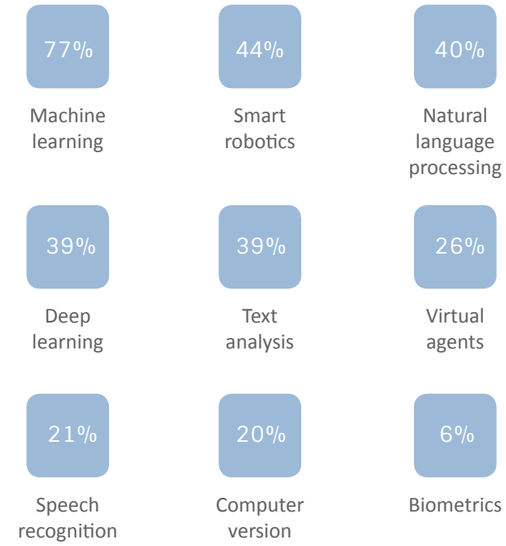


Figure 1-8. How technologies are used(Source: Microsoft "Artificial Intelligence in Europe How 277 Major Companies Benefit from AI Sweden Outlook for 2019 and Beyond")

1.3.4 The Role of AI In Digital Platform

When we talk about **business-to-consumer (B2C), business-to-business (B2B), customer-to-customer (C2C) platforms** there are various roles that AI can perform. For example, it supports anticipating a user's needs, giving the user a complete experience, and satisfy the user's needs in a timely fashion. To better anticipate user's needs, AI builds a persona for every user by gathering data around the person.

This kind of digital platform allows companies to delight their customers by changing their customer experience. In other words, users' experience matters for designing digital platforms.

This project proposes a new approach for exploring design space for digital platforms that fosters users' on-site experience.

1.3.4 An Approach of Recommender System Improving Wellbeing

Since one of the most famous applications of machine learning in digital systems is the recommender system, exploring its possibility for improving health and subjective wellbeing can be valuable.

While the field of recommender systems (RSs) has provided numerous tools to support user decision-making by identifying personalized and relevant content [35], RSs that provide personalized suggestions to boost wellbeing have not attracted a considerable research interest yet [34].

In paper "*Aligning Daily Activities with Personality: Towards A Recommender System for Improving Wellbeing*," the authors propose a novel approach for deriving personalized activity recommendations to improve subjective wellbeing by maximizing the congruence between activities and personality traits [34]. They argue the personality traits can be drivers of subjective wellbeing at an individual level and use as a proxy to user profiles to overcome the cold-start problem in RSs. They build a machine learning algorithm that predicts users' subjective wellbeing based on the congruence between their reported Big-Five personality traits and distribution of their activities. They assume that the higher recommended activities related to personal traits, the better for user's wellbeing.

To sum up, one way of establishing wellbeing-supported RS is aim to suggest activity distributions that improve the personality-activities alignment [34]. This approach triggers my interest about **is this the only way to optimize for wellbeing? If there is more, where and how could we locate the design opportunities?**

Term dictionary

Digital platform: Systems and interfaces that support commercial network or exchanges of information, goods, services. Categories include: social media platforms, knowledge platformas, media sharing platforms, and service-oriented platforms.

Machine Learning (ML): Pattern identification and analysis; machines can improve with experience from provided data sets [21].

Deep Learning (DL): Composed of multi-layer neural networks which enable machines to learn and make decisions on their own [21].

Natural Language Processing (NLP): Process that enables computers to extract data from human language and make decisions based on that information [21].

Computer Vision (CV): The process by which a computer gains information and understanding from a series of images or videos [21].

Cold-start problem: A situation of having sparse historical data or not having enough information about new users [34].

1.3.6 YOUTUBE AI SYSTEMS

YouTube is a complicated website embodied with multiple AI features. It is suitable for the case study of this project because the digital experiences on YouTube influence millions of people.

Owning to this project is inspired by the idea of AI for wellbeing, I will briefly introduce three major branches of artificial intelligence that YouTube end-user encounter are:

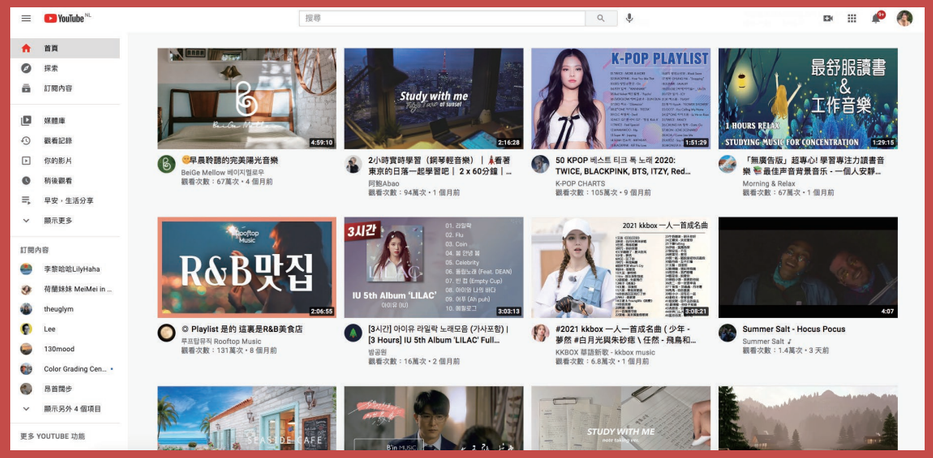


Figure 1-10. YouTube homepage filled with recommended videos: a recommendation system application example.

RECOMMENDATION SYSTEM

The system recommends personalized sets of videos to users based on their activity on the site. The goal aims to help users find high-quality videos relevant to their interests [22]. The system's design, including the architecture, the formula, and the user interface.

The architecture of the recommendation system has two primary filters: one generates candidate videos, and one ranks them. Influential factors include the user's past watching history-what you watch and how long you watch it, searching history, the channel's number of viewers, and the browsing history of similar users [fig.1-9].

This system is present in several user interfaces; for example, the homepage with all recommended videos is displayed with a thumbnail under the user's current watched video.

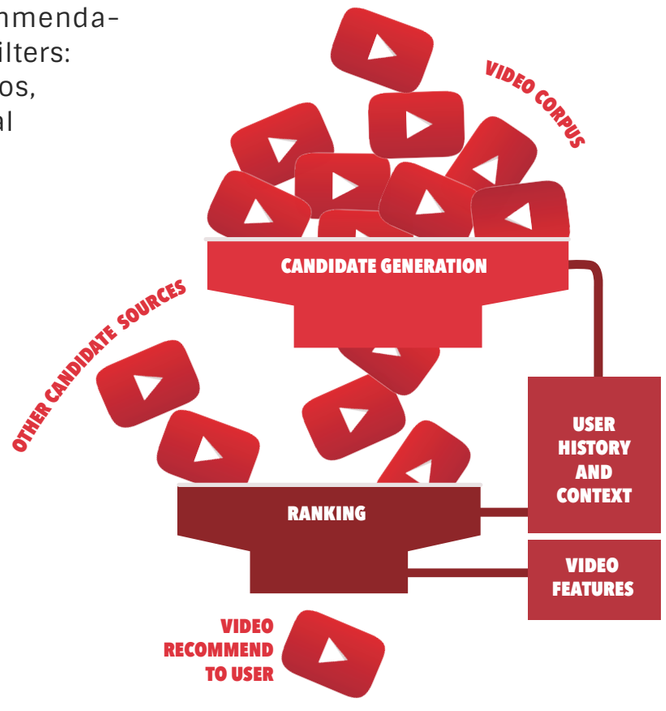


Figure 1-9. The Illastration shows YouTube recommendation system architecture.

NATURAL LANGUAGE PROCESSIN

Natural Language Processing(NLP) aims to deal with the interaction between humans and computers using the natural language by implanting machine learning to derive meaning from human languages. YouTube utilizes it mainly to do the audio-to-text conversion. For instance, voice input of search function and generation of auto subtitle.

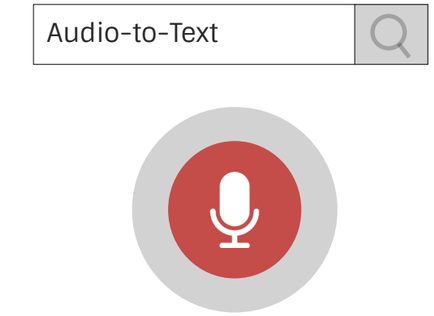
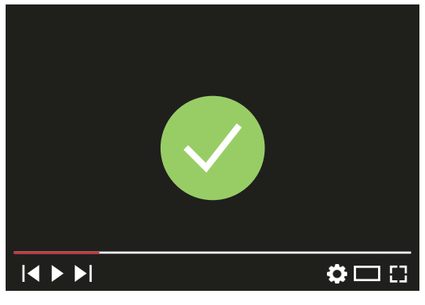


IMAGE RECOGNITION SYSTEM

Image recognition is a branch of Computer Vision and based on Deep Learning. It is a technology that detects and analyses images to identify places, people, objects, etc., and draws certain conclusions from them by analyzing them. On YouTube, every video being scan before uploaded to avoided harmful or offensive content. Furthermore, YouTube provides notifications or alarms underneath the video base on the content of the video.



1.4
CO-DESIGN AND SENSITIZING MATERIAL

WHY AND HOW

To let the AI system optimize for wellbeing instead of time-on-site, first, we need to know how the system affects wellbeing. One way to do so is through participatory design research: Talk to people about their interactions with AI-driven platforms. However, wellbeing is a relatively vague and enormous domain that end-users rarely touched. Furthermore, people are usually not directly aware of their everyday experiences. Behavioral Economics suggests that people have biases in understanding the link between behaviours and their wellbeing [34]. To have an informative conversation with them, designers must sensitize end-users to co-design with them [fig.1-11][23].

Generative techniques are needed to reach deeper levels of knowledge. A proper sensitized tool can help designers gain insight into real users' deeper emotions and needs—dreams, fears, aspirations, frustration, and ideas. Users' latent and tacit knowledge comes floating to the surface [fig.1-12].

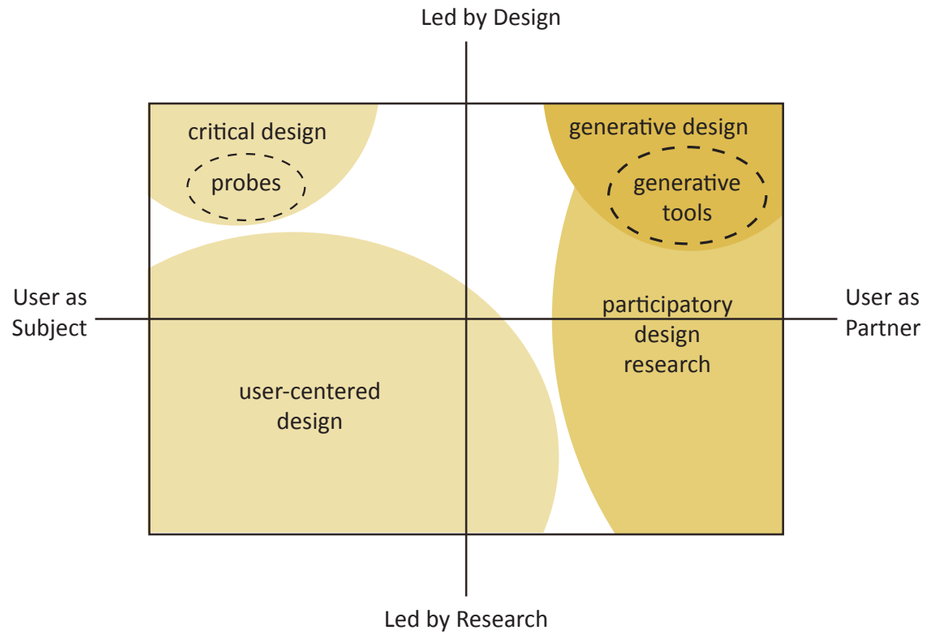


Figure 1-11. The map of design research, showing different approaches along two axes[18].

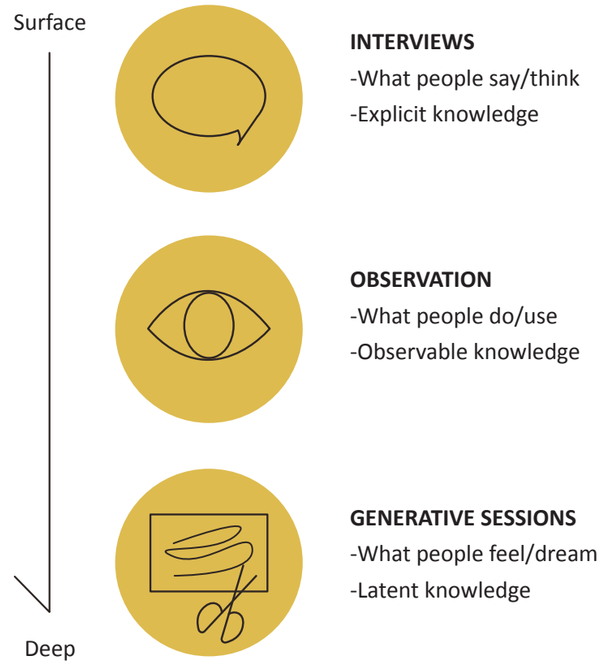


Figure 1-12. Layer of knowledge[19]

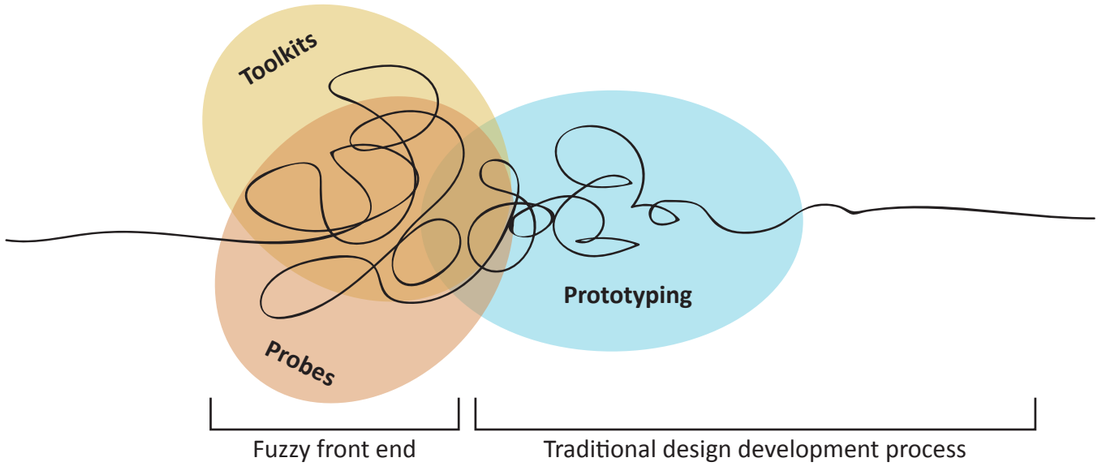


Figure 1-13. Three approaches to "making" are located along design process timeline[23].

WHY CARD DECK TOOLKIT

There are three approaches for a generating session in co-design: Probes, Toolkit, and Prototype.

In this research, the goal of the material is to immerse participants and help them convert which wellbeing aspect is affected by AI features. Thus, the toolkit is the most suitable method for the following reseasons.

1. The tool is for the very front end of the design process, which prototyping can be eliminated [fig.1-13].

2. The purpose of the toolkit match this study. It is to give non-designers a means to participate as codesigners in the design process [23].

3. Probes let users react to design suggestions to inspire designers, which is helpful if design suggestions are already existed [23].

Furthermore, both designer and participants need to comprehend wellbeing factors in a short period of session time, and it should be able to map with the feature. The tool should manageable, inspiring, sharable, and easy to carry from session to session. To sum up, a card deck is better to serve as sensitive material due to its ability to bring knowledge, mobility, and sharability.

KEY TAKEAWAYS FROM CHAPTER 01

1. AI for wellbeing indicates the beneficence principle of ethical AI, which means AI should flourish human wellbeing. It should be developed for the common good and empower a significant number of people. This principle is the focus of the project.
2. Wellbeing has several measurable elements, each contributing to it but not defining it. To construct a basic understanding of wellbeing, elements from five wellbeing theories are extracted.
   - Theories include:
   - Prema
   - Happiness enhancing activities
   - Flow
   - Self-determination
   - Six dimensions of psychological wellbeing
3. Companies embody AI systems in digital platforms to delight their customers by changing their customer experience.
4. To let the AI system optimize for wellbeing instead of time-on-site, first, we need to know how the system affects wellbeing. One way to do so is through participatory design research: Talk to people about their interactions with AI-driven platforms.
5. A proper sensitized tool can help designers gain insight about users' deeper emotions and needs—dreams, fears, aspirations, frustration, and ideas.

Photo by Jeff Sheldon on Unsplash

02

DESIGN A WELLBEING CARD DECK

In this chapter talks about:

1. Existing wellbeing cards
2. Wellbeing card concepts
3. How I evaluated concepts
4. Results
5. First design iteration

2.1 DESIGN SPACE OF WELLBEING CARDS

2.1.1 EXISTING CARD DECK REVIEW

Positive Computing studio [20] introduces a wellbeing card set which consists of 3 Basic Psychological Needs from self-determination theory [14] [fig.2-1] and six cards from the METUX model diagram, Spheres of Technology Experience [16].

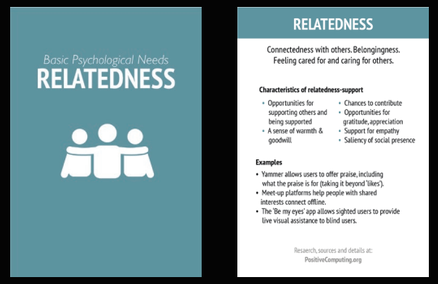


Figure 2-1. Wellbeing cards from Positive Computing Studio.

Figure 2-2. A Wellbeing Guide by Croco

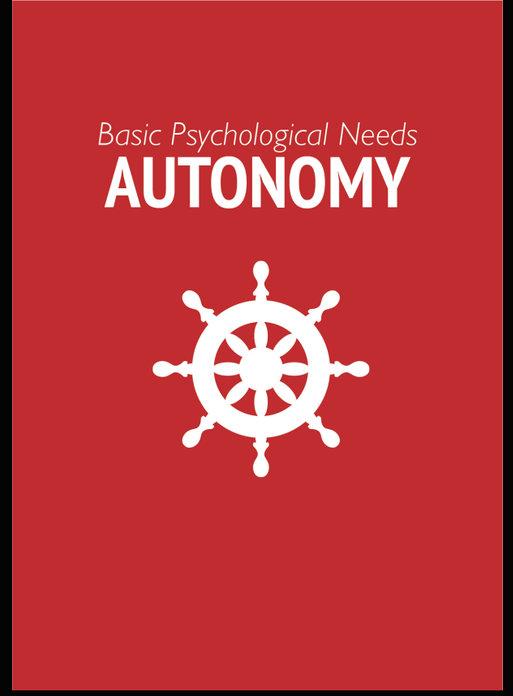
Instead of a sensitizing tool for participants, this card deck is designed for designers and aims to serve as a reference, brainstorming, ideation, troubleshooting tool. Moreover, the factors in it are too limited for participants to elaborate on their wellbeing. As a result, **the design of the card deck is not sufficient for the goals of this study but can serve as an inspiration.**

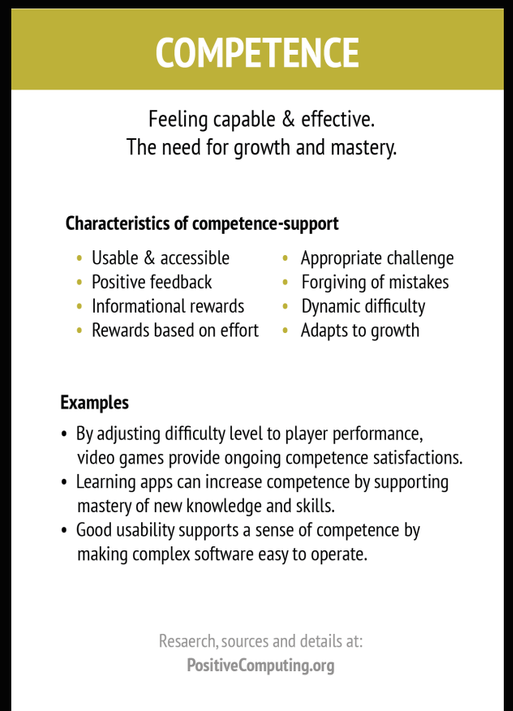
Besides the one from positive computing, many designers are creating wellbeing cards too. Picture 2-2 is a Wellbeing Guide design by Croco. The designer gathers some wellbeing aspects that everyone can relate to them. However, like most of the design online, these five image graphics **indicate elements that designer think is important but not based on research which makes them random.**
Since so many people are doing similar things, it must have value. So, why do we not design it in the right way?

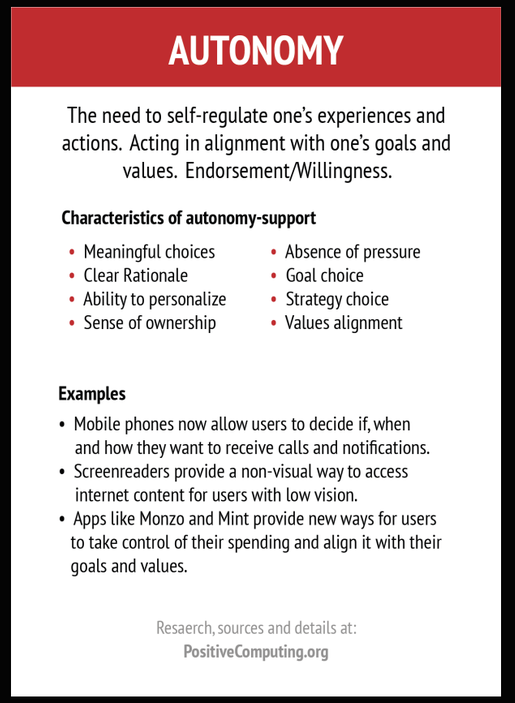
2.1.2 BRAINSTORMING

The design space for a problem is a set of decisions about a designed artifact and alternatives for these decisions [26]. Listing design information as design spaces created a skeleton for systematically considering design alternatives, such as recognizing interactions and conflict among decisions and comparing designs.

In the deep dive graphic [fig.2-3], four main design spaces, competence, hedonic, usability, the context of use, and several sub-design spaces, design alternatives under them.







Deep Dive

FOUR DESIGN SPACES FOR CARD

Here I brainstorm possible design alternatives base on the four following domains. Map out the relationship and conflict between different options to generate the design concept of the card [fig.15].

1 Competence Of The Card

It is focusing on the purpose and abilities of the card deck. Since users are experts of their own experience [27], when they are aware and conscious about the effect of digital features and wellbeing knowledge, they can better express their needs and pain points toward the researchers. **To excite users' potential in order to let the researchers gain sufficient insight, researchers must give users appropriate tools for expressing themselves.** The Wellbeing Card Deck aims to sensitize participants to reflect on their daily digital use based on wellbeing factors, trigger their empathy toward the topic, and enable them to discuss and identify abstract wellbeing concepts [fig.14]. With the cards' help, the researcher gained the tacit or latent level of knowledge and benefited from the insights.

2 Hedonic Of The Card

In the hedonic design space, attractiveness, texture, and card size were discussed. Since it has to be attractive to both the user and the designer, the graphic style, color tone, and font are essential factors.

3 Usability Of The Card

In the usability session, there are two sub-design spaces, understandability and capability, that need to be discussed. In the understandability, to let the **user and researcher who is not familiar with the wellbeing concept can progress the design research smoothly**, the 3,30,300 principle is followed to design the card(explanation of 3,30,300 principle). For the capability, context-specific and easy-to-read are the requirements for the content of the card.

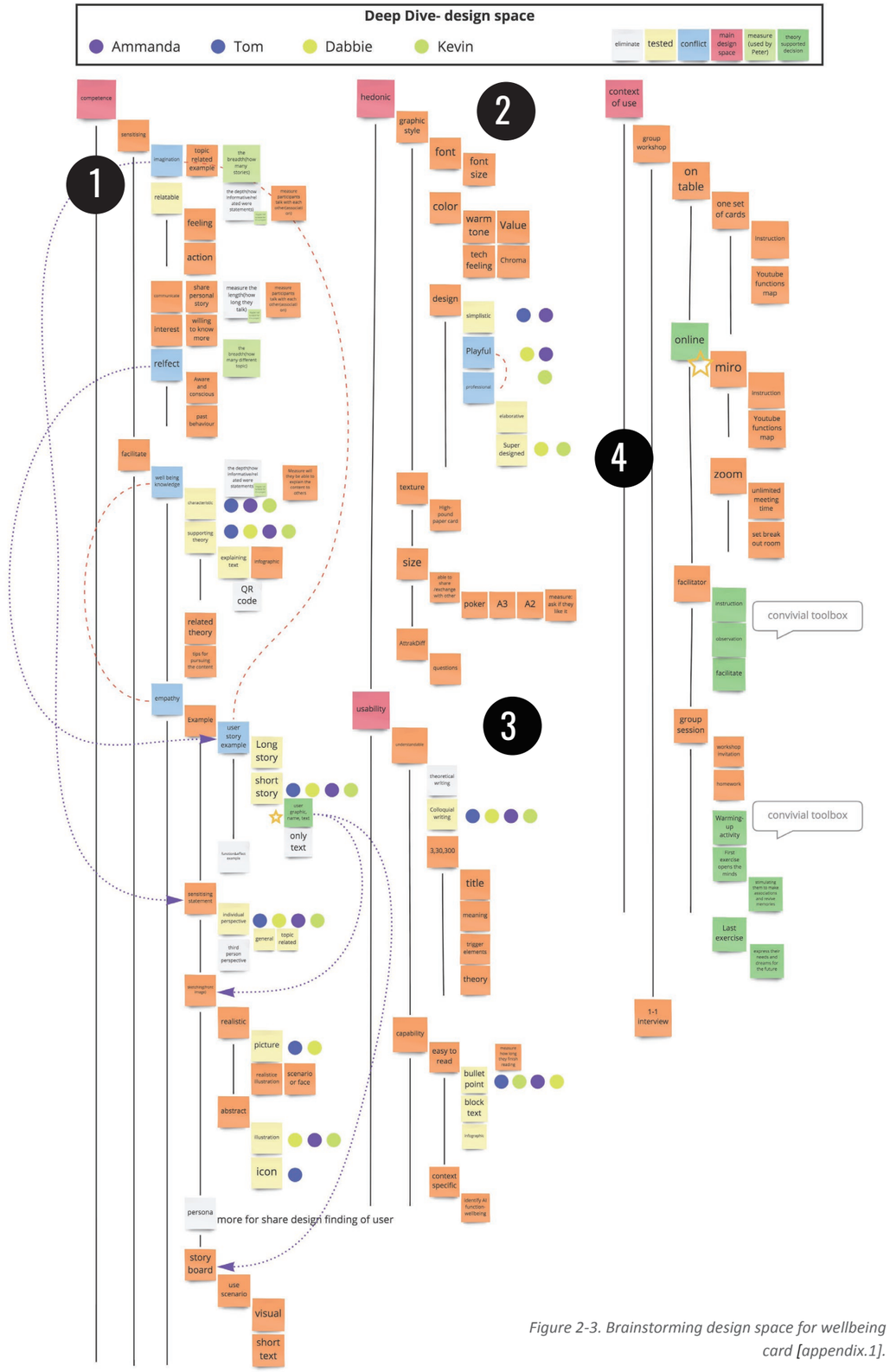


Figure 2-3. Brainstorming design space for wellbeing card [appendix.1].

4 Contect Of Use Of The Card

In the context of use design space, the used scenario is investigated, including used in the digital or physical environment. Due to covid-19 pandemic, hosting a group session or even an interview in person is tricky. Furthermore, according to paper creative tools for context mapping - tuning the tools [28], digital media perform equally promising in the creative session besides the traditional paper tools. Thus, this research integrated offline and online media as a possible design space.

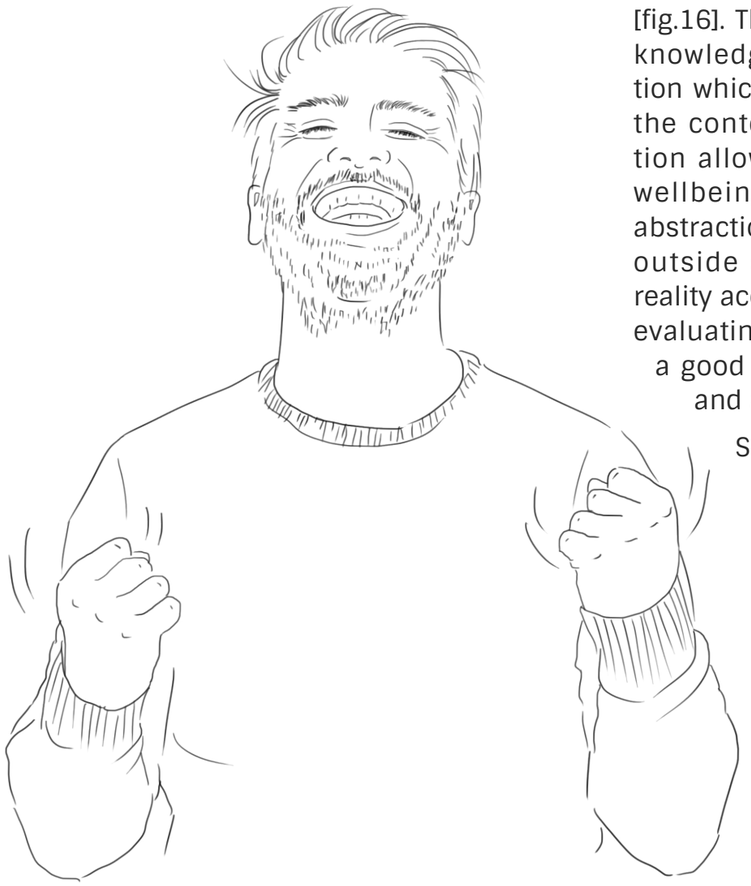
Based on these four main design spaces, I selected different characteristics to design three versions of the card for further analysis to generate the Wellbeing Card Deck's initial version. In the next chapter, Three draft concept comparison, I discussed the reason behind the selection of each alternative.

The 3-30-300 rule

The 3-30-300 rule introduces 3 level of communication. First, 3 seconds: An author has 3 seconds to attract people's attention and grasp the topic of the context. Hence, the title should attract attention. Second, 30 seconds: In 30 seconds, convert the overall message. This means the key takeaway should be clear and right away. Third, 300 seconds for the reader to finish reading detailed information. This priciple is frequently used in informative poster design.

2.2
THREE CONCEPTS COMPARISONS

With the knowledge from the previous chapter (design space), to let the card fulfill its competence, it is clear that the main design elements of the card came from the first design space (competence design space). The competence design space defines the card should contain four essential abilities, sensitizing imagination, sensitizing reflection, facilitate wellbeing knowledge, and facilitate empathy. Those abilities represent by a front graphic(trigger empathy), wellbeing theory and concept explanation(foster knowledge), and trigger elements(enable imagination and reflection).



Interesting design alternatives for text content appear at the difference in abstraction and the knowledge level [fig.16]. The card which contains more knowledge has a concrete description which decreases the openness of the content. The adequate information allows users to understand the wellbeing content better. However, abstraction will enable people to step outside of reality and re-picturing reality according to the imagination. By evaluating three designs, we can find a good balance between knowledge and abstraction.

Since the graphic's primary purpose is to trigger empathy towards the topic, we tested the different abstraction and humanity levels [fig.16]. Accordingly, three versions were formulated (Design A, B, C) [appendix.2].

Visual Summary of Design Decision For Each Concept

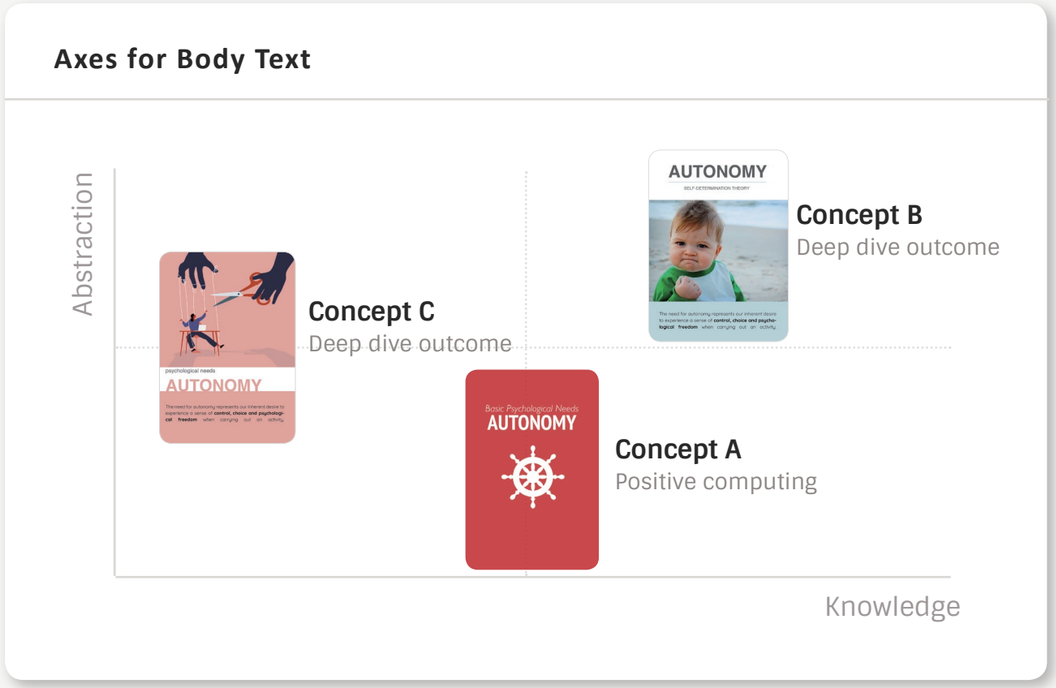


Figure 2-4. The map of 3 concepts of card, showing different approaches along two axes.

Basic Psychological Needs

AUTONOMY

AUTONOMY

The need to self-regulate one's experiences and actions. Acting in alignment with one's goals and values. Endorsement/Willingness.

Characteristics of autonomy-support

- Meaningful choices
- Clear Rationale
- Ability to personalize
- Sense of ownership
- Absence of pressure
- Goal choice
- Strategy choice
- Values alignment

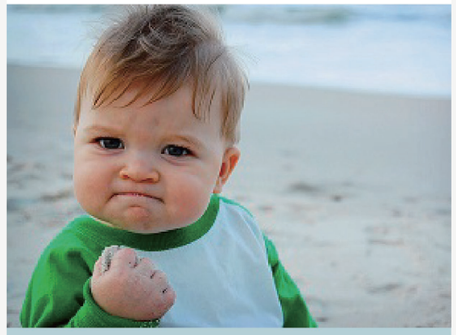
Examples

- Mobile phones now allow users to decide if, when and how they want to receive calls and notifications.
- Screenreaders provide a non-visual way to access internet content for users with low vision.
- Apps like Monzo and Mint provide new ways for users to take control of their spending and align it with their goals and values.

Resaerch, sources and details at:
PositiveComputing.org

AUTONOMY

SELF-DETERMINATION THEORY



The need for autonomy represents our inherent desire to experience a sense of **control, choice and psychological freedom** when carrying out an activity.

SELF-DETERMINATION THEORY

Self-determination theory is concerned with the intrinsic and extrinsic motivations of human beings, and the universal psychological needs associated with these

AUTONOMY COMPETENCE RELATEDNESS

Characteristics of autonomy

- Free will
- Fatalism
- In control
- Determinism
- Agency
- Sense of choice

Sensitizing statements

- I feel this feature keeps me from stop-using the app.
- I feel this feature ensures information aligns with my goals and values.
- This feature makes me feel obligated to...
- I will postpone my daily routine unconsciously when seeing this feature.

2.2.1 CONCEPT A

This set of cards [appendix.2] is extracted from the Wellbeing Card Deck design by the Positive Computing studio [25]. Their initial card deck included three cards describing the theory of self-determination and six cards explaining the field of technical experience. Since this card deck is designed for designers, the text content of "design A" contains high-level design knowledge such as feature examples and a low level of wellbeing knowledge written in a formal form. The cards have specific functional examples to sensitize readers. In the axes graphic of text, "design A" belongs to the non-abstraction and middle-knowledge area.

The graphic content of "design A" is an abstract icon. As a result, on the axes graphic [fig.2-4] "design A" is the most abstract and has less humanity.

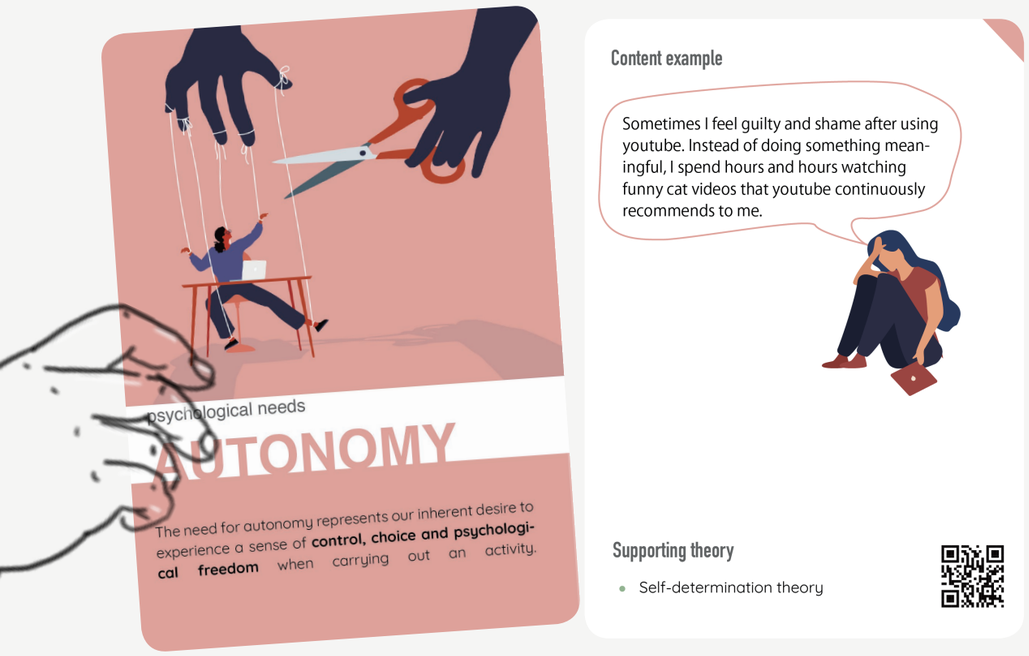
Most abstract illustration
Product-oriented examples
Design language
Academy writing

2.2.2 CONCEPT B

By contrast with "design A," "design B" is written in a conversational style [appendix.2]. In this design, the knowledge level is the highest. It included theory explanation, content introduction, and characteristics of the content written in bullet points. For triggering elements, instead of concrete examples, open-ended statements are farmed from an individual perspective. As a result, in the axes, graphic [fig.2-4] of text, "design B" belongs to the first quadrant, the most abstract, and the highest knowledgeable area.

For the graphic content of "design B," a realistic photo(with a human in it) is chosen; thus, the human level of "design B" is the highest, and the abstraction level is the lowest.

Realistic image with huam face
User-oriented examples
Colloquial style
Theory knowledge



2.2.3 CONCEPT C

Finally, in "design C," the knowledge level is relatively low since it only contains a card's content description [appendix.2]. The wellbeing theory is hidden in the QR code. Furthermore, using a concrete user example as a triggering component makes it lower abstraction than "design A." To sum up, in the axis graphic of text, "design C" locates in the middle abstract and the lowest knowledge level part.

The faceless illustration of a human and scene is used for the front image of "design C." In this case, the humanity and abstraction of "design C" are higher than "design A" but lower than "design B."

Human and scenes illustration
Concrete example
Colloquial style
Hidden theory knowledge

2.3 CONCEPTS EVALUATION

In order **to generate the final concept**, semi-structured interviews were conducted. Four participants were interviewed from the representative group, active YouTube users.

The main research question for this chapter is:

Which design alternative users feel that they can better help users reflect on their experience toward the topic and express their wellbeing concerns to the designer?

Sub-research questions:

- Which elements trigger users' reflection toward AI for wellbeing?
- Which element help users to express their wellbeing concern?
- Which element support empathizes or vibes with the concept?

2.3.1 Set-Up and Process

Interview with mapping process.

First, questions toward the cards. This session was intended better to understand the users' opinions towards each concept and observe their interaction with the cards.

In the second session, users mapped out their YouTube journey and identified their up-and-down emotion points with the cards. Users were asked to recall how they use YouTube last night and draw or write their interaction on the site from opening YouTube to close it.

2.4 RESULT AND FINDING

Abstract but Personal Narrative Trigger Reflection

Through observation, I found that participants' imagination correlated to the level of abstraction of the text. Participants seemed to be more related to a concrete example in design C but inspired by abstract sentences or open questions in design B. Participants who are not familiar with the topic tend to read the context example to immerse then check the sensitizing statement to reflect.

More open-ended and individual perspective statements (design B) outweigh the solid product or feature examples(design A), which trigger the last discussion and the most confusion. It has proved that card design for end-users requires a different setting from the one for designers.

Tom stated, "By making it an I statement, making it more about you as an individual, it make it more relatable and easy to understand the content."

Core Knowledge Increase Credibility

Since participants are not wellbeing experts, they appreciated the theory explanation on the card. It provides a scientific side to the card and makes the card looks professional and believable.

Colloquial and Concise Characteristics Increase Concept Understanding

Participants have positive interaction with design B because of the conversational and concise characteristics of the text. For instance, Tom stated, " I like bullet points. It's easy to go through compared to a black of text."

Realistic Human Features in Context Seemed to Trigger Empathy

Showing realistic human features seemed to trigger empathy, and scenes helped explain the concept. Three out of four participants believe combines human and scene can best describe the content(design C). Instead of illustration, participants feel a stronger relationship with the topic with a realistic picture(design B).

Tom states, "real-life picture can create more personal connection to the subject. I think it has value."

Although participants admire the simple look of the card, they believe the icon in design A is not informative. For example, Debbie argued, "the wheel can have so many meanings. Not only for autonomy".

Visual Summary of Design Decision

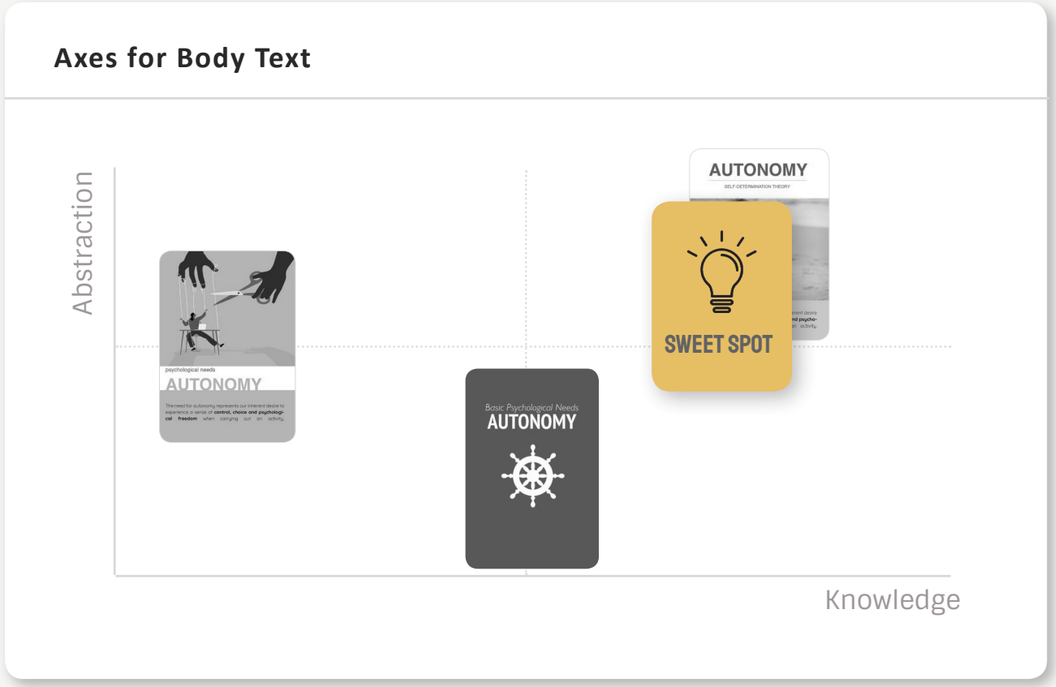


Figure 2-5. Graphic summary for findings

2.5
INITIAL VERSION OF CARD DECK

The initial Wellbeing Card Deck [appendix.4] is a deck of cards that demonstrate the internal influencers of wellbeing. Each card is derived from one of the elements of the five wellbeing theory that discussed in Chapter1. One card might have two corresponding theories due to the similarity of this element. This version of the card deck contains 22 cards.

Figure 2-6 shows the design of the card. Figure 2-7 shows the overview of four categories of cards. Different colors of cards stand for different categories/ theories of the elements.

GRAPHIC

- Facial Expression with Context

According to the interview, humanity and middle-level abstraction illustration style is chosen, which means combining design B and design C [fig.17]. Furthermore, the paper mind the face by Pieter Jan Stappers argued that the face is the most expressive of all images. And if using fictive material, photos of everyday people are suitable to represent real users [29]. Thus, the graphic should contain a certain level of abstraction so people can relate to and includes a human figure with facial expression and base on an everyday scene.

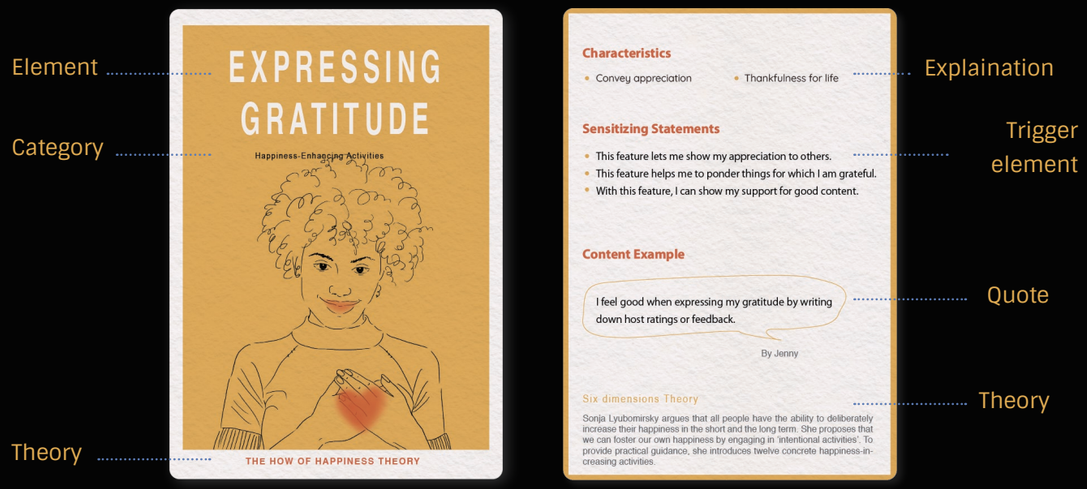


Figure 2-6. The design of the card

CONTENT OF CARD

The text should be conversational and concise, with a high abstraction level to boost imagination and self-reflection. The core knowledge of the theory is the icing on the cake.

Three elements should be considered for the content of the card.

CONCEPT EXPLANATION

To let people catch the point at a glance, the **characteristics of the content** are listed in bullet points. To increase the possibility of people reading them, the descriptions were relatively short but on topic.

TRIGGER ELEMENTS

Each card embraces both context-related sensitizing statements and a concrete content example. **The trigger elements are written from the individual perspective** and in an approachable description. Furthermore, both factors were **digital wellbeing context-specific.**
The card had more them one sensitizing statement, so when the participant did not agree on one but may agree on the others. **The context example is a quote from end-users.** They comes from statements gather in concept evaluation as well as online research.

WELLBEING THEORY

A summary of the leading theory was added to the card. It improved the professionalism of the entire card but did not overpower the main content.

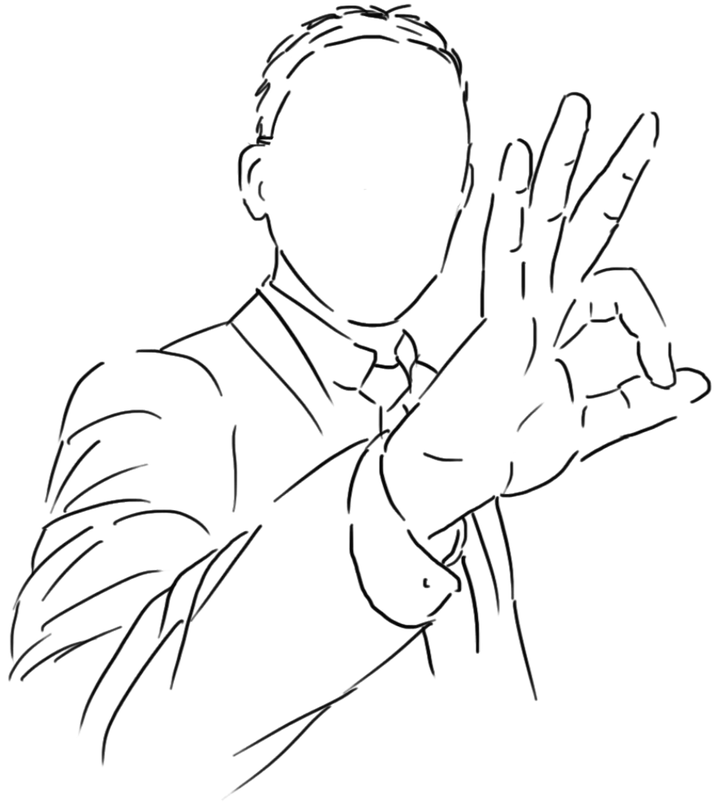
Figure 2-7. Four categories of the card

Key Takeaways From Chapter 02

1. Three card concepts based on differences in knowledge, abstraction, and humanize level were generated and evaluated.
2. Research result shows the wellbeing cards should embrace:
   - Abstract but personal narrative to trigger reflection
   - Core knowledge about wellbeing theory to increase credibility
   - Colloquial and concise characteristics to increase concept understanding
   - Realistic human features in context seemed to trigger empathy
3. The initial version of wellbeing card deck contains 22 cards. The content of the card include:
   - Graphic with facial expression and context
   - Concept explanation
   - Trigger elements
   - Relevant wellbeing theory

Ready for the next step?

Grab a coffee and sit tight, it's evaluation time!



03
EVALUATION PHASE

In this chapter, I illustrate two evaluation cycle. First, the interview and integrate the findings. Second, the final evaluation workshop and insights.

3.1 STUDY 1 : EFFECTIVENESS INTERVIEW

To evaluate the card deck, I conducted semi-structured interviews. I interviewed four participants who were from the representative group, active YouTube users.

The main research question for this chapter:

Does the designer feel that they could gather knowledge that informs their design issue using the Wellbeing Card Deck to interview?

Sub-research questions:

- Was the designer able to sensitize the participant concerning their wellbeing experience and the case?
- Was the information gathered through this sensitization process useful/informative/insightful/new/etc.?
- Was the tool help designer engaging participants and facilitate the session?
- Was the designer willing to use the tool in future projects?

3.1.1 Set-Up and Process

Interview with mapping process.

To assess the Wellbeing Card Deck, I formulated a two-session interview [appendix.5]. The card deck is successful when designers feel that they could gather actionable insights from participants; hence, the interview stakeholder includes designers and end-users.

Interview set up:

Observer
Chia-Ling Yeh
Interviewee
5 Active YouTube users
Interviewer
5 Educated designers with AI background
Environment
Miro+Zoom
Duration
30min for user/1her for designer
Documentation
Video record + Note-taking

In this research, I choose to **measure the subjective utility (How useful for someone else) of the cards** instead of scientific validity. The objective validity is challenging to validate because finding excellent criteria to say good or bad is stringent. Thus, recruited a group of designers to receive subjective feedback to measure the subjective utility for this study is a better option.

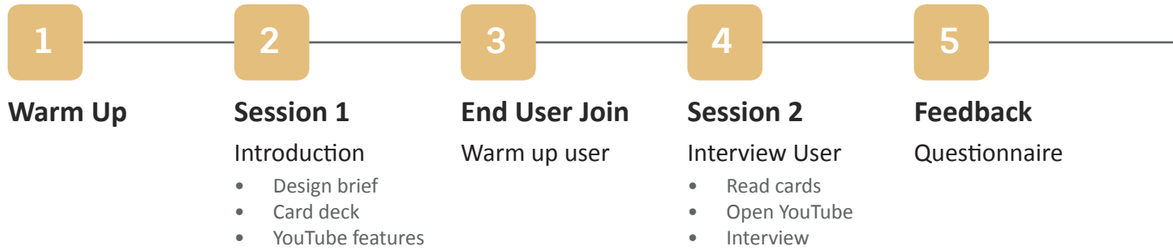


Figure 3-1: The process of the interview

For this interview, five well-educated master and Ph.D. students at TU Delft played the designer's role, and five were active YouTube users. The designer's role has to understand the AI aspect, the ethical aspect of AI, and design a digital system.

EXECUTION

The project brief [appendix.5] is prepared for the designers in order to frame the context for them to act on it. In this case, the designers can fully immerse themself in the scenario and work as a user experience designer of YouTube.

Before the interview, an official invitation was sent to all participants. The designers were asked to read the project brief, interview guidelines, card deck, and interview consent form before the meeting.

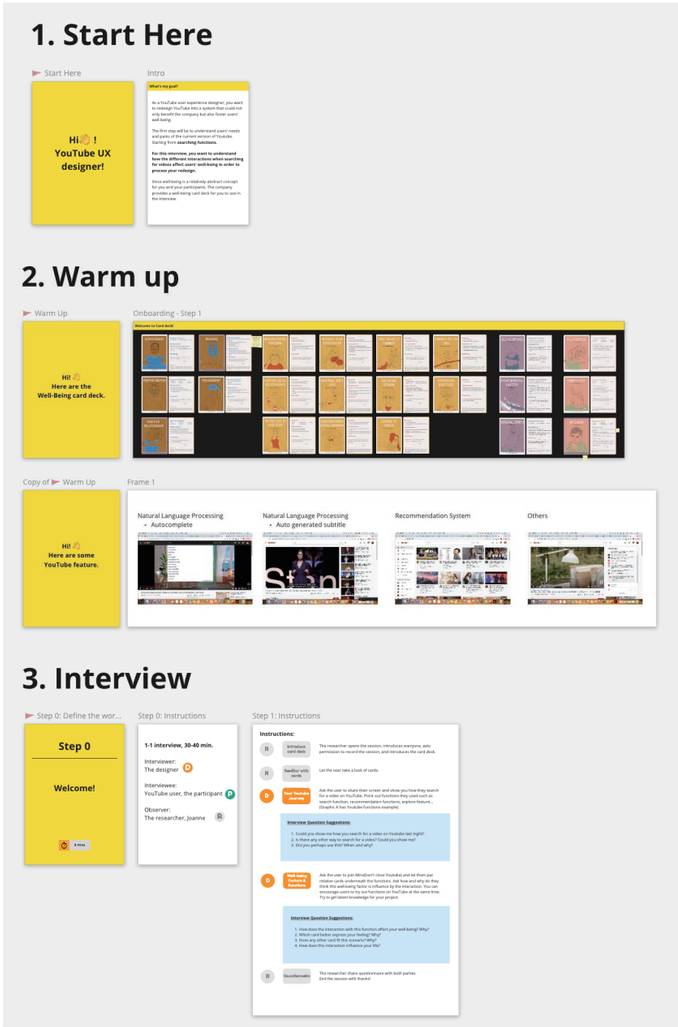


Figure 3-2. The session 1: Introduction - 1.Design brief, 2.Introduction, 3.Interview guide

SESSION 1

The researcher (observer) introduced the research purpose to the designer (interviewer)[fig.19-2]. To establish a solid research background for the designer, a scenario (research case), research goal, and possible questions for the interview were prepared. With the material, the designer could immerse in the context and act as AI for the wellbeing designer. The interviewer was able to read the cards and asked questions in this session.

SESSION 2

The researcher invited the participant (end-user). The designer, as the interviewer, referred to the advance instructions given in session one to facilitate the interview. The designer and participant acted freely with the tool. The researcher observed the interaction between the user and the designer and the utility of the cards [fig.3-3].

YouTube is present in the interview workshop. When the designer interviewed the user, the user was looking at the YouTube interface and the Miro board, which showed the card deck. People tend to put great weight on the end of the experience and the peak or trough duration[25]. Using YouTube during the interview aims to eliminate the biases that people tended to neglected episodes of pain or discomfort when conducting retrospective evaluations.

The user talks about their interaction with the platform and picks a card related to their wellbeing concern. Next, they read the card and get inspired. The interviewer asks questions base on the conversation.

In the end, the designer and user filled in the corresponding questionnaire.

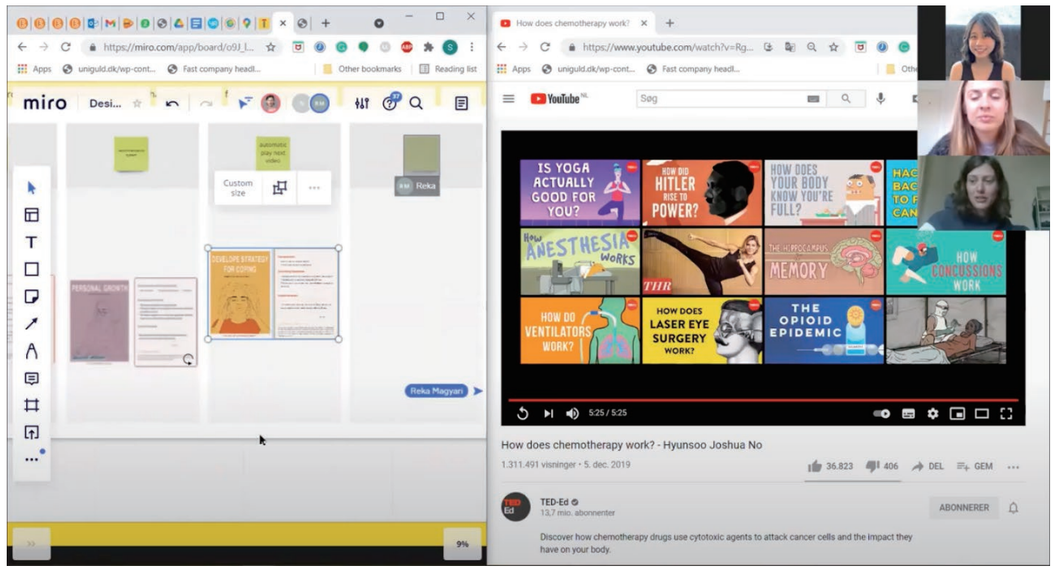


Figure 3-3. The user talks about auto-play function forces her to develop a strategy for coping and decrease her autonomy. It takes away the moment for her to think about if she wants to keep watching the video or not. In contrast, the block view like it show's in the picture is preferred.

Figure 3-4. The result from Group A's interview.

MEASUREMENT

OBSERVE

By observing the interview, I studied the interaction and communication between designer and participant. After the interview session, the designer and user received their questionnaires. The questionnaire for the designer is different from for the user.

QUESTIONNAIRE

For designers, 13 questions(appendix) for rating their views of the design activities they engaged in (on 7-point scales, ranging from strongly disagree to agree strongly). These included attributes such as" valuable," "engaging," "useful," "necessary," "difficult to use," etc. Next, rating interest, including "likelihood of future use," "recommendation to others," and "satisfaction." and why questions followed. Next, designers rated the competence of the card. Finally, additional five open-ended questions to seek insights on the value of both the content and format of the interview and tools and elements that worked well could be modified [appendix.5].

For the user, the questionnaire consisted of 15 questions. Including six attributes questions(same as designer's). And six questions regarding the card's competence, such as reflectability and imageability. End with three open-ended questions to earn feedback on their experience of the design activity and components that worked well and could be improved [appendix.5].

3.1.2 ANALYSIS

Analysis on the Miro wall

ANALYSIS BOTTOM UP

4 **Knowledge level**
Explain and relate different elements of a cluster

3 **Information**
Use intuition to cluster insight cards from all interviews

2 **Data level**
Use insight cards to capture interesting insights per interview

1 **Data level**
Use main insights (intuition) to create insight cards [fig.3-5] per interview

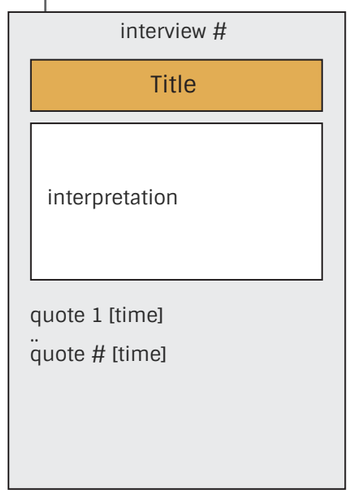


Figure 3-5. The insight card

1

Collect Statements

According to observation, write down insights, one on each card[fig.20]. I do it for all interviews first. Then check findings, which are based on intuition, in interviews by quotes.

Next, read the transcript, capture all exciting insights. Make insight cards out of it. Start with a quote, and turn it into insight.

2

Interpretation

I interpret the quote base on participants' needs and dreams. Next, I give each card a suitable title[fig.20].

3

Cluster

Cluster insight cards from all interviews based on similarity in the root cause.

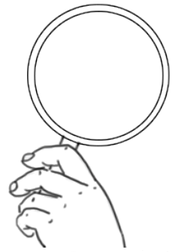
4

Relationship between Clusters

By asking why and how to find the link between clusters and gather knowledge for redesign.

Analysis on the Miro wall : Part of the clusters

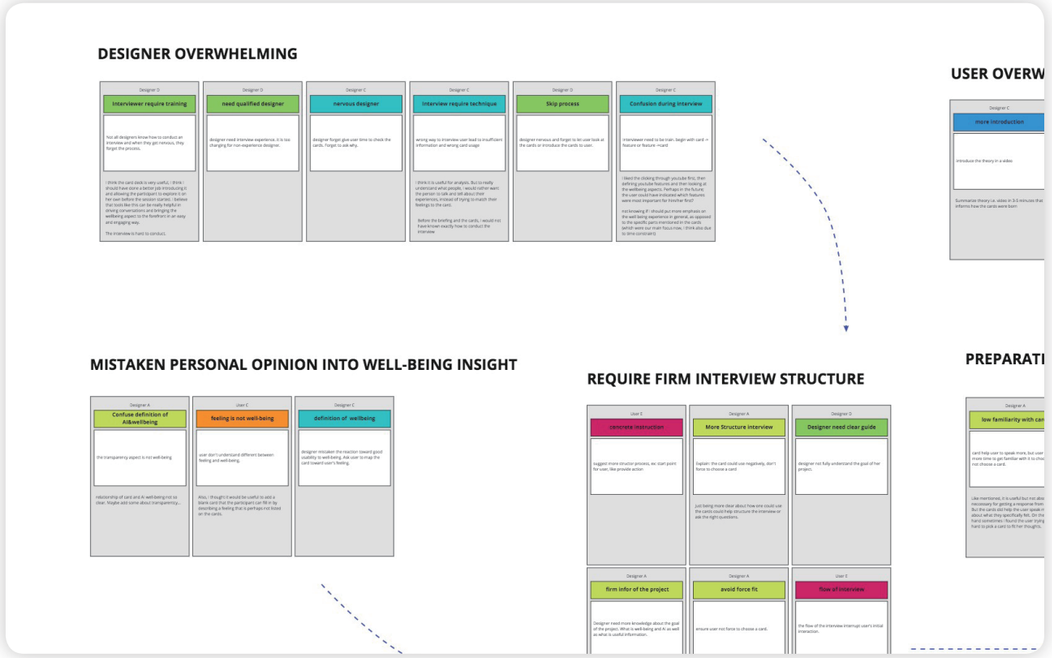
Comprehensive clusters in appendix 5.

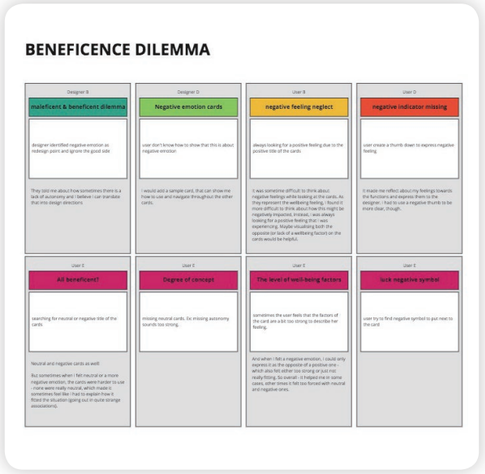


3.1.3 RESULTS

Interestingly, a big part of the feedback is not about the content of the card deck itself but how participants use it in the context. The hypothesis is that overall engagement of the process is more important than the physical design, or the testing should be structure in another way so the sole focus can be the card deck. Furthermore, some obstacles were due to the online testing scenario; for example, cards were always loading due to the slow internet that made cards hard to read. Users needed to zoom in and out all the time to decrease usability. Following are the key take away and user's opinions of the competence of the card. Other key takeaways described below:

The Designer Needs To Be Sensitized About Wellbeing Concept And Guide



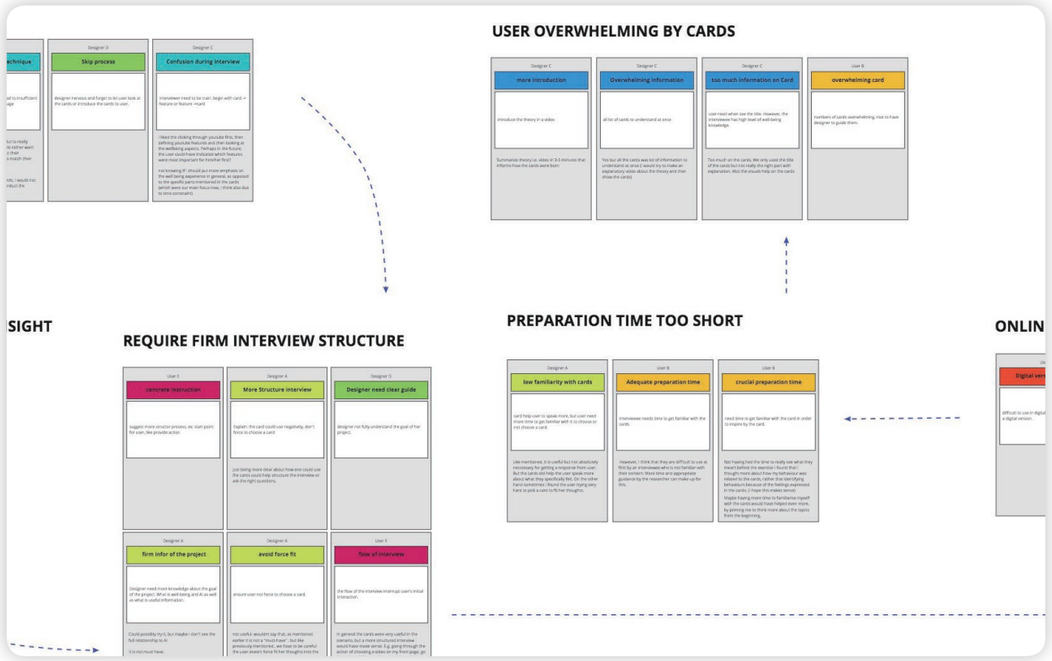


- **Distinguish user's personal opinions from wellbeing impacts.**
  Designers need to identify "like or don't like" or "usability" from actual wellbeing impact.

- **How to use the card deck needs to be more specific.**
  A designer misused the card deck as a tool that users can map feeling with instead of getting inspired.

- **Beneficence and nonmaleficence dilemma**
  Designers understand design "AI for wellbeing" as designing a non-maleficent system. Designers should have the mindset that digital systems can do good to humans before the interview. The designer should understand that acquire a positive wellbeing factor allows them to redesign the feature to enhance the user's wellbeing.

Simplify Card Deck And Provide Instruction



- **The user is overwhelmed by the card.**

  Users have a relatively short time to look at the cards. Also, the online scenario makes the card hard to read. Users need to zoom in and see the cards' detail, which restricts them from elaborate interaction and decreases their interest in reading the details. The 30-sec message is not clear. Detail information is supportive in the interview session; however, it is not eye-catching enough. As a result, necessary and main elements on the card should be highlighted even more.

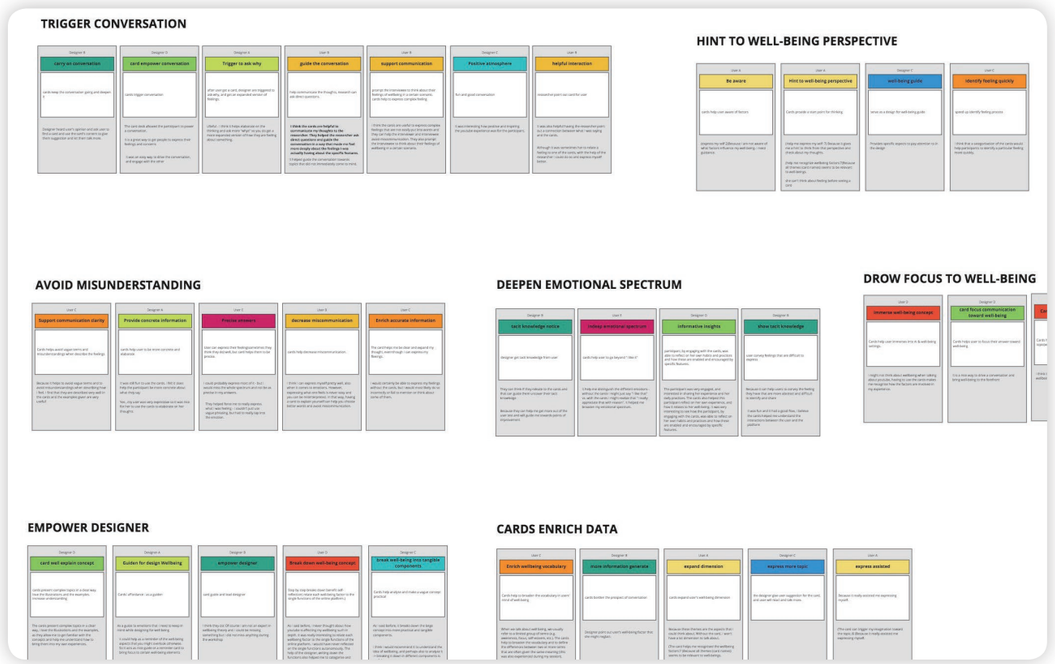
- **Usability needs to increase.**

  Both user and designer need an introduction for the card deck, including the purpose of the card deck, instructions, why those topics. Also, they should know they can use cards in the negative or neutral scenario.

- **Each card's content needs to be distinguished to reduce confusion.**

  Different cards have a similar characteristic, or the same word in sensitizing statements of other cards might confuse the user.

Competence Of The Cards Reported In The Interviews



"Tools like this can be really helpful in driving conversations and bringing the wellbeing aspect to the forefront in an easy and engaging way."

| Designer S

- **Deepen emotional spectrum and gain tacit knowledge**

  Participants and designers stated that it is not easy to talk about it because they are not wellbeing experts. In this case, cards became a note for them to think and discuss further. Because of the card's variety, they felt that they reflected on every aspect of the wellbeing and did not miss anything. Furthermore, cards helped designers ask more "why" questions to get a more expanded version of how participants feel about things.

  By going through participants' YouTube journey, participants felt deeply reflect on their YouTube impact on their wellbeing.

- **Trigger conversation and draw the focus to the wellbeing perspective**

  The tools helped the researcher ask direct questions and guide the conversation to make participants feel more deeply about the feelings they had with the specific features.

  By bring the wellbeing aspects to the forefront efficiently and engagingly, the conversation can mainly focus on wellbeing instead of personal perspective or usability.

- **Avoid misunderstanding between designer and participant.**

  The cards are helpful to express complex feelings that are not easily put into words, and they can help the interviewer and interviewee avoid miscommunication. The designers can double-check participants' replies with the cards, and participants can be more specific with their answers.

" I think it helps elaborate on the thinking and ask more "whys" to get a more expanded version of how they are feeling about something."

| Designer M

3.1.3 DISCUSSION

KEEP THE POSITIVE PHRASING AND SIMPLIFY THE CARD DECK

In the interview, participants argued that looking at **all positive descriptions on the cards** (including the title and content of the card deck) **made reflect on the negative or nurture impact of AI features on wellbeing relatively tricky.** It was not intuitive and required them to convert the positive statement into a negative one in their mind. However, **I deliberately designed this effect due to the goal of developing a beneficent AI system.**

Since the negative side of the AI system is more well known than the positive side, we want to know the possibilities to foster wellbeing and redesign to enhance them. The card deck aims to understand mostly the positive wellbeing impact of AI features so designers can redesign to enlarge user's wellbeing. In other words, create a beneficence system.

To decrease the overwhelming feeling of the cards, I first minimize the number of texts on them. According to my observation, every **participant appreciated that the card has a theoretical background, but they did not read it during the interview.** Hence, the theoretical explanation can be removed from the card and add to the toolkit manual [fig.3-6] [appendix.6]. Next, emphasize key information that can trigger reflection and decrease the title's visibility, such as "characteristic" and "context example" because they do not add much value to the context.

PROVIDES A BOARD TOGETHER WITH A CARD DECK

The intention of positive phrasing is not to force participants to only state positive experiences but encourage them to expand the boundary from only natural or negative experiences. Thus, **a platform that indicates participants can use cards in every emotional spectrum is necessary** [fig.3-7]. I am inspired by the "emotional curve" on the user journey map, which can indicate layers of emotion simultaneously. As a result, I design a wellbeing impact column on the upper part of the board consists of three colors: green for positive, cadmium orange for natural, and coral for negative wellbeing impact. In this case, users can freely put their cards on the corresponding part.

To let **the board serve as a guide for the workshop or interview,** it assimilates two principles from creative facilitate practice: The Ladder of Abstraction [fig.3-8] and 5W1H approach [fig.3-9]. The categories on the board guide participants to express what, when, why, and how. Moreover, it also guides the interviewer to at least claim four layers

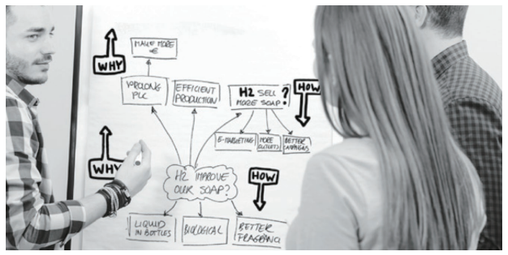


Figure 3-8. The Ladder of Abstraction

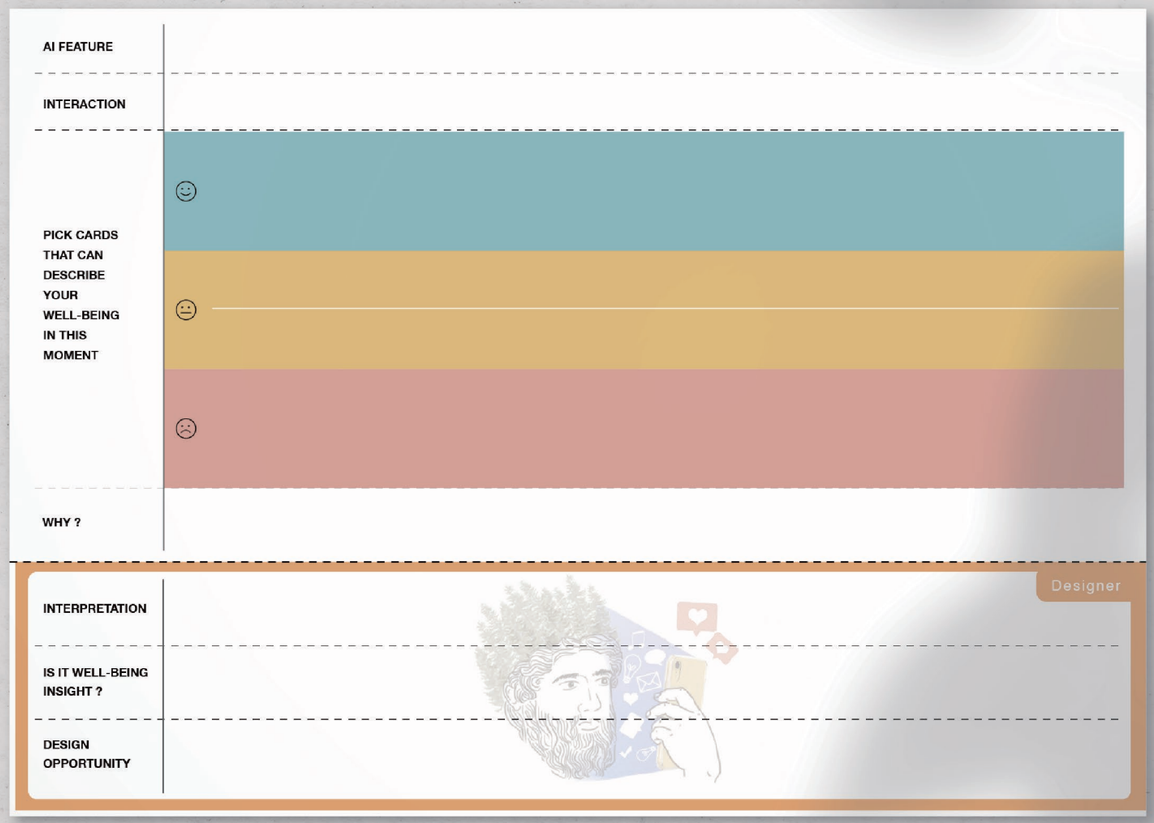


Figure 3-7. The board [appendix.6].

Figure 3-6. The website as manual [appendix.6].

Figure 3-9. The 5W1H

of abstraction ladder by introducing questions like "How does it affect you?" and "Why is it?"

In this way, designers will not miss out on essential questions.

The aim of the second part of the board is to increase the ability of inexperienced participants to judge the susses of the wellbeing toolkit. It is an additional feature and specifically designs to overcome the limitation of using students as participants in this project. **It is not the feature for sensitizing participants.**

Since the subjects in this study are all design students, compare to on-job designer, they are relatively weak in distinguish information they have gained from the session. However, in order to evaluate the effectiveness of the toolkit, including a range of wellbeing information and deep knowledge, **participants need to be able to differentiate wellbeing insights from others, such as usability or personal preference.**

As a result, I design **the second part of the board for inexperienced participants to use after the actual sensitizing session.** It has the following aspects for the analysis like "interpretation" and "design opportunity" [fig.3-7] which designers analyze users' dreams and needs.

PROVIDES A MANUAL TOGETHER WITH CARD DECK

A manual is designed to deal with participants and designers' overwhelming by the tool. And sensitize designers with AI for wellbeing concept, foremost, the beneficent aspect of AI.

The manual will introduce the purpose of the card deck, why we need it, what AI is for Wellbeing redesign, wellbeing theories, and the use of the card deck. With it, the barriers to entry decreased and sped up the workshop or interview preparation time.

The manual is an online website[fig.25] [appendix.6], so people worldwide can visit it and download the toolkit easily. Appendix 6 shows the framework of the website.

LIMITATION

The designers in this study are inexperienced design students. They were not as familiar with conducting interviews and run a focus group session as experience designers. This limitation can influence some of the findings.

Also, design students might be more talkative and know how to express themselves. They also have knowledge of what kind of information designers need and will like to know. In this case, the effectiveness of the card deck might decrease.

3.2 STUDY 2: EVALUATION WORKSHOP

This time, I evaluate the effectiveness of the generation tool by compare with the no-tool session.

The criteria are similar to the previous evaluation. However, the execution method is different to draw participants' attention towards the toolkit instead of the interview method. Moreover, this time participants experience both with a toolkit and without a toolkit session to compare both scenarios.

The main research question for this chapter:

Does designer feels that they were able to gather more meaningful knowledge that informs their design issue by toolkit than without it?

Sub research questions:

- Was the toolkit can better help designer sensitize participants with regard to their wellbeing experience and the case?
- Was the information gathered through toolkit sensitization process more useful/informative/etc. than no toolkit session?
- Was the toolkit help designer engaging participants and facilitate the session?
- Was the toolkit help designer explore beneficent design space?

3.2.1 Set-Up and Process

Workshop set up:
Observer
Chia-Ling Yeh
Participants
8 Active YouTube users/Educated designers with AI background
Environment
Physical environment
Duration
3 hours
Documentation
Video record + Note-taking

EXECUTION

To measure success, I hosted a workshop [appendix.7]. In the workshop's first session, participants discuss the topic without using the toolkit and a second session with it. Both session have same group of participants. In this way, I can test the new version and compare it to the no-tool situation. This workshop excution can answer the following questions.

- **Within one group, if the group tries without a toolkit what is the difference that designers feel?**
- **Do they feel a deep layer of information appears in session 2?**

After the workshop, a questionnaire was given to participants [appendix.7].

Figure 3-9. The workshop

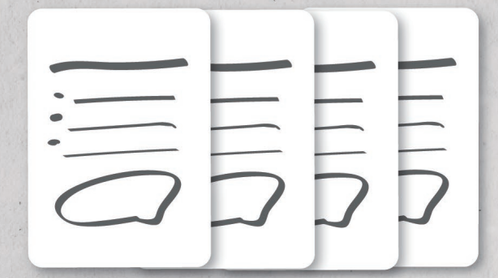
PILOT TEST

I conduct a pilot test with another group to make sure the final evaluation workshop can run successfully. The step of this pilot test is the same as the actual session 2 of the workshop.

The data from this pilot test is collected for future analysis as well.

During the test, I find out that :

- In the beginning, the arrangement of the cards should be one by one lay on the table so participants can have a quick overview.
- The board should be a giant canvas so participants can write freely.
- The designer should ask the participant to read aloud the card's name and think aloud before they start to share their story.



WORKSHOP TOOLKIT

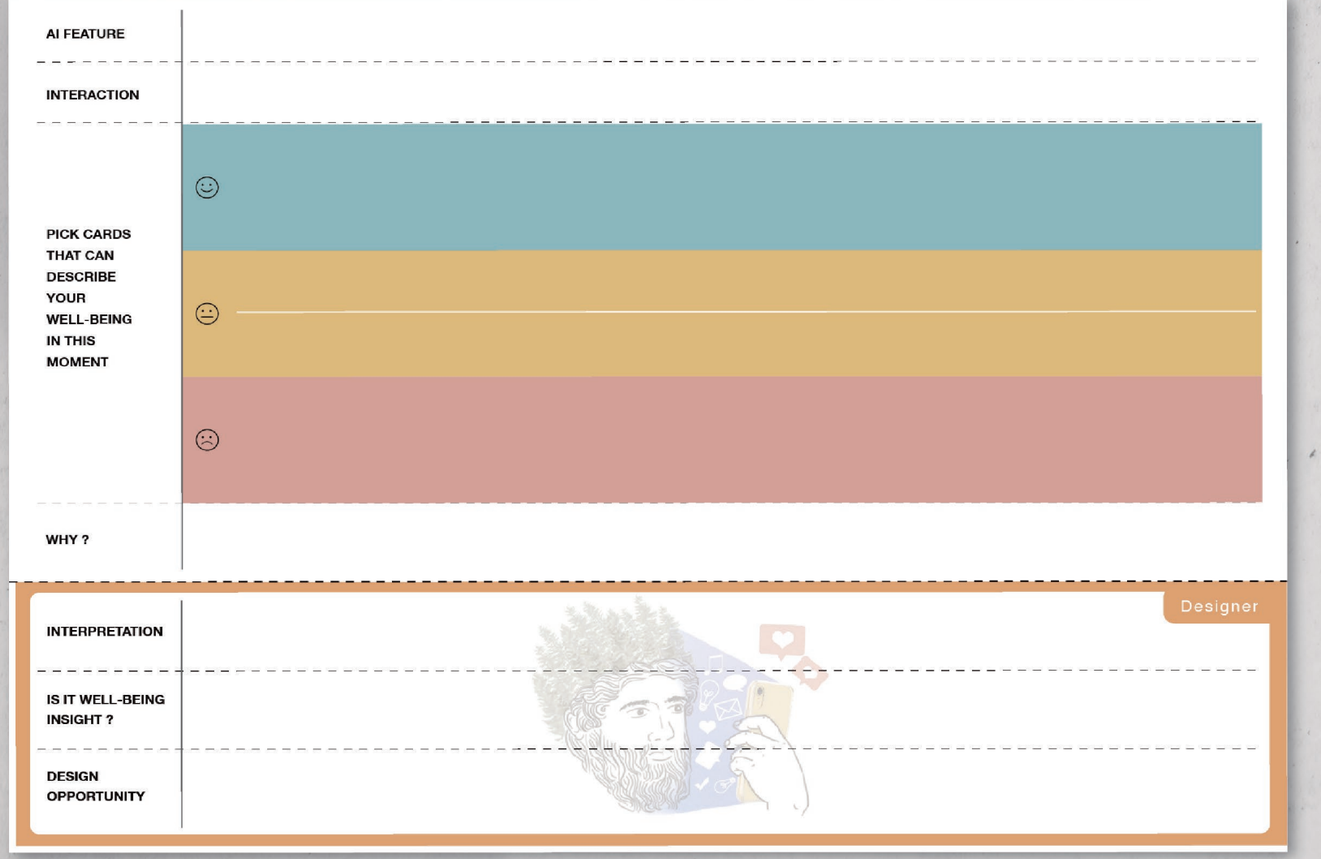
AI for Wellbeing website.

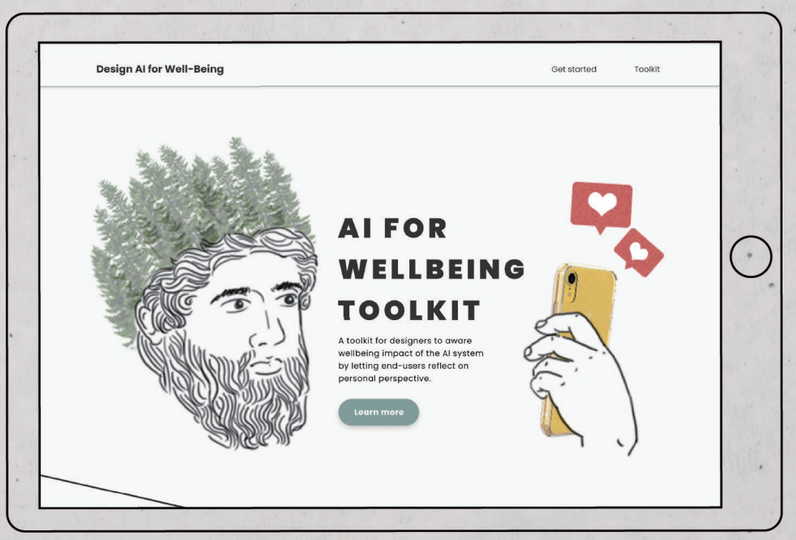
26 Wellbeing cards.

4 Empty cards:
Participants write down wellbeing aspects that they think are important but not inside the card deck yet.

Designer role card:
Holding this card, you act as a designer.

Stars:
Putting on the card when you think this aspect is more essential than others.





1. Context Introduction

The researcher first introduces the workshop goal and process. Next, the researcher illustrates the concept of beneficent AI because the participants are all design students who might not be familiar with the topic. I explain it at the beginning of the workshop to ensure participants are on the same page since understanding this topic is not what I to test.

Figure 3-11. Introduction

2. Interview In Pair

The participants work in pairs, and the designer and end-user roles rotate between them. The designer role needs to interview the end-user about their wellbeing impact trigger by YouTube. The researcher provides a simple designer persona, a YouTube UX designer [appendix.7], to help them immerse into the scenario. Besides it, the researcher lists some interview questions on Miro for the designer to use.

Figure 3-12. Participant sharing her experience

3. Write Down Interview Insights

During the interview, designers take notes and write down interesting statements on the Post-it.

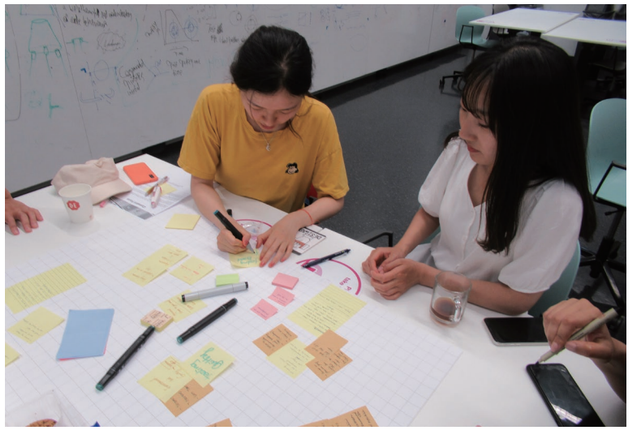


Figure 3-13. Write down findings

4. Cluster And Ideation

After the interview, everyone takes the designer role and starts cluster information from the session. Next, in the ideation phase, participants come up with ideas for each cluster.

Figure 3-14. Participants discuss and cluster insights in group

5. Rating Knowledge And Idea

In the end, to receive subjective opinions from the participants, I let everyone rank the information base on "knowledge level" and rank the idea base on "hits and novel hits." For information that is explicit and observable knowledge, they put a purple Post-it on it. For tacit/latent knowledge, they stick yellow Post-it. Next, green Post-it rates the hits ideas and red Post it for novel hits. The hits and novel hits standard are based on Figure 3-16.

Figure 3-15. End result of session

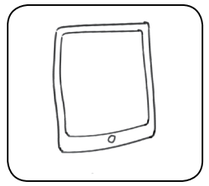
An idea "hits" you when it is...

- On target
- Relevent
- Interesting
- Clear
- Intriguing
- Fascinating
- Workable
- Right on the money

Figure 3-16. The standard for hits idea

1. Context Introduction

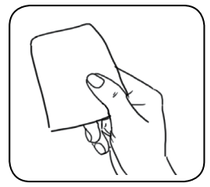
The researcher first facilitates participants with the manual. It shows case how the session and toolkits work and prepare participants for the designer role.



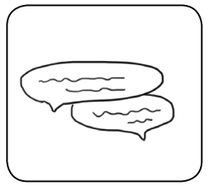
INTRODUCTION

2. Interview In Pair

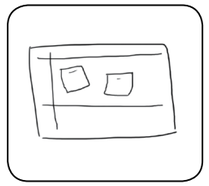
The participants work in pairs. The participant who takes the designer role lets the participant take the user role, look at cards on the table and pick one that resonates with them. Participants read the card and think about their relative YouTube experience. Designers document information on the board. YouTube can be present in the workshop if participants require it to bring up a memory.



PICK /READ CARD



REFLECT
AND SHARE



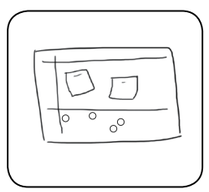
DOCUMENT

3. Write Down Interview Insights

Participants reflect on their relative YouTube experience toward the wellbeing concept they picked and share it in the group. The designer asks questions based on the user's opinions and documents them on the board.

4. Rating Knowledge And Idea

As in session 1, every participant takes the designer role. They discuss and distinguish information and interpret the information into the designer's insights. In the end, participants rank the information base on "knowledge level" and rank the idea base on "hits and novel hits." The criteria for both measurements are the same as the previous session.



DESIGNERS
REFLECTION AND
RANKING

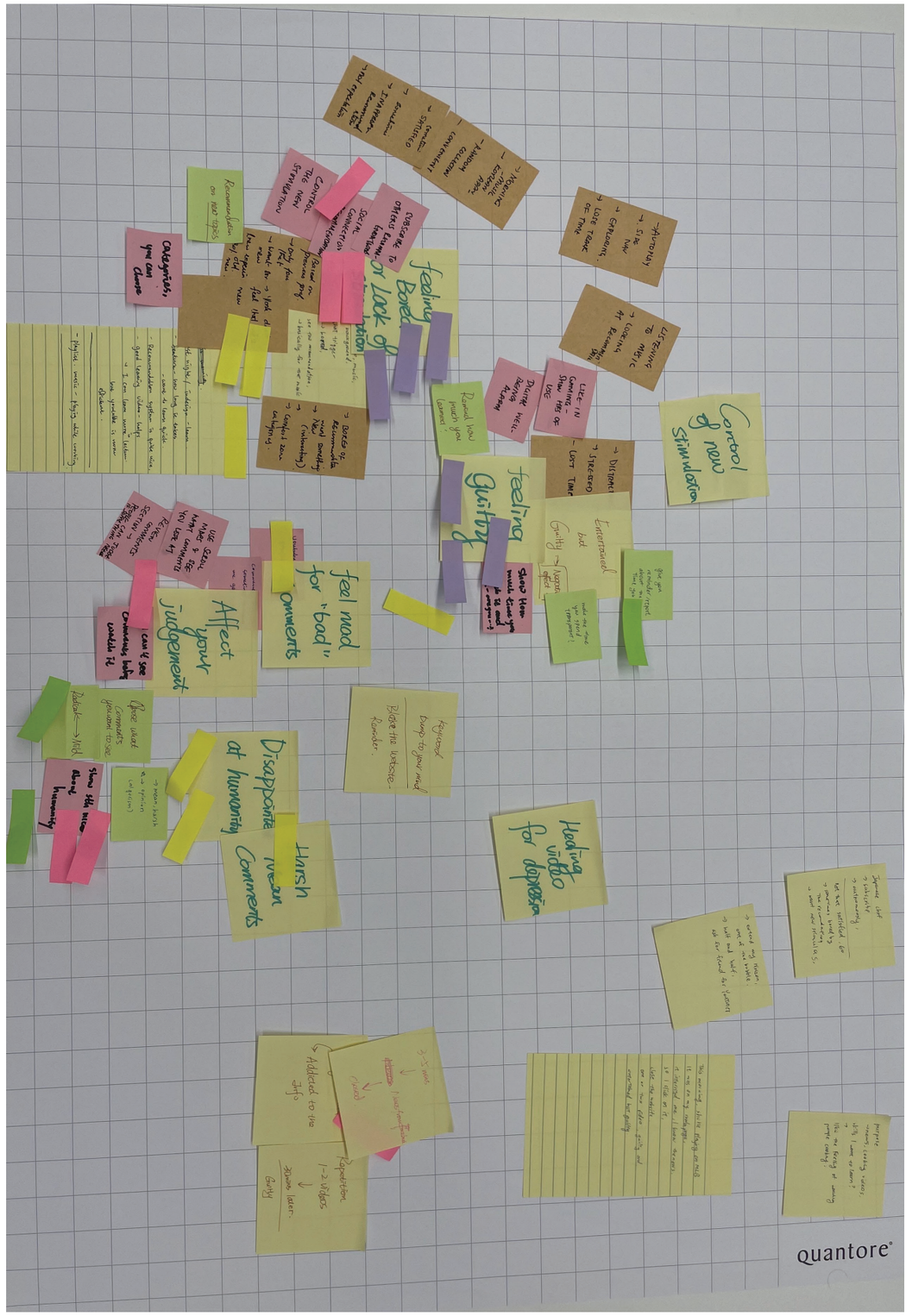


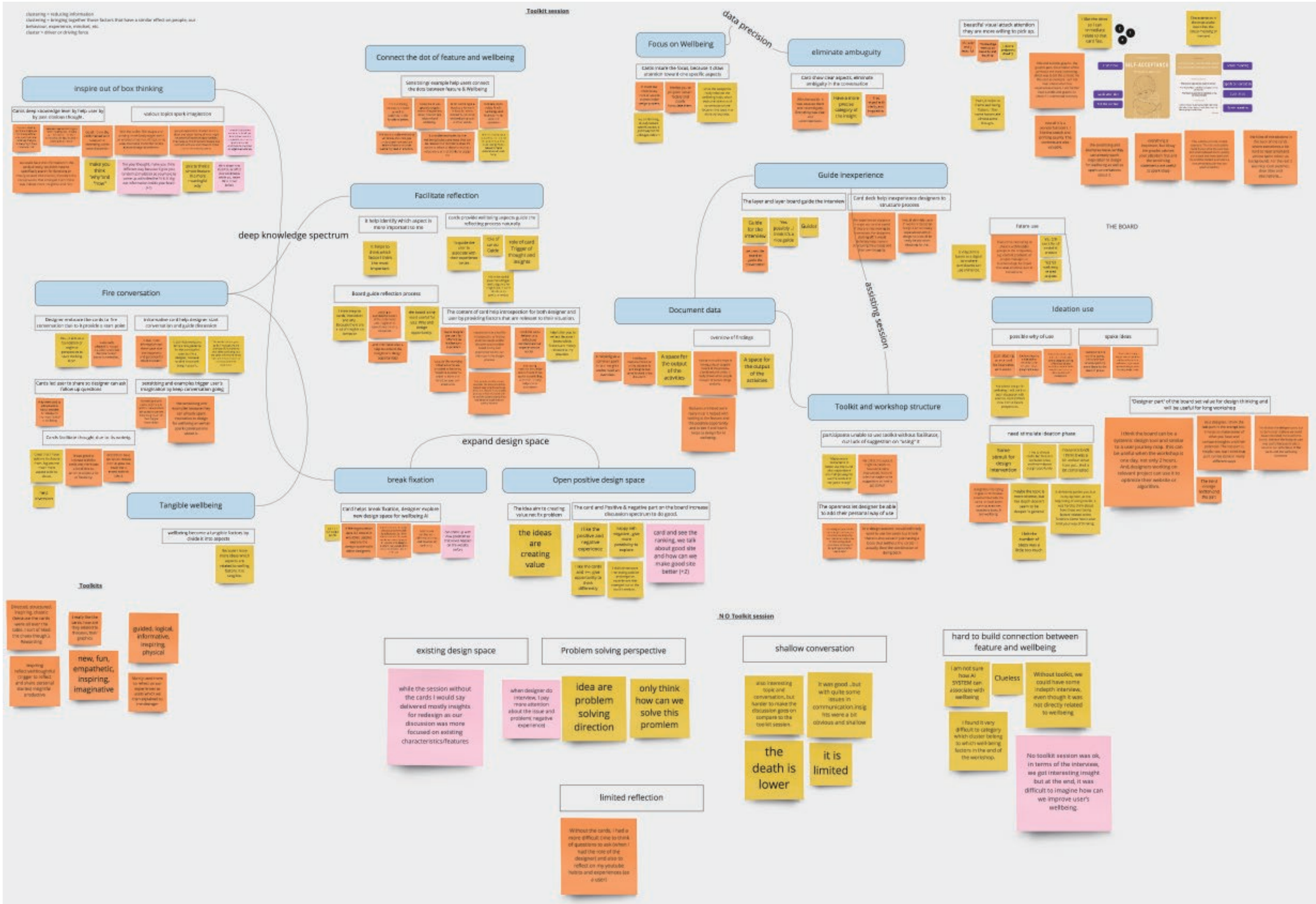
Figure 3-17. Left: End-result of toolkit session.
Right: End-result of no-toolkit session

3.2.2 ANALYSIS

Analyse session outcome

Cluster and group insights from the workshop

Collective information from the questionnaire [appendix.7]



3.2.3 RESULTS

To answer the research question, "do designers feel that they could gather more meaningful knowledge that informs the design issue by toolkit than without it?" I divide the question into two parts and analyze the result using two approaches: qualitative, clustering statements, and quantitated number outcome.

Toolkit gathers more meaningful information that informs design decisions.

First, measure the meaningfulness of knowledge. **In this research, meaningful knowledge is defined as tacit/latent information that enables designers to produce hit ideas.**

Calculating the Post-it number of tacit/latent knowledge and dividing it with all rating-Post-it number of each session will result in a deep knowledge rate per session. The result shows that compare to the no-toolkit session, the same group of designers feels the percentage of deep layer knowledge increases 12% in toolkit sessions. On the other hand, the hit idea percentage also improves about 10% [fig.3-18. The data prove toolkit gathers more meaningful information for designers to process into next phase.

Besides numbers, several clusters in Miro board(analysis conducted by the author) certify this finding as well [fig.3-19].

Deep knowledge formation

Participants report three elements that actively influence the deep knowledge formation in the toolkit sensitizing session: Fire conversation, Facilitate reflection, and turn wellbeing into tangible pieces.

1. **Fire conversation**

The wellbeing cards serve as a conversation opener, and sensitizing statements, as well as context examples, trigger users' imagination which led users to share more. In session one, every discussion usually ends with two follow-up questions. By comparison, in session two, designers ask more questions and climb four layers of the abstraction ladder.

"It fires your thought, makes you think differently because it gives you random stimulation, so you come up with an idea the fit it. It digs out information inside your brain."

| Participant P

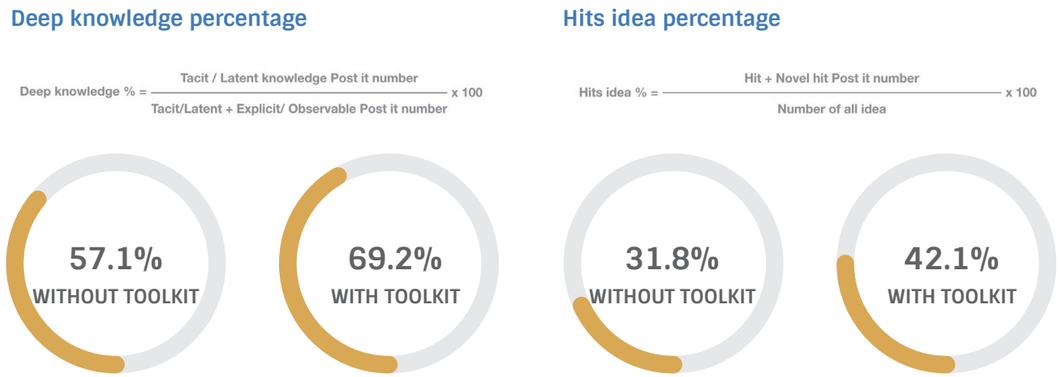


Figure 3-18: Statistics comparison of two session

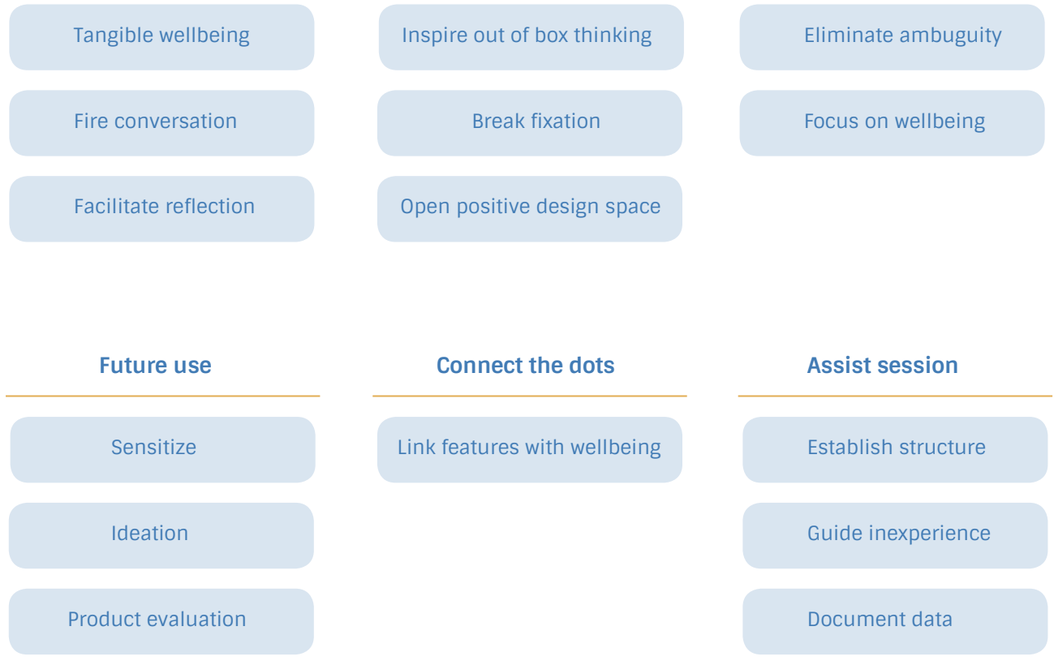


Figure 3-19: Overview of the insights from clustering

2. **Facilitate reflection**

The content of cards helps introspection for participants by providing triggering statements that are relevant to their situation. By following the column on the board, designers guide users through a comprehensive reflection process.

3. **Turn wellbeing into tangible pieces**

Unlike in session one, digital wellbeing discussion is more difficult because both designers and end-users are not wellbeing experts. Thus, coming up with precise questions to ask and reflect on YouTube experiences base on wellbeing without a guide is challenging. When decomposing wellbeing into elements and present on the card, it becomes more tangible.

Toolkit sensitizes users to discuss wellbeing comprehensively.

To answer the second part of the research question, **we can view design issues as the number of clusters (generate by participants).** The session outcomes can already showcase the differences in richness of data [fig.3-20]. In the same amount of time, designers identify six clusters in session 1 and 11 in session 2, almost double the number.

Furthermore, a significant finding here is that **in session 1, all of the clusters are about the negative impact of YouTube on human wellbeing.** Six clusters are Lack of stimulation, Tunnel vision, Feeling guilty, Influenced by harsh comments, Judged before experiencing, and even Disappointing in humanity. All valuable insights but focus on terrible effects of YouTube and require further interpretation to reveal actual wellbeing aspects.

This evaluation illustrates that a workshop without toolkit only provokes negative impacts of digital systems.

I notice that participants actively talk about negative experiences and **neglect any positive or neutral effect.** It is evident that negative issues need to be resolved; however, only eliminating all harmful elements might not boost users' wellbeing. The platform needs to empower neutral or positive impact as well.

Design base on this kind of one-sided findings might resulting in fixation in the ideation phase. This problem also comes to light while participants are ideating in the workshop. **Ideas generate in session one are all problem-solving perspectives.** For instance, an idea for cluster "Influenced by harsh comments" is to allow users/AI to review comments. It means users or the AI system can judge others' comments and report extreme or crossover statements. This approach can help design a system that does no harm but not boosts user's wellbeing.

Participants also notice the tendency of their **discussion in session one to focus solely on existing design space and solve current problems.**

"In the session without the cards, mostly insights for redesign as our discussion is more focused on existing characteristics/features."

| Participant C/S

"When designer interviews me, I pay more attention to the issue and problem (negative experience) that I am facing."

| Participant M

To sum up, the design space gathers from the **no-toolkit session is limited to pursue a non-maleficence system.**

Figure 3-20. Data of toolkit session(graphic below)is richer than session one(graphic on the top).

By contrast, **in session two, with the toolkit, participants come up with five positive, two neutral, and four negative wellbeing eleventh clusters [fig.3-21].**

The distribution is considerably balanced than in the no-toolkit session. For instance, a participant's statement brings up new and novel design space for recommendation system and wellbeing: expressing gratitude. He stated that because he knew how long viewers watch a video will influence the video's ranking in the recommendation system. Hence, by watching the video from the beginning until the end, he expressed gratitude to the video context creator. Furthermore, similar to the clusters, ideas generate from this session also have a diverse focus instead of only concentrate on solving existing problems. Participants passionately discuss ways to improve wellbeing based on the aspects shown on the cards, such as an auto-generated playlist for knowledge learning which can benefit personal growth.

In addition to observation and qualitative insights, the bottom-up analysis on Miro demonstrates the same finding and arises three elements that empower emerging original design space: Inspire out of box thinking, Break fixation, Open positive aspect discussion.

Sensitizing material inspire beneficent digital experience discussion.

Explore original design space

1. **Inspire out of box thinking**

Showing abstract and general wellbeing aspects on the card provides random stimulation that helps users bypass apparent thought and makes them think beyond the border. The tool digs out information inside their brain.

2. **Break fixation**

the session with the cards allowed participants to move past exist features and come up with new possibilities that never happen on the website before.

3. **Open positive aspect discussion**

Participants have a higher possibility to concentrate on beneficent design space. The positive, neutral, and negative wellbeing rows on the board inspire participants to think about different spectrums. With the toolkit, participants brainstorm ideas that can foster user's wellbeing, which is the goal of this project.

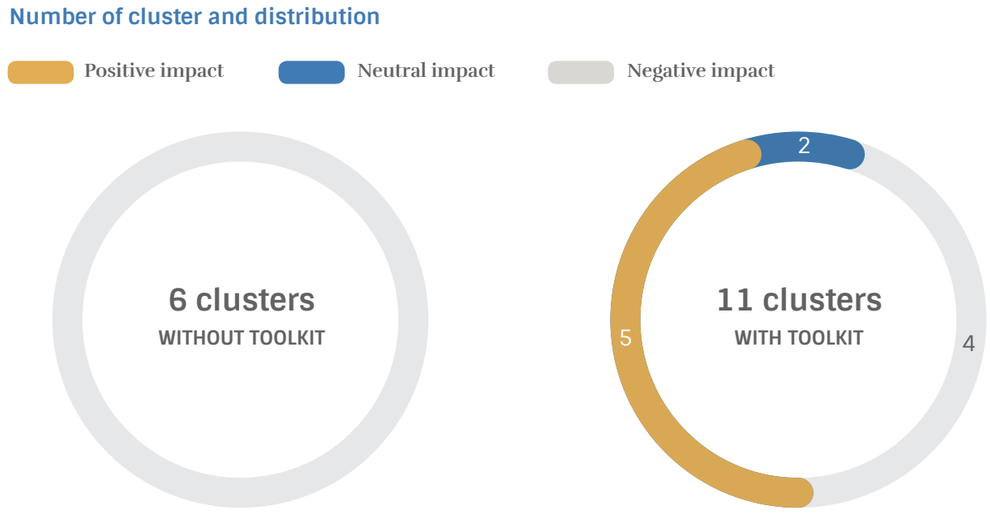


Figure 3-21: All clusters in the no-toolkit session is negative. With toolkit, the cluster number increase to 11, including 5 positive group.

"The context of card and see the ranking of the board, we talk about good site and how can we make good site better."

| Participant M/Y

To conclude, the answer to the research question in this chapter is: Yes, designers feel that they could gather more meaningful knowledge that informs the design issue by toolkit than without it.

Other insights

1. **The toolkit should be open but structured.**

Designer should not hang up on a tool but follow the flow. On the one hand, the method should have a certain level of openness for designer to personalize it. On the other hand, it should support the flow and structure to help designer facilitate a session. Furthermore, it should be self-explanatory to decrease the entry barrier for designers to download and use.

"I think the cards don't prescribe a strict way of doing things but rather keep it open for designer to add some personal touches."

| Participant F

How participants use the card?

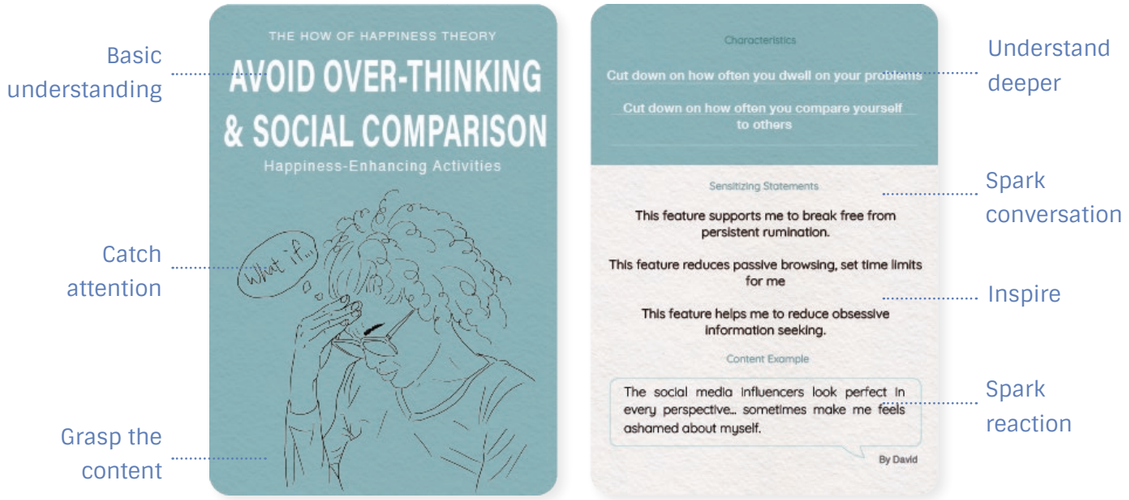


Figure3-22. Participants reported how they use the card.

2. **Bridge the gap between sensitizing and Ideation phase**

Participants address that, besides the sensitizing phase, they will like to have more support in the ideation phase as well. Even though the new design possibility appears, the technology that could contribute to the preferable effect is still unclear for them.

3. **The competence of each element of the card that was reported by participants [fig.3-22]**.

An interesting fact is how participants use each component on the card equal to the purpose of designing each component.

More findings in appendix 7.

Ready for my 4th design iteration?

3.2.4 DISCUSSION

Evidence indicates that **the toolkit thriving as the sensitizing material for designer to facilitate workshop.** It successfully **broadens the design space by stimulating end-users/participants to talk in diverse aspects of their digital wellbeing** and dives into deep layer of information.

The only adjustment for the Wellbeing toolkit could be to provide some suggestions on how to get started which can be added on the board.

Future suggestion: bridge the gap between findings and AI behind digital systems.

Although participants reported that the card deck connects YouTube features with wellbeing aspect, the AI systems behind the features are still ambiguous. This effect might decrease the ideation ability of designers due to AI unfamiliarity and result in difficulty communicating and cooperating with technologists. Participants also report the need for stimulation in the ideation process during the workshop. As a result, **the next step for this toolkit will be developing a way to link findings in the sensitizing session and the AI technology that can support it.**

In other words, the design spaces revealed in the toolkit sensitizing session become the research goal for the digital system development team. Enable to facilitate the ideation process, AI technologies that are related to the digital experience should be introduced. To attain this intention, this project proposed designs and guidelines for the second set of cards, the Ideation Card Deck, that future research could develop based on it.

Add Ideation Cards into the Card Deck

The Ideation Card Deck is **a deck of cards that demonstrates the affordance of AI technologies related to user's digital experience.** The design of the cards is inspired by AI x Design community [30], a collective of practitioners exploring the intersection of Design and AI/ML/Data.

In the Ideation Card Deck, **technologies are categorized by their affordance.** The topic includes **context awareness, content awareness, anticipatory, smart things, deep personalization.** Some categories might have more than one corresponding card due to the multiple aspects of the topics.

Figure.3-23 shows the design of the card. Different colors of cards stand for a different group of element. On the front side, the element name, category, and corresponding technologies are shown. On the backside, there is a paragraph of content explanation. Below it, there is a short introduction to relative technologies and one concrete example. The overall architect of this card deck is similar to the Wellbeing Card Deck.

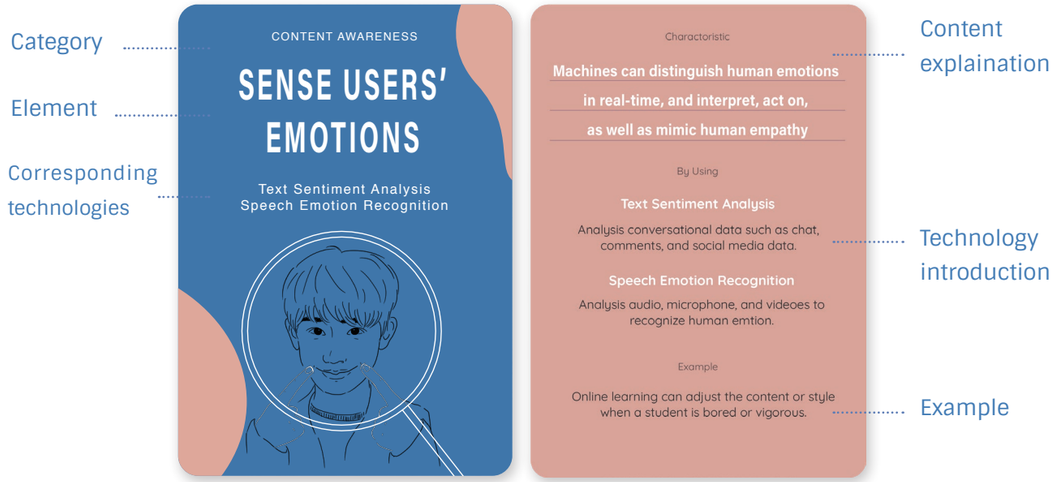
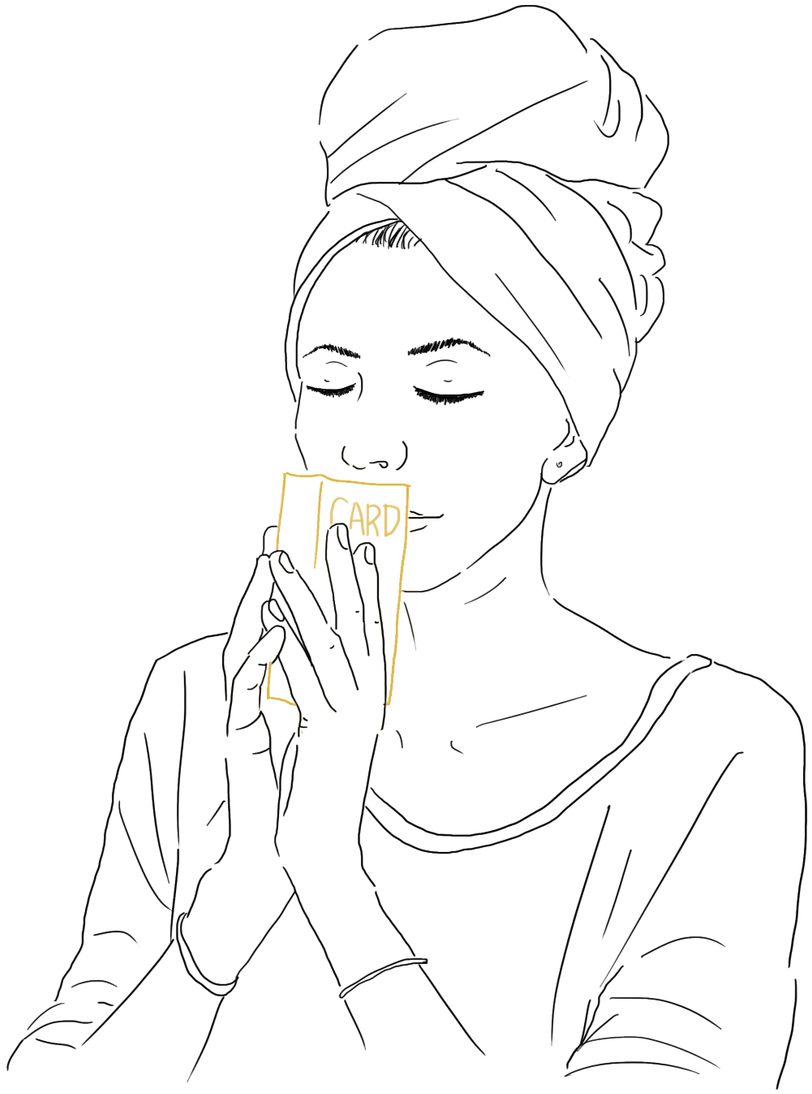


Figure 3-23. The design of Ideation card.

Figure 3-24. The design of Ideation Card Deck [appendix.8].

Key Takeaways From Chapter 03

- Two rounds of evaluation are conducted: study 1 effectiveness interview and study 2: evaluation workshop.
- Study 1 results illustrate that the card deck successfully sensitizes participants, but the overall engagement process requires extra design focus. For instance, the designer needs to be sensitized about beneficent wellbeing concept. The content of the card should be simplified and provide instruction to guide the process. Thus, a sensitizing material expands from only a card deck into a toolkit. Findings in Study 1 are integrated into the second design iteration.
- In study 2, participants validate the second design iteration, which contains a board, a website, and a Wellbeing Card Deck. The same group of participants experiences both with and without toolkit workshops. This evaluation illustrates that a workshop with toolkit successfully provokes comprehensive wellbeing impacts of digital systems. It inspires not only non-maleficence but beneficent digital experience discussion.
- The next step for this toolkit will be to bridge the gap between findings and AI behind digital systems. Here, I propose a possible solution of adding an AI Ideation Card Deck and design several example cards.



04
CONCLUSION

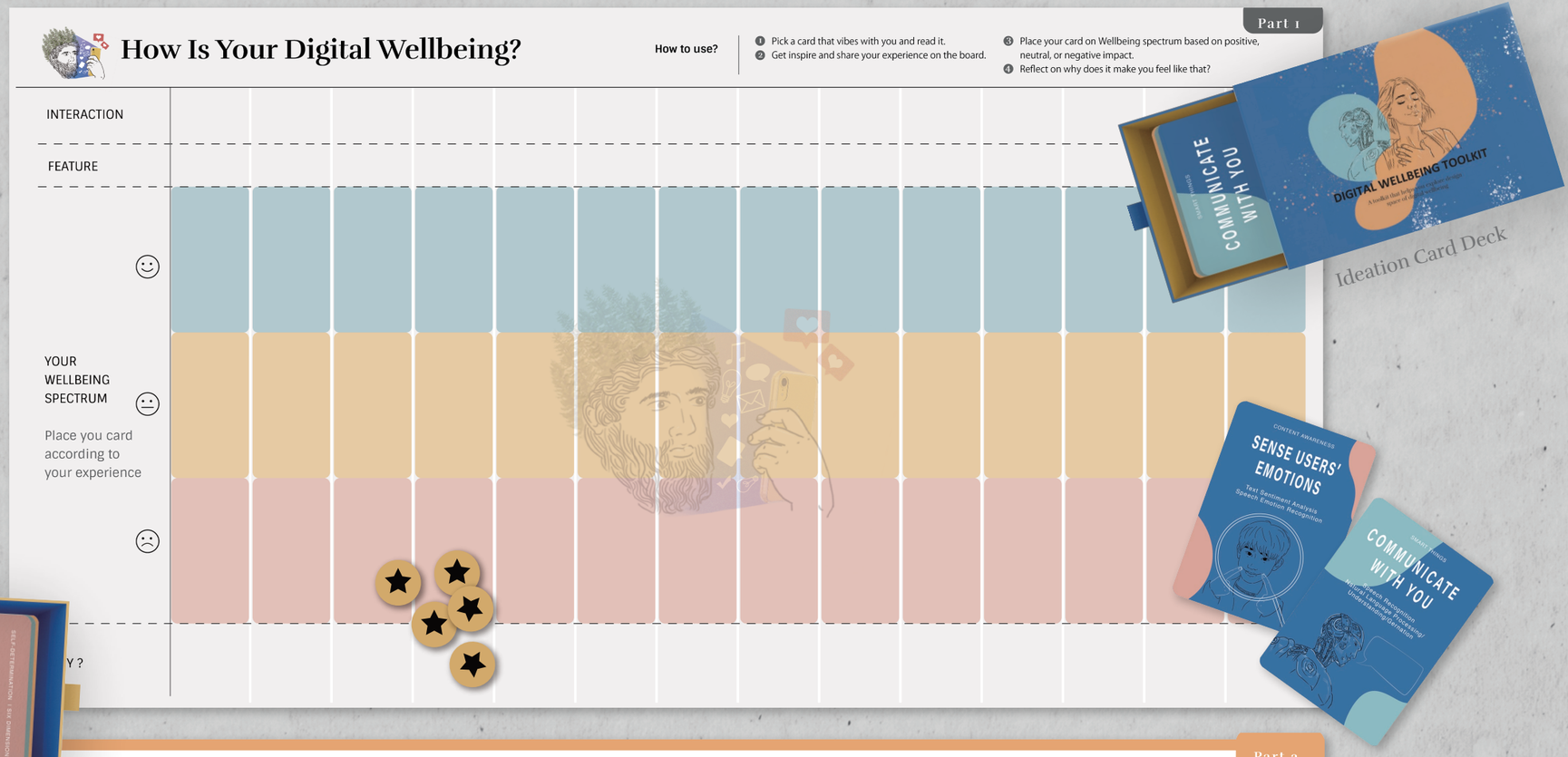
In this chapter, I provide a Digital Wellbeing toolkit based on research. I conclude the research and the project as well as discuss the future research possibility.

4.1 FINAL DESIGN

Findings of this research and process were boiled down into a Digital Wellbeing toolkit to download from the website [appendix.8].

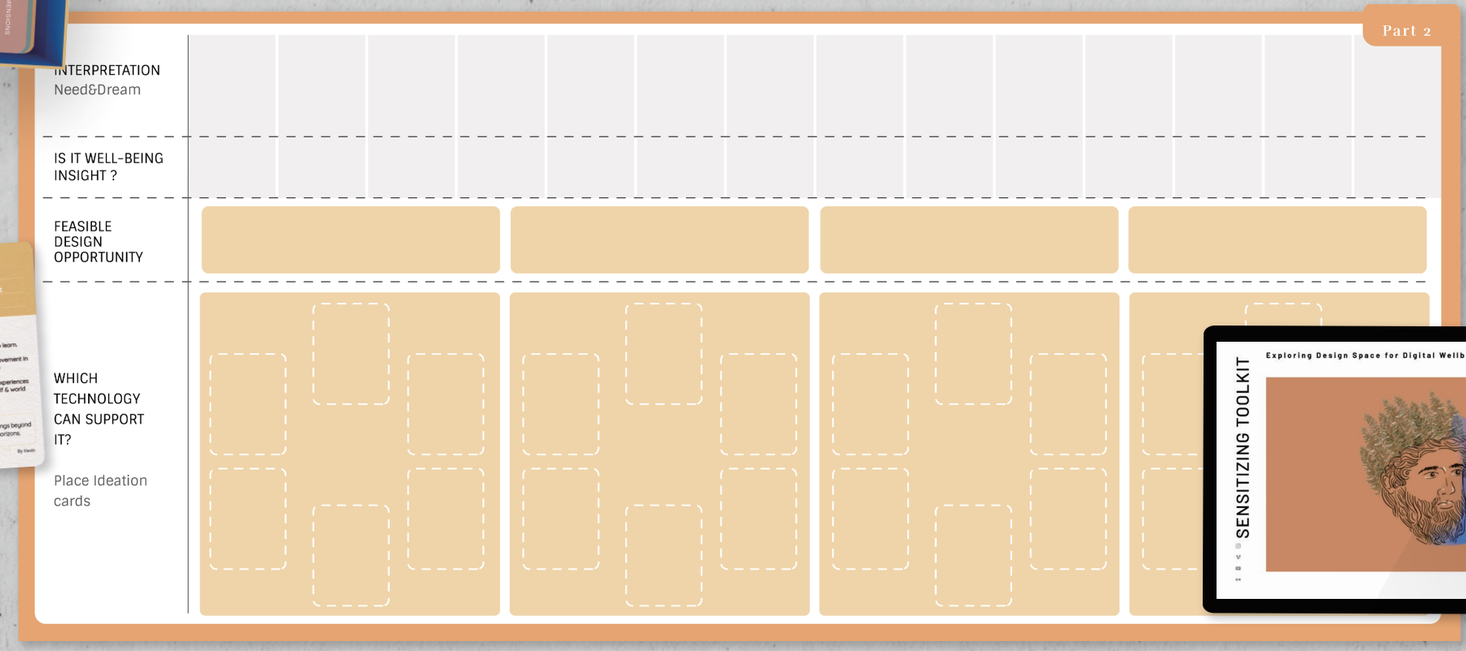
The website is a manual; it explains the aim of the project and steps for using the tool. The toolkit contains a Wellbeing Card Deck, an Ideation Card Deck, and the board.

When using the Wellbeing Card Deck, and the first part of the board can help sensitize participatory interviews or workshops. When combining it with AI Ideation Card Deck and the second part of the board, they become ideation material.



Ideation Card Deck

Wellbeing Card Deck



The Board Part 1 & 2

The Website

4.2
CONCLUSION

The **project successfully constructs a method to investigate explicitly beneficent design space for digital wellbeing**, which is one of the most challenging topics now in AI application. It sensitizes participants to discuss beneficial aspects of wellbeing impacts in the digital context, generating a possible design goal for the company to develop a system that can flourish stakeholders in the long term.

Primary outcomes and contributions of this project:

A toolkit to provoke and facilitate beneficent wellbeing discussion

The toolkit is designed to work as a sensitizing material. **It triggers digital wellbeing conversation, especially the positive impacts.** The elements that contribute to human wellbeing are mapped into the Wellbeing Card Deck. It can also serve as a guideline or checklist for digital wellbeing design. The toolkit aims to take the wellbeing elements into the exploring process of digital features. It could be used for scenarios other than a digital system with some simple modification of the content, linked explicitly to the context example part of the card.

The framework of the digital wellbeing exploring workshop

Integrating facilitated wellbeing features into a system is a dynamic and ongoing process; a sequence of workshops needs to be held to evaluate the success of design intervention to set the milestone.

According to the design research in this project, a concrete co-design workshop structure is formulated. In the sensitizing workshop, designer locates digital wellbeing design space by using Wellbeing Card Deck. Next, using Wellbeing Card Deck combine with Ideation Card Deck to brainstorm design solutions. The workshop process is guiding by the board in the toolkit. Figure 4-1 shows the journey.

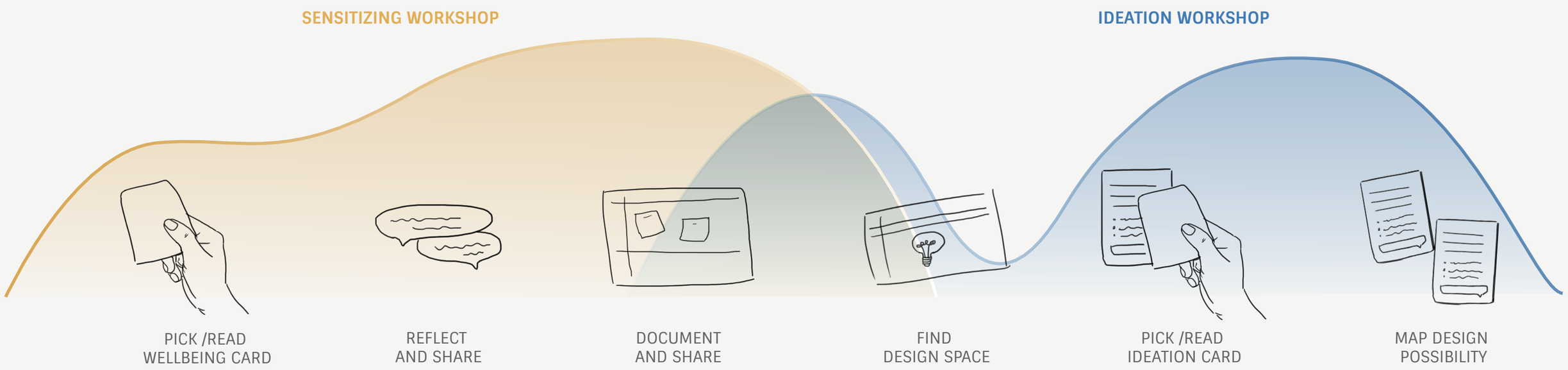


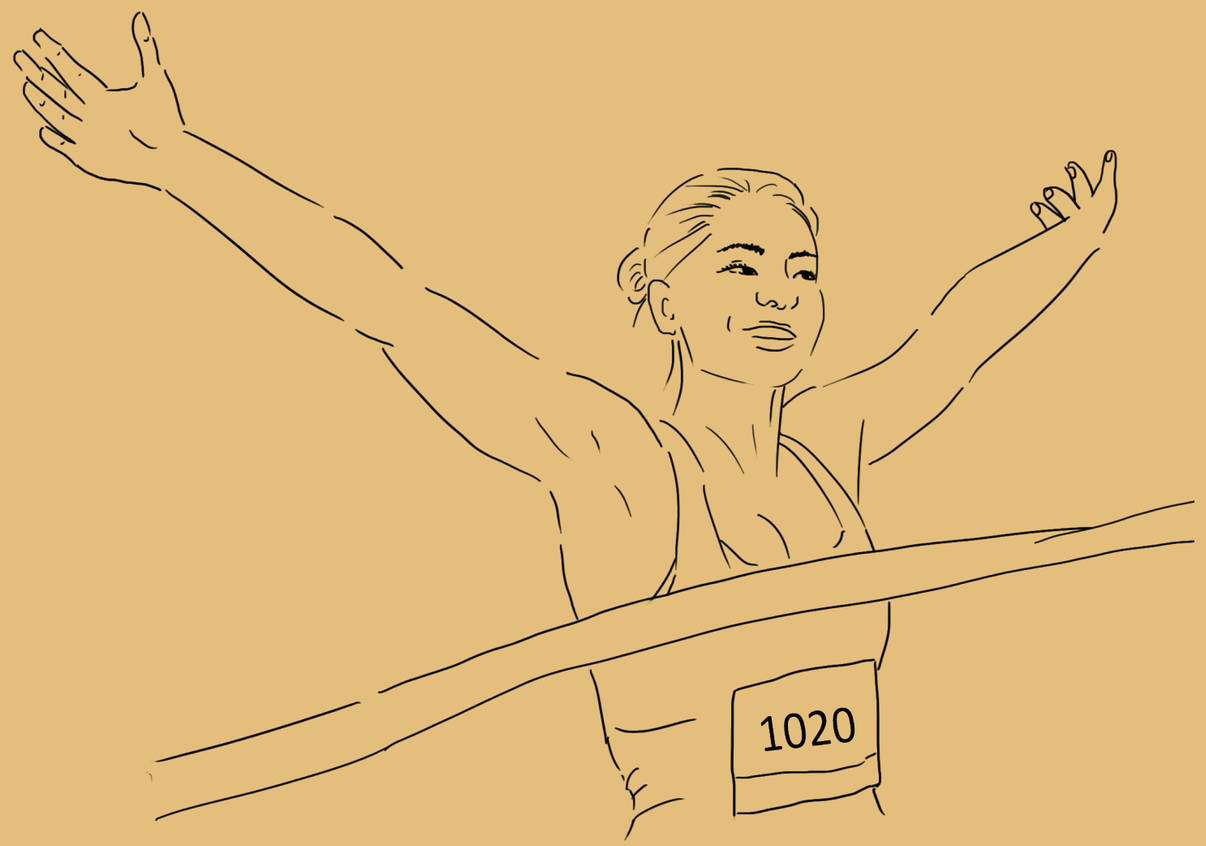
Figure 4-1. The framework of the digital wellbeing exploring workshop

4.2.1
LIMITATIONS

Owing to time limitations and the dynamic characteristic of wellbeing and AI technology, the research can only summarize the most central and contemporary part of each domain. As time passes, the new aspect of cards can be added to form a comprehensive Digital Wellbeing toolkit.

The toolkit is designed to be implemented during the discussion of different stakeholders in the development process. However, it is hard to recruit experienced digital system developers or designers for three-hour testing due to resource limitations. Thus, in this study, design students who have experience in AI ethics and AI design act as experts. Therefore, the level of information in reflecting upon one's perspectives may differ in other settings. In addition, due to Covid-19 regulations, the number of participants for final evaluation is relatively low. Thus, follow-up research can validate the product on a bigger scale to evaluate its potential.

Last, the Ideation Card Deck is the design suggestion for future research, which may need subsequent design research to complete and more rounds of testing to validate and get feedback.



4.2.2 FURTHER RECOMMENDATIONS

Based on the reflection about this project, some recommendations are made for both future research and implementation.

Test in industry

Testing the tool in actual scenarios and diverse digital system to understand the potential and the limitation of the tool.

Explore the wellbeing aspect in more domains

The current Wellbeing Card Deck builds on wellbeing theories; it might not contain all important elements for the digital wellbeing domain. Furthermore, wellbeing is a dynamic and fluid continuum influenced by many interconnected dimensions[6]. As a result, expand the card deck to cope with the rapidly changing world is necessary.

Suggestions for adding new wellbeing card:

- The aspect should have a certain level of obstruction that can provoke participants' imagination and not restrict their thoughts.
- Describe the aspect neutrally or positively. Neutral and positive descriptions will help participants subconsciously convert neutral and positive perspectives. In this way, designer has more opportunities to gain beneficent design space.

Develope AI Ideation Card Deck base on Chapter 3.2.4

In this project, we look at the general issue of measuring wellbeing regarding digital experience and design a method to map out the design space. **To make this method more concrete and AI-related, I will recommend building an AI Ideation Card Deck base on chapter 3.2.4.** In it, the author suggests a guideline for Ideation Card Deck in digital wellbeing domain and designs seven cards as examples. Future research can focus on exploring the ideation phase and comprehensive the card deck.

To sum up, due to the fast-paced nature of technology, development in AI applications has become an inevitable trend. New affordance of old applications or emergence of brand new technology both have the ability to alter the ecology of digital experience. Hence, developing the card deck over time is crucial for keeping the toolkit up to date.

4.3 WELLBEING FACTORS IN CONTEXT OF YOUTUBE

Interesting wellbeing impacts of the YouTube digital experience that reported during this study.

Auto subtitle - Kindness

When I noticed that there are automatically generated subtitles, I was very grateful. It represents the inclusiveness of this platform. Even people who understand the language but are deaf can watch the video. I think YouTube is also doing something to take care of these people.

Autocomplete - Growth

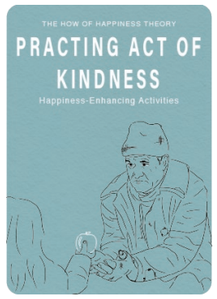
Sometimes I want to search for a specific topic but only know one or two keywords, I will type it in the search box and pick one which is most convincing. Even though I might not find exactly what I want in the auto-complete sentences, the right context usually appears after a search. This feature helps me narrow down and focus on what I want to learn. It makes learning a lot easier.

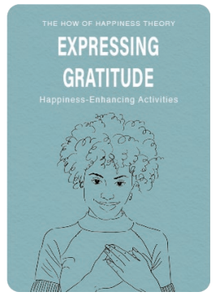
Share - Positive emotion & relationship

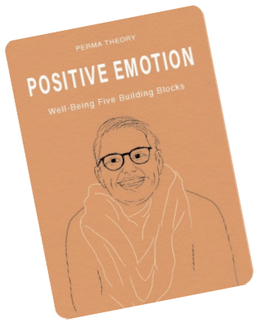
I don't "share" any video now because I feel no one care about video that I shared. For example, when I share it on Facebook, there is no reaction... Also, the "share" doesn't feedback to the recommender system, it will not help the creator either. No feedback to my action makes me feel little.

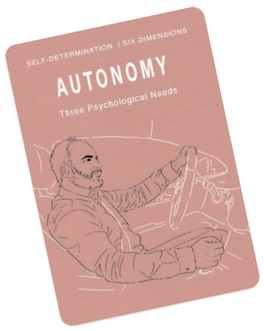
Speed up - Autonomy

The platform is very flexible. I often use the speed feature. When I watch an informative video which is a slow pace of talking, I usually speed it up so I can get information in a short time. However, it also influences my daily life. It makes me want to speed up people when they talk slow.









Number of times the card has been used

5	6	9	10	17
Expressing gratitude	Personal growth	Positive emotion	Engagement Flow experiences	Autonomy

Comment - Relationship

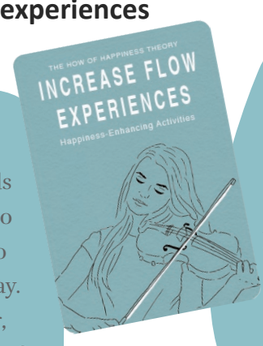
I use YouTube to watch live news so the comment is also live. When it comes to cross-country topics, the comments become unbearable for me. People write down extreme, political, and out-of-context statements truly hurt my belief toward humanity.

Recommendation - Gratitude

I know "how long people watch the video" is one of the important parameters in recommender system so I usually watch through the video to express my gratitude toward good context. I wish there is a better way to help the creator.

Advertising placement- flow

I use YouTube for meditation, so the ads that appeared in the middle of the video completely broke my process. I want to contribute to creators, but not in this way. Another type of ad placement is better, which is the placement at the beginning of the video. After watching the ad, I can still be immersed in the context without being shocked in the middle.



Next video recommend-Autonomy

There are two ways YouTube presents next video. One is autoplay after 5 sec which is too fast! I use YouTube to learn to knit before I put down my yarn, it already starts playing the next video, which is not what I need! I prefer the one that when the video is over, it stops and shows links to recommendation videos. In this case, I feel a sense of choice instead of being forced to accept the recommendation.

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APPENDIX