ReflectTok

Master 2.1 project, Eindhoven Uiversity of Technology, Department of Industrial Design

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Track: Research, Design and Development (RDD)

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Prologue

This document is a design report describing the creation of ReflectTok, a design project by Yorn Thijssen in the final year of the master Industrial Design prior to the start of the Final Master Project (FMP).

The project started from a combination of my professional identity and vision, including my role and experience as designer, and my passion for and experience in education. While studying the Science Education for a full year prior to this project, I experienced that digital, especially media, literacy was very poor in students.

My personal aim for this project was to combine design and education addressing the abovementioned lack of digital literacy, exploring if design for education is a subject to continue in the FMP.

Summary

TikTok is an extremely popular social media platform amongst youth. While it can leverage positive effects, the powerful recommendation system also creates a filter bubble: the potential consequence of personalized content, where individuals will be isolated from diverse perspectives and information. Students aged 12-16 lack awareness on the algorithmic working of social media platforms and potential effects on themselves and society. This project aimed to design an educational tool that supports students 12-16-years old in acquiring the knowledge, skills, and mentality necessary to make critical and aware use of TikTok.
A user centered and iterative design approach resulted in the design of ReflectTok consisting of a physical tool and application. Students work in duos on two activities: 'Visualize your Bubble' and 'Challenging the Algorithm'. By performing these activities students reflect on, discuss, and learn about how TikTok its algorithm works, how it creates filter bubbles alongside their effect, and how it can be influenced. This report describes the full design process of the creation of ReflectTok.

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1. Introduction

Today, we interact with a vast number of digital technologies and consume a huge amount of media, indicating they have an increasingly vital place in our society. It is often expected that children become skilled in the use of digital technologies because they encounter and start using digital technology from an early age on. But digital literacy among students in the Netherlands is actually notably low. Teachers evaluated primary school students at 4.7 and secondary school students at 5.0 for digital literacy, indicating a need for improvement (Hezemans, 2023).

The Netherlands does not include learning objectives on digital literacy, setting it apart from many European countries (European Commission, European Education and Culture Executive Agency, 2022). Schools have the autonomy whether to teach digital literacy, causing differences between students. Although the government formed a team of teachers, digital experts, and curriculum experts for creating these learning objectives, a short-term solution is needed for teaching digital literacy (Ministerie van Algemene Zaken, 2023).

This short-term solution is especially needed on media literacy, one of the four digital literacy domains, given that 84% of 12- to 16-year-old students use social media (almost) daily (Rombouts, Van Dorsselaer, Scheffers-van Schayck, Tuithof, Kleinjan, & Monshouwer, 2020). As these children are bombarded with a stream of information, images, and videos, becoming media literate is essential. It enables them to question the authenticity of content and heightens awareness of the impact on themselves and on society, stimulating critical and aware use of media.

TikTok is the most used social media platform among the aforementioned majority (Van der Wal et al., 2023) It is known for its short-form videos and addictive endless-scroll feature. Despite its positive effects, it can shape individual and societal beliefs and behavior. Any user can create content, which results in content including political views, harmful trends or behaviors, misinformation, fake news, hate speech or other more extreme content. Additionally, the recommendation algorithm is designed to show content users are most likely to engage with, potentially creating a 'filter bubble' where users are exposed to the same (extreme) content.

In line with the lack of digital literacy, students lack understanding of algorithmic workings and fail to recognize the effect of a filter bubble and understand how their actions can influence it. Moreover, they lack awareness of its potential influence on both an individual and societal level (de Groot, de Haan & van Dijken, 2023).

In conclusion, there is a need for a short-term solution on teaching digital literacy in the Netherlands, especially on media literacy and the extensive use of TikTok by students. This led to the following design challenge:

Create an educational tool that supports high-school students aged 12 to 16 in acquiring knowledge, skills and mentality that are needed to make critical and aware use of TikTok, thereby improving their media literacy.

1.1 Approach

To address this challenge, a combination of the double diamond model and a user centered design (UCD) approach was applied.

The former mentioned is a design framework including two diamonds and four phases: discover, define, develop, and deliver (Design Council, n.d.) (figure 1). In the first diamond one investigates a problem while in the second diamond, one investigates a solution. 'Discover' and 'develop" are diverging phases, 'define' and 'deliver' are converging phases.

User Centered Design (UCD) is an approach focussing on users and their needs (Norman & Draper, 1986). By using a variety of research and design techniques like interviews, observations and usability tests, users are involved throughout the iterative design process (figure 2). These stages are very similar to the stages in the double diamond model.

In chapter 3 'The Design Process' it will be described and visualized how each step fits within both approaches and which methods were used.

1.2 Reading Guide

This report continues with chapter 2, providing background information and related work (in education) on digital and media literacy, TikTok and filter bubbles. Chapter 3 visualizes and describes the design process followed by the (final) design in chapter 4. These will both be discussed in chapter 5, including limitations and future work. The full project will be concluded in the final chapter of this report. Additionally, before the appendices, the Proposal for the Final Master Project is presented.

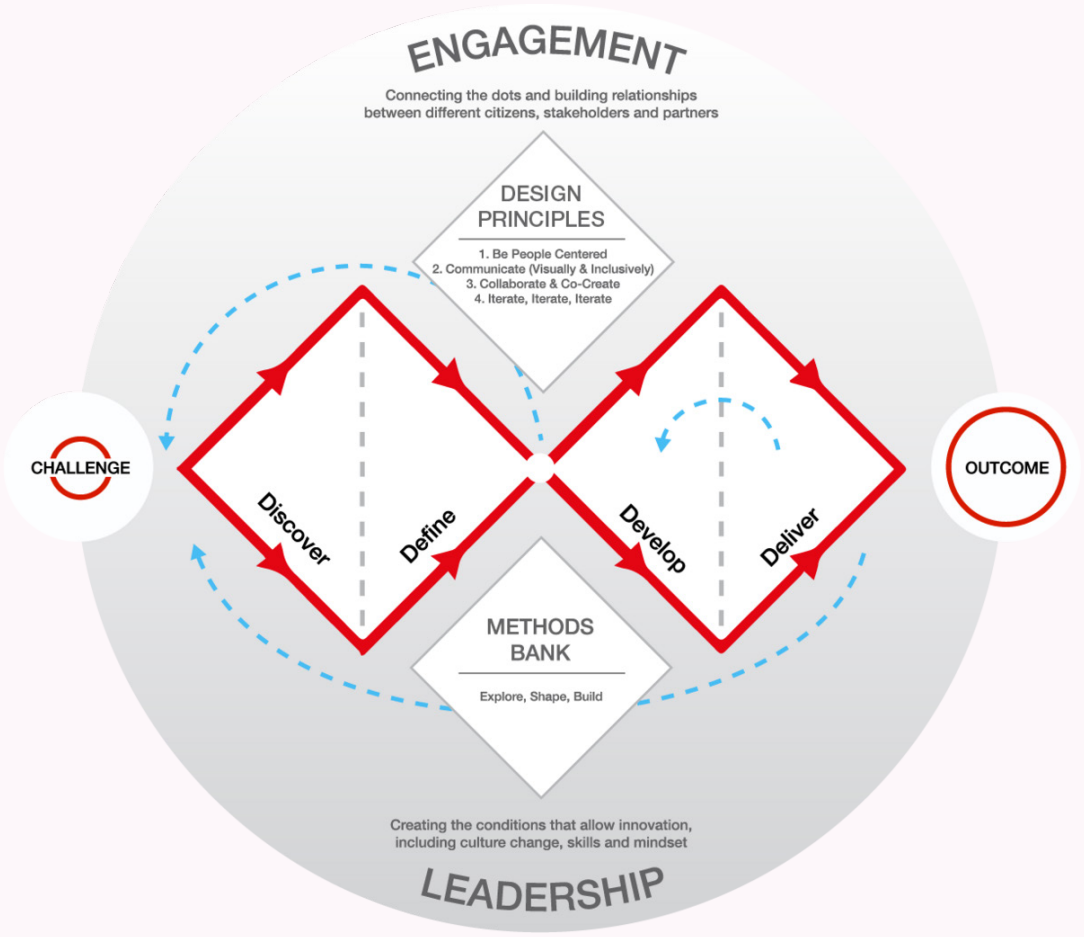

Figure 1: Visualization of the double diamond model (Design Counsil, n.d.).

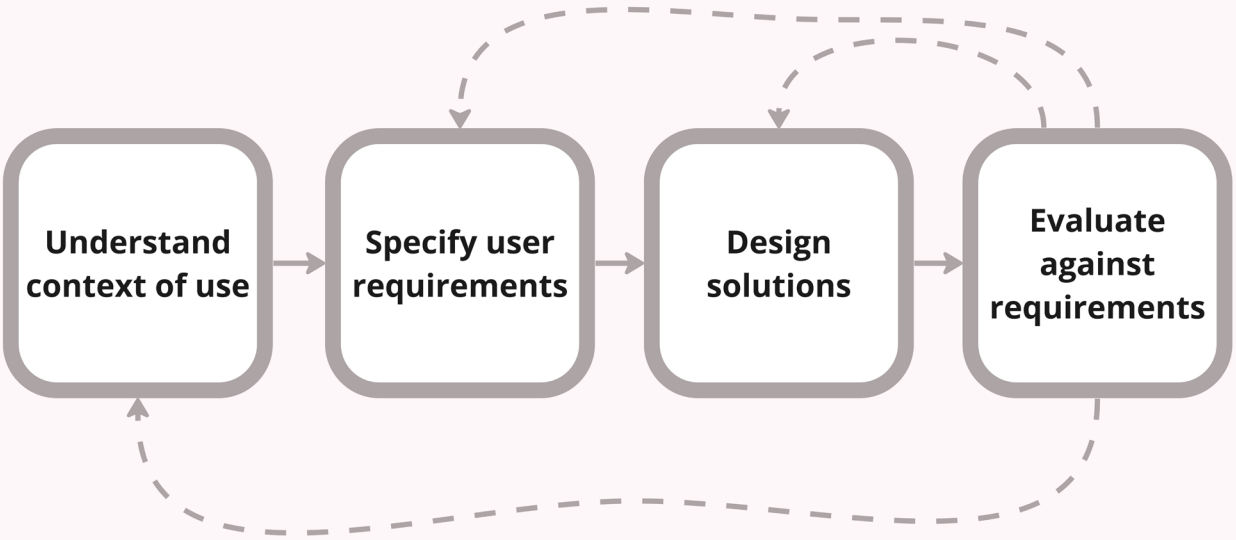

Figure 2: Visualization of the iterative UCD process (What Is User Centered Design?, 2023).

2. Background & Related Work

2.1 Digital Literacy

Stichting Leerplan Ontwikkeling (SLO), the national expertise center on curriculum development, describes digital literacy as a combination of knowledge, skills, and attitude such that one can make aware, responsible, critical, and creative use of digital technology, digital media, and other technologies (Over Digitale Geletterdheid, n.d.). SLO categorizes digital literacy into four domains: ICT-skills, media literacy, computational thinking, and digital information skills. This project focusses on one of these four domains: media literacy.

2.2 Media Literacy

Children aged 13-16 spend an average of 4 to 5 hours daily on smartphones, with about 1.5 hours on social media (Van Benthem, 2022; Hoekstra et al., 2023; Cijfers Over Mediagebruik | Nederlands Jeugdinstituut, 2023). The majority (84%) uses social media almost daily (Rombouts et al., 2020). Media literacy is becoming more crucial in our increasingly medialized society. SLO defines it as the combination of knowledge, skills, and attitude to make aware, critical, and active use of media (Over Digitale Geletterdheid, n.d.). It is further divided into four topics:

- Medialization of society
- Media and perception
- Media, participation, and identity
- Creating and publishing media

Key topics in this project are medialization of society and media and perception, which are focused on educating students about the media's role, effects, and portrayal of reality, including its influence on perception, and shaping norms and values.

2.3 TikTok

TikTok, launched by ByteDance in 2016, is a highly popular and the fastest growing social media app, achieving in over 4 years what Facebook and Instagram took 10 years to do, with over a billion monthly active users (Woodward, 2023). In the Netherlands, 74% of 14- to 17-year-olds use the app (Van der Wal et al., 2023). Its success can be attributed to its unique format allowing short video creation and the powerful algorithm in the recommendation system which ensures highly personalized content on the famous "For You" page (FYP) (figure 3).

Figure 3: a screenshot of a video on the FYP on TikTok.

2.3.1 Effects & Influence

Among other things, TikTok has the positive effect of fostering connections among children that deal with issues on e.g. identity, autism, or ADHD. Nevertheless, TikTok also received critique upon its potential negative effects. The app's design, which aims to keep users engaged as long as possible by its addictive endless-scroll and powerful recommendation system, can create a 'filter bubble. For example, Amnesty International highlighted mental health risks caused by these features in two reports (2023), while another study created and warned a filter bubble on the FYP showing merely conspirational, radical and hateful extremist content can potentially influence users' trust in institutions, experts, and moral frameworks (Boucher, 2022).

2.3.2 The Algorithm

TikTok's algorithm is so powerful that 90-95% of the content that is seen comes from the recommendation system (The Wall Street Journal, 2021). TikTok made significant changes to the FYP amid the criticism in 2022, but they still refuse to be transparent on how the algorithm exactly works (Griffin, 2022). The company states that recommendations are based upon a number of factors:

- User interactions (likes, shares, accounts one follows, comments)
- Video information (captions, sounds and hashtags)
- Device and account settings (Language, location, device type)

(TikTok, 2020). Mainly a single user interaction significantly influences the content on the FYP: watch time, or in other words how long a user watches a piece of content (The Wall Street Journal, 2021). TikTok learns a user's deepest interests and emotions, shows similar content, and potentially creates a 'filter bubble': the consequence of personalized content, where individuals will be isolated from diverse perspectives and information (Areeb et al., 2023). The Wall Street Journal's investigation, using automated accounts, revealed users can end up in a variety of filter bubbles on their FYP. From general ones on astrology to extreme topics such as election conspiracies, sexual dynamics or depression.

2.4 Filter Bubble

'Filter bubble" is a term coined by Eli Pariser in 2011, describing it as:

"your own personal, unique universe of information that you live in online. And what's in your filter bubble depends on who you are, and it depends on what you do. But the thing is that you don't decide what gets in. And more importantly, you don't actually see what gets edited out." (Pariser, 2011)

Despite it might improve user experience, Pariser warned filter bubbles are potentially harmful for both individuals and society. It closes us off to new ideas, subjects, and important information, reinforcing existing beliefs and biases (Pariser, 2011b) While studies show mixed empirical evidence on the effects of filter bubbles, the presence of filter bubbles in recommendation systems is apparent (Kramer et al., 2014; Haroon et al., 2022; Ross Arguedas, A., et al., 2022; Areeb et al., 2023). For example, in the The Wall Street Journal's investigation a bot's FYP consisted for 93% on depression related content (figure 4) (The Wall Street Journal, 2021).

A recent study found students lack awareness of algorithmic working (de Groot, de Haan & van Dijken, 2023). In interviews, students did not mention algorithmic filtering's influence or their actions shaping their content. With social media, notably TikTok, rising as a primary news source for many youths, it is crucial to teach media literacy to students (Commissariaat voor de Media, 2023). It emphasizes the need to educate them about the workings of algorithms in social media, filter bubbles, and their potential impact on both individuals and society

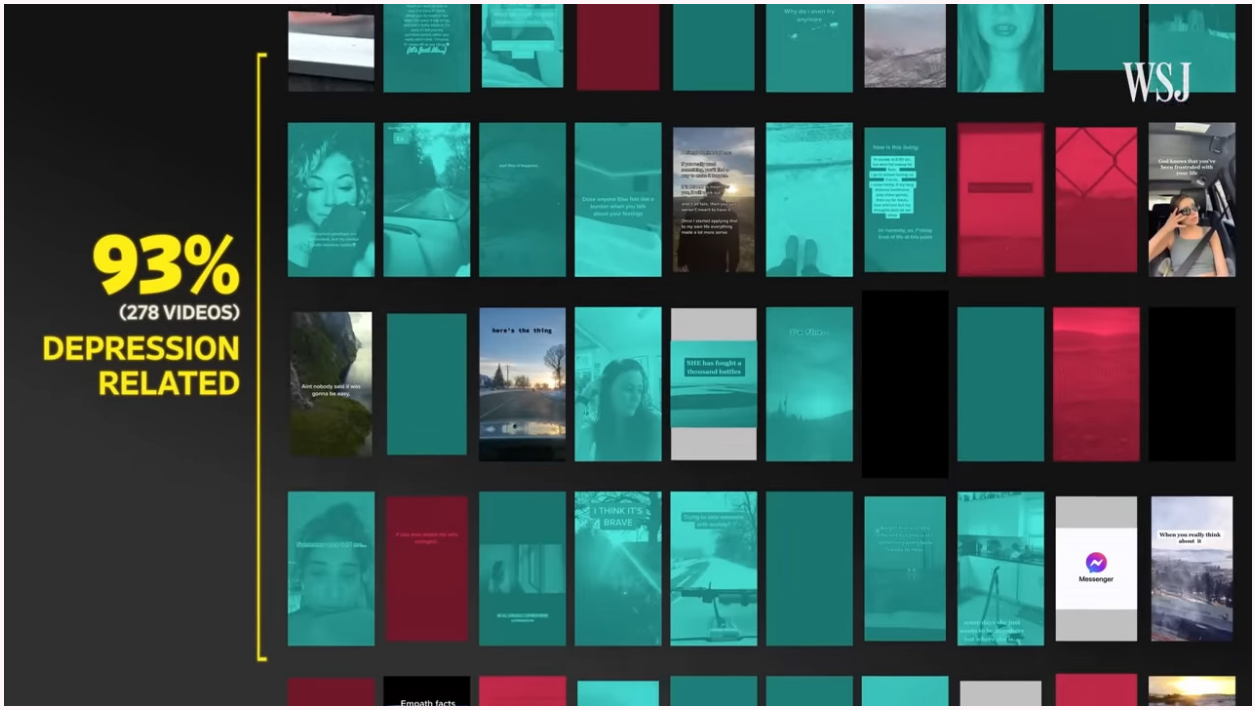

Figure 4: a screenshot of the video of The Wall Street Journals' investigation (2021).

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2.5 Learning material

SLO provides an overview of various modules, series of lessons, tools and workshops on media literacy (Leermaterialen, n.d.). Most material focusses on multiple aspects of media literacy at once, but some material is focused on specific topics like material from Internethelden, focusing on social media topics such as privacy and fake news (Leermaterialen, n.d.; De InternetHelden, n.d.).

Tools like VR lessons and discussion cards are available for classroom use, emphasizing critical thinking about (social) media in a playful manner (Ons Aanbod, n.d.; Podiumvooronderwijs.nl - Jongeren Mediawijzer Met VR, n.d.; Uitgeverij Pica, 2023).

However, limited attention is given to algorithm workings, filter bubbles and their effect in existing materials. Most often it is a small part in a series of modules like in material from De Baas Op Internet (n.d.). In contrast, The Hmm designed a workshop specifically on TikTok in which students learn about the app, the (working of the) FYP, and in which they create a documentary on a specific filter bubble (TikTok - the Hmm, 2023).

A Utrecht University research project is developing an educational app promoting algorithmic awareness knowledge, agency and ethical reflection for students in secondary education, in particular related to their opinion formation and perspective taking. The app, intended for class use with both individual and group assignments, and whole-class discussions, is currently under development. Therefore, specifics about the content are limited.

Given is that students engage with the design through three roles and phases: platform user, developer, and owner (figure 5)(The Filter Bubble App, n.d.). In this manner, the method neglects the opportunity for students to reflect on their own potential filter bubbles and their impact on themselves and society.

While ample media literacy materials exist, there is little material addressing the algorithmic workings of social media, filter bubbles, and their impact on individuals and society. Even less material lets students use the actual context, social media e.g. TikTok, while learning. Current materials also often employ a traditional teaching approach, simply providing information and assignments.

2.6 Design Gap

Based on the abovementioned conclusion there is a design gap for an innovative, self-reflective approach to educate students on the algorithmic workings of social media, filter bubbles, and the influence on individual and societal level, thereby enhancing overall media literacy.

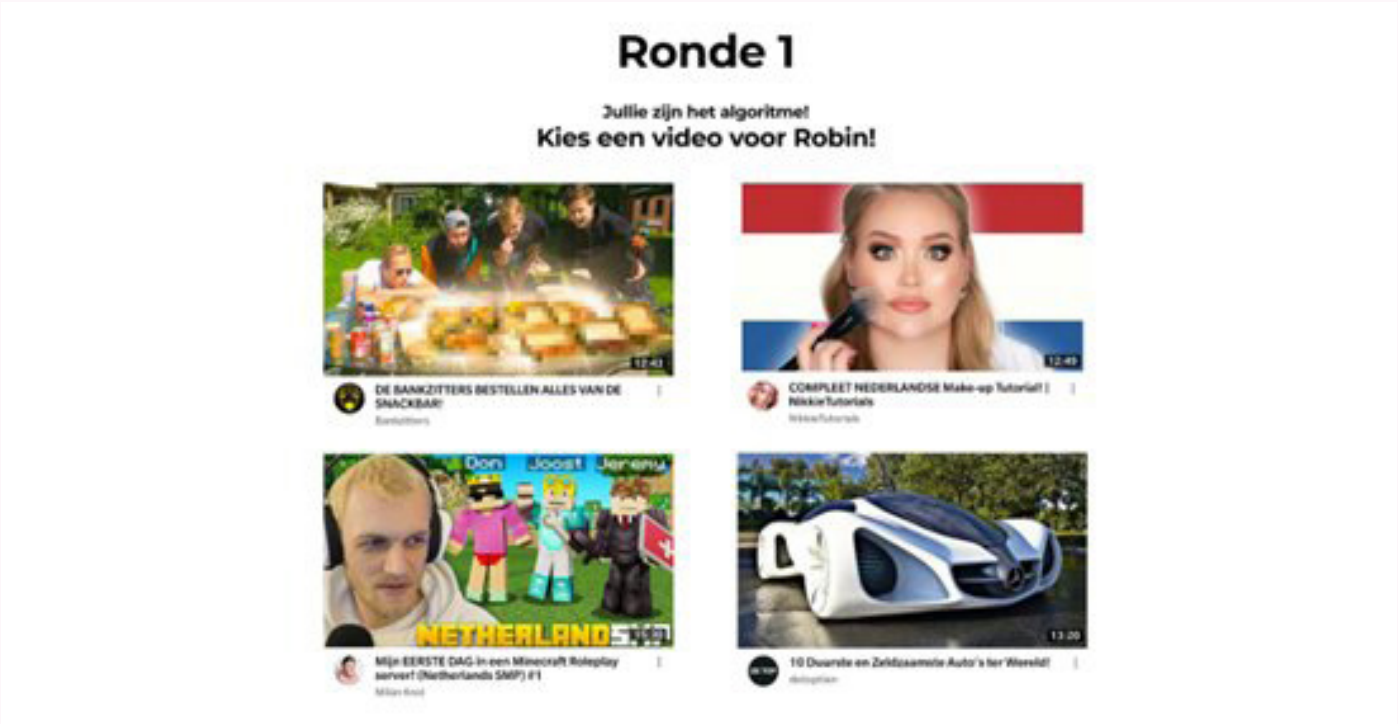


Figure 5: Example of 'the algorithm activity' in The Filter Bubble App (n.d.).

3. Design Process

This chapter describes the process towards the final design in four iterations. For each iteration a visualization shows how the steps taken fit within the Double Diamond model and the UCD iterative design process.

3.1 Iteration 0

Iteration 0 involved research, writing a design brief, creation of persona's which were used in co-creation sessions and making design ideas and lo-fi prototypes.

3.1.1 Phase 1: Discover & Define Design Challenge

The project started with the intention to create an educational tool to address lack of digital literacy. Research on digital literacy was conducted to discover relevant challenges in education that also suited the designer's vision, resulting in key findings (figure 6) and a design brief (Appendix A).

Media literacy, specifically media and society, and media and perspective, became the focus of the project. Given the widespread use of TikTok among students and the algorithmic influence of the recommendation system, the following "How Might I" question that includes four design goals was documented in the design brief:

How might I, by use of design, enhance 12–16-year-old high-school students' awareness of (1) their TikTok use, (2) how it can influence their media consumption and perspective, (2) how this is happening for each individual and (4) how this can have an impact on society?

Figure 6: Key findings from research on digital literacy.

BEN

- 15 years old
- vmbo-t
- Plays soccer.

Personality

Ben is a 15-year-old boy who likes to play soccer. He is a very loving and caring person and is therefore very much loved by classmates and teachers. He sometimes struggles with dealing with his own emotions, especially after his recent break-up.

TikTok Filter Bubble

Sad Break-up videos

Figure 7: Persona Ben (full persona and scenario in Appendix B).

ILSE

- 14 years old
- Havo
- Loves being active (Running)

Personality

Ilse is a very kind and lovely 14-year-old girl who loves to be active and is very ambitious. She is introverted and therefore somewhat quiet girl. She has a small number of really close friends.

TikTok Filter Bubble

Running video's

Figure 8: Persona Ilse (full persona and scenario in Appendix B).

3.1.1 Phase 2: Develop & Deliver First Design Ideas

To get a better understanding of TikTok, investigation on the app was done and three personas and scenarios were created (figure 7,8,9 & Appendix B). These gave insights into the target user and were used in a brainstorm session with fellow students. Moreover, contact was made with high schools for interviews and co-creation sessions with teachers.

In the brainstorm session participants worked in pairs, each assigned one of the personas, and brainstormed on design ideas for one of the four goals in the design challenge. Results inspired the creation of three designs ideas that addressed the four design goals. Lo-fi prototypes of these designs were made (figure 10,11 & 12).

The designs were not further elaborated upon, as it was intended to use them as prompts for idea generation in co-creation sessions with teachers. However, due to infrequent and slow contact these sessions occurred later in the process. Content and intention of these sessions changed according to the stage of the process.

RICK

- 14 years old
- vwo
- Lives and grew up on a farm.

Personality

Rick is a smart 14-year-old vwo student who grew up on a farm. Amongst his classmates, he is loved for his great sense of humour. However, it is noticeable when he is being serious and tries to convince others of his opinion.

TikTok Filter Bubble

Farming & FarmersDefenceForce

Figure 9: Persona Rick (full persona and scenario in Appendix B).

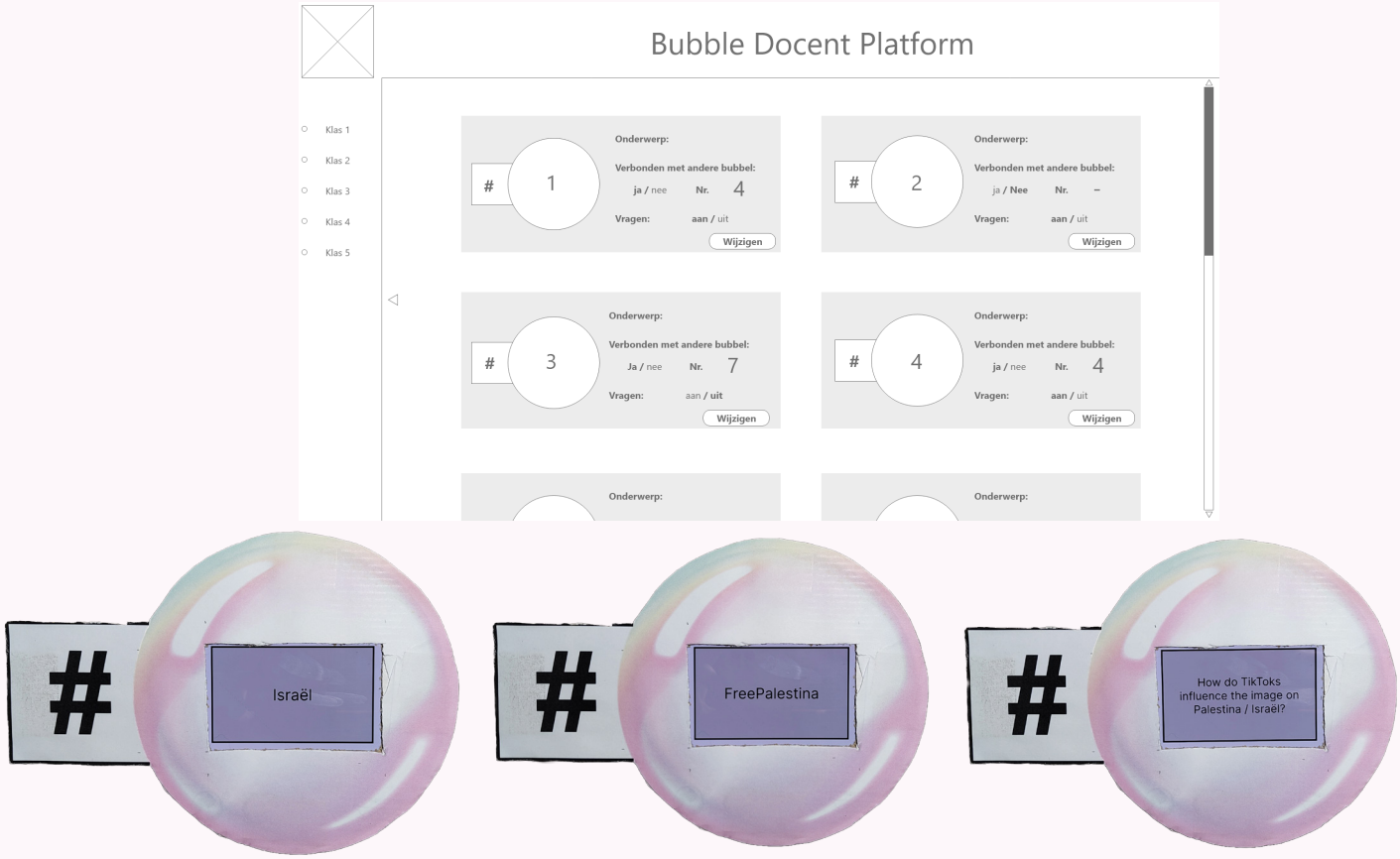


Figure 10: Lo-Fi prototype idea 1: Students use physical 'bubble' tools in class, each showing an existing bubble on a small screen. They match with a peer, reflecting on the bubble's influence using questions. A platform allows teachers to insert bubbles and questions, allowing the use for actualities.

Figure 11: Lo-Fi prototype idea 2: A combination of a two-person game and reflection, where students guess the owner of video in a blended FYP, earning points for correct guesses while indicating others are shown different content. After each video students answer reflection questions to provide insights into the bubbles.

Figure 12: Lo-Fi prototype idea 3: Students reflect on FYP videos by inserting their phones into the design, choosing a topic and receiving reflection questions. Three design variations were made including cards with questions in drawers (top), questions on a screen (middle), and physical rotating disks (bottum). All variations feature a timer to raise awareness on their total TikTok use and their watch time per video, the most crucial data for the recommendation system.

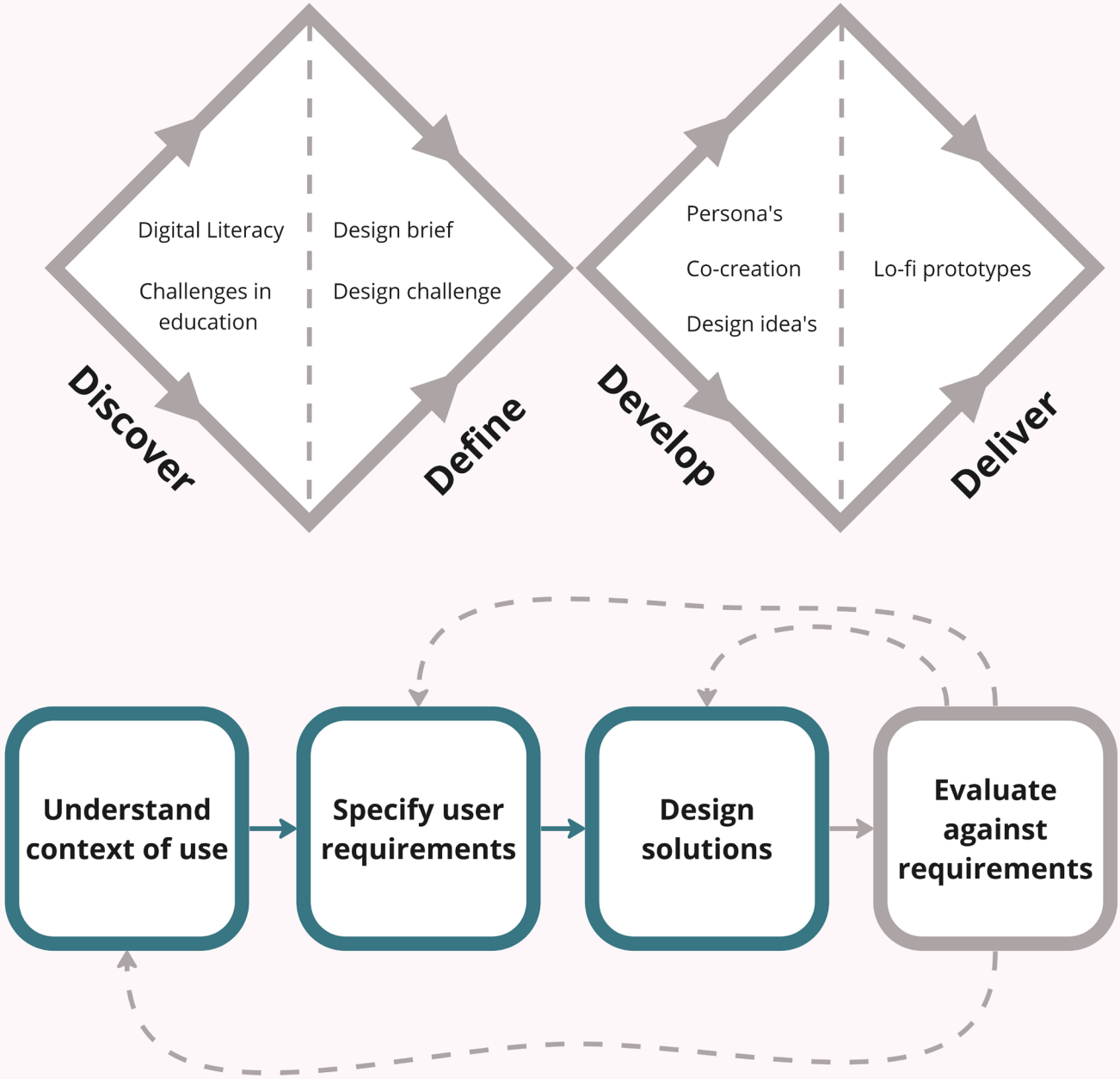


Figure 13: A visualization of the steps in iteration 0 in the double diamond model and iterative UCD process.

3.2 Iteration 1

Following the design ideas in iteration 0, a new iteration involved interviews, co-creation with teachers, defining learning goals and the development and evaluation of a design.

3.2.1 Phase 1: Discover & Define Design Requirements

Interviews

Five teachers across three high schools were interviewed on digital and media literacy, focusing on students' awareness of TikTok use and its influence, particularly regarding filter bubbles. Table 1 provides an overview of the participants' roles as teachers and/or in digital or media literacy. The interview questions are listed in appendix C.

Table 1: Interview Participants role as teacher

Participant	Role
1, School 1	Teacher ICT-, Mentor, Role in digital Literacy team
2, School 2	Teacher Media literacy, Member of Digital/Media literacy team
3, School 3	Education coordinator lower grades, Visual art teacher
4, School 3	Mentor/Coach, Teacher biology
5, School 3	Mentor/Coach, Teacher Englisch

Interviews were recorded, transcriptions were made, and a thematic analysis was done. A total of 7 themes were found, among which 15 smaller subthemes were found (figure 14).

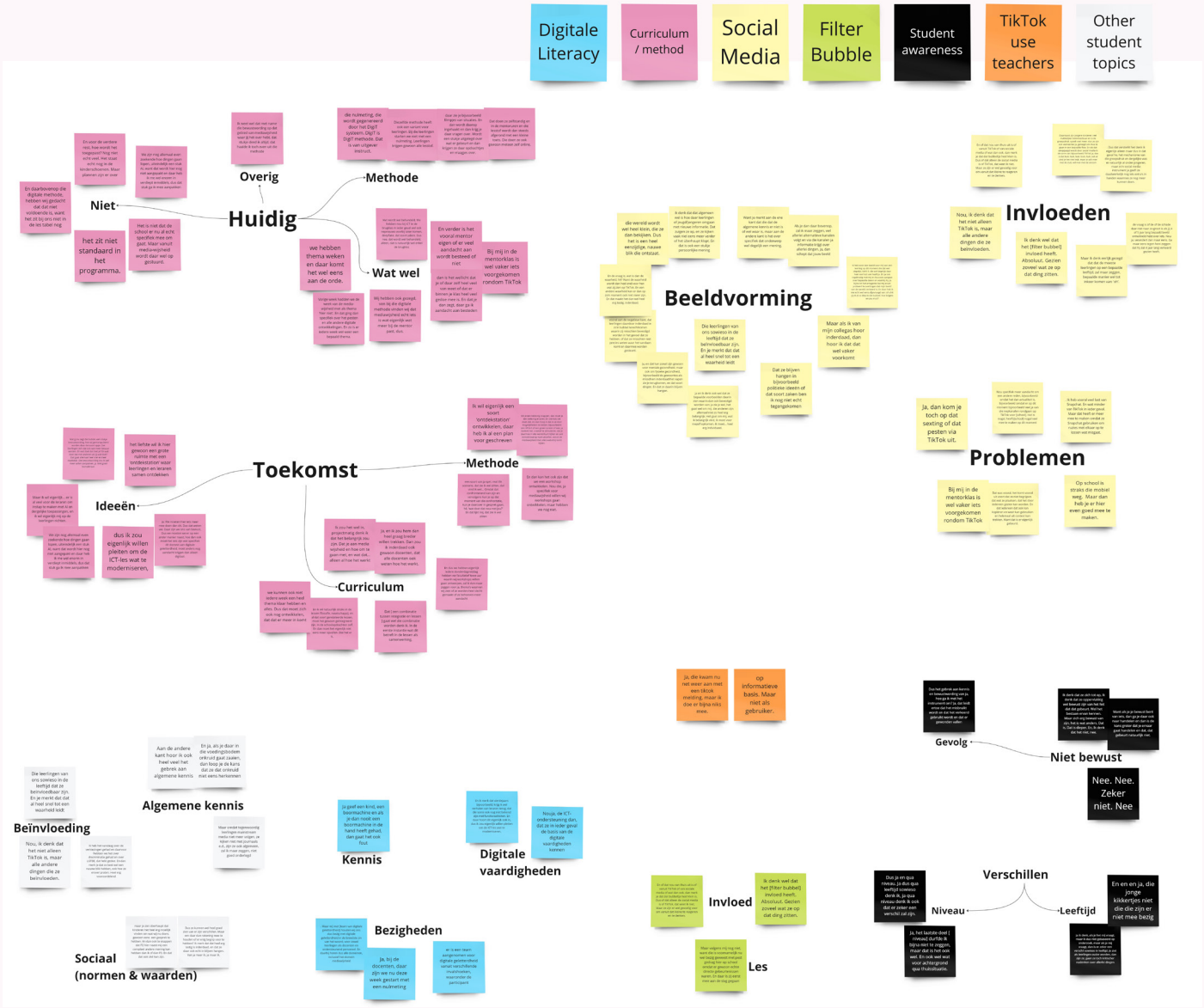


Figure 14: Result of the thematic analysis conducted on the interviews

The theme curriculum showed the differences amongst schools: school 1 actively taught digital literacy, school 2 incorporated it through thematic weeks, and school 3 addressed it if the mentor teacher thinks it is important.

In social media, the influence on students' perspective was given a lot of attention, including examples of students noticeably being influenced by a filter bubble. Other problems were also mentioned, such as sexting, cyber-bullying and fake accounts.

The theme on students' awareness of filter bubbles and their possible influence showed the need for increasing awareness, with teachers giving clear answer on the question if they think students are aware:

"No" (p5)
"No" (p6)
"Definitely not" (P4)

The results support prior research on the lack of students understanding and awareness of filter bubbles and their potential influence, indicating a need for media literacy education.

Additional Teacher Involvement

Teachers have also been involved in establishing design requirements using the MoSCoW-method and a workshop to formulate learning goals (ii).

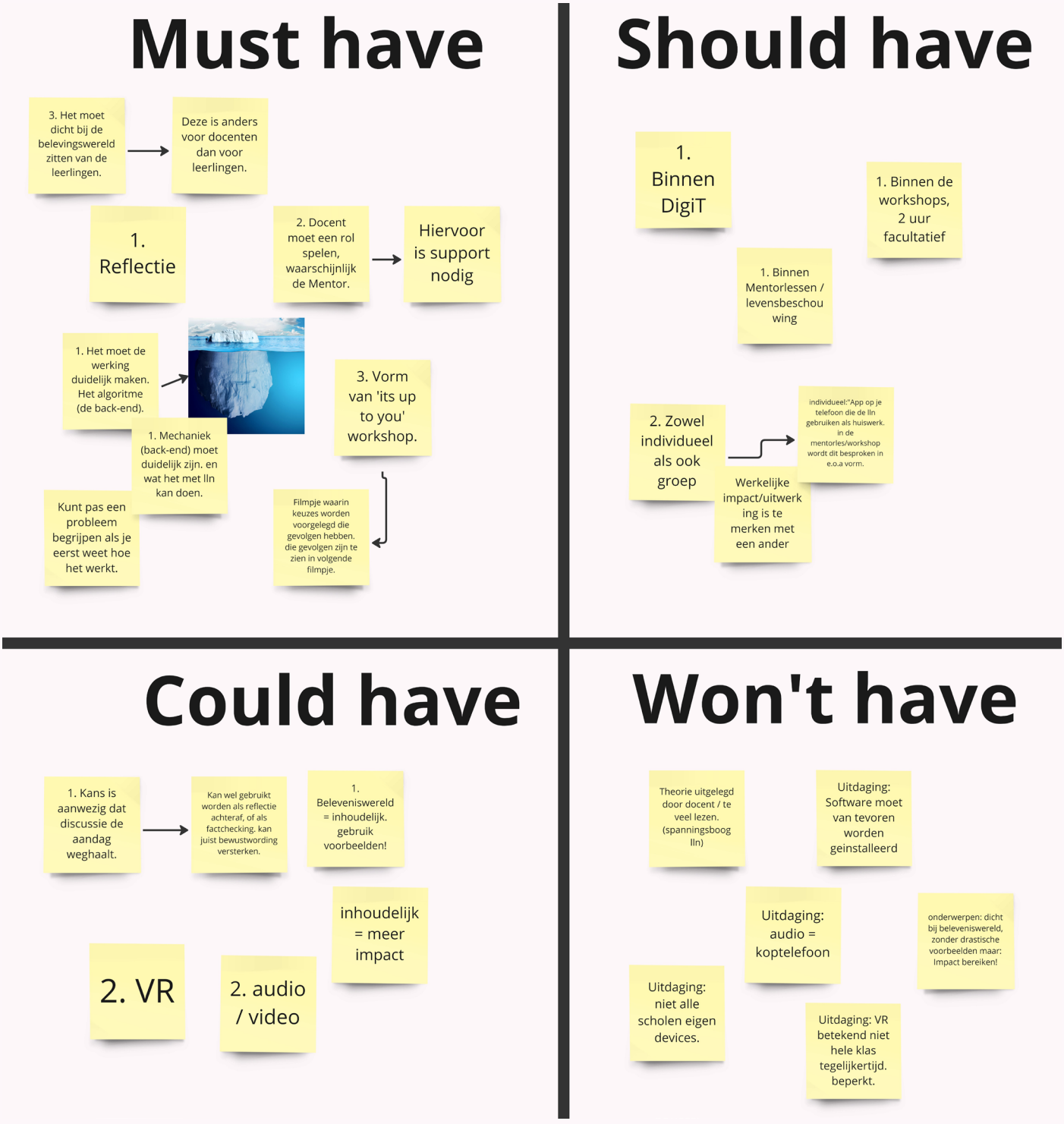


Figure 15: Result of the co-creatio using the MoSCoW-method.

(i) MoSCoW-Method

Preparations were done for a co-creation session for establishing and prioritizing design requirements using the MoSCoW-method (Stapleton, 1997). Instead of asking what a design Must, Should, Could and Won't have, a series of questions was formulated for each priority level (Appendix D). Results are presented in figure 14.

Due to the limited participants, only one teacher, no valid requirements can be concluded. However, elements in 'Should have' inspired for the development of a design, described in 3.2.2.

(i) Formulating learning goals

Students learning goals were formulated, inspiring approaches for the design to achieve the four goals in the design challenge. This was done by taking learning goals on media literacy from SLO, specifically medialization of society and media and perspective, and tailoring them to TikTok (Digitale geletterdheid – Inhoudslijn po-vo Mediawijsheid, 2018).

A selection was chosen that align with the four goals of the design challenge. Learning goals were formulated and categorized in three categories: *knowledge on TikTok, TikTok and perspective* and *TikTok and society (figure 16)*. This process also influenced refining the overall design challenge to:

Create an educational tool that supports high-school students aged 12 to 16 in acquiring knowledge, skills and mentality that are needed to make critical and aware use of TikTok, thereby improving their media literacy.

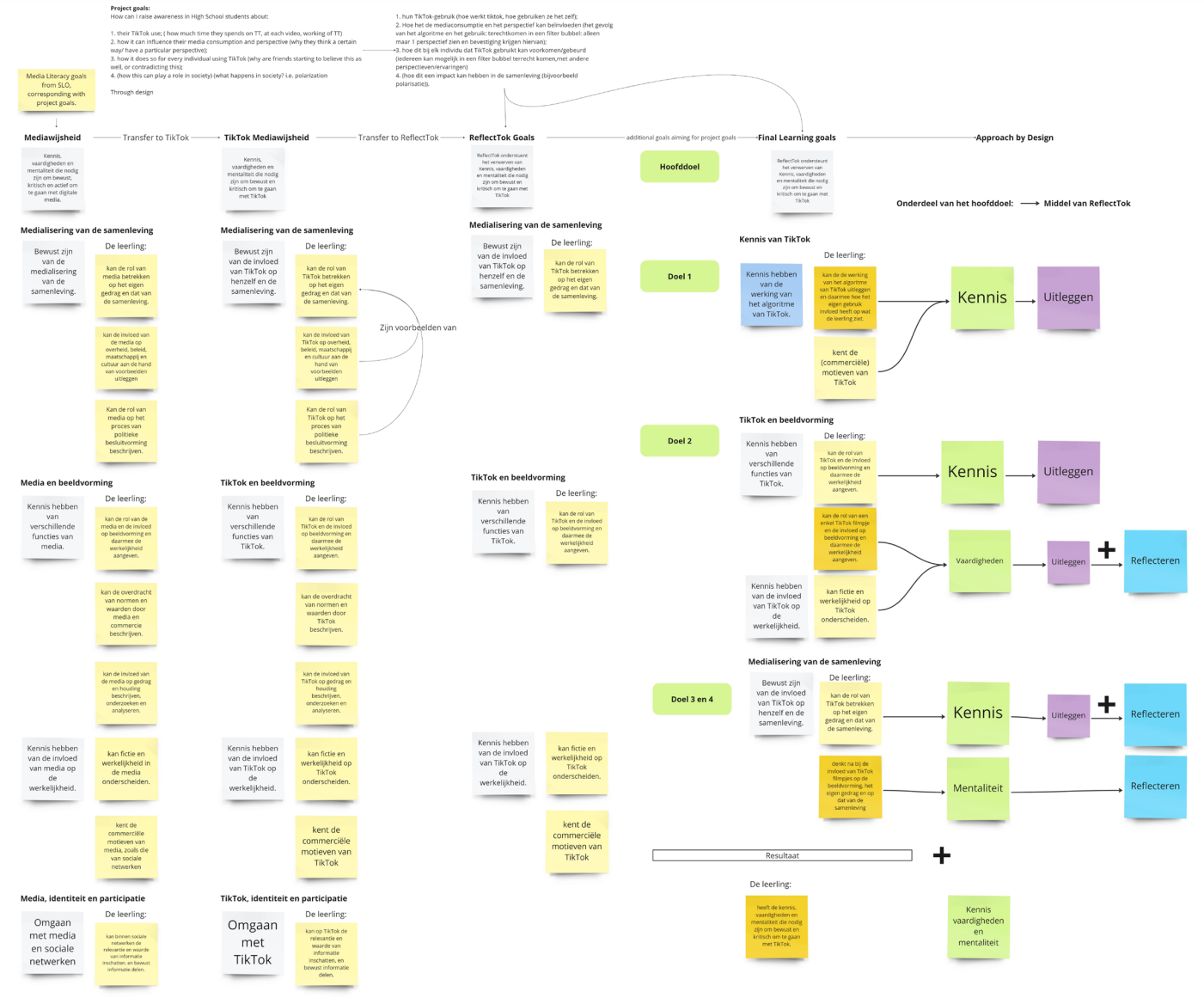


Figure 16: Visual of the process of the formulation of the learning goals. Final Learning goals in Appendix G

In a co-creation workshop with three teachers (P3, P4, P5), learning goals were validated through two rounds: firstly, ordering topics related to TikTok by importance, and secondly, formulating learning goals in the three aforementioned established categories.

Their formulated learning goals (figure 18) were similar, sometimes almost identical, to the earlier formulated learning goals (Final Learning Goals in figure 16), providing validation for their use.

Het algoritme	Actualiteiten	Entertainment
Filter Bubbel	Fysieke Gezondheid	Ziekte / aandoening
Eigen invloed op het algoritme	Mentale gezondheid	Dansen
Nieuws	Oorlog	(Huis)Dieren
Nep Nieuws	Beauty	Kennis van invloed
Artificial Intelligence	Fashion	Sport / Fitness
Politiek	Seksualiteit	Normen / Waarden

Figure 17: All possible topics that could be used in the workshop. Empty cards for own input were available.

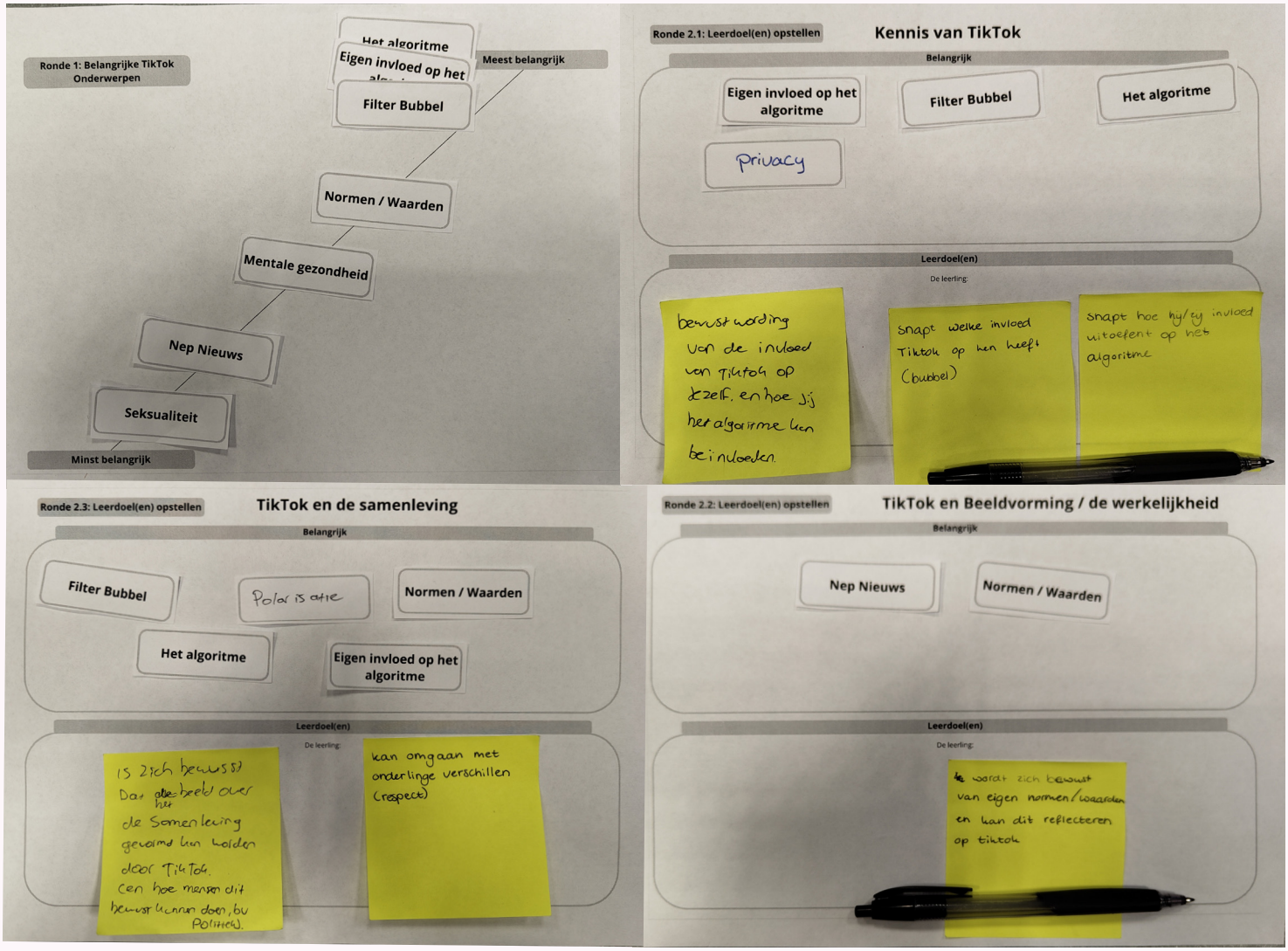


Figure 18: Results of the co-creation workshop to formulate learning goals.

3.2.2 Phase 2: Develop & Deliver ReflectTok Application

The inspiration in the co-creation and the validated learning goals led to the creation of ReflectTok. An application aiming to teach the learning goals by providing knowledge and by making use of reflection. Providing knowledge by giving insights in their use and through explanation pages. Reflection by a series of questions on their TikTok use.

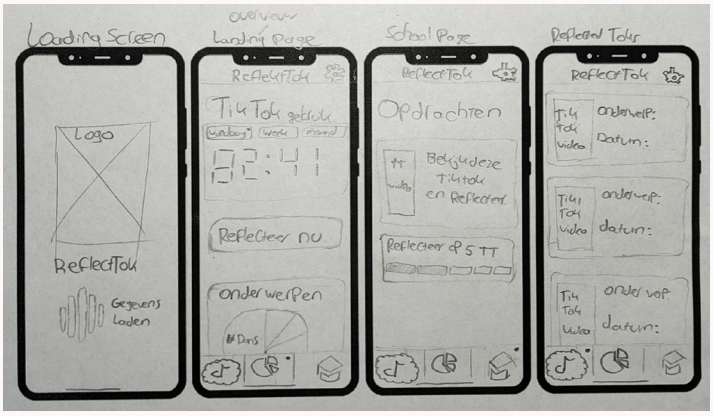


Figure 19: ReflectTok App wireframe sketches

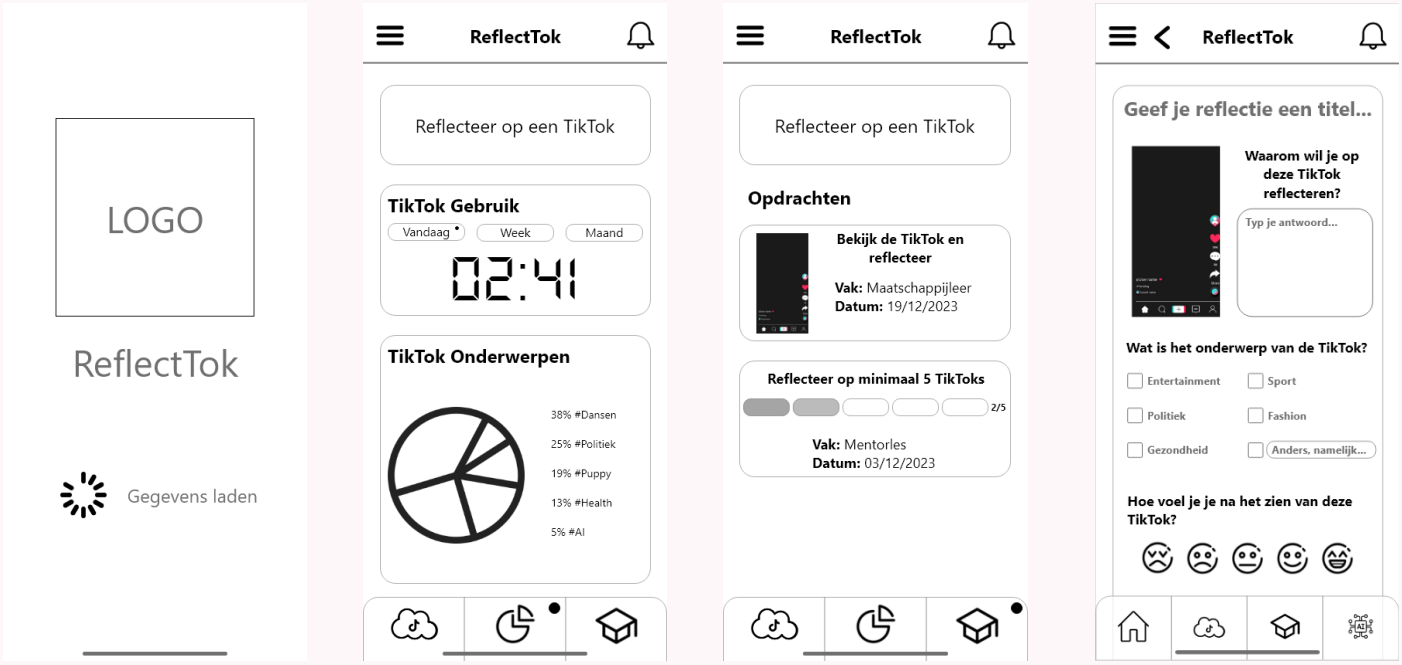


Figure 20: ReflectTok App wireframe Demo. Full clickable demo available via: https://xd.adobe.com/view/b5054fce-6510-4b13-9cb0-9805cadddcf9-e056/

Teachers can assign it as homework, gaining an overview of student reflections that can be used for in-class discussion. Creation of the design prioritized features like the usage overview, reflection method and explanation page, leaving its use deliberately open to put to discussion during design walkthroughs with teachers.

Design walktrough

A design walkthrough and interview with three teachers (P2, P3, P5) provided positive feedback on the tool's overall concept, its use of reflection for achieving the learning goals, and it being helpful for teachers. Suggestions for improvements indicated more in-depth development is needed and simpler language use for lower educational levels. Regarding reflection, a potential feature was brought forward where students self-report which and how many videos on each topic they saw. For algorithmic awareness, an idea was mentioned involving an assignment to manipulate the FYP content, through which students learn the algorithm working and the actions that influence the algorithm. All teachers indicated they would use it in mentor classes, but P5 mentioned:

"I am thinking in an analogue way using a worksheet: watch 20 videos and write down the topics, after which reflection questions are answered."

which posed the question of the benefits of the design being an application.

Coach feedback

In a feedback meeting with a squad coach, concerns were raised that the application only raises awareness without teaching critical thinking and ways to act to get out of a filter bubble. Suggestions included exploring methods beyond the app-based reflection to avoid keeping students within the same context as TikTok, being an application. An example proposed creating a mental-physical relationship by embodying the filter bubble, Lastly, it was recommended to define the design's use to facilitate better decision-making. since leaving it open brings this hard.

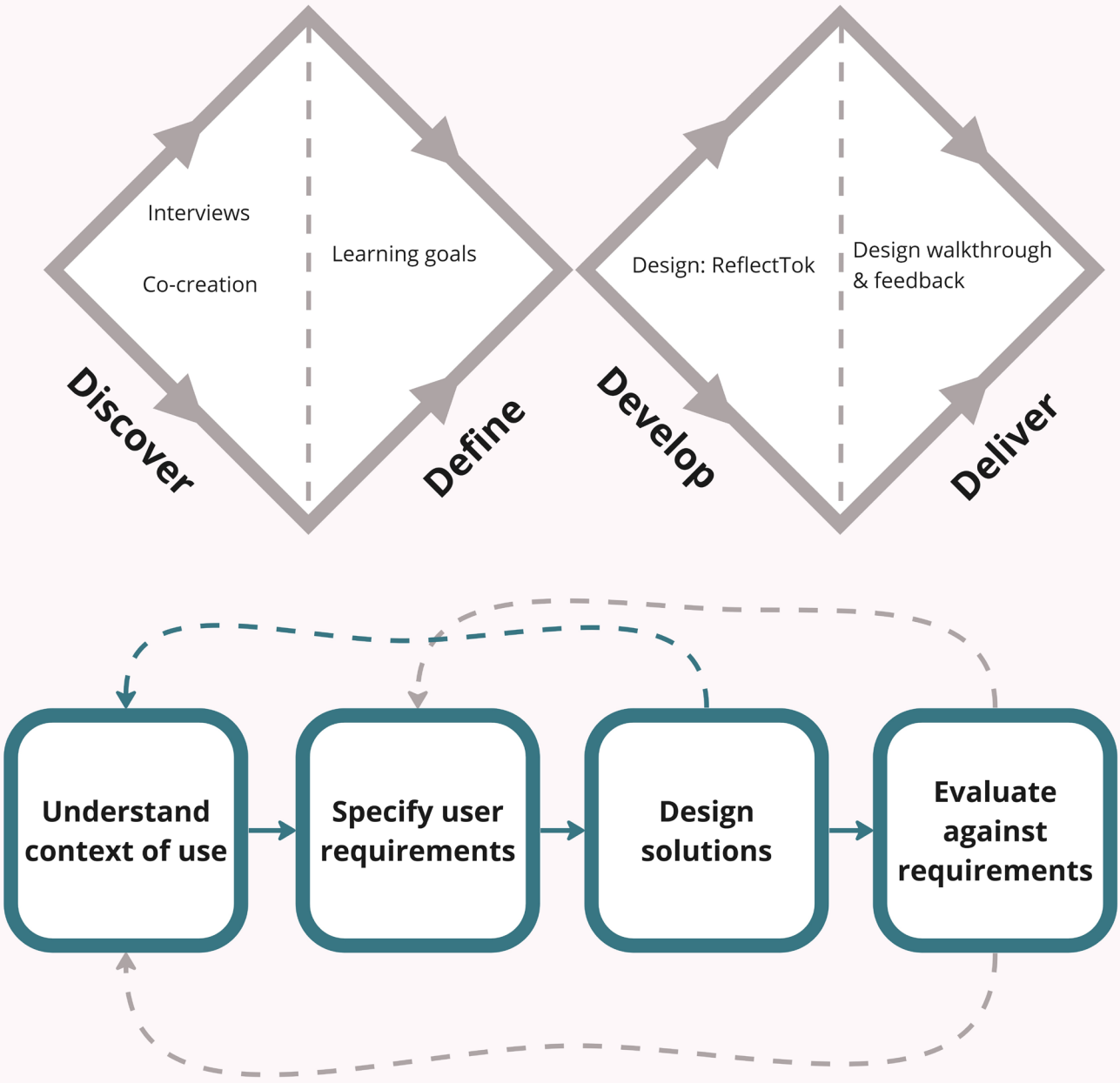


Figure 21: A visualization of the steps in iteration 1 in the double diamond model and iterative UCD process.

3.3 Iteration 2

The design feedback, proposed design ideas and approaches, resulted in an iteration of ReflectTok

3.3.1 Develop & Deliver ReflectTok Tool

ReflectTok became a physical tool with an application. In a classroom setting, students work in groups of two or three on two parts of the design.

'Visualize your Bubble' & Challenge the Algorithm

The physical tool, including tokens, allows students to perform the two parts. In part 1 'Visualize your Bubble' students categorize videos on their FYP, creating a physical representation of their 'bubble', and reflect on this. In part two 2 'Challenge the Algorithm' students need to take actions and keep track of them to complete the challenge of getting a video with a specific topic on their FYP (Appendix G). These parts are unchanged and therefore detailed in Chapter 4 Final Design.

For part 1, five categories were chosen based on most popular topics on TikTok and topics teachers find important (See 3.2.1. Phase 1: Discover & Define Design requirements).

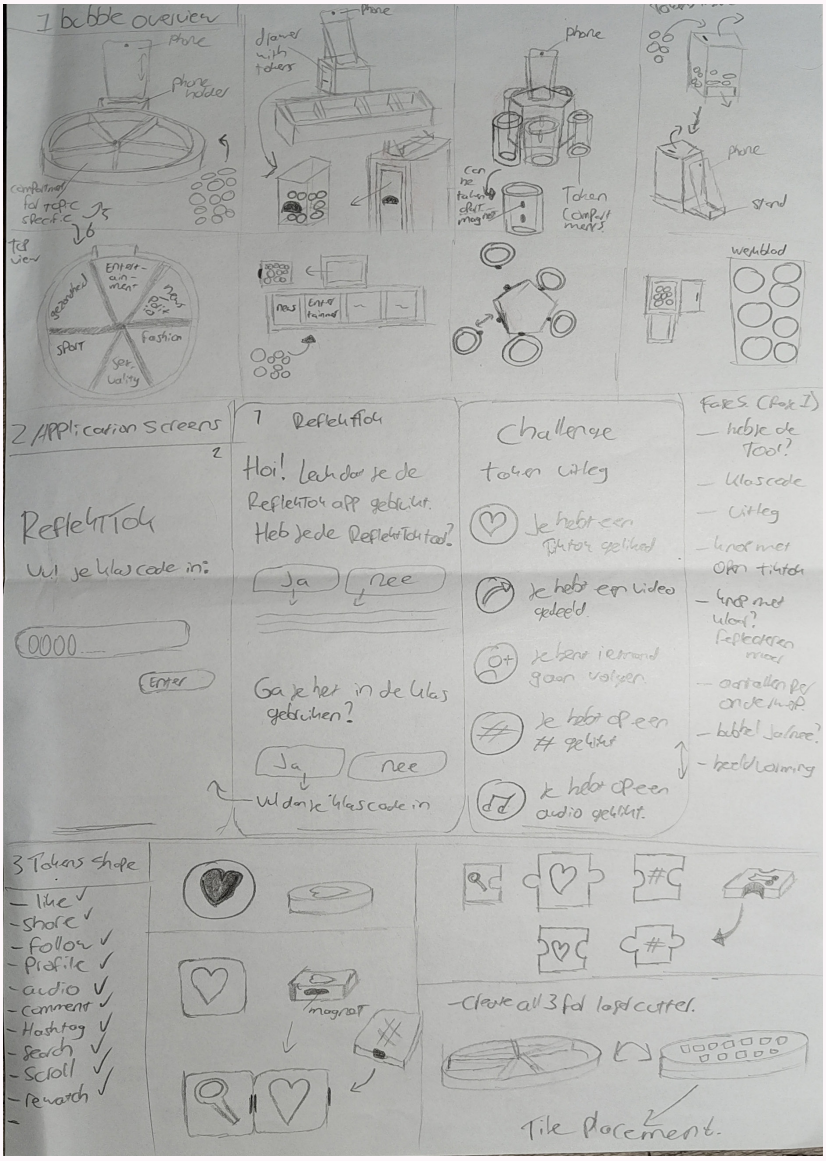


Figure 22: ReflectTok design exploration on the filter bubble overview for part 1, the application and the shape of the tokens

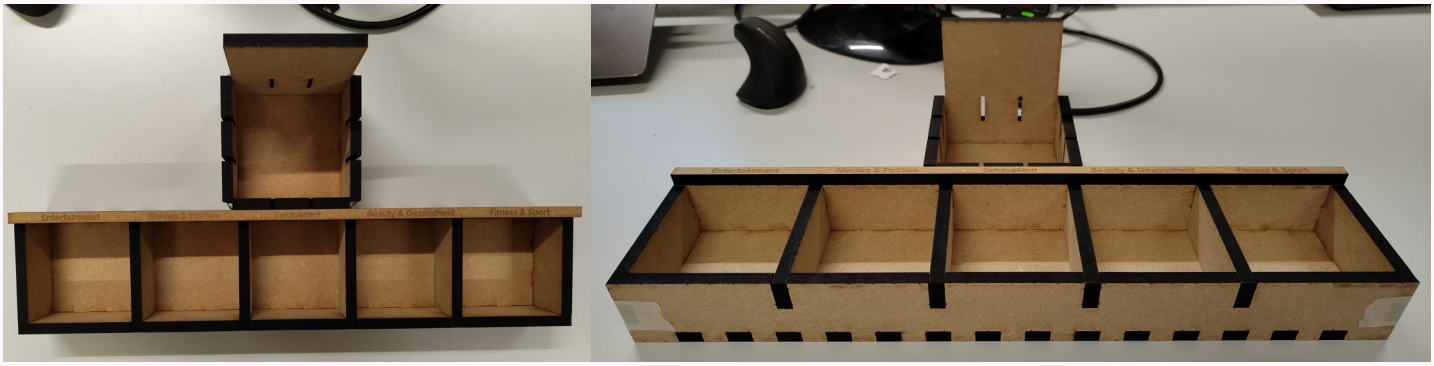


Figure 23: Lasercutted design prototype for part 1, the categories include Entertainment, News & Politics, Sexuality, Beauty & Health and Sports & Fitness.

Design

Through shape exploration (figure 22, 23 & 24) it was chosen to use a round shape for the tool (figure 24 & 25), representing a 'bubble', and a rounded square shape for the tokens (figure 27), evoking association with app icons in UI design Combining both parts in one design, a 'path' for the tokens in part 2 was created on one side of the design (figure 26, right).

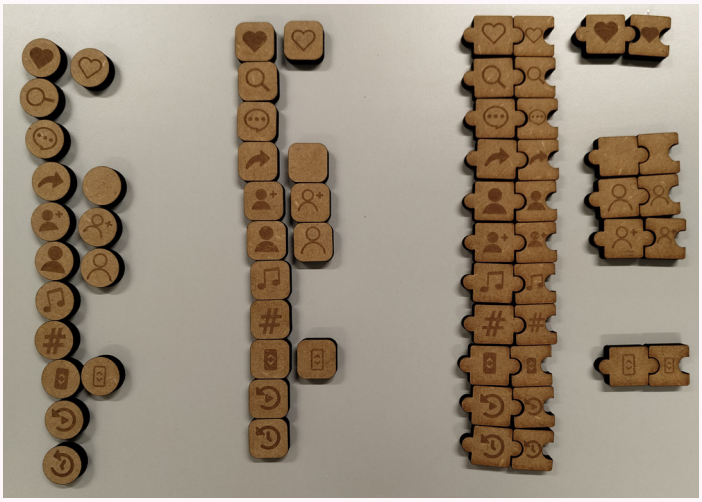


Figure 24: Lasercutted token variants for part 2

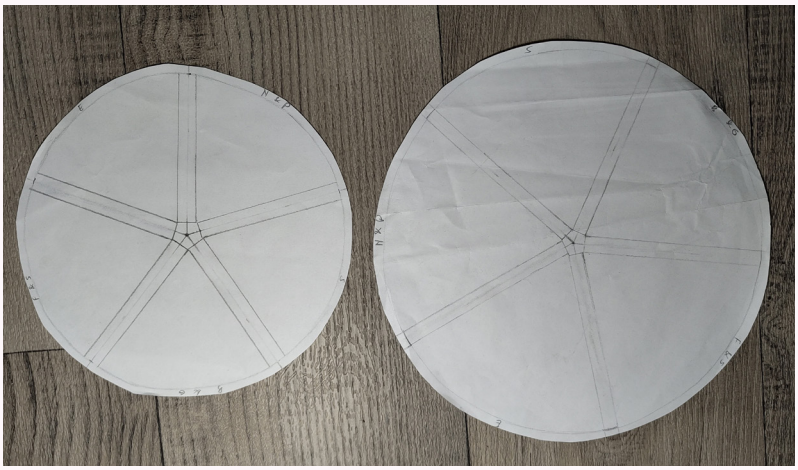


Figure 25: Size exploration of circular designs.

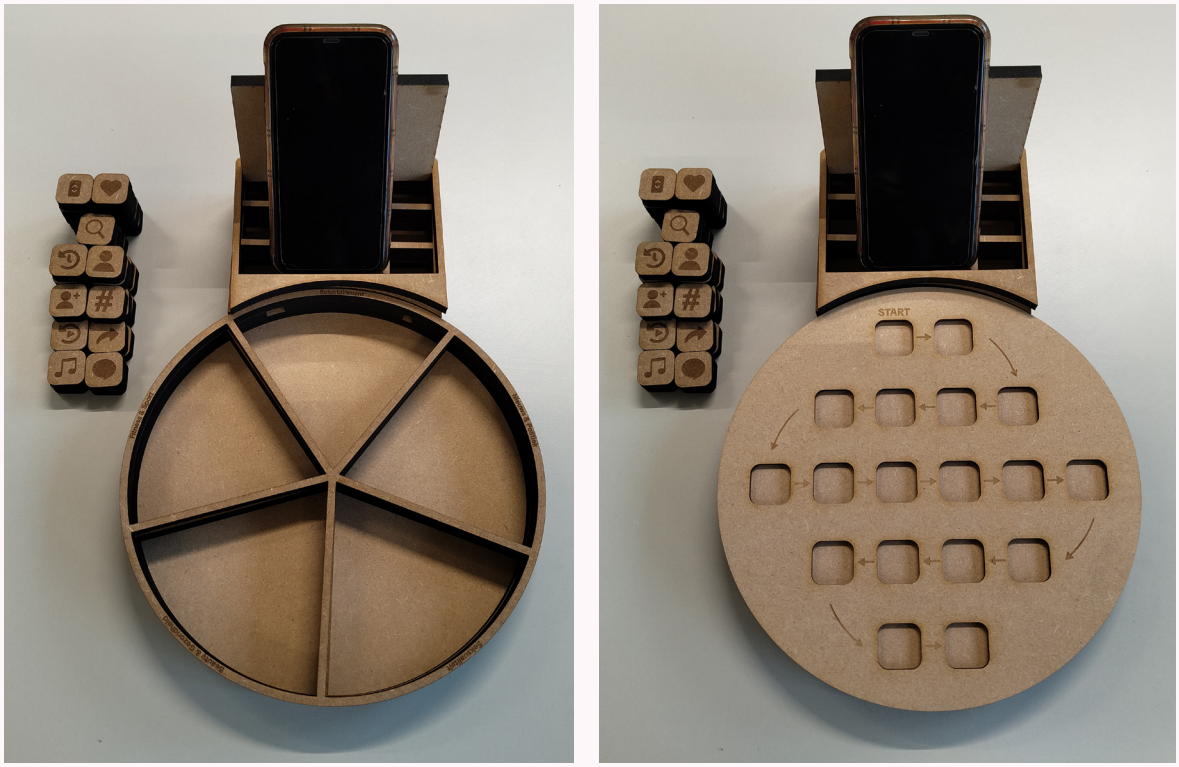


Figure 26: Design prototype ReflectTok Tool. Left: side for part 1. Right: side for part 2. It includes a storage box for the tokens, doubling as a phone stand.

Figure 27: ReflectTok Tokens representing eleven possible actions to influence the algorithm.

Application

The ReflectTok application was designed to assists students in using the design, explaining both parts, showing the reflection questions and providing information on TikTok's algorithm. The application is unchanged and is detailed in Chapter 4 Final Design.

A clickable demo was created in which use is made of the familiar TikTok font and colors, indicating its relevance to TikTok (figure 28).

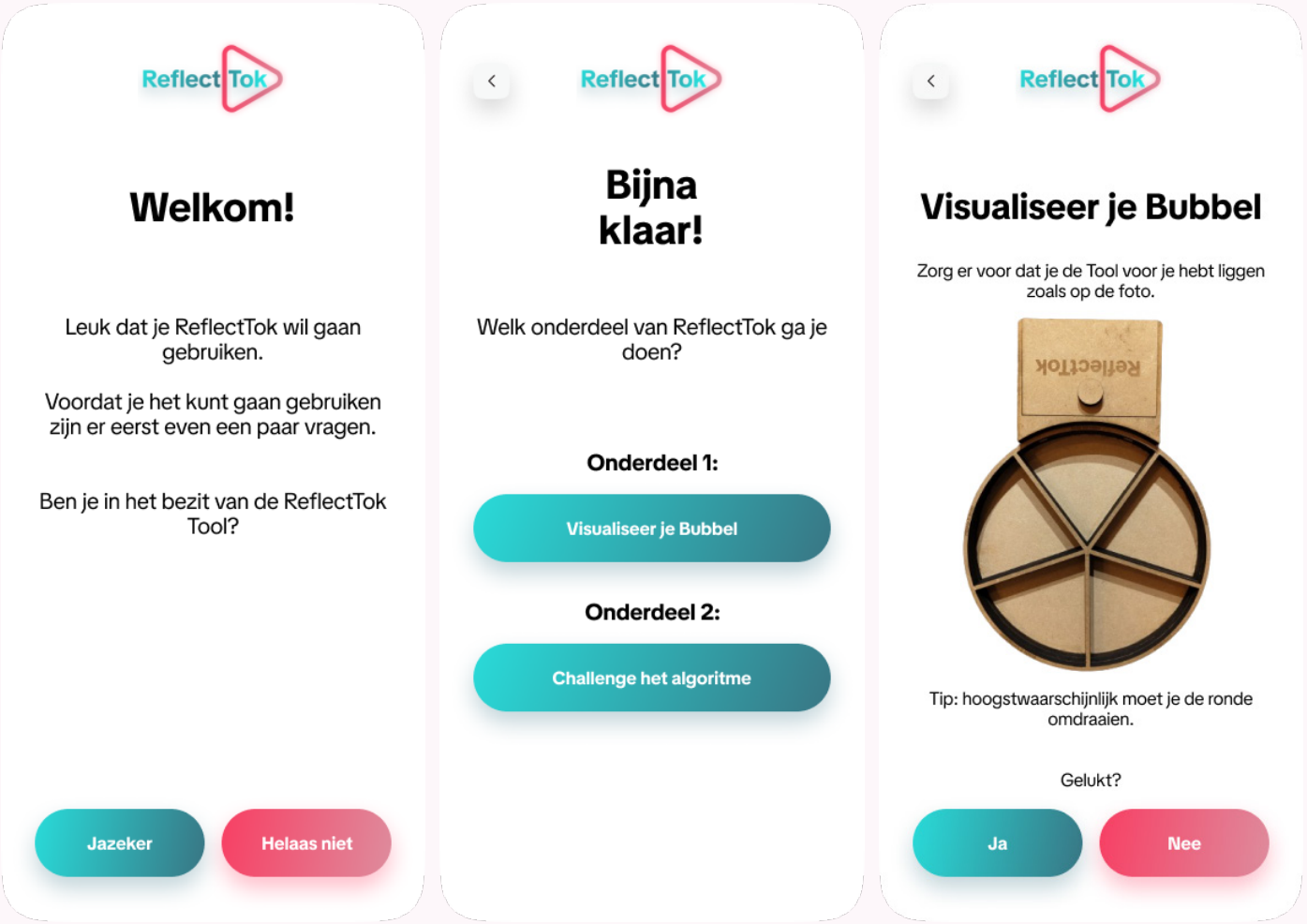


Figure 28: A selection of pages of the ReflectTok application. Overview of all pages can be found in Appendix E. Full clickable demo available via: https://www.figma.com/proto/Yv5ArZGS3EdlP7H2fak0AV/ReflectTok-V2?page-id=206%3A281&type=design&node-id=255-3810&viewport=622%2C49%2C0.06&t=ipqY45U6Ty5PKwVa-1&scaling=scale-down&starting-point-node-id=426%3A141&mode=design

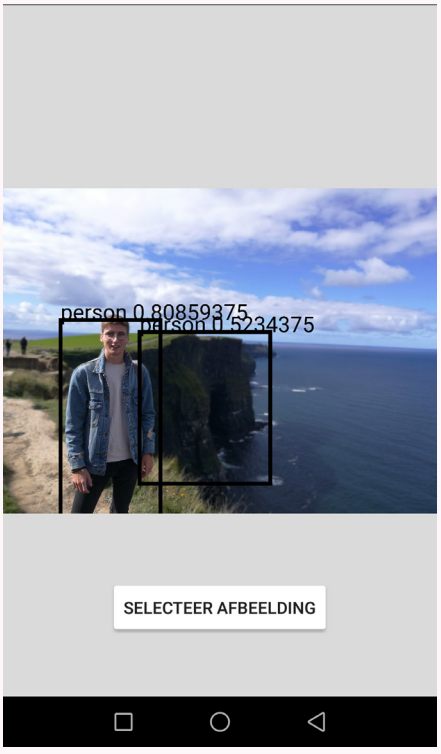


Figure 29: Object recognition android application.

An attempt was made to realize scanning the path in part 2 using an object recognition model integrated in an android App using Android Studio.

After successfully creating an app using an example model (figure 29), preparations were taken to make a custom model to recognize icons on the tokens. This was unsuccessful due to unresolved issues with Google Colab and TensorFlow Lite model maker occurred Tensorflow. (n.d.). An alternative solution required new preparation being time consuming. Realizing the technical application was then discarded.

Reflection Questions

10 reflection questions were made for part 1 (figure 30 & Appendix F). These questions, made to align with the learning goals and based upon Rolfe et al.'s reflection model (2001) ,can be answered by 'yes' or 'no' in the application. Follow-up questions to be answered in the group, like "Why do you think that?", provide collaborative reflection.

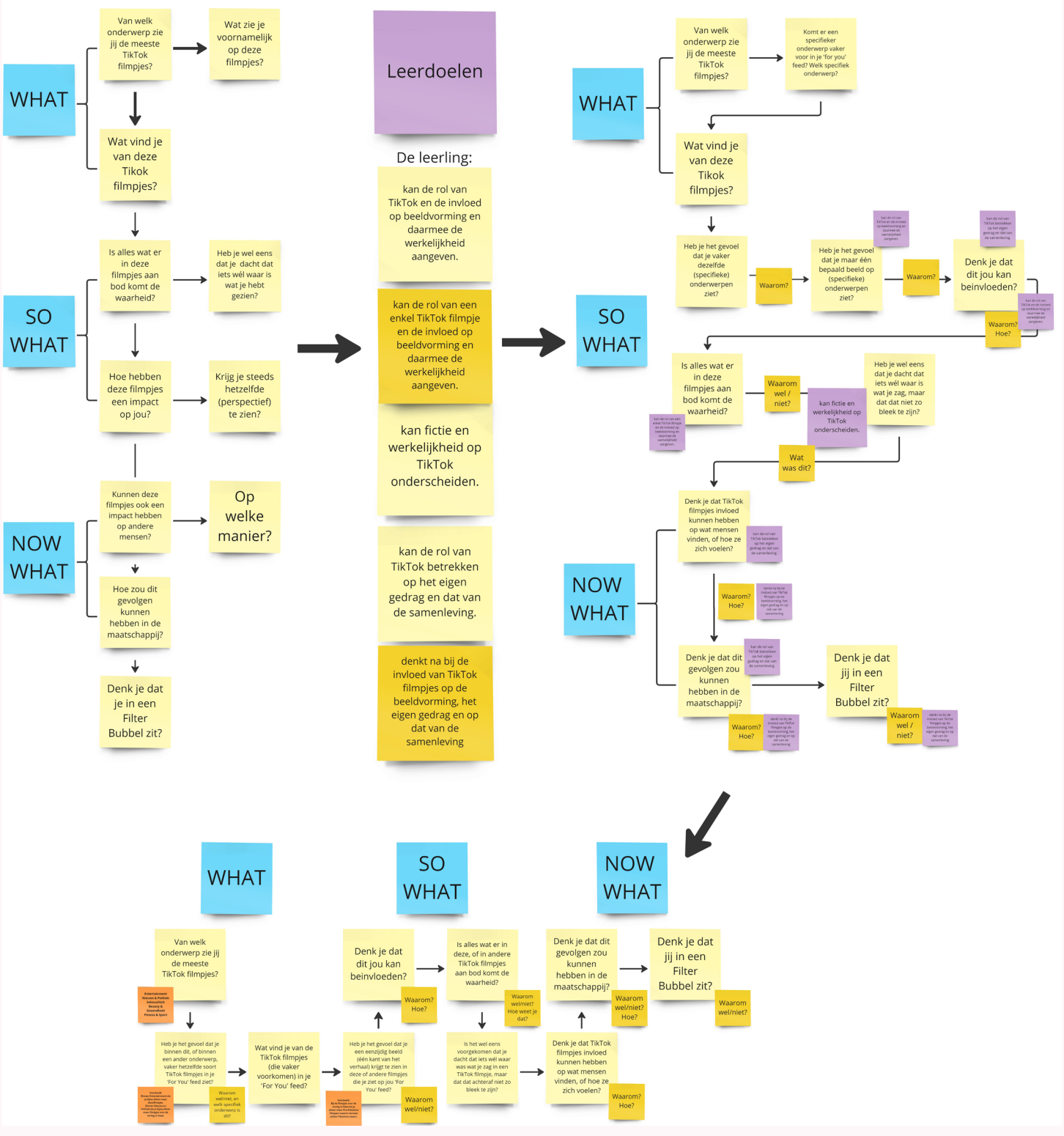


Figure 30: Full process of formulating the reflection questions.

Use Scenario

It was decided to design ReflectTok to be used in multiple lessons (figure 31). In the first class, teachers introduce filter bubbles and algorithms in social media after which students perform part 1. Their reflection is put to use in a classroom discussion facilitated by the teacher. In class two or three, students perform part 2 followed by another classroom discussion.

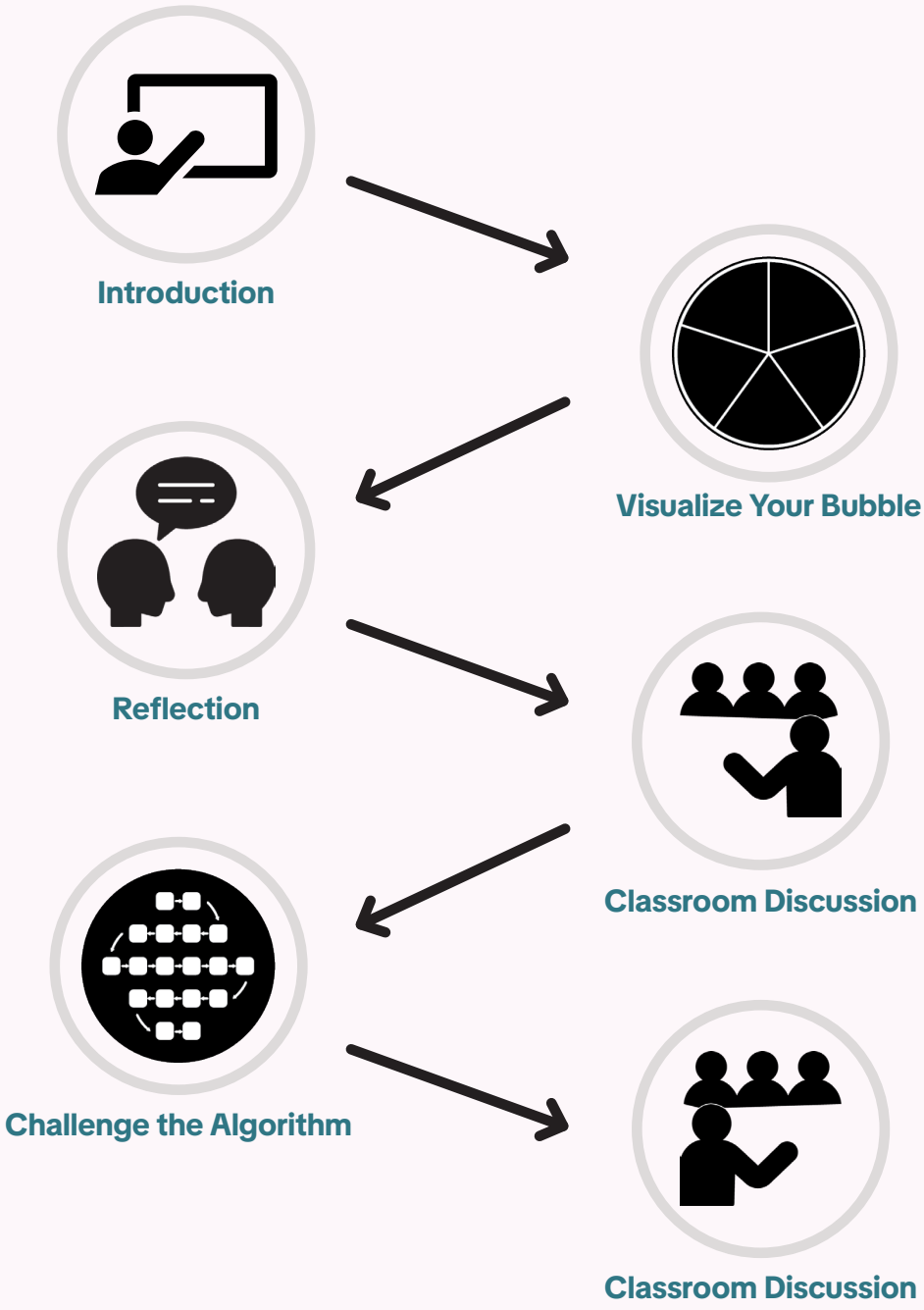


Figure 31: ReflectTok use scenario.

Use Tests

User tests with students have been conducted to evaluate the usability of the design and its impact on learning. Students completed pre- and post-tests on algorithmic awareness, filter bubbles and their (societal) influence. They performed either part of the design while thinking out loud. The post-test also included questions upon use, learning outcomes, and the System Usability Scale (SUS) (Brooke, 1996).

Link to pre- and post-test in Microsoft Forms:

Pre-test

https://forms.office.com/e/sKCKtnTdb9

Post-test

https://forms.office.com/e/kREATe0U4P

Table 2: Overview of student participants

Participant	Gender	Age	Grade (Dutch system)	TikTok use	Part Performed	Together with Participant:
1	Male	13	1	Often (every day)	1	2
2	Male	13	1	Often	1	1
3	Male	14	2	Very often (multiple times a day)	2	4 & 5
4	Female	13	2	Often	2	3 & 5
5	Male	13	2	Very often	2	3 & 4
6	Male	13	2	Very often	1	8 & 10
7	Male	12	2	Very often	2	9
8	Male	13	2	Very often	1	6 & 10
9	Male	13	2	Very often	2	7
10	Male	13	2	Very often	1	6 & 8
11	Female	14	2	Very often	2	14
12	Female	13	2	Very often	1	13
13	Female	13	2	Very often	1	12
14	Male	13	2	Regularly (multiple times a week)	2	11

An analysis was done to determine whether students improved their answers for each question in the test, categorized based on whether they performed part 1 or part 2.

Verbetering na Onderdeel 1: Visualiseer je bubbel		Verbetering:	Ja	Verslechterd	Gelijk	Licht	
Ik ben deelnemer nummer:	1	2	6	8	10	12	13
Ik weet wat een algoritme is.							
Geef in eigen woorden een korte omschrijving van een algoritme.							
Ik weet hoe (het algoritme van) TikTok werkt (waarom jij de video's op je 'For You' feed krijgt die je daar ziet).							
Geef in eigen woorden een korte omschrijving van hoe (het algoritme van) TikTok werkt.							
Ik weet hoe ik (het algoritme van) TikTok kan beïnvloeden (er voor zorgen dat je andere videos op je 'For You' feed krijgt).							
Geef in eigen woorden een korte omschrijving van hoe je (het algoritme van) TikTok kunt beïnvloeden.							
Ik weet wat een 'Filter Bubbel' is.							
Geef in eigen woorden een korte omschrijving van een 'Filter Bubbel'.							
Filmpjes in een 'Filter Bubbel' laten altijd twee kanten van het verhaal zien.							
Waarom denk je dat dit wel / niet zo is?							
TikTok filmpjes laten altijd zien wat de waarheid is.			verkeerd beantwoord?				
Waarom denk je dat dit wel / niet zo is?							
Het gebruiken van TikTok kan mensen beïnvloeden.							
Geef in eigen woorden een korte omschrijving op welke manier TikTok mensen kan beïnvloeden.							
Waarom denk je dat dit niet zo is?							

Figure 32: Results on students improvement after performing part 1.

Verbetering na Onderdeel 2: challenge het algoritme		Verbetering:	Ja	Verslechterd	Gelijk	Licht	
Ik ben deelnemer nummer:	3	4	5	7	9	11	14
Ik weet wat een algoritme is.							
Geef in eigen woorden een korte omschrijving van een algoritme.							
Ik weet hoe (het algoritme van) TikTok werkt (waarom jij de video's op je 'For You' feed krijgt die je daar ziet).							
Geef in eigen woorden een korte omschrijving van hoe (het algoritme van) TikTok werkt.							
Ik weet hoe ik (het algoritme van) TikTok kan beïnvloeden (er voor zorgen dat je andere videos op je 'For You' feed krijgt).							
Geef in eigen woorden een korte omschrijving van hoe je (het algoritme van) TikTok kunt beïnvloeden.							
Ik weet wat een 'Filter Bubbel' is.							
Geef in eigen woorden een korte omschrijving van een 'Filter Bubbel'.							
Filmpjes in een 'Filter Bubbel' laten altijd twee kanten van het verhaal zien.							
Waarom denk je dat dit wel / niet zo is?							
TikTok filmpjes laten altijd zien wat de waarheid is.							
Waarom denk je dat dit wel / niet zo is?							
Het gebruiken van TikTok kan mensen beïnvloeden.							
Geef in eigen woorden een korte omschrijving op welke manier TikTok mensen kan beinvloeden.							
Waarom denk je dat dit niet zo is?							

Figure 33: Results on students improvement after performing part 2.

Results show improvement in students' understanding, particularly on algorithms, their functionality and how they can be influenced on TikTok, as well as on filter bubbles. Lack of improvement often occurred when students already provided correct answers in the pre-test. Noticeably but logically, more students showed improvement in understanding filter bubbles if they performed part 1, while more students showed improvement on algorithmic working if they performed part 2 (figure 34). Students themselves reported learning about filter bubbles (n=6) and influencing the algorithm (n=5). Likewise, in the questions upon use and outcomes they mentioned to change their tiktok use (n=10) by being more aware of the videos they (want to) see (n=6) or by influencing the algorithm (n=4). These results show the design has potential in achieving the learning goals, thereby achieving the design challenge.

The calculated system-usability score was 62.679 (part 1: 67.857, part 2: 57.7) indicating below-average usability and suggesting improvements. This is strengthened by students responses on use and learning outcomes, and the observations. While watching TikTok was mentioned as the most enjoyable aspect (n= 5), frequent app errors (n=3), lack of understanding what to do (n=2) or no clarity (n=1) were mentioned as least enjoyable. Observations align with these findings. Students noticeably struggled with understanding what to do, sometimes doing it in unintended ways. It suggests a need for a different approach, possibly incorporating more intuitive guidance than written instructions. Moreover, students often failed to recognize the categories on the design and it was observed that performing a part with three students causes disturbances, with one student often left out.

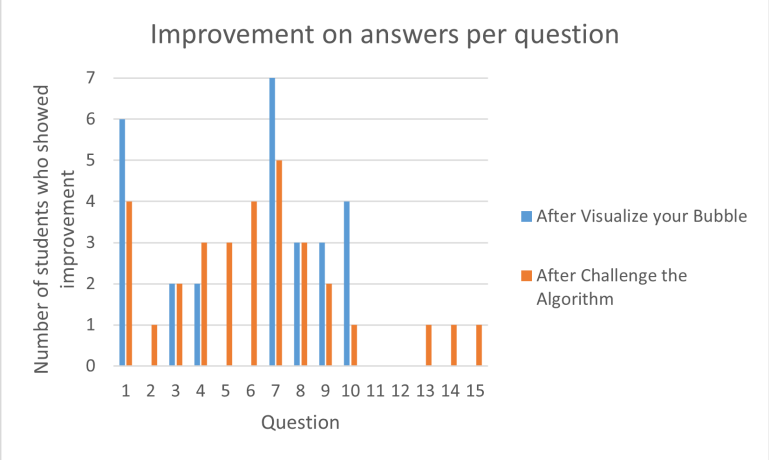


Figure 34: Improvement on students' answers per question

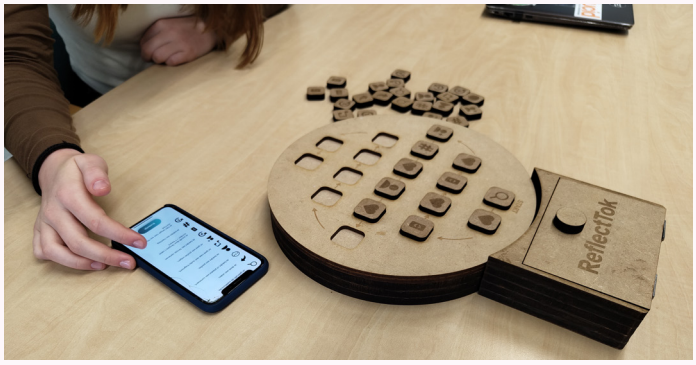


Figure 35: Students performing part 1 "Visualize your Bubble" (left) and part 2 "Challenge the Algorithm" (right).

Demo Day

Visitors were interested in the design, gave positive feedback and acknowledged the necessity. Although no visitors interacted with the design, multiple visitors asked to exchange contact information, leaving the designer very satisfied.

Figure 36: Demo Day stand.

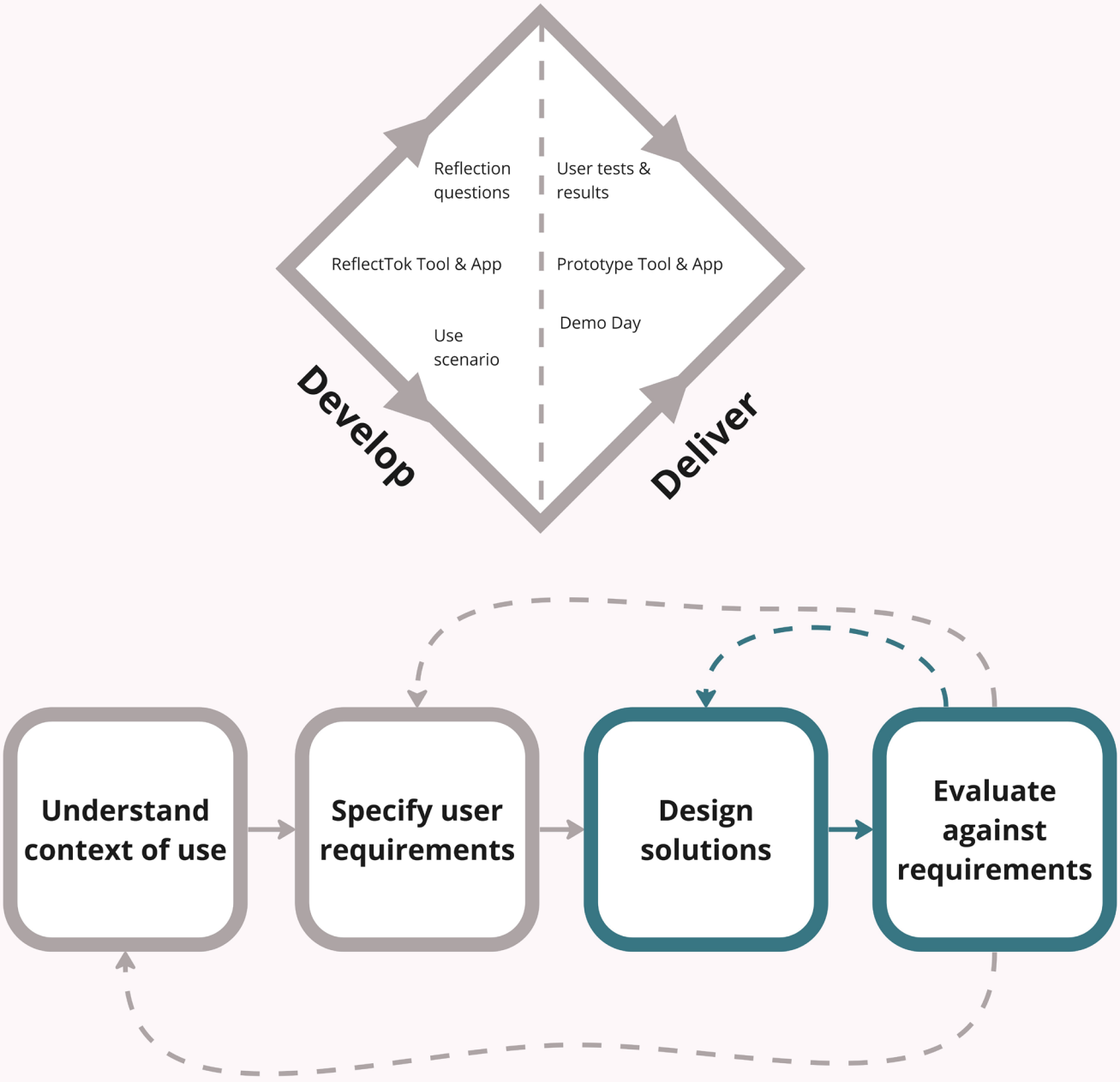


Figure 37: A visualization of the steps in iteration 2 in the double diamond model and iterative UCD process.

3.3 Iteration 3

Based on the findings in the user tests, a couple design improvements were implemented. Others are listed as future work in chapter 5 Discussion. A 3D model was made to visualize the design as product featuring both the tool and tokens a 3D-printed design from robust lightweight and high-quality plastic material, ensuring it withstands repeated use by students. Moreover, 3D-printing this material allows for quick on-demand manufacturing. A value proposition and Customer Journey map ware made to explore further business opportunities. It resulted in the Final Design as described in the next chapter.

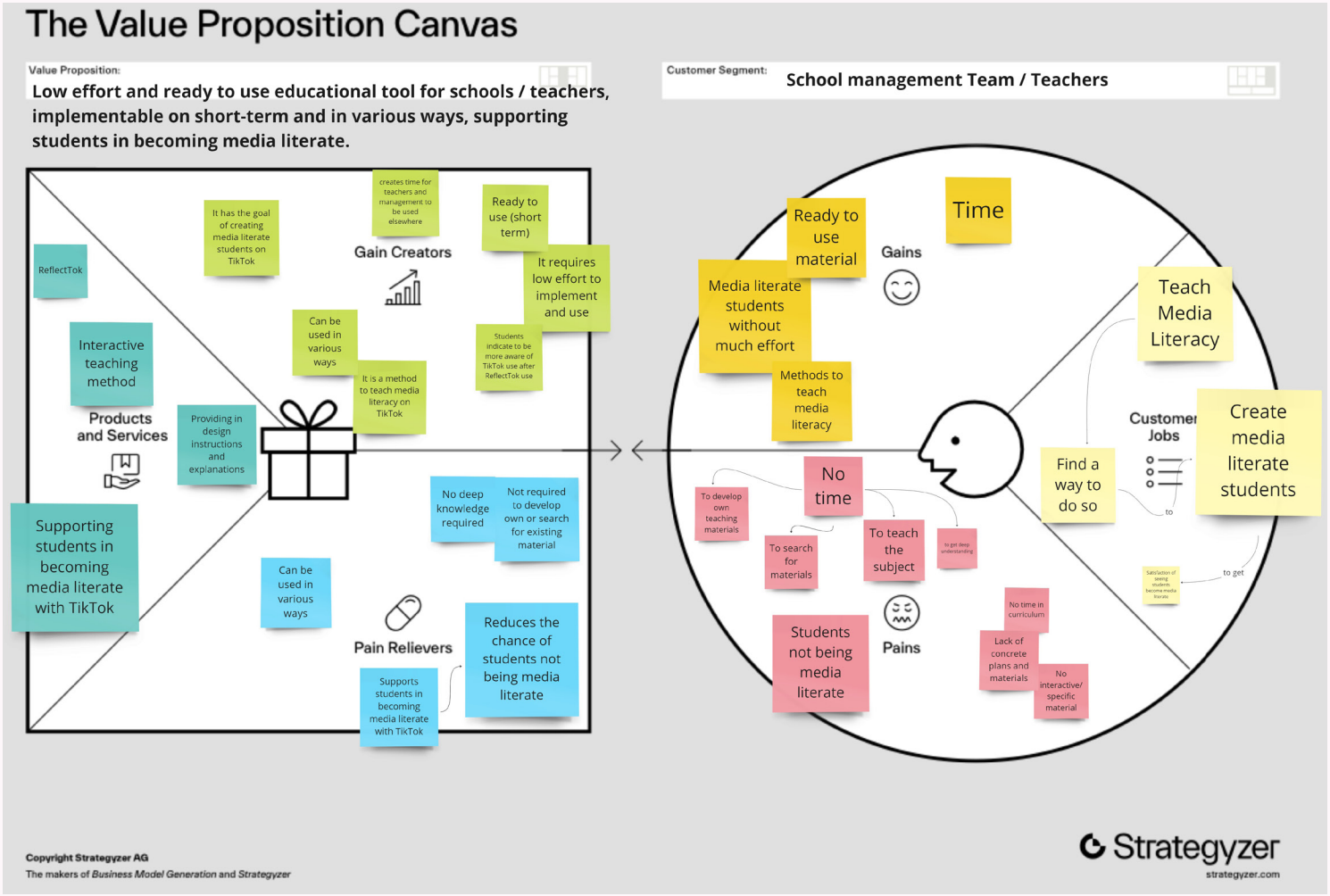


Figure 43: Value Proposition Canvas for ReflectTok.

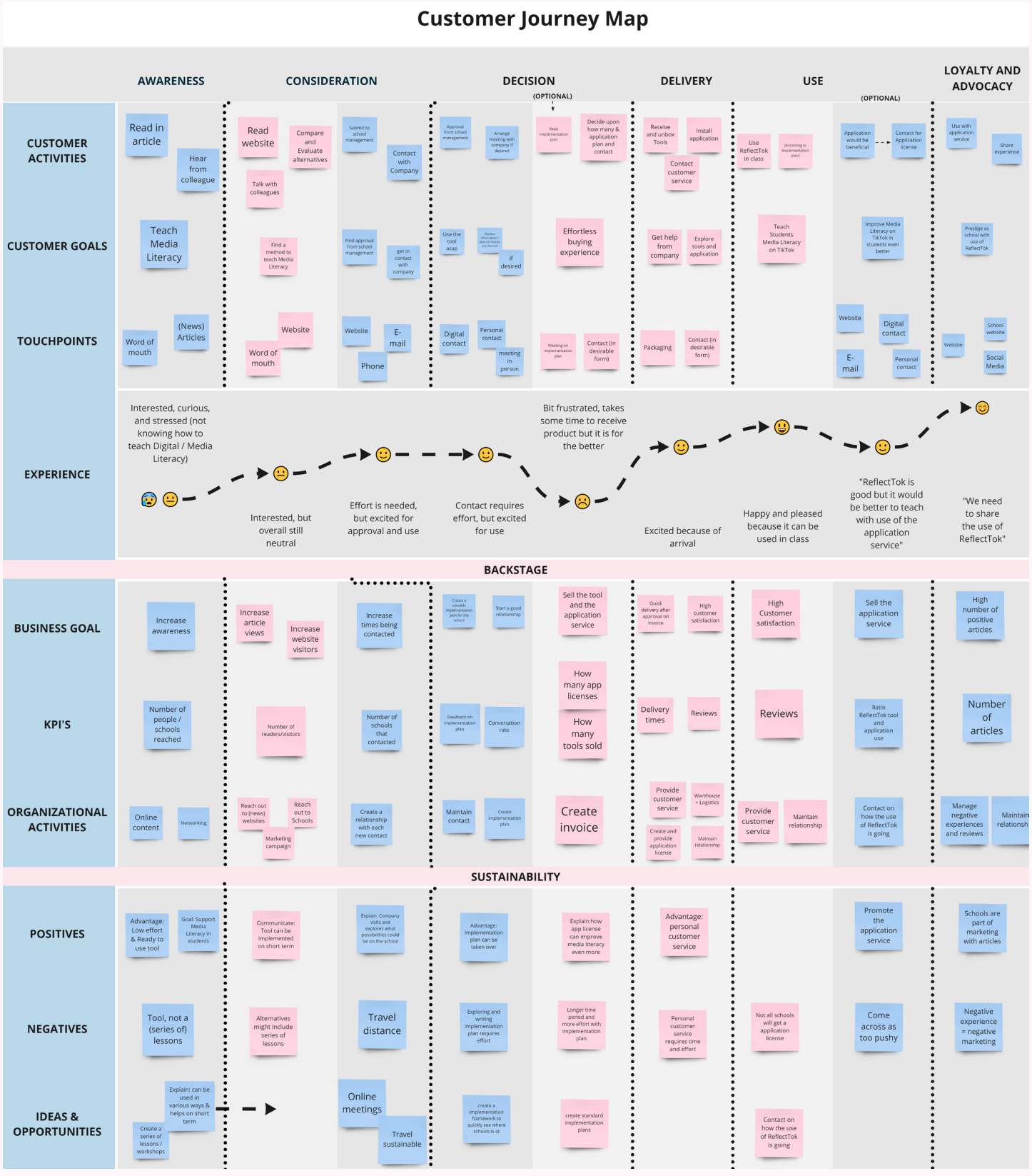


Figure 43: Customer Journey Map for ReflectTok.

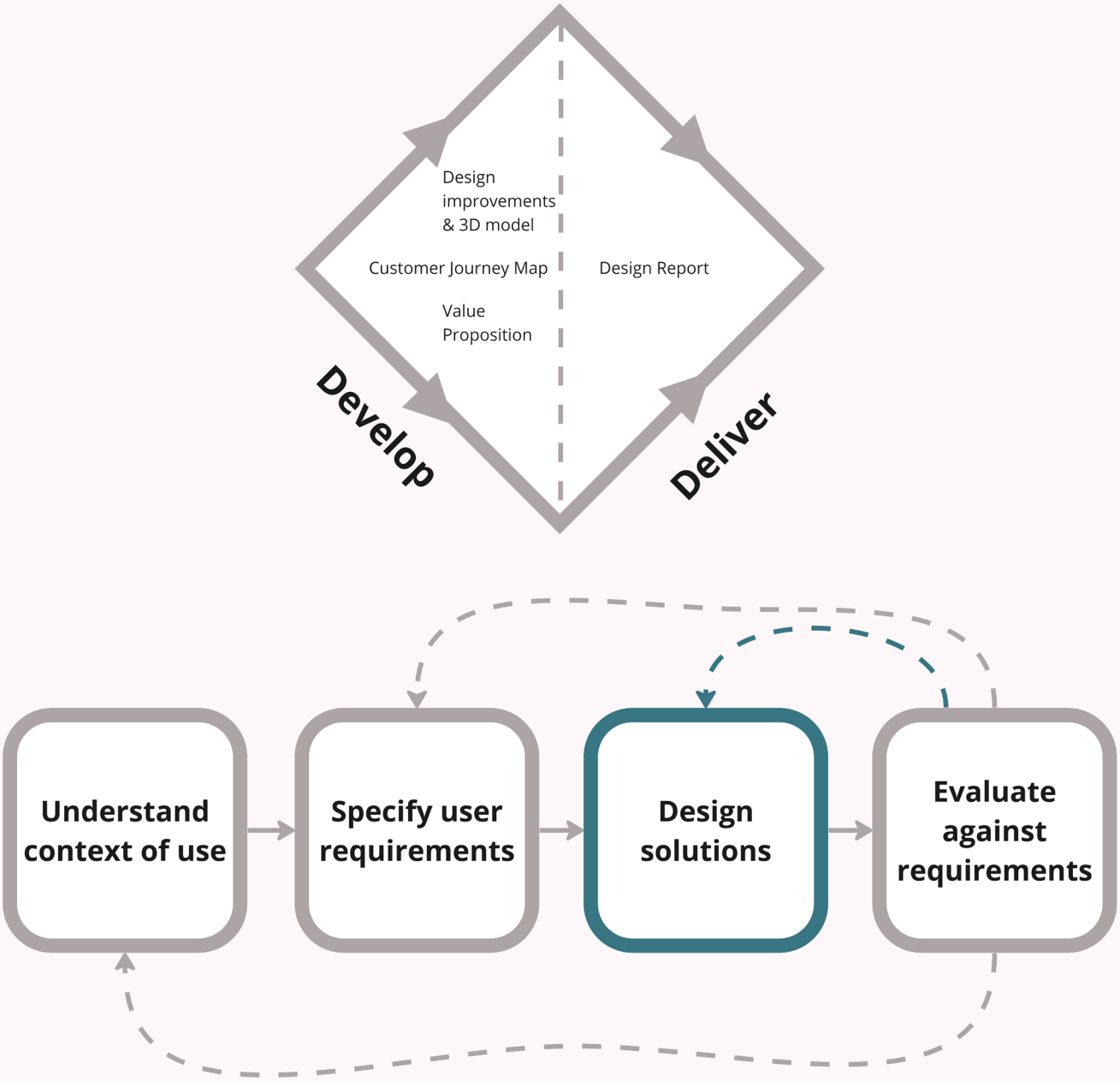


Figure 38: A visualization of the steps in iteration 3 in the double diamond model and iterative UCD process.

4. Final Design

This chapter provides a detailed description of the final design and depicts business opportunities.

ReflectTok is an educational tool that supports students in acquiring knowledge, skills and mentality that are needed to make aware and critical use of TikTok. Consisting of a physical tool and an application, students work in duos on 'Visualize your Bubble' and 'Challenging the Algorithm'.

4.1 The Physical Tool

ReflectTok's physical tool consists of the circular shaped design, the tokens and a storage box for the tokens that doubles as phone stand, all made from high quality plastic. Both sides of the circular shaped design are used, each for one of the parts that students work on. The tokens display icons that correspond to the possible actions to influence TikTok's algorithm in 'Challenge the Algorithm'.

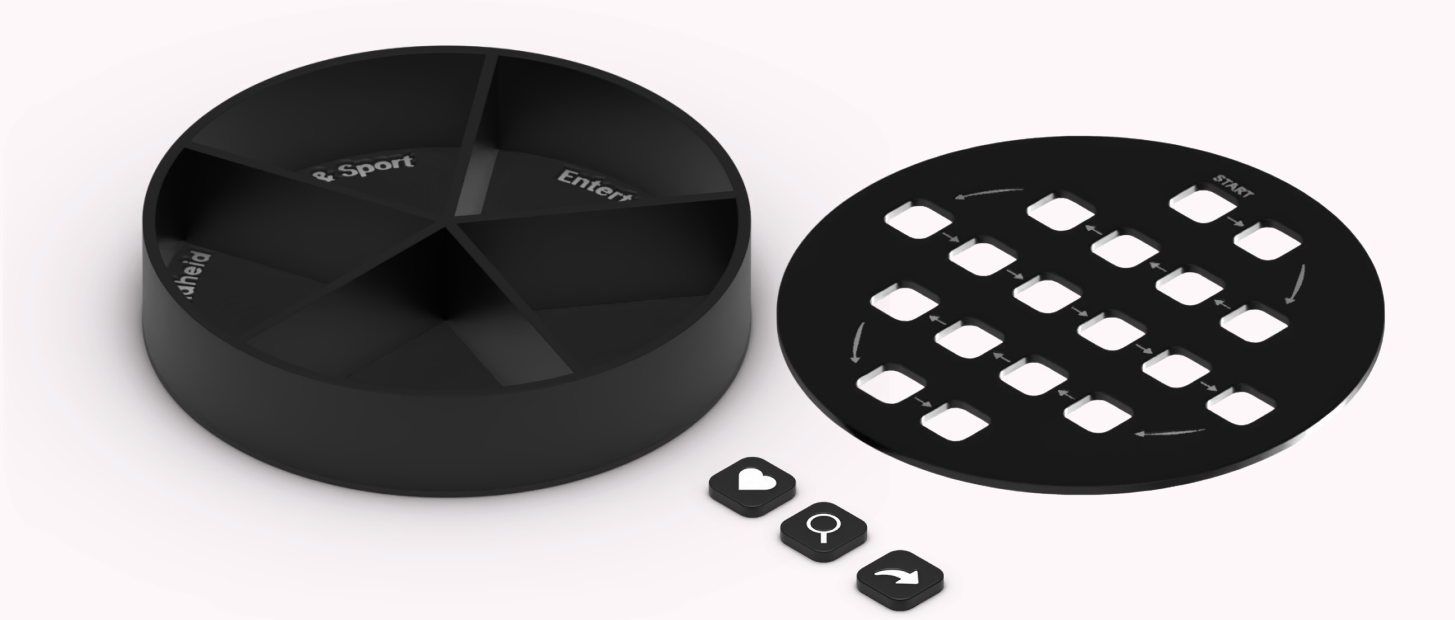


Figure 39: ReflectTok Final Design model

4.2 The Application

The ReflectTok app guides students step by step through the use of the design in each part. It shows the reflection questions in part 1, the challenge options in part 2 (figure 40). After completing task 2 the students scan their created path of tokens with the app. It then shows which action was taken most, how this influences the algorithm and explains the influence of other actions and data.

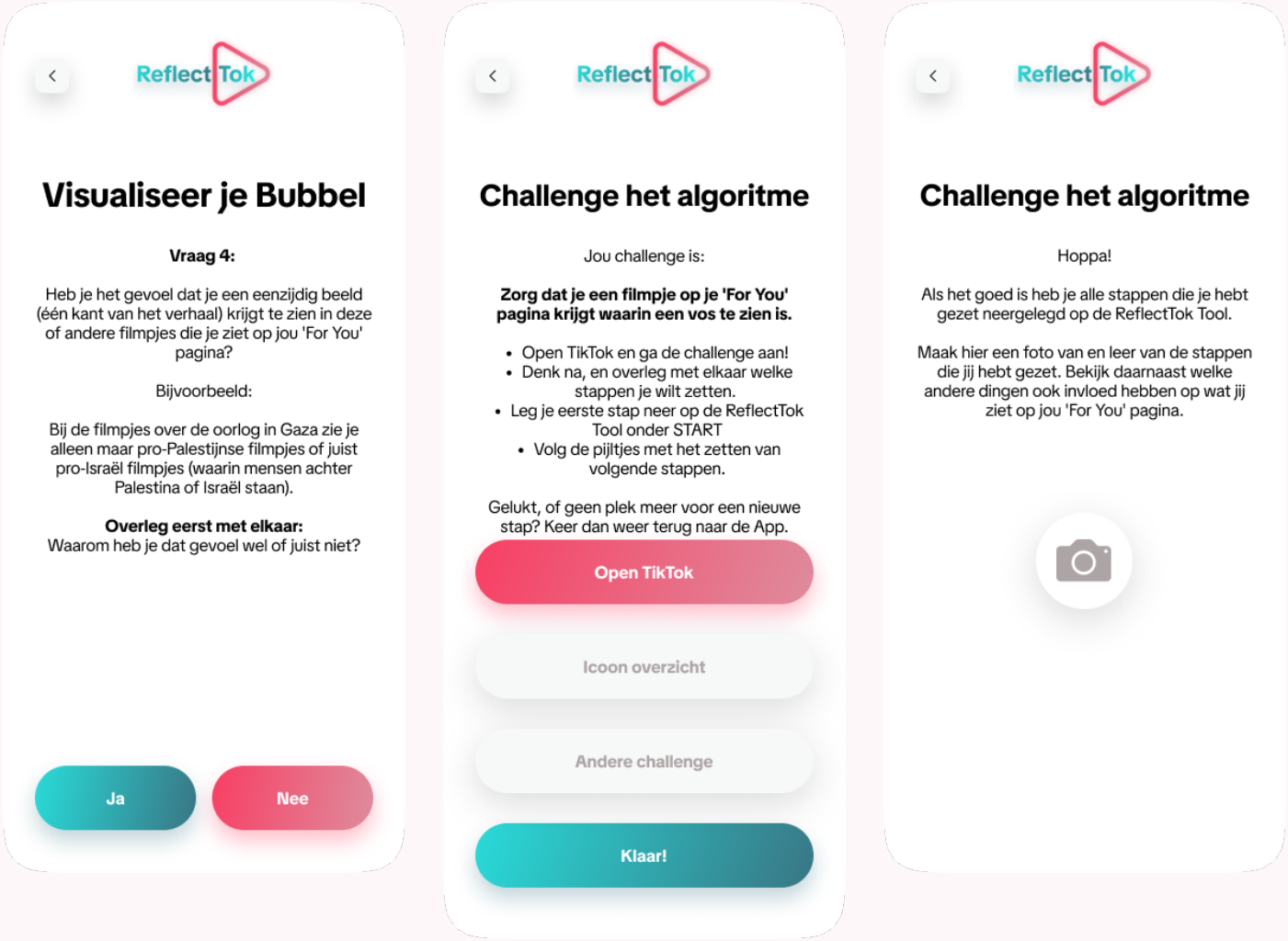


Figure 40: ReflectTok Final Design Application

4.3 Part 1: 'Visualize your Bubble'

Following the instructions in the application, students will be asked to watch TikTok videos on their FYP and to categorize them in one of five categories:

Entertainment, News & Politics, Sexuality, Beauty & Health or Sports & Fitness.

By placing a token in the corresponding category in the physical tool for each video, it creates a physical representation of, and insights in students' TikTok 'bubble'. Most learning, however, occurs in the reflection phase. One by one, the app displays 10 questions that need to be answered together. These questions, made using formulated learning goals and the 'what, so what, now what' reflection model of Rolfe et al. (2001), are answered in the app by either yes or no, but reflection takes part with follow-up questions like 'Why do you think that?'. 'Visualise your Bubble' facilitates collaborative reflection on, and enhances understanding of, students' bubble and its potential impact on themselves and society.

Figure 41: ReflectTok Final Design for 'Visualize your Bubble'

4.4 Part 2: 'Challenge the Algorithm'

In part 2 'challenge the algorithm' students receive the challenge to get a video with a specific topic on their FYP. They must achieve this by taking actions that influence the algorithm. Students place each action they take with a corresponding token on the physical tool, creating a 'path' to success. After they beat the challenge or no place for a token is left, students go back to the app and scan their path. The application will show which step is taken most and how this influences the algorithm. Additionally, students get an overview of how other methods and data influence the algorithm. 'Challenge the Algorithm' lets students explore and creates understanding on TikTok's algorithmic working.

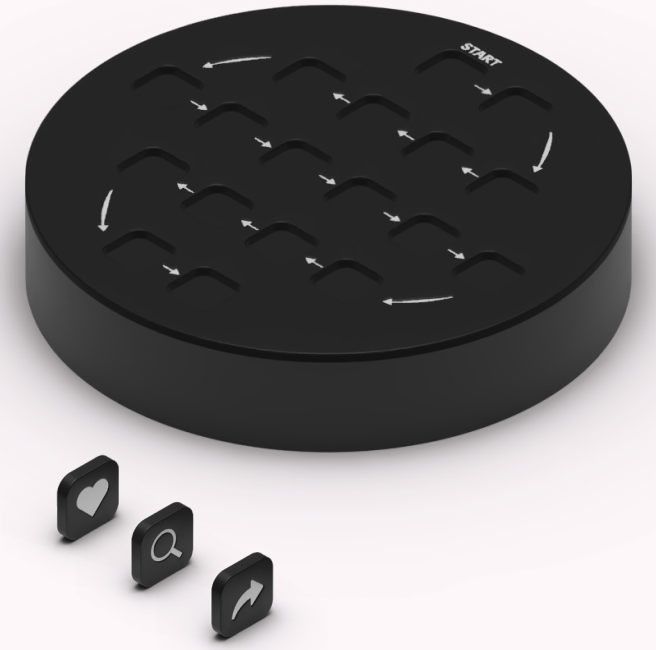


Figure 42: ReflectTok Final Design for 'Challenge the Algorithm'

By making use of ReflectTok, students work in a social constructivist approach on a diverse set of learning goals, aiming to enhance the set of knowledge, skills and mentality that are needed to make aware and critical use of TikTok.

4.5 Business opportunities

Creating a Value Proposition Canvas and Customer Journey Map for ReflectTok explored business opportunities (Osterwalder et al., 2014). A company could be created that has as business model to directly sell the product and providing several services service to schools. The company services include:

- Premium version of the app, providing insights for teachers (future work)
- Workshops, given on location.
- Integration plan, alongside the product (similar to and taking inspiration from digiwijzer (Oplossingen Digitale Geletterdheid Voor Alle Soorten Onderwijs, 2024)).

For the last-mentioned service, the company conducts research and creates a curriculum implementation plan. The ReflectTok company value proposition is that they provide a low effort and ready to use educational tool for schools / teachers, implementable on short-term and in various ways, supporting students in becoming media literate.

5. Discussion

In this chapter the most important design choices are discussed and supported by literature. Moreover, Limitations of both process and design are discussed and future design ideas and work are listed.

5.1 Design Decisions

5.1.1 Reflection & Collaboration

Reflection and collaboration are dominant in all designs throughout the process. Reflection improves awareness and deeper understanding of knowledge, and collaboration fosters reflection by facilitating the exchange of information, promoting critical thinking skills (Baird et al., 1991; Gokhale, 2012). It fits within the theory of social constructivism, positing that an individual's understanding is shaped through social interaction (Vygotsky, 1978).

5.1.2 Reflection Questions

The reflection questions are made with use of the reflection model of Rolfe et al. (2021). It consists of three simple questions to guide individuals in reflecting on their experiences:

- 'What?' prompts to describe the situation or experience.
- 'So what?' encourages to explore meaning, emotions thoughts and insights of the experience.
- 'Now what?' focusses on future actions.

It was chosen for its relevance, covering being in a filter bubble ('What?'), its individual impact ('So what?'), and potential societal influence ('Now what?').

5.1.3 Physical design and use of tokens

For the final design, a major decision was to create a physical design and use tokens. Based on cognitive development theory and teachers, studies suggest tangibles and hands-on learning increases learning and fosters engagement (Haury & Rillero, 1994; Antle, 2007). While minimal evidence exists for the former suggestion, studies show evidence for the latter including that it can foster collaboration (Price et al., 2003; Cho et al., 2017).

5.2 Future Design improvements

User test findings suggest more design improvements than were implemented in the Final Design.

Regarding the physical design, improvements are needed on the storage box that doubled as a phone stand. It was challenging and time-consuming to put tokens in and out, requiring a smoother use. Moreover, the dual function should be made more intuitive.

For the application, design improvement is needed on providing the explanation of both parts and presenting the information on the influence on the algorithm. This could for example be done by creating animations. Moreover, a feature should be designed that would give insights on students answers for the teacher.

5.3 Limitations & Future work

Several limitations can be found.

A lot of attention was given to validating the need, and theoretical background before making design decisions, which proved to be time-consuming. Instead, design decision could have been made earlier and validated by testing. Moreover, the material choice in the final design is merely supported by argumentation and has not been tested nor validated on its role on use and appeal over e.g. wood, like the prototype.

In user tests, students only performed one design part. It has not been tested in the intended use scenario consisting of a series of lessons. Future work should study the impact of the design in the intended use scenario on learning outcomes of students.

Additionally, since the focus has been on achieving and evaluating learning outcomes for students, the design was not validated nor tested with teachers. Future work should also include teachers in the abovementioned study.

The student participants did not fully represent the target group, being relatively young and mostly male. Future work should better represent target group.
While there is academic support for the use of tangibles, it would be interesting to investigate the role and benefits of the use of a physical tool and tangibles.

6. Conclusion

In this project, the following design challenge has been addressed:

Create an educational tool that supports high-school students aged 12 to 16 in acquiring knowledge, skills and mentality that are needed to make critical and aware use of TikTok, thereby improving their media literacy.

By using the double diamond model and taking a UCD approach, a variety of methods have been used and a variety of designs were developed, leading to the final design of ReflectTok. While the design showed potential to achieve the intended learning goals, it has not been tested within the intended use scenario. Furthermore, design improvements should be made to increase overall usability, enhancing students learning. Future work should implement these improvements and perform user tests in the intended scenario on larger scale to determine the impact of the design.

Acknowledgements

I want to express sincere gratitude to my coach for providing invaluable feedback throughout this project. Special thanks to the teachers and students involved in this project for their collaboration and valuable input during user tests. Lastly, I want to thank fellow students for their participation in co-creation and their informal feedback and insights in this project.

References

- Amnesty International. (2023, November 9). Global: TikTok's 'For You' feed risks pushing children and young people towards harmful mental health content. https://www.amnesty.org/en/latest/news/2023/11/tiktok-risks-pushing-children-towards-harmful-content/

- Antle, A. N. (2007). Designing tangibles for children. In CHI '07 Extended Abstracts on Human Factors in Computing Systems (CHI EA '07). Association for Computing Machinery, New York, NY, USA, 2243–2248. https://doi.org/10.1145/1240866.1240988

- Areeb, Q. M., Nadeem, M., Sohail, S. S., Imam, R., Doctor, F., Himeur, Y., Hussain, A., & Amira, A. (2023). Filter bubbles in recommender systems: Fact or fallacy—A systematic review. WIREs Data Mining and Knowledge Discovery, 13(6). https://doi.org/10.1002/widm.1512

- Baird, J. R., Fensham, P. J., Gunstone, R., & White, R. (1991). The importance of reflection in improving science teaching and learning. Journal of Research in Science Teaching, 28(2), 163–182. https://doi.org/10.1002/tea.3660280207

- Boucher, V. (2022, June) Down the TikTok Rabbit Hole: Testing the TikTok Algorithm's Contribution To Right Wing Extremist Radicalization. https://qspace.library.queensu.ca/server/api/core/bitstreams/a6c3012c-af83-4d2a-9fcc-570c0664e2b2/content

- Brooke, J. B. (1996). SUS: a "Quick and Dirty" usability scale. In CRC Press eBooks (pp. 207–212). https://doi.org/10.1201/9781498710411-35

- Cho, J., Yoo, J., Shin, J., Cho, J., & Bianchi, A. (2017). Quantifying Children's Engagement with Educational Tangible Blocks. In Proceedings of the Eleventh International Conference on Tangible, Embedded, and Embodied Interaction (TEI '17). Association for Computing Machinery, New York, NY, USA, 389–395. https://doi.org/10.1145/3024969.3025062

- Cijfers over mediagebruik | Nederlands Jeugdinstituut. (2023, March 24.). https://www.nji.nl/cijfers/mediagebruik

- Commissariaat voor de Media (2023) Het Digital News Report Nederland 2023. https://www.cvdm.nl/wp-content/uploads/2023/06/CvdM-DigitalNewsReport-2023.pdf

- De InternetHelden. (n.d.). De InternetHelden. https://beinternetawesome.withgoogle.com/nl_nl

- De Baas Op Internet (n.d,) Aan de slag. https://debaasopinternet.nl/aan-de-slag

- Design Council. (n.d.). Framework for Innovation - Design Council. https://www.designcouncil.org.uk/our-resources/framework-for-innovation/

- Digitale geletterdheid – Inhoudslijn po-vo Mediawijsheid (2018, March) SLO. https://www.slo.nl/publish/pages/6123/slo-2018-03-05-leerlijn-digitale-geletterdheid-mediawijsheid-po-vo.pdf
- European Commission, European Education and Culture Executive Agency, (2022). Informatics education at school in Europe, Publications Office of the European Union. https://data.europa.eu/doi/10.2797/268406

- Gokhale, A.A. (2012). Collaborative Learning and Critical Thinking. In: Seel, N.M. (eds) Encyclopedia of the Sciences of Learning. Springer, Boston, MA. https://doi.org/10.1007/978-1-4419-1428-6_910

- Griffin, A. (2022, July 13). TikTok makes changes to its 'For You Page' amid criticism over its mysterious algorithm. The Independent. https://www.independent.co.uk/tech/tiktok-fyp-for-you-page-algorithm-explained-b2122409.html

- de Groot,T. de Haan, M. & van Dijken, M. (2023) Learning in and about a filtered universe: young people's awareness and control of algorithms in social media, Learning, Media and Technology, 48:4, 701-713, DOI: 10.1080/17439884.2023.2253730

- Haroon, M., Chhabra, A., Liu, X., Mohapatra, P., Shafiq, Z., & Wojcieszak, M. (2022). YouTube, the Great Radicalizer? Auditing and Mitigating ideological biases in YouTube recommendations. arXiv (Cornell University). https://doi.org/10.48550/arxiv.2203.10666

- Haury, D. L., & Rillero, P. (1994). Perspectives of Hands-On Science Teaching. Columbus, OH: ERIC Clearinghouse

- Hezemans, P. (2023, December 19). Nederlandse leerlingen en scholieren scoren onvoldoende op digitale geletterdheid - ECP | Platform voor de InformatieSamenleving. ECP | Platform Voor De InformatieSamenleving. https://ecp.nl/monitors-digitale-geletterdheid-2023-persbericht/

- Hoekstra, H., Jonker, T., van de Veer, Neil. (2023, january 28) Nationale SocialMedia Onderzoek 2023. NewcomResearch & Consultancy B.V. https://www.newcom.nl/wp-content/uploads/2023/01/Newcom-Nationale-Social-Media-Onderzoek-2023.pdf

- Kramer, A. D. I., Guillory, J., & Hancock, J. T. (2014). Experimental evidence of massive-scale emotional contagion through social networks. Proceedings of the National Academy of Sciences of the United States of America, 111(24), 8788–8790. https://doi.org/10.1073/pnas.1320040111

- leermaterialen. (n.d.). SLO. https://www.slo.nl/sectoren/vmbo/digitale-geletterdheid-vmbo/digitale-geletterdheid-vo/leermaterialen/mediawijsheid/

- Ministerie van Algemene Zaken. (2023, December 7). Vernieuwen curriculum primair onderwijs en voortgezet onderwijs. Toekomst Van Het Onderwijs | Rijksoverheid.nl. https://www.rijksoverheid.nl/onderwerpen/toekomst-onderwijs/toekomstgericht-curriculum

- Norman, D.A. & Draper, S.W. (1986) User Centered System Design; New Perspectives on Human-Computer Interaction. CRC Press

- Ons aanbod. (n.d.). https://edux.nl/maatwerk/digitale-geletterdheid/digitalig/ons-aanbod

- Oplossingen Digitale Geletterdheid voor alle soorten onderwijs. (2024, January 5). Digiwijzer. https://digiwijzer.nl/oplossingen/

- Over digitale geletterdheid. (n.d.). SLO. https://www.slo.nl/sectoren/vmbo/digitale-geletterdheid-vmbo/digitale-geletterdheid-vo/digitale-geletterdheid/
- Pariser, E. (2011a, March). Beware online "filter bubbles" [Video]. TED Talks. https://www.ted.com/talks/eli_pariser_beware_online_filter_bubbles

- Pariser, E. (2011b). The filter bubble: What the Internet is Hiding from You. Penguin Press HC.

- Podiumvooronderwijs.nl - Jongeren mediawijzer met VR. (n.d.). https://www.podiumvooronderwijs.nl/mediawijzer-vr

- Price, S., Rogers, Y., Scaife, M., Stanton, D., & Neale, H. (2003). Using 'tangibles' to promote novel forms of playful learning. Interacting With Computers, 15(2), 169–185. https://doi.org/10.1016/s0953-5438(03)00006-7

- Rolfe, G., Freshwater, D., & Jasper, M. (2001). Critical reflection for nursing and the helping professions: A User's Guide. Palgrave MacMillan.

- Rombouts, M., Van Dorsselaer, S., Scheffers-van Schayck, T., Tuithof, M., Kleinjan, M., & Monshouwer, K. (2020). Jeugd en riskant gedrag 2019. Trimbos-instituut. https://www.trimbos.nl/wp-content/uploads/sites/31/2021/09/af1767-jeugd-en-riskant-gedrag-2019.pdf

- Ross Arguedas, A., Robertson, C., Fletcher, R., & Nielsen, R. (2022). Echo chambers, filter bubbles, and polarisation: a literature review . Reuters Institute for the Study of Journalism.

- Stapleton, J. (1997). DSDM: Dynamic Systems Development Method: the Method in practice. https://openlibrary.org/books/OL668596M/DSDM_dynamic_systems_development_method

- Tensorflow. (n.d.). Bug - pip install tflite-model-maker fails or hangs forever · Issue #60431 · tensorflow/tensorflow. GitHub. https://github.com/tensorflow/tensorflow/issues/60431

- The Filter Bubble app. (n.d.). Utrecht University. https://www.uu.nl/en/organisation/development-education-of-youth-in-diverse-societies/the-filter-bubble-app

- The Wall Street Journal. (2021, July 21). How TikTok's algorithm figures you out | WSJ [Video]. YouTube. https://www.youtube.com/watch?v=nfczi2cI6Cs

- TikTok. (2020, November 4). How TikTok recommends videos #ForYou. Newsroom | TikTok. https://newsroom.tiktok.com/en-us/how-tiktok-recommends-videos-for-you

- TikTok - the Hmm. (2023, May 22). The Hmm. https://thehmm.nl/education/tiktok/

- Uitgeverij Pica. (2023, July 17). MediJA praat - Uitgeverij Pica. https://www.uitgeverijpica.nl/titels/medija-praat-pica?_ga=2.34707938.2115674723.1569999108-37476330.1569480263

- Osterwalder, A., Pigneur, Y., Papadakos, P., Bernarda, G., Papadakos, T., & Smith, A. (2014). Value proposition design. John Wiley & Sons.

- Van Benthem, D. (2022, July 4). Jongeren vijf uur per dag op smartphone: "Meer tijd nodig om te leren." NOS. https://nos.nl/nieuwsuur/artikel/2435316-jongeren-vijf-uur-per-dag-op-smartphone-meer-tijd-nodig-om-te-leren
- Van der Wal, A., Janssen, L. H. C., Bij de Vaate, A. J. D., Beyens, I., & Valkenburg, P. M. (2023). De plussen en minnen van social media. Jongeren aan het woord, Center for Research on Children, Adolescents, and the Media (CcaM), Universiteit van Amsterdam.

- Vygotsky, Lev (1978). Mind in Society. London: Harvard University Press.

- What is User Centered Design? (2023, October 27). The Interaction Design Foundation. https://www.interaction-design.org/literature/topics/user-centered-design

- Woodward, M. (2023, December 21). TikTok user statistics 2024: Everything you need to know. SearchLogistics. https://www.searchlogistics.com/learn/statistics/tiktok-user-statistics/

Reflection

This reflection describes my choices for the project 'ReflectTok' in light of my professional identity and vision (PIV), elaborates on learnings in, and the integration of the expertise areas, and depicts development of professional skills and my overall competence as a designer.

The project started from a combination of my PIV, including my role and experience as designer, and my passion for and experience in education.

As a designer I aim to bring and explain digital technology to possible users in a comprehensible manner and strive toward becoming an innovator who does so by use of design. Developments in digital technology are taking place at a rapid pace which I think people cannot keep track of, resulting in unawareness of how technology works and what it means to use it, including potential (often negative) consequences. It hinders people in making an informed and conscious decision regarding technology adoption, has not allowed people in doing so for technology in use and causes technology is used without critical considerations.

Because of my passion for education, I successfully studied for the master Science Education a full year prior to this project. The societal issue described above was heavenly noticeable amongst students during my two half-year internships at two high schools. Likewise, ICT skills, information literacy and media literacy were also poor. In general, I concluded that there is a lack of digital literacy.

My main goal for this project was to combine my experience in design and education and to address the abovementioned issue to create an educational tool that improves digital literacy, exploring 'designing for education'. By exploring and reflecting upon it afterwards I aimed to conclude whether it is a field in which I want to continue my FMP and potential future in.

A goal regarding User & Society was to learn new empirical supported UCD techniques, expanding my competence in knowing and applying these techniques such that a variety could be used in my FMP. In the process, various new design techniques were used and learned like the MoSCoW method and the System Usability Score (SUS). However, most learning occurred through development of a workshop including self-created assignments which showed that self-created non empirical supported methods can also bring valuable results.

Similar to the goal of learning new UCD techniques, intended goals for Technology and Realization included learning new realization techniques. Throughout the process I experienced and learned to prepare and realize prototypes using the laser cutter by realizing the physical ReflectTok tool and developed in depth skills in using programs such as Figma and Illustrator by realizing the clickable demo application and 3D-model.

These skills also add to my competence in Creativity and Aesthetics. I am a designer who is focused on the content, including theory and whether a product works or creates results as intended, less on the aesthetics. E.g. for the intended outcome of ReflectTok it is more important how students learn than the decision on design color or material. However, user experience does include these aspects. Looking back on previous deliverables for individual projects and comparing them with current deliverables, I

have made sincere steps in (giving attention to) creativity and aesthetics, resulting in improvement on deliverables.

Math, Data and Computing was integrated through analysis of a variety of data from user tests, resulting in sheets and graphs underpinning the potential of the design and a SUS score on its usability. Moreover, through exploration and trying to realize the applications' technical part, I got a basic understanding of object recognition models and programming android applications.

Business and Entrepreneurship has received little attention in this project since I do not prospect a future within this area for myself. However, it has received attention in extracurricular activities by attending events, expanding my network by making contact with schools, experts and companies. It has resulted in a potential company to work with in my FMP, described in more detail in the FMP Proposal.

The most important aspects I learned in this project, however, are on a personal level.

In previous projects, if quite some work was done on a design which was discarded in an iteration, I often felt dissatisfied because it felt like the provided work was discarded as well. When the application in this project was discarded and a new design idea emerged, I learned to accept and appreciate it by seeing the provided effort all led to this new iteration.

After a year in education, it took some time to get back into a design mentality at the start. Moreover, I am a designer who focusses on theory and finding arguments for support on multiple aspects such as validation for design decisions to make sure it will succeed. It is not necessarily a bad thing, but these two aspects resulted in much attention being paid to research and validating assumptions to make design decisions. Being time-consuming, it also resulted in minor design decisions that were taken by myself. Designing includes flexibility and making decisions, validating them by testing. In the FMP I want to learn to be more flexible by challenging myself to take decisions based on less validation beforehand, which is described in more detail in the Proposal.

Reflecting upon designing for education, I have chosen to continue this in my FMP. Despite the challenges, it has been interesting and exciting to combine the two fields, especially in relation to my vison. In the FMP, however, a change in target group will take place. I am going to focus on teachers, which is detailed in the Proposal.

In conclusion, I integrated a variety of aspects of the expertise areas in this project through which I learned multiple hard skills and soft skills, adding to my overall competence as a designer and which I aim to use in my FMP. The most important learning point is on a personal level, finding out I seek a lot of validation which can be restricting, which I am going to address in my FMP.

Appendices

Appendix A: Design Brief

This design brief is made for the M2.1 Preparation FMP project to create a narrow design challenge.

How might I?
The following HMI question is proposed:
How might I, by use of design, enhance high-school students' awareness of their TikTok use, how it can influence their own media consumption and their perception, how this is happening for each individual and how this can have an impact on society.

Project Purpose
Starting from wanting to do something with Digital Literacy as formulated by SLO and the four domains, a choice was made to focus on media literacy. Specifically, the influence of media in society and media and perspective.

Students are starting to use social media at a very young age. Additionally, TikTok is the most popular social media amongst youth. They use it without being aware of the data they share and how algorithms use this data to create a feed to keep them on the platform. This feed has potential influence on their perspective, like it has potential influence on every user of social media. So, social media, especially TikTok, also has a role in society that many students are not aware of.

Target Users
The project aims to be made for two different types of users.
The first and foremost target user will be high school students 12-16 years old.
The second target users are the high-school teachers of these students, that possibly will use the design in their lessons.

Project Goals
The goal is to create a design which could be implemented in high-schools and could be used by teachers. This design aims to make students more aware of their TikTok use, the consequences it has on their media consumption and the possible influence on their perspective and on society.
This has benefits for both teachers and students. Teachers will have a tool that assists them in teaching digital literacy, in particular media literacy, while students will work on their media literacy through this design. Moreover, the students will be aware of their own media usage and might change their behavior accordingly.

Succes criteria
Interviews and/or questionnaires after use of the design will establish whether students are more aware. Teachers will have a sense of the (improved) degree of media literacy of their students and can support outcomes as well as give their own take on whether the design succeeds in its goal.

Project Scope
The project will deliver a design and demonstrator of the design, as well as a design report including a final iteration after Demoday. It is possible that education can be developed in which the design will be used, but this will be outside of the scope of this project.

Resources
The Internet, especially literature, in general will be a huge resource. Fellow students can and probably will be involved in different stages of the project to give input and feedback. Moreover, my coach, Tilde Bekker, will also provide feedback.

An important resource will be high schools, involving the teachers concerned with digital or media literacy, and the students. These will be contacted via my personal network.

Constraints
The major constraint is the ERB form, since the project probably will concern children of age 16 and younger. It will be discussed whether the responsible teacher can give permission for these students, instead of reaching out to the parents of each student.

Timewise, there are two constraints. It has taken a long time to define this specific scope, so a lot of time has already passed. Towards demo day it will be stressful, which is a constraint in itself. It will be a task to plan wisely, adapt when needed, and spread the work towards DemoDay.

Assumptions
While literature shows lack of digital literacy, a big assumption is that students are not aware of the data they share and the potential influence and consequences it has. Nowadays it is more and more known that social media tracks every click, every like, every second. But only knowing this, and constantly being aware and doing something with this knowledge, is a difference. This will be tested by interviewing the teachers and by making personas and confirming whether these are likely to be reality. Moreover, a questionnaire amongst students belongs to the possibilities.

Risks
A major risk is that the teacher cannot give consent to the student and that the ERB form will take a long time to be approved, as well as it will be time-consuming to ask parents for consent. Next, since schools have and need to comply to their planning as well, it can take some time to contact and arrange meetings with teachers and/or students.

Appendix B: Personas & Scenarios

Person

BEN

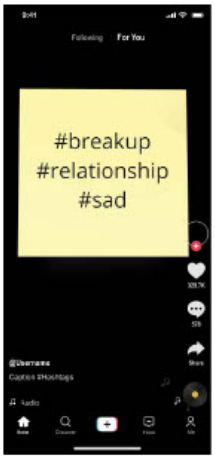
ABOUT

- 15 years old
- vmbo-t student
- Plays soccer.

Personality

Ben is a 15-year-old boy who likes to play soccer. He is a very loving and caring person and is therefore very much loved by classmates and teachers. He sometimes struggles with dealing with his own emotions, especially after his recent break-up.

Filter Bubble / Tiktok use



Ben recently started to use TikTok a lot. This is because of the recent break-up he experienced. He has more time to do so since he does not spend time anymore with his partner.

Ben came across some breakup videos, and because he recognizes how he is feeling, he watched them multiple times and likes them. The algorithm learned that by providing him more of these videos, he spends more time on the app. His feed slowly turned into a sad breakup filter bubble.

Scenario

Positive

Ben is having a hard time dealing with his emotions since his break-up. Especially, since his friends haven't had a relationship yet. He thinks that they are not able to talk to him about it.

With his extended TikTok use now, he gets more and more videos about peers breaking up on his feed, and how it makes them feel. Moreover, he also sees videos that show how these peers have dealt with the breakup and with their emotions.

Seeing these videos makes Ben on the one hand a bit sad, but at the same time it helps him to deal with his feelings. He tries some methods shown in the videos and notices some of them work. He is feeling better way sooner than he thought he would.

Negative

Ben is having a hard time dealing with his emotions since his break-up. Especially, since his friends haven't had a relationship yet. He thinks that they are not able to talk to him about it.

With his extended TikTok use now, he gets more and more videos about peers breaking up on his feed, and how it makes them feel. It confirms his own feelings, which isn't directly a bad thing.

However, since Ben has trouble dealing with his emotions, he is unaware of what only seeing breakup videos do with him. They put him in a negative spiral and make him sad on moments he would otherwise be happy. In those moments, he decides to stay at home more often and watch more TikTok when his friends invite him over.

Person

ILSE

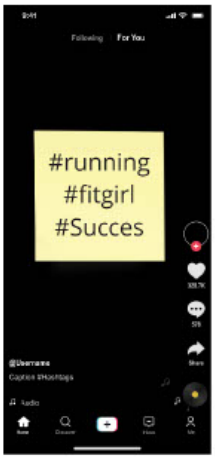
ABOUT

- 14 years old
- havo student
- Loves being active (Running)

Personality

Ilse is a very kind and lovely 14-year-old girl who loves to be active and is very ambitious. She is introverted and therefore somewhat quiet girl. She has a small number of really close friends.

Filter Bubble / Tiktok use



Ilse uses TikTok quite often. Since she likes to be active, she watches videos of others being active when she can't. For example, during breaks in school or when she is done with her homework at night.

Because she rewatches these videos, likes them and follows famous runners, her feed is mostly filled with running videos. Since she has high ambitions, she also trained the TikTok algorithm to show her videos of people with great successes.

Scenario

Positive

Ilse has been in this filter bubble for a while now. She has seen videos of people who achieved great successes, who can run quicker and farther than her.

Because of her ambition, Ilse always wants to set better times. However, her times have remained static for a while.

Amongst the videos in her filter bubble are also videos in which runners explain various running and training techniques. She tries one of them and notices it works. The videos even helped her achieve a PR.

Negative

Ilse has been in this bubble for a while now. She has seen videos of people who achieved great successes, who can run quicker and farther than her.

In the first weeks into this bubble, she loved to see and became happy of seeing the successes of others. But due to her high ambitions, she raised the bar for herself after seeing these successes. However, she is not able to reach them (yet).

Now, while she cannot look away from the videos because it is her interest, she slowly takes herself down when she uses TikTok. She thinks she is failing because she cannot reach her ambitions, while she sees others succeed. This has such an impact that her school results slowly decline.

Person

RICK

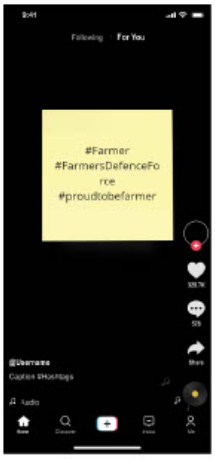
ABOUT

- 14 years old
- vwo student
- Lives and grew up on a farm.

Personality

Rick is a smart 14-year-old vwo student who grew up on a farm. Amongst his classmates, he is loved for his great sense of humour. However, it is noticeable when he is being serious and tries to convince others of his opinion.

Filter Bubble / Tiktok use



When Rick is not doing homework or helping his parents on the farm, he relaxes with TikTok videos. The algorithm has learned that he likes to watch farming videos, and what it means to be a farmer.

Due to a combination of Rick his location, and known interest in farming, Rick's TikTok feed is getting more and more filled with videos with a certain political point of view, supporting farmers in the well-known political discussion in the Netherlands. Because it affects his parents and him as well, he keeps watching them.

Scenario

Positive

After being in this bubble for a while, Rick his opinion upon this debate is becoming stronger. On his feed are videos of other farmers who are going to protests. Amongst these videos are also peers who are demonstrating.

At one point, Rick decides he is going to a protest as well. There, he meets several peers, and they decide to remain in contact.

Besides meeting them at protests, Rick now often hangs out with these peers, and they become his friends.

Negative

Rick has quite a large group of friends, with quite some diversity in political orientation. This has never been a problem.

After being in this bubble for a while, Rick his opinion upon this debate has become stronger. He also sees videos with quite some falsehoods.

One time, when Rick was hanging out with his friends, they spoke about this political discussion. Since Rick has this strong opinion now, and does not hesitate to try to convince others, it has clashed with one of his friends. Especially because of the use of falsehoods that Rick is convinced of are true.

Their clash has caused them to not like each other anymore, and it causes difficulties when they want to hang out with the whole group of friends.

Appendix C: Interview Questions

1. Kunnen jullie kort wat over jezelf vertellen en over je ervaringen als docent?
   Can you briefly tell me about yourselves and your experiences as a teacher?

2. Wordt er aandacht besteed aan digitale geletterdheid/mediawijsheid op deze school? Op welke manier? Wat is jullie rol hierin?
   Is there attention on digital literacy/media literacy at this school? In what ways? What is your role in this?

3. Zijn jullie bekend met TikTok? Gebruiken jullie het persoonlijk?
   Are you familiar with TikTok? Do you use it?

4. Zijn jullie bekend met de term filter bubbel?
   Are you familiar with the term filter bubble?

5. Weten jullie hoe deze ontstaan en wat de impact kan zijn op leerlingen, of de beeldvorming van leerlingen?
   Do you know how they form and what impact they can have on students or student's perception?

6. Hebben jullie het idee dat de leerlingen zich hier ook bewust van zijn? Waarom wel / niet? Kun je voorbeelden noemen? Zit er verschil in dit bewustzijn vanwege leeftijd, en/of niveau van de leerlingen?
   Do you think students are aware of this? Why or why not? Can you provide examples? Is there a difference in awareness based on age and/or the students' academic levels?

7. Wat zijn jullie ervaringen hiermee in de klas, of wat zijn vernomen ervaringen van collega's? Wat is de invloed van filter bubbels in de klas, en hoe is dit te merken? Kun je voorbeelden noemen?
   What are your experiences with this in the classroom, or what experiences have colleagues shared? How do filter bubbles influence the atmosphere in the classroom, and how is it notice able? Can you provide examples?

8. Hoe gaat de school hiermee om? Wordt er aandacht besteed aan mediawijsheid in de lessen of wordt er specifiek onderwijs hierin gegeven?

   > Nee: wat zou de school, of scholen in het algemeen, hierover moeten onderwijzen, en waarom gebeurt het nog niet?

   How does the school address this issue? Is there a focus on media literacy in the lessons, or is edu cation provided on this topic specifically?

   > If not: What do you think the school, or schools in general, should teach about this, and why hasn't it been implemented yet?

Appendix D: MoSCoW Questions

Must-Have (M):

1. **Kennisbegrip/ Knowledge Understanding**

- Weke specifieke concepten of aspecten gerelateerd aan filter bubbels en/of TikTok vinden jullie cruciaal dat leerlingen begrip van hebben?

- Which specific concepts or aspects related to filter bubbles and/or TikTok do you consider crucial for students to understand?

2. **Fascilitering van de leraar / Teacher Facilitation**

- Zou de tool een op zichzelf staand ontwerp moeten zijn, of zou de docent hier een rol bij moeten spelen? Zijn de docenten hiertoe in staat, geacht het onderwerp, of zou hierbij bepaalde support nodig zijn?

- Should the tool be a standalone design, or should the teacher play a role in its implementation? Are teachers capable of this, considering the subject, or would specific support be necessary?

3. **Betrokkenheid en interactie / Engagement and Interaction**

- Welke interactieve activiteiten of mogelijkheden zien jullie om leerlingen betrokken te houden met het gebruik van deze educatieve tool? Zijn er bijvoorbeeld specifieke methoden of interacties die effectief zijn in het onderwijzen van mediawijsheid in het huidig curriculum? Bv reflecteren, visualiseren of praktisch bezig zijn?

- What interactive activities or opportunities do you see for keeping students engaged with the use of this educational tool? Are there specific methods or interactions that are effective in teaching media literacy within the current curriculum? For example, reflecting, visualizing, or hands-on ac tivities?

Should-Have (S):

1. **Integratie in het curriculum / Integration into the Curriculum**

- Hoe zou een dergelijke educatieve tool binnen het huidig curriculum passen (vakken/lessen), of waar zien jullie wellicht nieuwe mogelijkheden voor onderwijs, zodat deze tool het meeste effect zal gaan hebben bij de leerlingen?

- How would such an educational tool fit within the current curriculum (subjects/lessons), or where do you possibly see new opportunities for education so that this tool would have the most signifi cant impact on students?

2. Gebruik / Use

- Zou de tool aanpasbaar moeten zijn voor zowel individueel en groeps gebruik? Hoe?

- Should the tool be adaptable for both individual and group use? How?

Could-Have (C):

1. Discussie / Discussion

- Kan de tool kenmerken bevatten die discussie over de inhoud van de filter bubbels aanspoort, of zou dit de aandacht van de bewustwording ervan weghalen? Zou de discussie kunnen aansporen over de impact ervan?

- Can the tool include features that encourage discussion about the content of filter bubbles, or would this divert attention from awareness? Could it stimulate discussion about their impact?

- Zijn er andere kenmerken die de tool zou kunnen hebben om de effectiviteit van het ontwerp te verhogen, of het gebruik ervan?

- Are there other features the tool could have to enhance the effectiveness of the design or its us age?

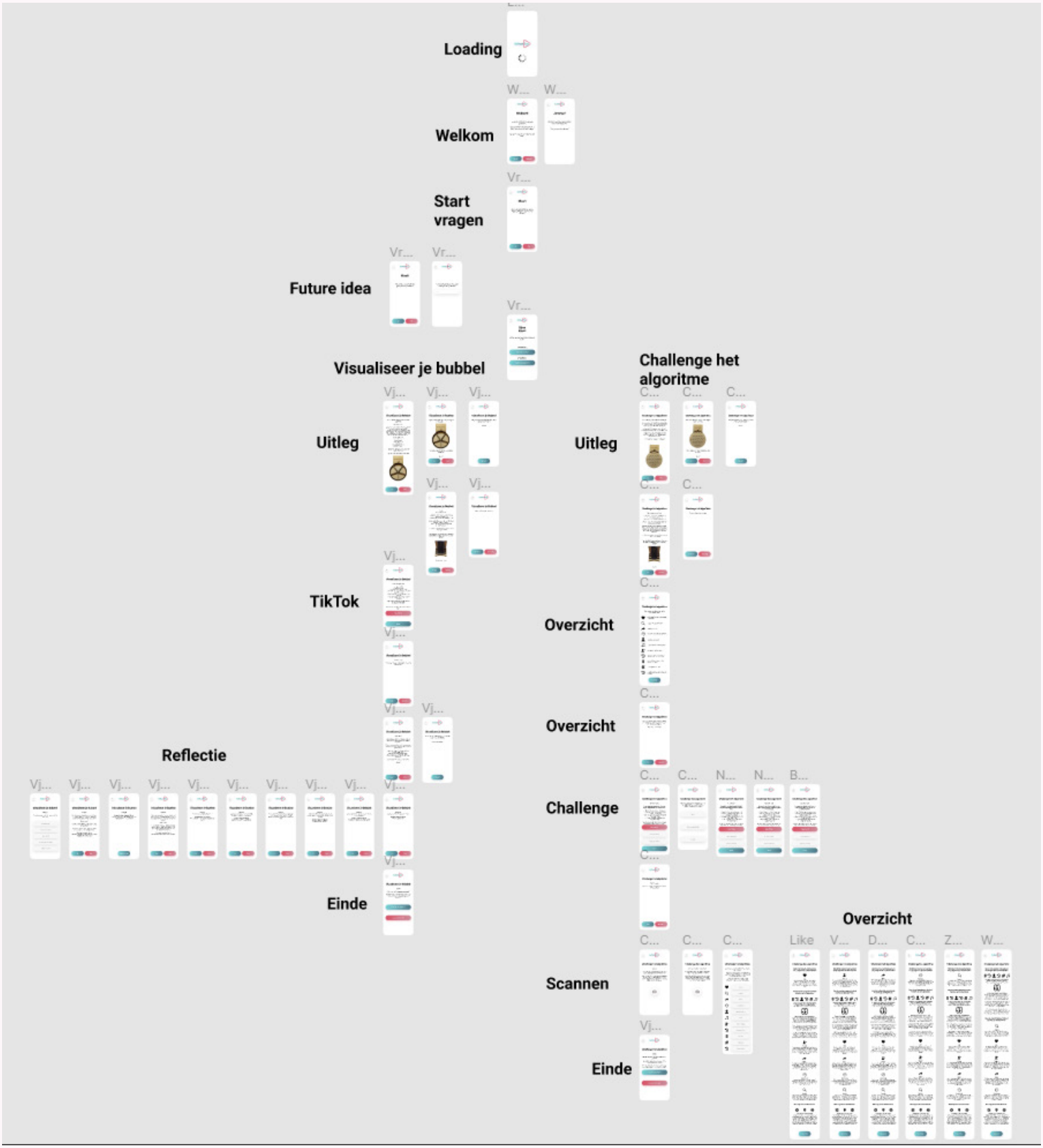
Must-Not-Have (Won't Have - W):

1. Uitdagingen / Challenges

- Zijn er aspecten gerelateerd aan de technologie, de content of onderwijsmethoden die de tool moet ontwijken vanwege mindere effectiviteit of wellicht mogelijke risico's of controverses? Of wellicht bepaalde onderwerpen die niet gepast of counter productief zijn in het klaslokaal?

- Are there aspects related to technology, content, or teaching methods that the tool should avoid due to lower effectiveness or potential risks or controversies? Are there specific topics that might be inappropriate or counterproductive in the classroom?

Appendix E: Overview ReflectTok Application Screens



Appendix F: Reflection Questions

This is an overview of the questions in the 'Visualize your Bubble' section that students discuss and answer with each other.

1. **What subject do you see the most on TikTok videos?**
- Entertainment
- News & Politics
- Sexuality
- Beauty & Health
- Fitness & Sports

2. **Do you feel that within this or another subject, you often see the same type of TikTok videos in your 'For You' feed?**

   Discuss: Why do you feel this way? If yes, what specific subject is this?

   Example:
   Within Entertainment, you mostly see dance videos.
   Within News & Politics, you mostly see videos about the war in Gaza.

3. **What do you think of the TikTok videos (that occur more frequently) in your 'For You' feed?**

4. **Do you feel that you get a one-sided view (one side of the story) in these or in other videos you get on your 'For You' feed?**

   Discuss: Why do you feel this way or not?

   Example:
   For videos about the war in Gaza, you only see pro-Palestinian videos or pro-Israel videos (in which people support Palestine or Israel).

5. **Do you think this can influence you?**

   Discuss: Why do you think so? How does or doesn't it do so?

6. **Is everything that occurs in these or in other TikTok videos the truth?**

   Discuss: Why is that? How do you know?

7. **Has it ever happened that you thought something in a TikTok video was true, but it turned out not to be true later on?**

8. **Do you think TikTok videos can influence what people believe or how they feel?**

   Discuss: Why do you think that? How?

9. **Do you think this can have consequences in society?**

   Discuss: Why do you think that? In what way?

10. **Do you think you are in a Filter Bubble?**

    Discuss: Why do you think so?

Dit is een overzicht van de vragen in het onderdeel 'Visualiseer je Bubbel' die leerlingen met elkaar bespreken en beantwoorden.

1. Van welk onderwerp zie jij de meeste TikTok filmpjes?

- Entertainment
- Nieuws & Politiek
- Seksualiteit
- Beauty & Gezondheid
- Fitness & Sport

2. Heb je het gevoel dat je binnen dit, of binnen een ander onderwerp, vaker hetzelfde soort TikTok filmpjes in je 'For You' feed ziet?

Bespreek: Waarom heb je dat gevoel wel of juist niet? Zo ja, welk specifiek onderwerp is dit?

Voorbeeld:
Binnen Entertainment zie je bijna alleen maar dansfilmpjes.
Binnen Nieuws & Politiek zie je bijna alleen maar filmpjes over de oorlog in Gaza.

3. Wat vind je van de TikTok filmpjes (die vaker voorkomen) in je 'For You' feed?

4. Heb je het gevoel dat je een eenzijdig beeld (één kant van het verhaal) krijgt te zien in deze of andere filmpjes die je ziet op jou 'For You' feed?

Bespreek: Waarom heb je dat gevoel wel of juist niet?

Voorbeeld:
Bij de filmpjes over de oorlog in Gaza zie je alleen maar pro-Palestijnse filmpjes of juist pro-Israël filmpjes (waarin mensen achter Palestina of Israël staan).

5. Denk je dat dit jou kan beïnvloeden?

Bespreek: Waarom denk je dat? Hoe zou dat wel of juist niet kunnen?

6. Is alles wat er in deze, of in andere TikTok filmpjes aan bod komt de waarheid?

Bespreek: Waarom is dat zo? Hoe weet je dat?

7. Is het wel eens voorgekomen dat je dacht dat iets wél waar was wat je zag in een TikTok filmpje, maar dat dat achteraf niet zo bleek te zijn?

8. Denk je dat TikTok filmpjes invloed kunnen hebben op wat mensen vinden, of hoe ze zich voelen?

Bespreek: Waarom denk je dat? Hoe?

9. Denk je dat dit gevolgen zou kunnen hebben in de maatschappij?

Bespreek: Waarom denk je dat? Op welke manier?

10. Denk je dat jij in een Filter Bubbel zit?

Bespreek: Waarom denk je dat?

The ‘Challenge the Algorithm’ Challenges

This is an overview of example challenges that students need to do in ‘Challenge the Algorithm’.

Fox

Make sure you get a video on your ‘For You’ page that shows a fox.

Nature

Make sure you get a video on your ‘For You’ page that focuses on nature.

Dutch Politics

Make sure you get a video on your ‘For You’ page that has to do with Dutch politics.

Books

Make sure you get a video on your ‘For You’ page that is about one or more books.

De ‘Challenge het Algoritme’ Challenges

Dit is een overzicht van enkele voorbeelden van challenges die leerlingen aan kunnen gaan in ‘Challenge het Algoritme’.

Vos

Zorg dat je een filmpje op je ‘For You’ pagina krijgt waarin een vos te zien is.

Natuur

Zorg dat je een filmpje op je ‘For You’ pagina krijgt waarin de natuur centraal staat.

Nederlandse Politiek

Zorg dat je een filmpje op je ‘For You’ pagina krijgt dat met nederlandse politiek te maken heeft.

Boeken

Zorg dat je een filmpje op je ‘For You’ pagina krijgt dat gaat over één of meerdere boeken.

Appendix H: Learning Goals

This is an overview of the student learning goals that ReflectTok aims to support. These are divided in topics and subcategories.

Main goal

The student possesses the knowledge, skills, and mindset necessary to make aware and critical use of TikTok.

Knowledge of TikTok

Understanding the functioning of TikTok's algorithm:

- The student can explain the functioning of TikTok's algorithm and understands how their own use influences what they see on TikTok.
- The student is familiar with TikTok's (commercial) motives.

TikTok and perspective

Understanding various influences of TikTok:

- The student can indicate the role of TikTok and its influence on perspective and, consequently, on reality.
- The student can indicate the role of a single TikTok video and its influence on perspective and, consequently, on reality.

Understanding the influence of TikTok on reality:

- The student can distinguish between fiction and reality on TikTok.

Medialization of Society

Being aware of the influence of TikTok on oneself and on society:

- The student can relate the role of TikTok to their own behavior and that of society.
- The student reflects on the impact of TikTok videos on perspective, their own behavior, and on that of society.

Dit is een overzicht van de leerdoelen waarin het doel van ReflectTok is om de leerling te ondersteunen in het behalen ervan. Deze zijn onderverdeeld in onderwerpen en subcategorieën.

Hoofddoel

De leerling heeft de kennis, vaardigheden en mentaliteit die nodig zijn om bewust en kritisch om te kunnen gaan met TikTok.

Kennis van TikTok
Kennis hebben van de werking van het algoritme van TikTok:

- De leerling kan de werking van het algoritme van TikTok uitleggen en daarmee begrijpen hoe het eigen gebruik invloed heeft op wat de leerling op TikTok ziet.

- De leerling kent de (commerciële) motieven van TikTok.

TikTok en beeldvorming
Kennis hebben van verschillende invloeden van TikTok:

- De leerling kan de rol van TikTok en de invloed op beeldvorming en daarmee de werkelijkheid aangeven.

- De leerling kan de rol van één enkel TikTok filmpje en de invloed op beeldvorming en daarmee de werkelijkheid aangeven.

Kennis hebben van de invloed van TikTok op de werkelijkheid:

- De leerling kan fictie en werkelijkheid op TikTok onderscheiden.

Medialisering van de samenleving
Bewust zijn van de invloed van TikTok op henzelf en op de samenleving:

- De leerling kan de rol van TikTok betrekken op het eigen gedrag en dat van de samenleving.

- De leerling denkt na bij de invloed van TikTok filmpjes op de beeldvorming, het eigen gedrag en op dat van de samenleving