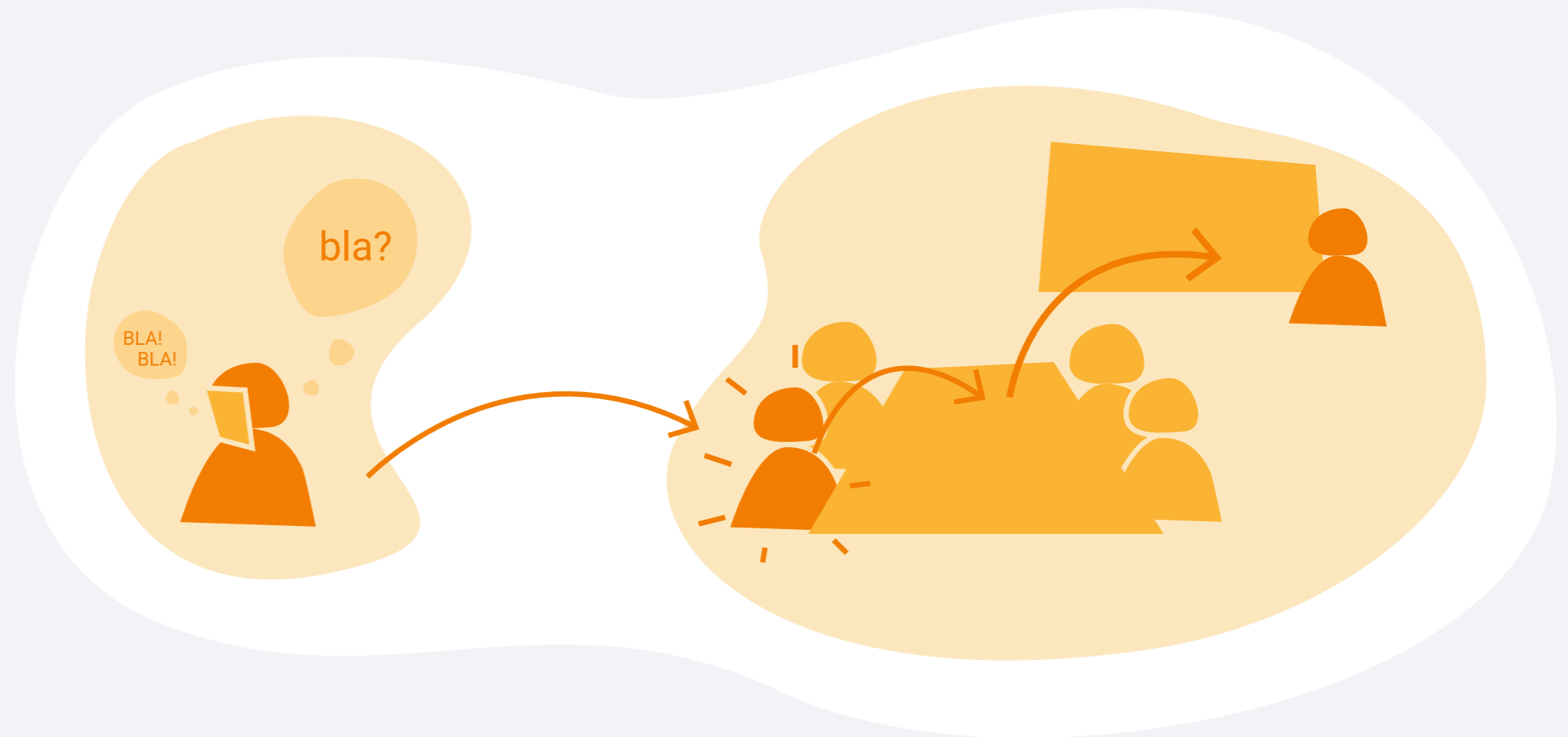


Design of a reflective tool to integrate students' context in Dutch language learning services

(NLtraining use case)



Mariana Pérez Contreras
Master Thesis

Acknowledgements



Master thesis

Design for interaction

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**And thanks to you, for reading.
You are also part of it!**

Enjoy!

Executive Summary

Language is one of the most important factors that international citizens need to acquire when establishing in a new country, it enables communication, widens opportunities in relation to academic and professional development (Geurts & Lubbers, 2017b), and provides a sense of belonging. Therefore, it is relevant to understand what enables and inhibits the language learning process to make the integration process more user centered, propose actionable ideas and design effective interventions in order to optimize current language services, which in the end will result in cultural-societal impact (Sosa, 2019).

This project aims to contribute to such language learning services optimization, working together with NLtraining, who is a specialized Dutch school providing language courses for expats and immigrants.

A service design methodology is proposed to help bringing a user centric vision based on students' real context but also provides a holistic scope including not just students and professors but also content making professionals and administrative departments.

The initial phase of the project involves an exploration of existing literature from Second Language Acquisition and service design, where it was found that SLA research is centered on providing the ideal learning environment, however, specifically in language learning, interactions in real life represent a great space for learning, therefore a gap between real context and learning environment was found.

To better understand this gap in current language learning practices, exploratory research is carried out, interviewing students from NLtraining coming from different levels, where the main insights show that even though students have great motivation to learn the language and achieve academic and professional goals, their language use in real life is inhibited by different factors: cultural barriers, self-esteem, and deep complex reflective processes. It was found that professors who are the course facilitators have limited access to these kinds of insights, since they make their decisions based on assumptions from what they observe from the course, this, seen

from a service design perspective, can become an opportunity to optimize current strategies.

The goal of the project is, then to design a tool that will help bridge students' experiences through a reflective practice, which will support their learning process, as well as support professors with real insights of their students' language use. Three exploratory concepts were developed, tested with students, and evaluated from a design perspective, then a final concept is presented, where a digital prototype is built, given its versatility and accessibility, it has the potential to be integrated into NLtraining's current workload and bridge students' context to the learning environment.

This tool helps collecting data such as: activity performed (listening, speaking, reading, or writing), description of the experience (text input), related class resources and emotion (good, neutral or not so good).

The prototype is validated in the final stage of the project, where the main findings conclude that enabling

such reflective tool can promote students engagement with the course, in first instance because it provides a structured space to share and vent their (positive or negative) experiences, identify elements from the course that are working well or not, and finally allow professors to learn, empathize and best prepare the content of the course, based on a loyal portrait of students' needs.

This project presents the impact of service design practices in an educational setting, which includes supporting stakeholder communication and collaboration, helping scope gaps in the service based on user insights and enabling an iterative approach to fostering optimizations.

heel
trots
op
mezelf

Tell me and I will forget,
show me and I may remember,
involve me and I will understand

Confucius

Reflection of a Dutch language student: "Very proud of myself"

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Chapter 1. Introduction

1.1 Introduction to the project

In the city of Leiden 1 out of 8 citizens are adult **internationals** (person living in the Netherlands who has a different passport other than Dutch), (Leiden in Cijfers | Gemeente Leiden, n.d.), this means that from the 127,079 residents, 16,643 come from an international background, numbers that are expected to increase in the coming years, which demands a deep understanding of the needs and context of the community.

This project thesis aims to contribute to such understanding by presenting an alternative perspective based on a service design methodology applied to Dutch language learning, collaborating with NLtraining who is a specialized Dutch language school.

Why is it important to talk about language?

Because is one of the main aspects that influences international integration, it is part of a complex challenge because it goes beyond facilitating socio-cultural integration and knowledge sharing, it means economic development first: for internationals who relocated in a new country, and second: for industries, and government organizations from the host country (Van Tubergen and Kalmijn 2009). It enables participation, promotes a sense of belonging and

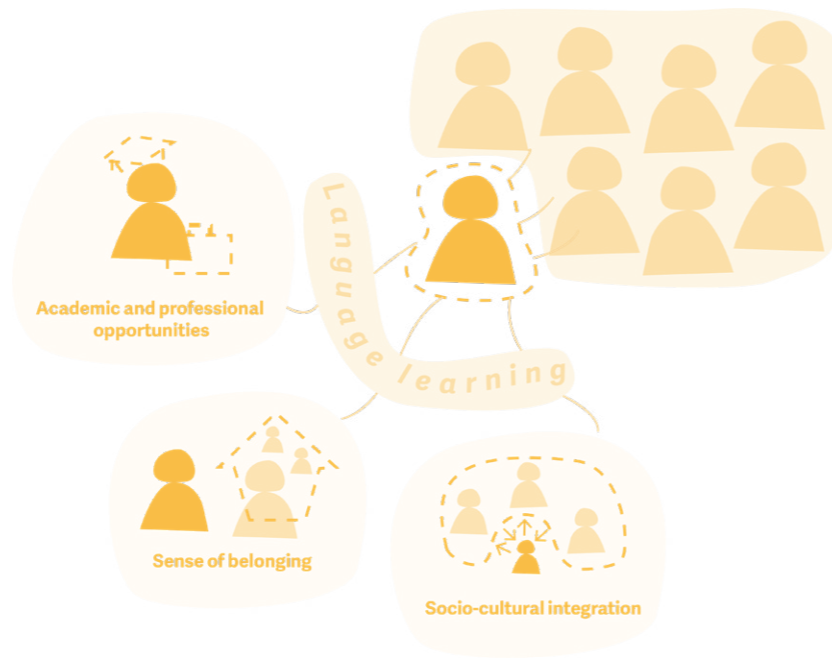


Fig 1. Aspects enabled by language learning

widens academic and professional opportunities, therefore there is a great interest in bringing new strategies.

The first section of this chapter is dedicated to the theory behind the current Dutch learning courses. Current Dutch language courses are mostly based on **Second Language Acquisition theory**, which is rooted in cognitive and instructional sciences, providing knowledge on structure, guidelines and strategies to produce language courses; it identifies the principal aspects that have an influence on the learning process and makes sure that the ideal learning environment is designed.

In the second section, I will introduce **service design** as a discipline that can provide a resourceful methodology to help optimize Dutch language learning courses and its current theoretical background because it scopes the different stakeholders

across the service (students, professors, educational developers, etc), beyond the learning process, driven by user insights that are incorporated in the service to optimize best practices with a holistic approach.

As a conclusion, **by having a multidisciplinary approach a bridge can be created between academic discussions and real-world problem solving**, this proposes that the collaboration between the service design and SLA field can enrich the dialogue when developing or optimizing language learning strategies (Van Der Bijl-Brouwer (2022).

1.2 Introduction to Second Language Acquisition

Second Language Acquisition (SLA) is defined as a “theoretically and empirically based field of academic inquiry that aims to understand how the systematic manipulation of the mechanisms of learning and/or the conditions under which they occur enable or facilitate the development and acquisition of a language other than one’s first” (Loewen, 2014).

It has been evolving through the last decades, being influenced by different approaches (Johnson, 2008),

beginning with behaviorism: learning a language was seen as a “habit formation”, a relationship between stimuli and responses. The principal strategies used in this approach are: repetition, imitation and practice.

Then, cognitivism, which perceived language learning as a comprehensive process, where students were able to understand and process information related the target language and acquire it based on their mental processes.

Finally, a dialogical approach explained that there are environmental factors that can help understanding language acquisition, learning a language was seen as a mean to connect with the world through signs (language).

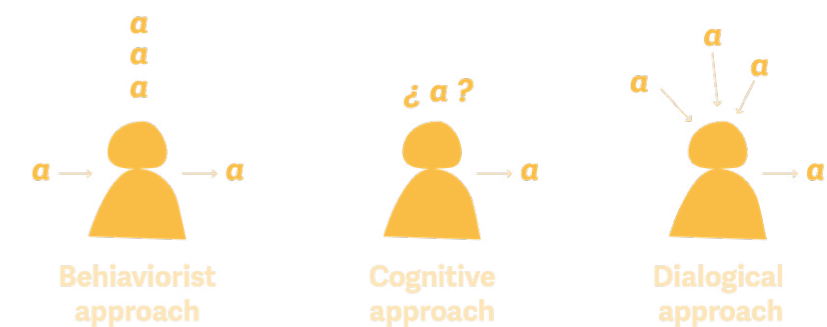


Fig 2. Different approaches in SLA

Still, from the previously mentioned approaches we can see that SLA practices are deeply focused on the dynamics between the professor, the student, and the content of the courses, with emphasis on the relationship between learning and teaching (Lightbown & Spada, 2013).

New developments and theories are tested with students inside the classroom, or in an academic laboratory, where most of the participants are students on an academic exchange or international education programme, being English or Spanish as the target language.

After this short introduction to SLA theory and its approaches, I would like to discuss what are the elements that conform the language learning process, based on SLA research.

1.2.1 Relevant aspects of the Dutch language learning process

In the previous section I introduced Second Language Acquisition as a general reference for Dutch language current practices, now I would like to focus on Dutch language learning process, which is presented in the second edition of *Handboek Nederlands als tweede taal in het volwassenonderwijs* (2015), (*Handbook Dutch as a Second Language in Adult Education*).

In this section I present such aspects and its description. The main categories are: influencing factors, modules and strategies, its understanding is important because it will help to categorize and identify potential opportunities in next stages of the project.

Modules (activities and knowledge blocks)

Activities include **listening, speaking, reading and, writing**. Listening is the direct or indirect auditive input which the student then assigns a meaning according to their understanding. Speaking is the speech conversion of students' expressions. Both of these activities are most of the times acquired already by most of the Dutch learning students, however, reading is an activity that requires a certain level of literacy, it is the ability to actively assign a meaning to the characters in paper (or any other kind of sign). Similar case for writing, which is making use of characters in order to communicate (*Handboek Nederlands als tweede taal in het volwassenonderwijs*, 2015).

Vocabulary and grammar, represent knowledge blocks. Vocabulary consists of the knowledge of words that give the meaning of expressions. Finally, grammar is form of the language, where the student must learn the rules of how the language is correctly used.

By the end of the course, a successful (or not) acquisition of the language is assessed. Writing and speaking are activities that are assessed by a qualitative observation of the professor when performing a determined task, in comparison to listening, writing, grammar and

vocabulary that are assessed in a quantitative test that can be analogue (written) or digital.

Influencing factors

As the behaviorist approach suggest, language learning is influenced by environmental elements, which then, facilitate the student to communicate with the real-world through language, this main elements are the following:

- **Students' background** – aspects like age, length of stay in the country, genre, first language background and academic level.
- **Cognitive factors** – sensitive period (related to brain plasticity and ability to learn languages), intelligence, and learning style.
- **Socio-affective factors** – attitude and motivation, extravertedness and introvertedness, and culture.
- **Social environment factors** – contact with the language and interaction and learning methodology and strategy.

Identifying factors is crucial, because it facilitates the interpretation of the students' context and how it will potentially perform during the learning process. Even though, it is not very clear from literature if there is an existing structure for its collection, or said in another way: it is not clear if learning this information from the students is something that is currently done in Dutch language courses.

Language learning strategies

After presenting the influencing factors and modules, it is relevant to talk about strategies because it shows the different process with which a language can be learned, and are the following (Loewen, 2014):

- **Cognitive** – this kind of strategy relate to the pure brain processes that are used to retain knowledge, for example visualization, memory, and repetition.
- **Meta-cognitive** – this strategy refers to more complex processes that are used to plan, analyse, monitor, and evaluate learning, for example choosing a learning strategy and assessing how effective it was.
- **Social** – this strategy consists of reaching out to people in order to get learning support, activities such as talking to native speakers and peer discussions are part of this category of strategies.
- **Emotional** – refers to the use of emotions to support the learning process. They help regulate emotions or uses them as trigger to increase engagement. An example would be a reward after certain amount of study, or recognition after successfully using the language.

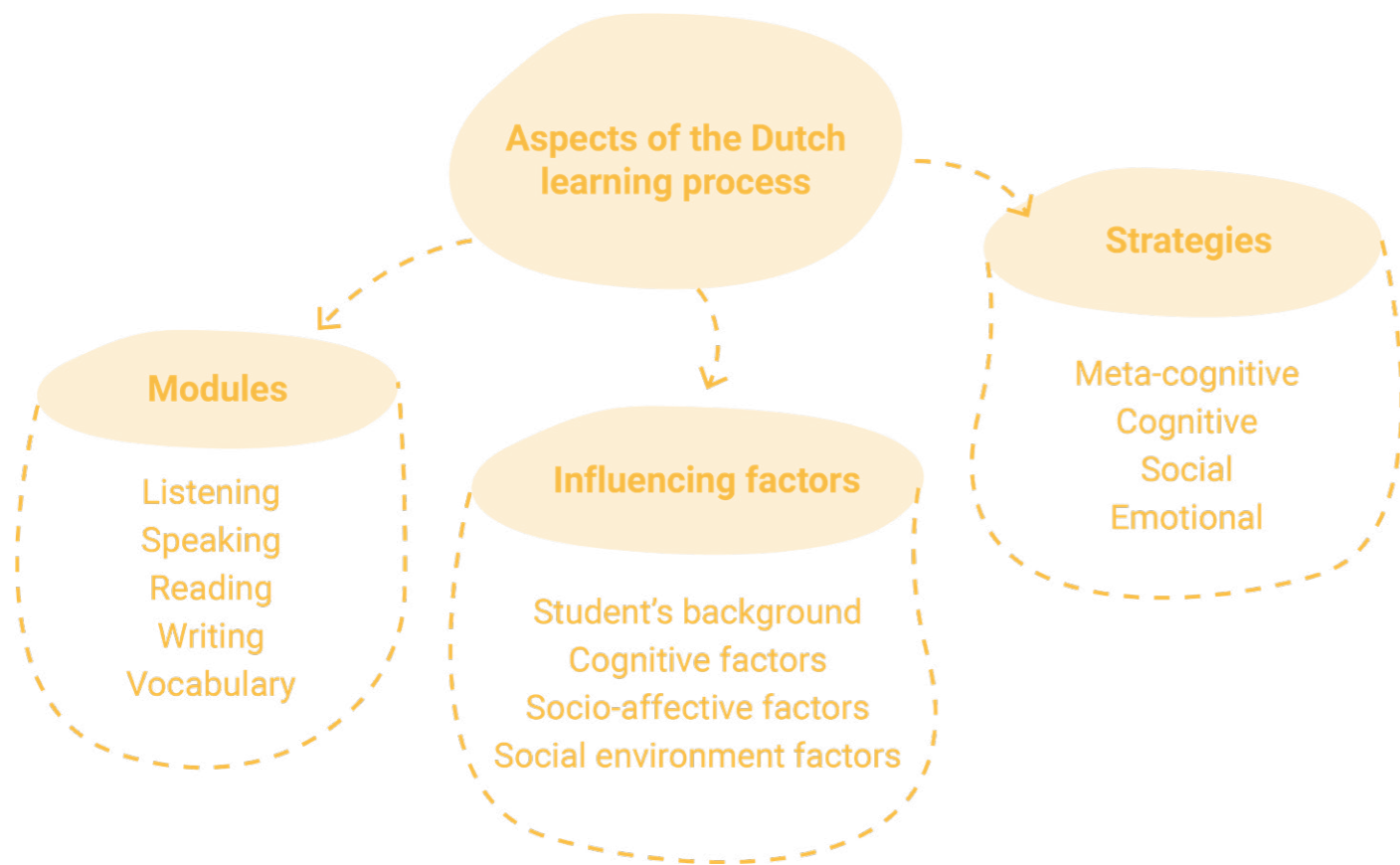


Fig. 3 Relevant aspects of Dutch language learning

Learning about the aspects of Dutch language learning helps us to understand: through the modules “what” has to be learned and the activities involved, through the influencing factors “why” is it relevant for the student to learn and the role it has in their context and through the strategies “how” can learning be facilitated.

In conclusion, current Dutch language courses are dedicated to implement the ideal learning environment, by developing new strategies that can support knowledge gaining, however, there is a question if whether the influencing factors are also taken into account. In the next section I will deep dive into the challenges that I found when analysing related work presented in this section.

1.2.2 Challenges found in language learning

In this section, I delve into the challenges found after reviewing literature related to language learning.

From the research carried out in SLA, I found that the main goal is to design and provide an optimal learning environment by making use of effective learning strategies in order to gain language proficiency. Therefore its scope is the dynamics between professors and students and how knowledge travels.

However, in the frame of this project, which is Dutch language learning services, I found that knowledge built upon developing such **learning**

strategies comes from research targeting college students doing an exchange semester, or in a foreign education program, where the target language is English or Spanish. Specific research related to Dutch language learning is limited, therefore it is an invitation to delve into this context and contribute to current research.

Another challenge that I found is that factors influencing the learning process are related to students background, social and socio-affective factors, as well as the social strategy suggests that reaching out to Dutch native speakers is crucial to effective learning, which implies that learning is not limited to the learning environment; “learning is an activity that happens in different instances, for example as in formal and semi-

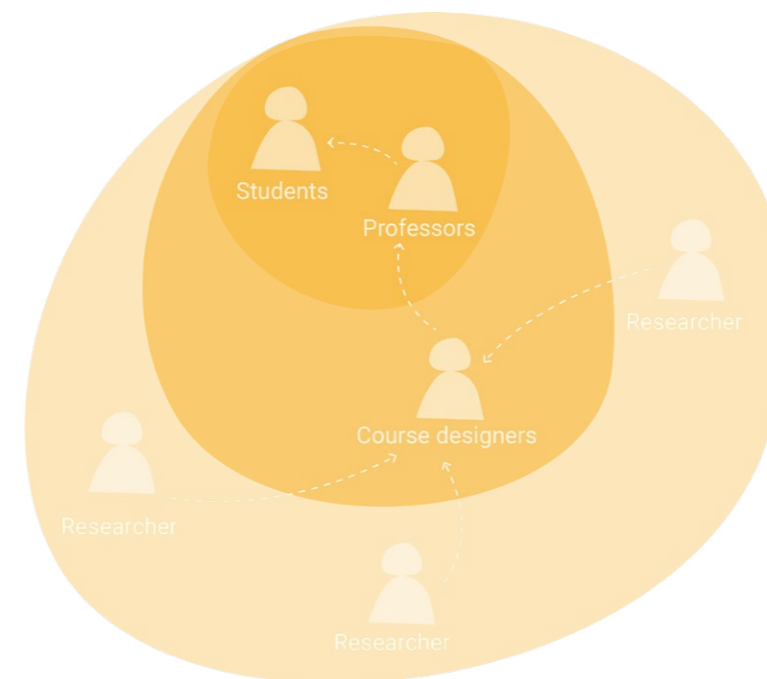


Fig. 4 Visualization of current dynamics in SLA, where the arrows show the direction on which knowledge and information travels.

formal learning environments” (Selander, 2008). This is a challenge because current assessment structures are based on language proficiency, which is tested inside the classroom, when real-life situations might have a great influence on the learning process (Fig. 4).

Then, I conclude that knowledge of influential factors involved in informal learning can be beneficial for optimizing the design of future learning strategies, that can support students in experiencing an effective learning process, which at the same time would contribute to a smooth integration process, which is the main goal for learning Dutch, in the context of this project.

In conclusion, considering an approach that helps learning from students’ informal learning in real-life can greatly contribute to current approaches involved in SLA knowledge building (behaviorist, cognitivist and dialogue).

In the next section I will introduce a service design approach which is based on user experience and its relation with their real environment and can help overcome the challenges found in this section.

2. Service design as an approach to language learning

As mentioned in the previous section, a great challenge is to learn and process contextual information from informal learning outside the learning environment. In this case, service design is proposed as a potentially helpful approach, which will be presented in this section.

Service design originates from design thinking, it provides collaborative methods that balance the needs of different stakeholders to gain deep end-to-end understanding of services, with a user centered mindset, the main goal is to enable meaningful and holistic optimizations (Stickdorn et al., 2018b). There is an increasing interest for organizations to take a service design approach, since it brings the voice of the users to current practices to foster an improved experience.

The reason for proposing a service design approach in a discipline such as second language acquisition (SLA) is because it uncovers insights and opportunities beyond the learning environment. By focusing on **user experience**, service design can provide guidance on how best satisfy user needs, incorporating the needs as well from professors and SLA practitioners. In that matter, previous work of service design in

education has mostly focused on administrative and catering processes process (Carvalho & Goodyear, 2017b), which means that the approach of this project can also contribute to understanding the collaborative nature of service design and SLA.

Previous work on service design in educational services (Carvalho & Goodyear, 2017b), has proposed a **networked perspective of different aspects involved in the learning process**. This perspective is presented in the Activity Centred Analysis and Design (ACAD) model (Fig. 5), which helps identifying aspects that could be optimized or improved in order to foster effective learning. It has as a central character the “emergent activity”, defined as what people “do”. The three surrounding categories are the different design elements that can influence such “emergent activity”: epistemology design (knowledge, content of the course, tasks etc), social design (roles establishment, group discussions, etc), and finally set design (tools, resources, artefacts).

One point that Carvalho & Goodyear, (2017b) make is that “learning cannot be designed, people learn in and through their own “emerging” activity”, it is a fact that learning is an activity that happens in different instances, for example as in formal and semi-formal learning environment (Selander, 2008), (during the classes, or in events organized by schools), as

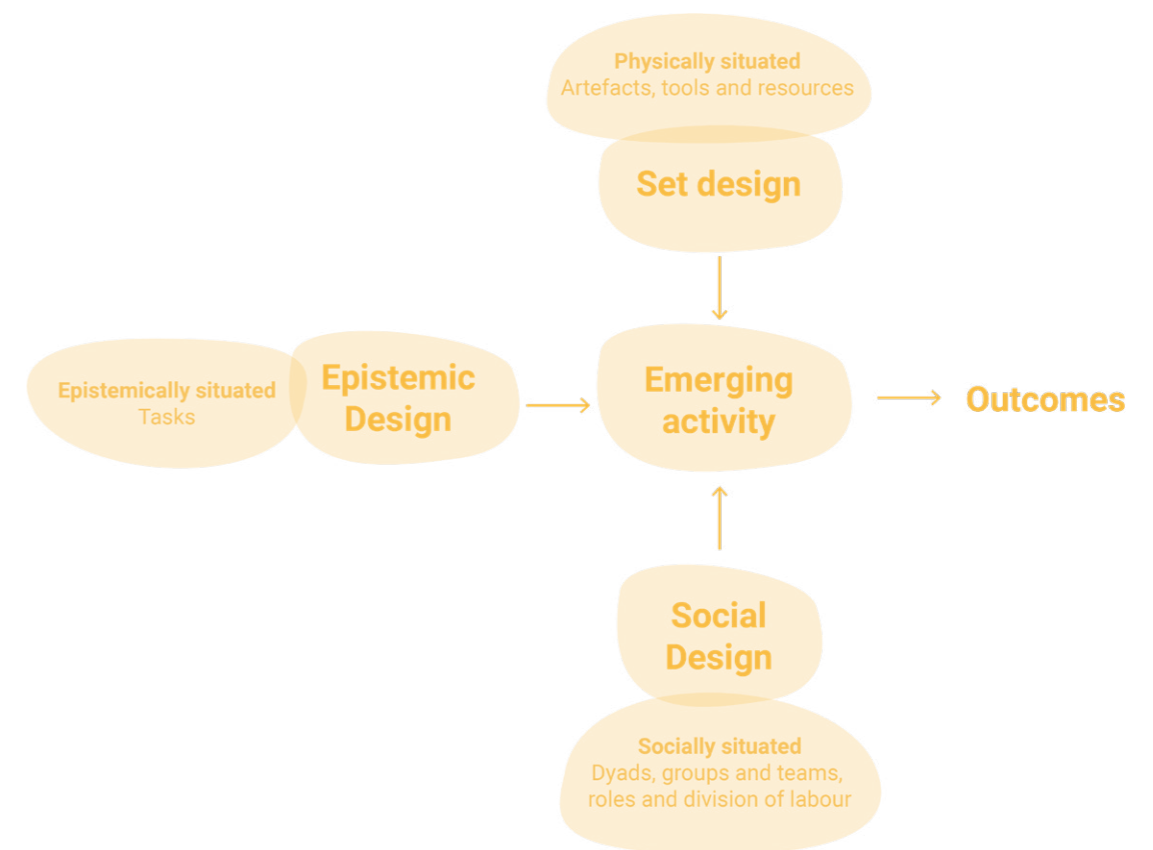


Fig. 5 Activity Centred Analysis and Design (ACAD) model

well as informal (real life, for example conversations with neighbours, reading a letter from an organization, listening to a podcast, etc). Therefore, the key is to understand the context and experiences where learning “happens” outside of the classroom.

One relevant assumption, that this project might help clarifying, is that learning in informal settings (or use of knowledge outside the classroom) can be in fit in categories from the ACAD model, as well as in different aspects from SLA (mentioned in the previous section), making it challenging to map its relevance within the service structure.

As mentioned by Rodríguez-Kaarto & Hahn, (2015) concepts like relations, interaction, and immediacy

with native (or more advanced) 2L (second language) speakers are also considered to be part of the learning environment. Here, I would like to emphasise a little more on the relevance of user experiences in a real context with an example: as part of the strategies of the class, students participate in a role-play activity simulating a phone call to the doctor to make an appointment. Since it is carried out by two students with the guidance of the teacher, students have a controlled environment, where they speak in a slow pace and take time to hold the conversation. A different story comes when the phone call has to be carried out in real life: let's say that the student is experiencing a weird symptom and wants to make an appointment, during the call the speech speed

from the secretary was very difficult to understand, in addition to the challenge of explaining the specific symptom, due to the lack of familiarity with this context, the student can experience a negative emotion, which in most cases prevails in their own thoughts. During the next class, the professor tries to explore how students are tracking with their language use, but the student did not feel like sharing openly her experience, due to embarrassment, disappointment, etc.

This point shows that the **real context and learning environment can vary in different elements, which raises the following question: how can informal learning (or learning in real context) be related or embedded in formal learning?** It would be great that professors could be present when students are using the language in real-life, unfortunately it is not possible by the means that we have nowadays, therefore, it is important to look into a method/tool to learn about informal learning. It is relevant to understand real-life language use because it can provide useful insights about what enables an inhibits language learning, which could be for example: cultural constrains (Rodríguez-Kaarto & Hahn, 2015), lack of motivation (Lamb et al., 2020), exposure, economic incentives, efficiency (Geurts & Lubbers, 2017b), and more. So then, optimizations can take place to tackle inhibitors and

reassure enablers.

As a conclusion, service design can provide a holistic structure of the elements that are related to the learning process and its production (ACAD model), as well as provide a user centric perspective based on user experience and incorporate it into SLA research structures, however, there is a latent question in regards to the connection between the learning environment and real context, which is part of the main contribution of this project.

In this section I explained what is service design, how can it relate and contribute to SLA, in the next section I will focus on describing the service design methodology and what are the different tools that can be used.

2.1 Service design as a methodology

I would like to properly dedicate this section to explain the design methodology and the tools that can be used from service design.

An interesting quality from service design is its versatility and can be applied or explained in different ways, according to Stickdorn et al., (2018b), it can be seen as a mindset, as a process, as a toolset, as a cross-disciplinary language or as a management approach. In the frame

of this project, service design will be defined as a methodology because it sets an objective and evolves through iterative cycles, being the following the stages of the methodology:

- **Research** – consists of learning the current context of the service within the user's life (van Boeijen, A. et al, 2020). In this stage, the user plays a crucial role where they can actively participate in different methods depending on the project. The outcome is to obtain data and translate them into insights about service performance and shed light into possible improvements.

- **Ideate** – consists of making use of insights to concretize in different ideas how the issue, touch point or design goal be solved.

- **Prototype** – consists of the pilot version of a concept in real-life, it helps visualizing how does the proposal will look in the future. The level of fidelity varies according to the needs of the project, in some cases it is used to explore concepts, communicate or inspire.

- **Test** – In this step, the concept goes through a validation process, assumptions and question stablished in the research question, can now be assessed against the performance of the prototype. Here, the designer can get an idea on what aspects are working well, and which ones would

need to be optimized.

In each of the stages different methods can be applied depending on the objective of the research and help collecting data from the service, users and stakeholders, a complete list of such has been listed by Stickdorn et al., (2018b) and van Boeijen, A. et al., (2020). In the following paragraph I will introduce the most **relevant methods** in the frame of this project:

Reading tip! Each of the methods has an icon that will be used throughout this document to make it easier to identify.



- **Participant observation** – consists of the designer getting immersed in the users' context by accompanying them in their normal activities, the designer can interact or not according to the design goal. The objective is to detect which are the elements, artifacts, emotions, and people involved in the desired situation or interaction. There are different resources that help document this kind of methodology, like voice recording, taking photographs and making field notes.



- **Interviews** – consists of one-on-one conversations with the users, where the designer makes use of a semi-structured script with relevant questions. The goal is to understand the user's perspective and learn from

their experiences. Activities that help documenting data obtained through this tool are voice recording, taking photographs and making field notes.

Brainstorming – consists of a session where based on provided information, participants develop ideas.

The goal is creating concepts and shape them in sketches, text, or mind maps. Diversity is key, and having an open mind helps designers and participants to collaborate.

Workshop sessions – consists of a session where a certain group of participants (could be users, but also different stakeholders from the service ecosystem), and the facilitator, that can be the designer brings a targeted topic with a specific goal, this could be generating a discussion about an issue, test a concept or understand the participants' point of view. These sessions can also be called co-design or participatory sessions because people are brought together to work in a certain topic.

Decision matrix – consists of guiding the decision-making process, mainly when a more detailed concept is to be developed from previous iterations. This tool helps mapping relevant aspects and giving a value to each element to

help objectively decide which is the optimal direction.

In addition to the methods, service design provides tools to help document, analyse and visualize the findings resulting from data collection by using the previously mentioned methods. Being among them: personas, journey maps, stakeholder maps Stickdorn et al., (2018b).

Journey map – consists of a visualization of a user experience over time, or throughout the service. It helps to identify gaps or issues and support decision making when proposing a solution. There are different variables that can be displayed in the customer journey such as: activities, emotions, stakeholders, interfaces, etc. Data used to elaborate the journey map comes from research tools like interviews and observations.

Stakeholder map – like a journey map, the stakeholder map is a visualization of the stakeholders involved in the service and the main goal is to map their relationship: what are their needs, motivations, and requirements. This tool is valuable because it helps showcasing the ecosystem and helps designers to work with a holistic approach.

Decision matrix – consists of guiding the decision-making process, mainly when a more detailed concept is to be developed from previous iterations. This tool helps mapping relevant aspects and giving a value to each element to help objectively decide which is the optimal direction.

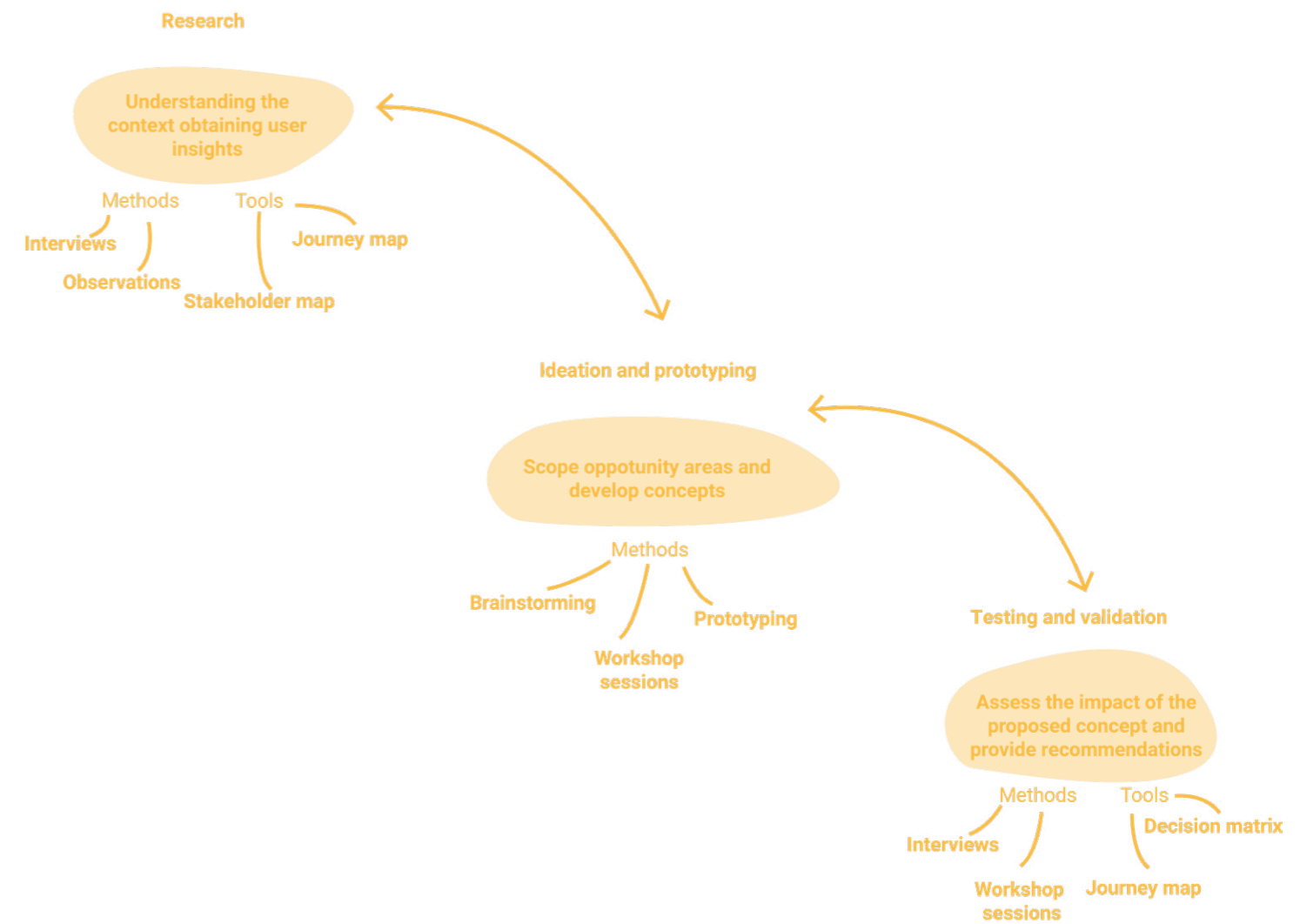


Fig. 6 Visualization of service design stages, its definition, tools and methods used in iterative cycles.

After presenting an overview of the methods and tools that are used in service design, the next step is to define the strategy or practice that will enable students' real context to reach the learning environment.

Students' real context is a concept that varies between students and can be unpredictable, this is what makes it fascinating. Its intangibility can challenge its understanding and collection, therefore a strategy that can allow students to act as

translators of their own experiences can be a reflective practice, when applied effectively, it helps students to scaffold (informal) learning experiences into the (formal) learning process, according to Bentvelzen et al. (2022b).

In the next section I will introduce the theory behind the reflective practice and its current applications.

3. Reflection as a bridge between real context and learning environment

In the previous sections I introduced SLA as a theory which faces some limitations caused by the intangibility of students' real context, which is a factor that influences the learning process. Then, I proposed that a service design methodology can provide useful tools to propose a user centered optimization. In this section I propose that a reflective practice can be a helpful strategy to stimulate students to document their real context because it can help transforming experiences to actionable insights.

Reflection is defined as the process carried out to reassess thoughts, beliefs, and feelings by analysing past, present, and future situations, finding causes and building conclusions with a problem-solving approach (Strampel, K., & Oliver, R., 2007). It is a relevant activity in the learning process because it helps understand behaviours, enables students to engage in personal and self-development (Reflection Literature, 2020) and facilitates cognitive growth (Wang et al., 2023).

In the frame of this project, **reflection can enable students to become aware of their language use in their daily**

life, evaluate their experience and translate it into data that can be then analysed in the context of the course.

Durall et al., (2017) explain that the reflection process consists of three main stages: awareness, critical analysis, and change. Beginning with recognizing a past or present situation (awareness), where the person becomes aware of an experience, where it is important to provide a broad description of the aspects and resources that were involved. Then, the critical stage consists of making relationships between facts, emotions and resources and understanding the causes. Finally, change consists of the application of the learnings from the previous stages in future situations. Important tasks of the reflection process include making analogies, evaluations, and generalizations, understanding feelings, and remembering people and knowledge involved.

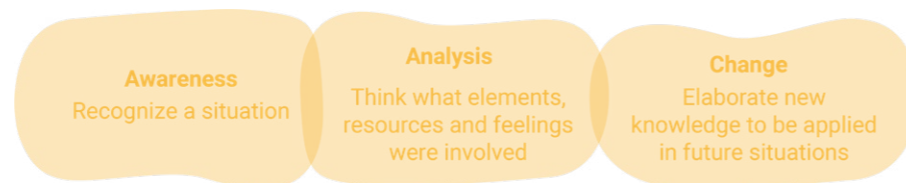


Fig. 7 Reflection process presented by Durall et al., (2017).

Another topic from of study of the reflection practice is mentioned by Durall et al., (2017), who locates reflection in two-time dimensions: in action and on action. This definition is relevant because reflection in action refers to the reflection process

made immediately after a situation or event happened, opposite to reflection on action, which refers to the retrospective analysis of such event or situation. During in-action reflection one can capture a loyal picture of a situation, being able to identify very specific details and

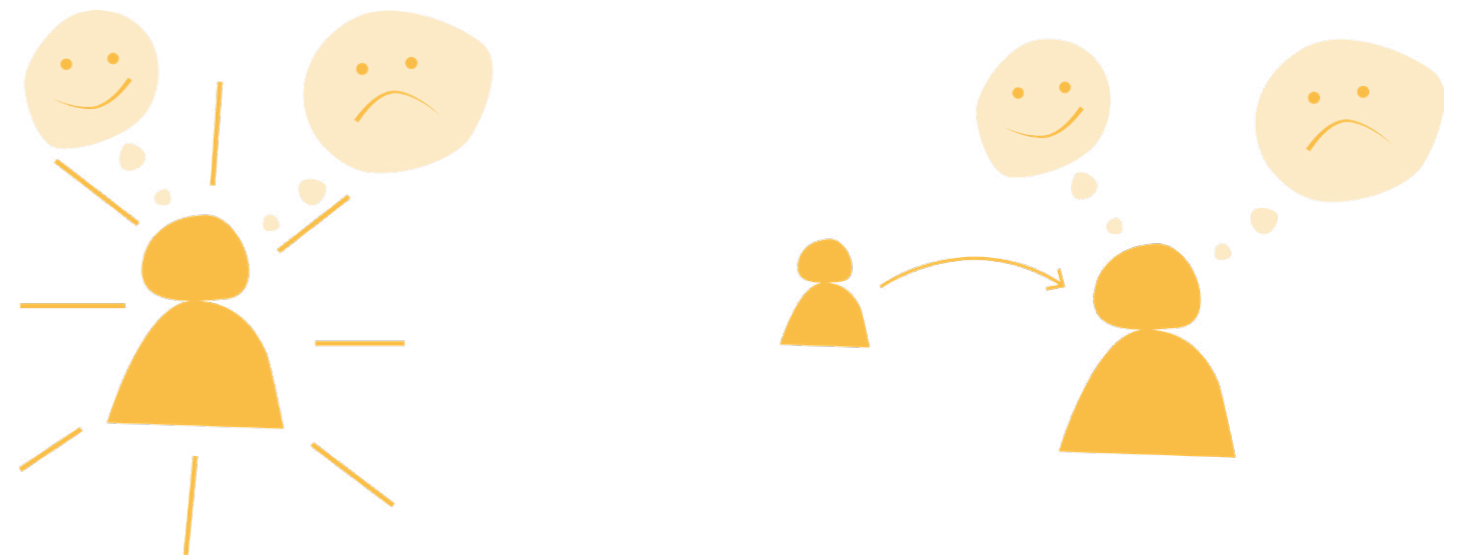


Fig. 8 Reflection in-action happens immediately, reflection on-action happens afterwards

prevent any omission of relevant information. Compared to reflection on-action, which involves recalling details from a situation, which sometimes can represent a challenge, however, it can provide a deeper understanding of the situation, emotions and factors involved.

How to enable reflection?

Several studies describe techniques with which reflection can be supported, for example, interviews, and questionnaires (Bentvelzen et al. 2022b), as well as dialogues with peers (Mynard, Jo 2022), journaling (Wang et al. 2023) which can be analogue (written) or digital, and formulating questions.

Interviews - are (semi) structured conversations conducted by an interviewer, who brings a topic for reflection with prepared questions, and the interviewee responds according to their experiences.

Questionnaires - are a set of predetermined questions presented in a specific structure to prompt reflection towards a situation.

Dialogues - are non-semi-structured conversations between a group of people or one-to-one, this method enables a conversation where participants share their experiences and build upon a collaborative reflection.

Journaling - is a technique where the participant/student writes a description of a situation, experience, etc. including their emotions, thoughts and insights. This can be enabled in different settings: in paper, or through a digital platform, where

the goal es to enable self-reflection.

Self reporting - similar to journaling, self-reporting collects emotions, thoughts and attitudes, however, it makes use of structured questions and it has been used for research purposes.

Formulating questions - is a technique where the participant/ student ask their own questions in regard to a specific topic helping to retrospectively reflect on what they find relevant.

After revisiting theoretical background of reflection, I found that it can serve two main purposes: collect information from the students' real context, as well as engage students into an autonomous learning perspective. Reflection enables students to become aware of their experiences, identify relevant aspects and build knowledge from it. When this process is carried out, the data collected can become useful for professors, researchers and course designers to get to know contextual information. This can enable communication between different stakeholders, as a service design practice suggests.

In conclusion, reflection can provide a technical frame to activate students' experience and help translating such into the learning environment. Furthermore, it can

enhance the learning process, and improve communication between stakeholders.

With this section I finalise the theoretical review of related work and proceed to formulate the research questions and design goal, according to my findings.

4. Research questions and design goal

After deep diving into SLA research, service design tools and methods, and theory of reflective practicum, I structured my findings by framing the problem and formulate the research questions accordingly, finally, I conclude with the design goal.

I found from SLA research that it is mainly focused on learning strategies which are oriented towards the dynamics between student and professors, and less focused on daily life experiences, which can have a great impact on the language learning process.

The research questions that this project aims to elaborate on are the following:

RQ – How can service design methodologies be used to embed students' real context in Dutch learning courses best practices?

Sub-questions that will help shape the scope are:

RQ1 – Why is it important to know about language use in real context? (Chapter 1 and Chapter 3)

Correlating findings from relevant literature within the context of NLtraining by identifying language courses as a service.

RQ2 – How can language use experiences can be learned, gathered, and documented? (Chapter 4)

Identifying the techniques that can enable student's reflection and its documentation, customized to NLtraining's students.

RQ3 - How can language use data can be implemented in Dutch language learning services? (Chapter 5)

Integrating a final design which brings effective reflection and can be implemented in NLtraining's services, to be used by students and different stakeholders.

As a conclusion, a design goal was formulated:

"Design a tool that helps bridging students' real-life experience with the learning environment"

This chapter explored relevant literature, which helped framing the problem statement. The following chapter will be focused on the steps towards a final design according to the design goal and research questions.

Chapter 2. Design process and Methodology

In brief, the main research question that will guide the research direction of this project is:

How can service design methodologies be used to embed students' real context in Dutch learning courses best practices?

and is supported by the following secondary questions:

RQ1 – Why is it important to know about language use in real context?

RQ2 – How can language use experiences can be learned, gathered, and documented?

RQ3 - How can language use data can be implemented in Dutch language learning services?

Why a design methodology? (1) it allows designers to get to know the real context of service users (in this case students from a Dutch learning course), (2) provides a holistic approach mapping different stakeholders and their roles, finally (3) it is iterative, helps generating concepts that become prototypes in different cycles, this will allow me.

In this section I will describe each of the stages that conform this thesis project, the tools, and outcomes.

Additional details about research with participants

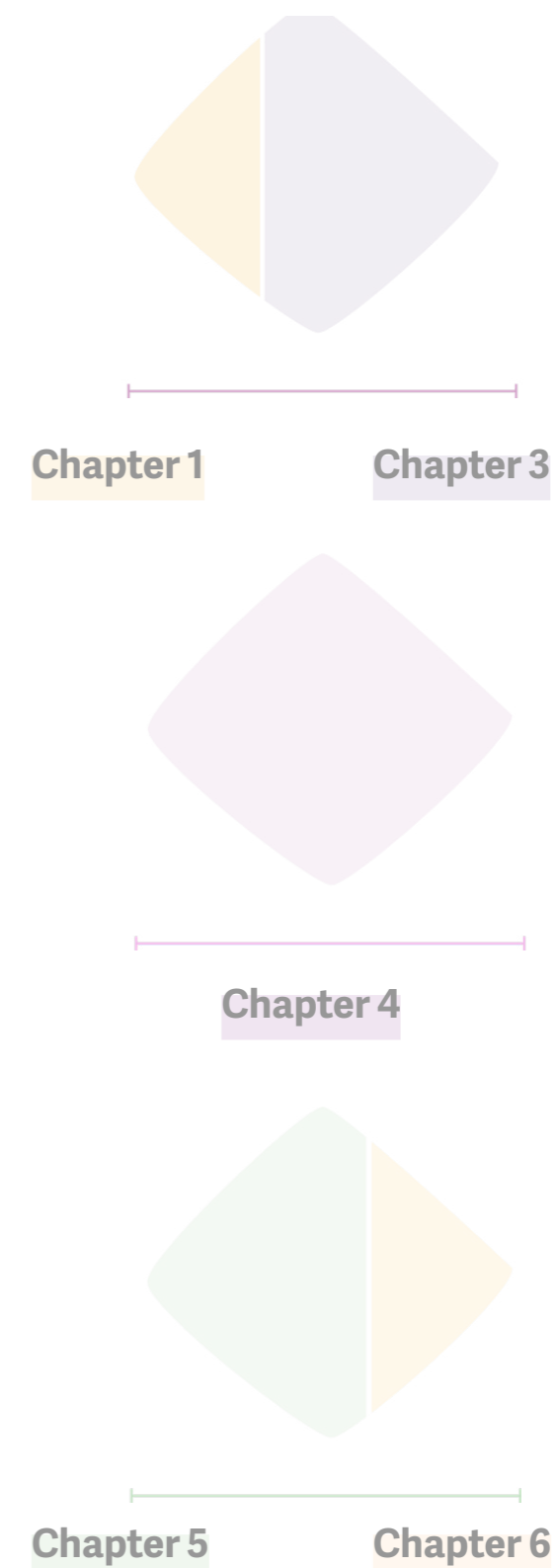
The sample was selected based first on their experience and familiarity with the context (Dutch language courses), this involved students, professors and course designers (maximum-input sampling, (Stickdorn et al., 2018b)) and second that they showed interest in the topic (self-selective). This allowed me to build trust with participants, keep constant communication and obtain reliable data.

Consent and privacy before each session with participants a consent form was prepared, explaining the scope of the project, their role in the session and the details on how data would be used. Any personal or delicate detail was discarded, and any graphic material was processed and anonymized, to ensure the privacy of the participants.

Reading guide:

The project is structured in three main stages, however, I contemplate a stage 0 which is the project brief. The work involved in each of the stages is documented in different chapters of this project with the intention of facilitating the comprehension of the design decisions made along. Each chapter has a color code, it is visualized in Fig. 9 (next page) together with the methods and tools used. This chapter is does not include any research activities, therefore it is not part of the description.

A full description of the methods can be found in Chapter 1, section 2.1, with exception of social listening in the research stage, which refers to conversations with people from related areas of expertise, for example critical design, Finish language learning, participatory policy making for internationals.



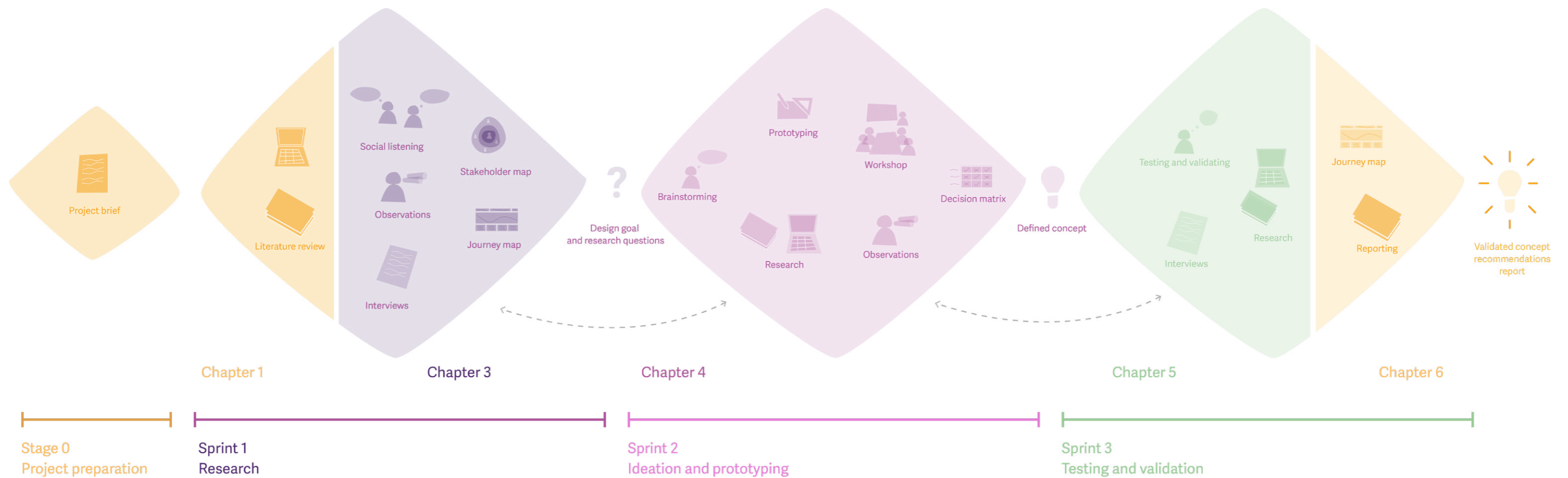


Fig. 9 Overview of the design process followed for this thesis project

Sprint 0: Project setting

Preparation of a project brief which consisted of the proposal of the topic and potential approach.

Sprint 1: Research

First section - (Chapter 1) I carried out an exploratory research, which consisted of getting immersed on existing literature and understand the relation between different theories related to Second Language Acquisition and service design.

Methods: literature review

Objective: Gain theoretical knowledge from related theories to define the scope and problem statement

Outcome: research questions and design goal

Second section - (Described in Chapter 3) continuation of exploratory research with participatory methods in order to correlate findings from literature into the real context of the project. First contact with target group following the guidelines mentioned in the previous page.

Methods: interviews, observations, data analysis, and social listening

Objective: build up theoretical knowledge with contextual insights

Outcome: journey and stakeholder map

Sprint 2: Ideation and prototyping

In this stage (Chapter 4), I applied ideation and prototyping methodologies to explore the solution space determined in the previous section, then, will proceed

to test three different concepts with students and professors to understand what are the most relevant features according to the students' context and needs, finishing with a definition of a design proposal.

Methods: Brainstorming, prototyping, workshop, observation

Outcome: Decision matrix, final prototype

Objective: Selection and definition of the concept idea and its design guidelines

Sprint 3: testing and validation

First section - (Chapter 5) I designed an evaluation session with students in order to assess the final design against design criteria formulated in the previous stage.

Methods: Testing in real context,

interviews, research

Objective: Evaluate the proposed design concept, provide recommendations and elaborate a report

Second section - (Chapter 6) I analysed and synthesised the results from the evaluation in the previous section, discuss the contribution to current research and provide recommendations for next steps.

Methods: Data analysis and academic writing

Outcome: Report, journey map, stakeholder map

Objective: Conclude with final remarks in regard to the performance of the final design and present the contribution of the project to further research.

Chapter 3. Understanding the real context

3.1 Introduction to the context

The idea of working with a social topic related to language learning came from the fact that the internationalization percentages in Leiden are increasing, as mentioned in the introduction. This **transition towards a multi-diverse and cultural society represents an exciting challenge** that requires optimization of services involved in social integration, being learning the language a crucial aspect.

A good start is to look at it with interdisciplinary lenses, which means integrating knowledge from cross-academic disciplines, learning from different ways of working and considering the real-life context. In this case, design can function as a “binding glue” by making use of participatory methods who help engage with the real-world (Van Der Bijl-Brouwer, 2022).

More specifically, I pictured how service design can provide relevant tools and knowledge given its collaborative nature and end-to-end understanding of experiences from different stakeholders, which “enable holistic and meaningful service experiences” (Stickdorn et al., 2018b).

This would not have been possible without the support of an organization which I introduce in this section:

NLtraining, who expressed their interest in making this project a case study.

In this section I will share the motivation for this project, introduce NLtraining and provide a detailed picture of their current practices and insights from students and professors, to correlate my previous findings from literature.

3.2 Motivation

As an international citizen of the Netherlands, I have experienced the need for integrating to society, moreover, I have seen that this is a challenge that is also experienced by almost 12.5% of the population in the Netherlands (Leiden) (Leiden in Cijfers | Gemeente Leiden, n.d.), who come from a different country. In a fast-paced world, priorities such as work, family and wellbeing take most of the time of immigrants, leaving scarce time and energy to learn a language on top. Because of this, I think that **providing effective and mindful language learning services is crucial for a smooth integration, improvements in academic and professional opportunities and gain a sense of belonging.**

Therefore, I would like to use my abilities as a designer together with my experience as an international to design a proposal based on the needs and demands from the real context.

3.3 Meet NLtraining

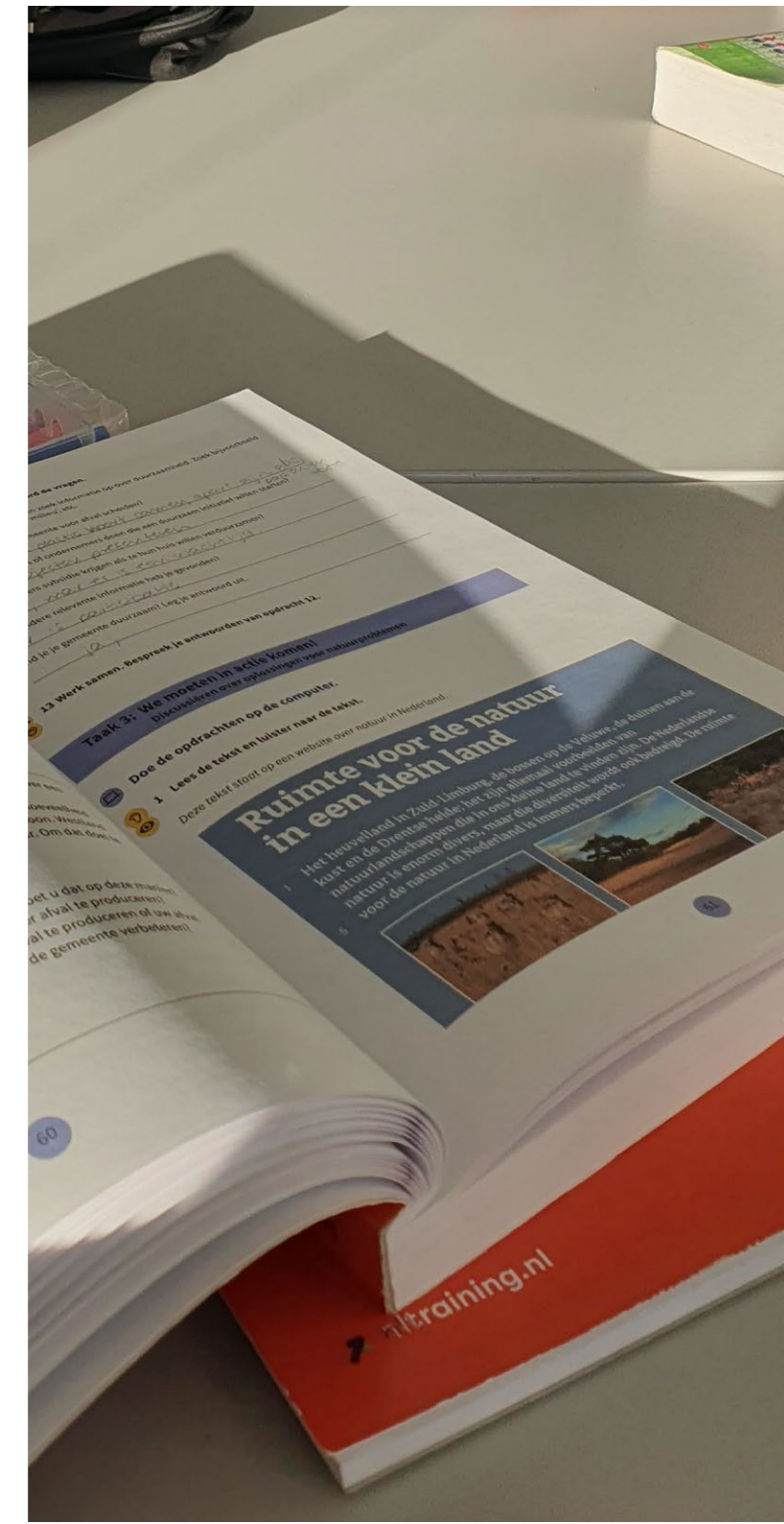
NLtraining is a specialized Dutch language school that, since 2005, (Over Ons, n.d.) works together with organizations such as companies and government instances to deliver Dutch language courses also called “programs”. Around 4,000 students take part on the teaching activities in the 140 locations in the Netherlands. Each of the courses is thought and planned for a specific goal: “to provide a suitable learning environment for language acquisition to facilitate participation in work and society. By doing this, students can have access to better opportunities” (Over Ons, n.d.).



The offer of courses (or “programs”) consists of different levels from beginner (A0) to advanced (B2), where depending on the migratory situation of each student, it can get subsidised by the government. The groups consist of **adult students from different nationalities** and get together two times per week for 6 hours, in the city of Leiden, where NLtraining facilitates their services.

NLtraining joined the project because they are constantly optimizing their learning services and share the vision that language learning goes beyond the classroom.

Their contribution of NLtraining as a stakeholder of this project is to provide access to students and professors, provide information about the organization, share details about their way of working and express their needs. I was working with Jorien Overeem, the main contact for this project, who works in education development and Sandra Alberto, who is a project leader.



3.3.1 NLtraining's stakeholders

A stakeholder map illustrates in Fig. 10 involved stakeholders along the service and its role. By scoping the role and relevance of stakeholders, I get to understand the dynamics and communication, which is the first step towards identifying gaps.

The client is an external organization, such as government, companies and foundations, who are interested in a specific target group and its language proficiency.

EDA Team (education development) builds up a proposal which contains the structure, method, and timing of the course, according to their expertise in cognition and SLA.

Professors are the responsible for carrying out the classes throughout the course and are the direct contact with students,

Students are the service receivers, they and main target group of this project, they interact with professors and project leaders and their role is to participate in the courses and gain language proficiency.

Project leaders are in charge of the administrative processes: forming the groups, registering and de-registering students, etc.

As additional stakeholders I identified language researchers and society in general. However, they are not represented in the stakeholder map, because they do not actively participate in the service activities.

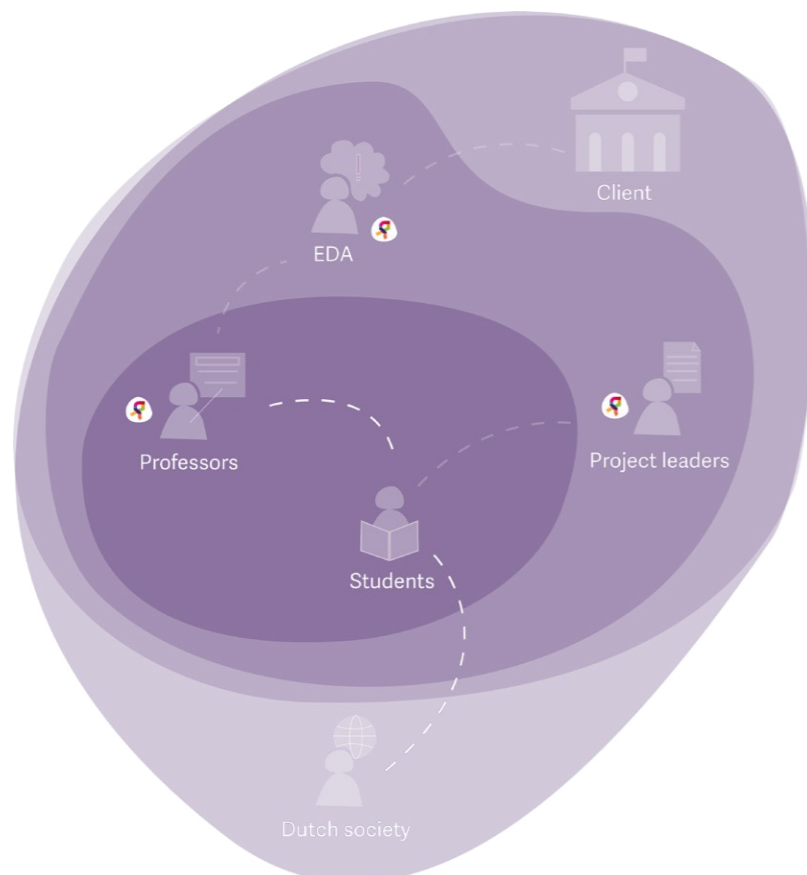


Fig. 10 NLtraining's stakeholder map

3.3.2 The language learning journey

A stakeholder map illustrates in Fig. 10 involved stakeholders along the service and its role. By scoping the role and relevance of stakeholders, I get to understand the dynamics and communication, which is the first step towards identifying gaps.

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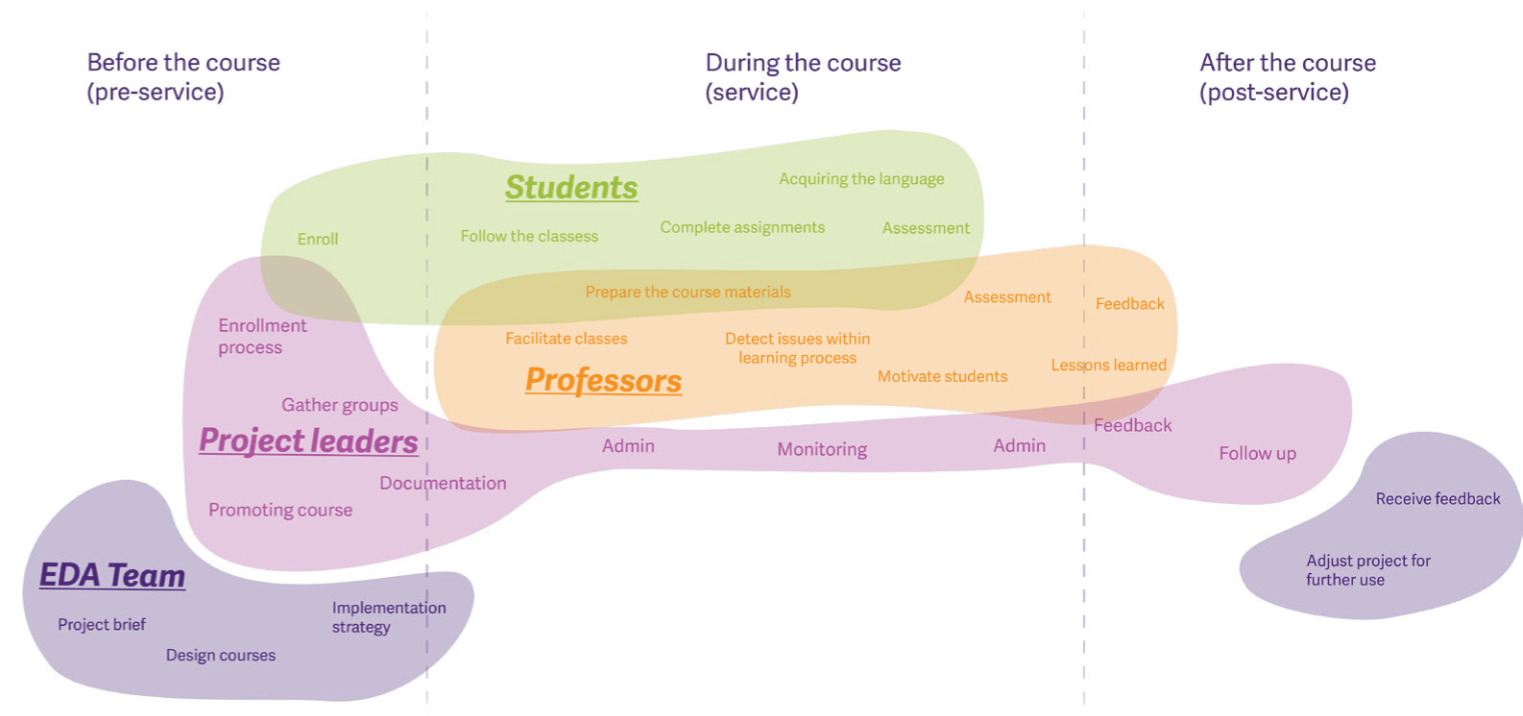
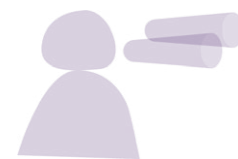


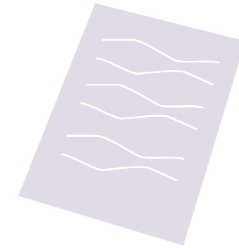
Fig. 11 Journey map of a course in NLtraining

3.4 Preparing to deep dive into NLtraining's context

In this section I describe the preparatory work done before getting immersed in NLtraining's context.

The first step was to contact with interested professors, with whom I would work along the project. Three groups participated: two intermediate (level A2 to B1) and one advanced (B1 to B2), conformed by adult students living in Leiden.

 Upon agreement with professors, I joined the classes from the three groups as an observant with the objective to explore the current dynamics between students and professors in their environment and to assess whether language use experiences outside the classroom was a topic that came across the class. Data from this observations was documented in field notes made throughout the classes.

 Afterwards, I invited interested students to interviews carried out during the class. Participants included 9 students in total from different groups: 6 from an intermediate level (A2-B1)

and 3 from an advanced level (B1-B2). All participants provided their consent to participate in the session.

The language used in the interviews was Dutch, with exception of one interview that was in English and another that was in Spanish because the participants felt more comfortable speaking in those languages. Additionally I interviewed two professors, one from intermediate level (A2-B1) and one from an advanced level (B1-B2). These interviews were carried out in Dutch.

The goal was to deep dive in different aspects relevant to students' experiences and professors' knowledge: language use in real life, current reflective practices and perception of NLtraining's services. The topics touched upon the interviews were inspired from literature and previous observations. The complete transcript of the interviews can be found in the Annex.

Interviews were documented with a voice recording device, then transcribed and translated to English. Then, the transcripts were imported to a software called Atlas.ti to facilitate its analysis and synthesis. I identified trends in participants' responses and created codes according to incidental topics.

Finally, I generated insights from both students and professors.

Figures in this page show NLtraining's physical learning environment, including printed materials, use of a digital platform and additional computers for individual assignments and exams.

Books and access to the digital platform differs depending on the proficiency level and the learning method included in the course.



Fig. 12 Observations during the class



Fig. 13 Set design of the classroom



Fig. 14 Set design of the classroom

3.5 Steping into the students' and professors' shoes

After carrying out interviews, I proceeded to transcribe and translate data obtained, then I identified trends and clustered insights. The main findings from **students** data is the following:

- **Motivation and language use –**

Students are in general satisfied with the service, their main motivation to learn the language is to communicate with family members (55% of the participants) followed by getting access to better work opportunities (44% of the participants), however, most participant students stated that the most evident opportunity to use the language is during the classes, opportunities outside the classes were limited in an average of 3 times per week.

- **Inhibitors of language use –**

There are two main factors (student related and service related) that inhibit students to search for more language use opportunities, which are:

Student related- Involve (external aspects) cultural barriers, where the student does not feel they convey with the cultural and social rules, therefore they perceive pressure to fit in and prone to negative reactions,

which are interpreted as a “lack of empathy” from Dutch society. The external factors have an impact in the way the students perceive themselves (internal aspects), beginning with complex mental processes, overthinking if the knowledge that they possess is fulfilling their expectations of fitting in society.

Service related – Most prominent inhibitors are writing and speaking (abilities), and grammar and vocabulary (knowledge).

- **Class resources –**

Most of the students considered that the resources provided by NLtraining are useful even though they do not use all of them. 3 out of 9 participants mentioned that they are aware that is good to have a wide range of resources because they support different learning styles. However, the use of the website (online exercises) was the preferred format, because of the practicality to do the exercises at home. Regarding desired resources, there was a trend that showed that topics that were not related to realistic situations were less engaging.

- **Reflection –** It is a process that is already happening, students mentioned that they carry out reflective practices mostly to find mistakes and learn from them. A minority of students (2) mentioned that they reflect before they have language use (planned opportunity).

Reflections of negative experiences tend to be more impactful than positive experiences.

Insights found from **professors** data is as follows:

Professors expressed their interest for knowing more about language use of students, one of them emphasised that throughout the class he had to make choices about the topics and materials, and most of these choices were done based on his assumptions.

They said that they have little knowledge of to what extent students reflect, they include some reflection after the modules, but it does not provide a structure, it is done during the classes.

As a conclusion:

1. Levels across the service operate in different times, which might entail knowledge gaps, due to the scarcity structured communication patterns (Tam et al., 2023). **Professors have little knowledge of students' experiences with language use outside the classes**, which causes those most learnings from students' experiences are obtained through assumptions. Course designers then depend on their own assumptions from the assumptions from professors. Which increases the relevance of providing a tool to enable professors to learn from students' experiences.

2. Students have a great interest in sharing their experiences, from the interviews, I could learn that the level of detail from their stories is very high, according to Pozzo and Nerghes (2020) these stories are powerful sources of information that enables knowledge to go further than (just) assumptions.

3. Reflective practices are already common in students. However, the lack of structure can lead to negative self-perception, or negative perception of their effort to learn the language, which can demotivate students to use the language and “narrow it to merely survival-oriented behaviours” Oxford et al. (2015).

4. The relation between the topics of the class and real-life context is crucial for students' engagement, this means that if the topic is relevant for the students' context, then they will look for opportunities to use the language outside the classroom more frequently. According to Kormos and Dénes (2004): “the topics or tasks that are accurate to the contextual sense seem to be more useful”.

In the next section I will summarize findings from the interviews with both, students and professors.

3.6 Key insights

After getting in contact for the first time with students and professors, I could correlate knowledge from literature. In this section I will conclude this chapter by summarizing my findings in main insights that will help me develop concept ideas to bridge students' experiences to the classroom.

Assumption based knowledge

Professors do not have a strategy for learning students' experiences outside the classroom, even though they are interested. This generates a gap of knowledge that causes that course content is not fully relevant to students. Given the intensity of the courses, professors have scarce (paid) time to prepare outside the teaching hours, and students are its majority working full-time, in charge of their families or studying. This results in professors formulating assumptions from their observations in the classroom.

Strong reflective practices that do not reach the learning environment

In the other hand, students are already carrying out deep reflective practices, which happen mostly after negative experiences with language use: factors such as cultural barriers, self-perception and lack of knowledge are the main inhibitors for language use. These processes help students identify the areas that

need reinforcement for language proficiency. However, this reflections are not reaching the classroom, since there is currently no dedicated space or structure to do so, since the course is focused on predetermined content.

This insights relate to the problem statement formulated in Chapter 1, which is that current language learning courses have a limited knowledge from students real experiences because it is fully focused on the formal learning environment.

This section helped to answer **RQ1 – Why is it important to know about language use in real context?** Because there is a gap between students' current reflective practices and professors, which cause assumption based knowledge. In student's reflections, they identify map aspects that can be improved or that work well, this can be very helpful for professors to optimize their course preparation.

The next step is to prepare for developing concepts in order to collect and document current reflective practices, as stated in the design goal:

“Design a tool that helps bridging students' real-life experience with the learning environment “

Next section will describe the conceptualization process.

Chapter 4. Developing concepts

4.1 Introduction

This chapter describes the process and reasoning behind developing concepts of a tool that obtain data from students' real-life experiences with language use.

In previous chapters I addressed RQ1 which was: why is it important to know about language use in real context? it is important because professors build up knowledge on students' real context based on assumptions, and students' context remains as an external factor, when from literature it is known that it has a great impact on the learning process.

Now in this chapter, I address RQ2: **How can language use experiences can be learned, gathered, and documented?**

The first step was to carry out an individual brainstorm session, where the outcome was three different concepts/ideas, then I proceeded to build a prototype for each of them, and finally I evaluate each concept with students in order to assess what attributes can be merged in one concept design.

This chapter concludes with the results of the evaluation session and its analysis.

4.2 Design opportunities

Prior to propose concepts, I carried out an individual brainstorm session inspired by the application of current reflective techniques (explained in Chapter 1) and its correlation with the findings from the real context (described in Chapter 2).

Several research has been carried out exploring research techniques in education, for example Feeler tracks focus and physical activity from students and it is displayed where students can reflect upon their behavior (Durall, E & Toikkanen, T, 2013), or using tarot cards as a way to implement a playful experience where students and professors could reflect (Skovbjerg, 2022). In addition, my observations showed that students are highly involved in conversations and dialogues with other students and that they become engaged in exercises that are related to their daily life experiences.

Ideas like: a situated interface installed in open spaces, a written journal, a reward system everytime reflection was carried out, playful experiences with Dutch people, etc, were developed in the brainstorm session. Afterwards, I selected the potential ideas according to NLtraining's context, which are presented in the following sub-sections.

4.2.1 Taal-canvas

This concept is based on a written journey and was inspired by previous research by Wang et al. (2023) that explains that paper journal reflection can enable the ability to access memory of thoughts, it allows an embodiment of knowledge through writing.

The reason that a journaling technique was selected is because it **provides a space for personal reflection after using the language in real life, as well as helps documenting information for professors to learn from their students.** Can be easily stored and consulted in further occasions. This concept allows reflection in-action, since it can be carried out in a wallet, then it can be extended and filled in afterwards (reflection on-action). This versatility of reflective types intends to collect a loyal portrait of the students' context, which can be then shared with their classmates.

How does it work?



1. Students use the Dutch language outside the classroom.



2. Students take a folded A3 journey map, which has check boxes to indicate what they did (speaking, listening, writing, or reading) and how they felt (good, neutral, not so good).



3. The map unfolds showing a journey line, with graphic resources to help students share more details about their experiences.



4a. The student can select whether they want to share with the group and begin a discussion with other students. The student can keep their journey for themselves for further analysis.

Core features

Words as reflective agents

Writing is a powerful technique that helps organizing thoughts and enables reflection, which then become tangible and easily documented. This feature satisfies the need for collecting and documenting student's experiences.

Playful experience

Emojis can help convey a message and communicate meaning between cultures, there are some experiences that can not be easily told, therefore emojis facilitate the narrative of stories and potentially serve as a playful experience.

Personalized

Students can design their own journey, the text and layout depends on each participant's creativity and motivation, therefore, no story will be the same among the class

4.2.2 Digi-taal

Janssens et al. (2018) says that various disciplines are currently using electronic diaries in order to collect data on feelings, knowledge, behaviour and social context, this enables to learn about real-life situations, in a true to reality way.

This prototype was inspired on the familiarity that most of NLtraining students have with digital interfaces, in particular throughout NLtraining's courses: class content is already available for students.

It is a digital interface that allows reflection in and on-action, which means that it is available at any time, for students to share their experiences: right after a situation or retrospectively. It collects the frequency of language use, the activity that they performed: listening, writing, the resources from the class that were relevant in their experience and finally the emotion they perceived. Options are predetermined and were based on the previous studies in Chapter 4. To enable this experiences to reach the learning environment an option to share their story is available.

To develop this concept, I made use of simplified visualizations, reduced text, and graphic communication, it was integrated it in a Figma (digital prototype software). [Link to prototype](#)

Core features

Convenience

It can be accessed at any time, this is a benefit because informal learning experiences can happen at any time, therefore this concept can serve as great support in that regard.

Simple interaction

Though a set of screens, the student can select the options related to their experience, no extra-time needed to complete a story. It brings a balance between enhancing reflection and simplicity that helps document experiences.

Personal and shared experience

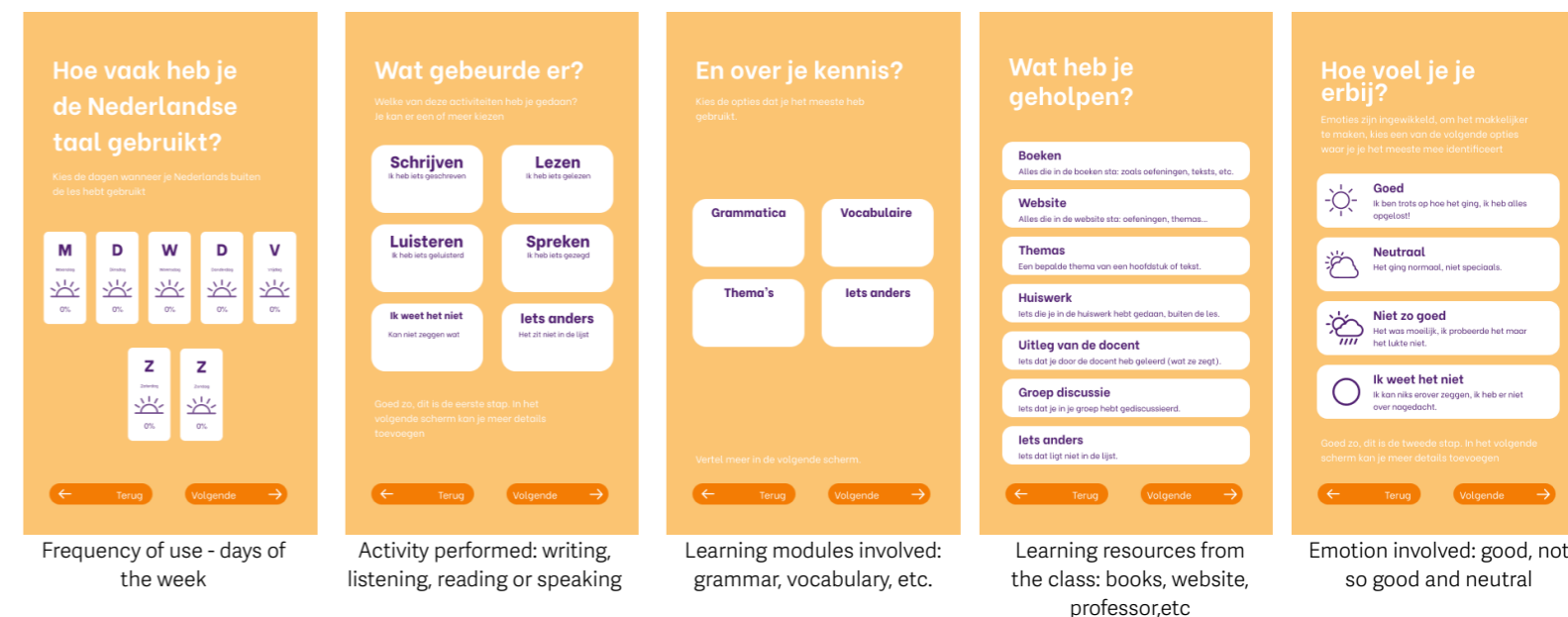
Students can fill-in and reflect about their experiences first by themselves, and then decide to share with their peers. This concept enables a hybrid modality: reflection in and/or on-action, personal and shared, it all depends on the student's needs and wishes.

How does it work?

1. Students have an experience using the Dutch language.
2. This experience brought an emotion that the student wants to share and proceeds to use the prototype
3. The student follows the screens throughout the interface which prompt a reflection, clicking the options that suits their situation.
4. The student sends their story to the system.
5. Additionally, the student can share it with the group or propose a discussion around their story.



Fig. 15 Photos of the prototype developed for Taal-canvas

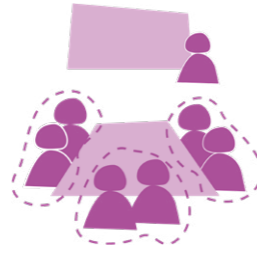


4.2.3 Samen spelen

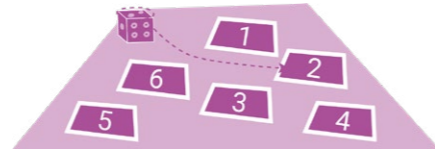
Bentvelzen et al. (2022b) says that conversations are a powerful technique for reflection, and this resonates with NLtraining way of working. Throughout my observations in the classroom, I realized that students get engaged in conversations between students, where the professor serves as moderator. Work made by Fagan (2015), states that a dialogic interaction between students, regardless of their correctness can help students work through language issues.

This concept was created to **enable a group discussion through a game interaction**. The intention is that students get in groups and share their experiences using prompting questions and to stimulate students to engage in a conversation, a points system was included. The game has a points card where students can cross relevant aspects from their peers' experiences that were mentioned during the conversation. This concept allows students' experiences to travel to the learning environment by the points card that will serve as documentation of the aspects were mentioned. This game is intended to be used during the class, or when students are in the classroom and enables reflection on-action because the questions are from their previous experiences.

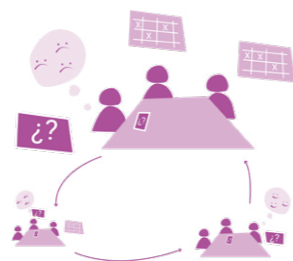
How does it work?



1. A student throws the dice and then picks a card with the number that appeared from the dice.



2. The rest of the students get a point card with elements grouped in 4 categories (each category has different points). Each element has several checkboxes. The elements are the same as in the previous concepts (knowledge, activity, and emotion).



3. The student who picked the card answer the question, and the rest of the students proceed to check boxes of the elements that are mentioned while answering the question.

4. The student finishes answering the question, and the rest of the students can elaborate in the conversation, finally, the next student picks the dice and begins another turn.

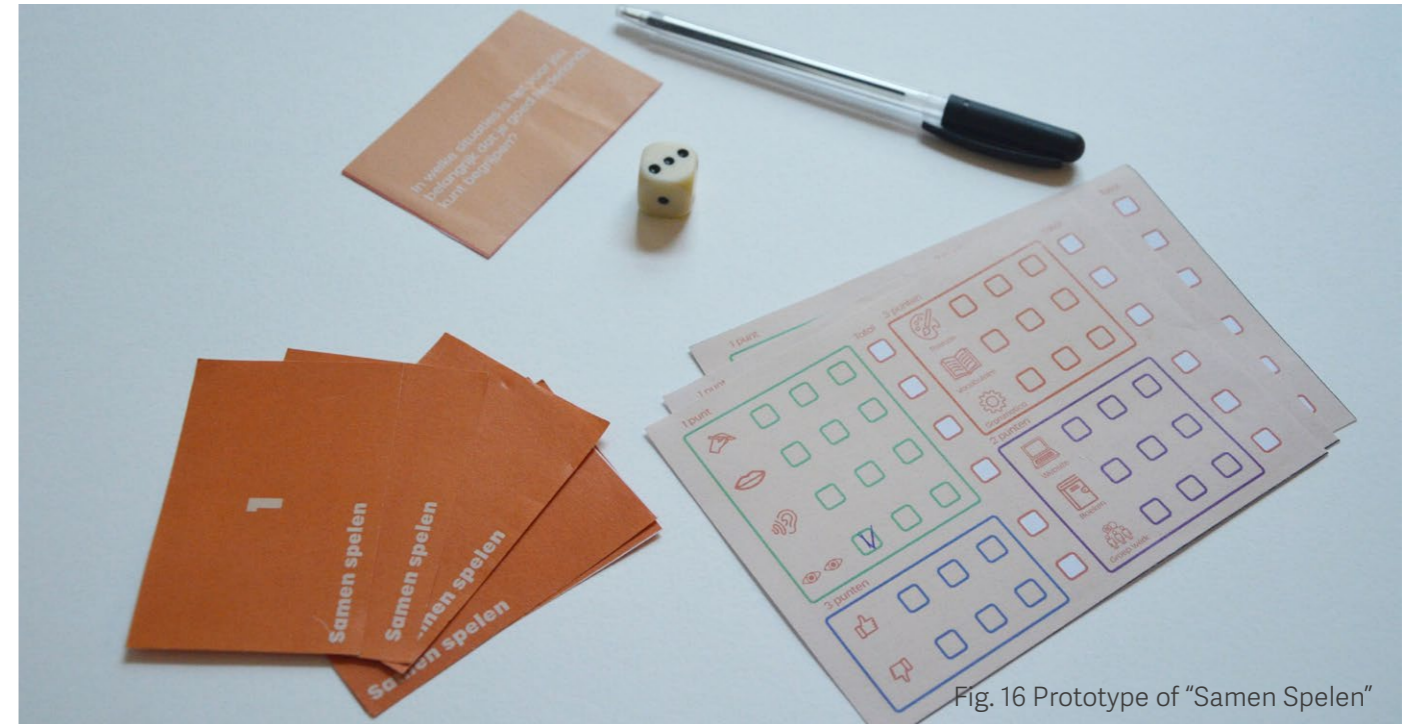


Fig. 16 Prototype of "Samen Spelen"

Core features

Enabling students dialogue

Students from NLtraining are easily involved in conversations with their peers and professors, therefore this concept brings a structure for this conversations to enable reflection. By asking questions, students can share their emotions related to good or bad experiences, they can learn from their stories, but also learn from other students. It acts as an interchange of knowledge.

Playful experience

By adding a points system, this concept aims to stimulate a deep reflection where students get rewarded with points after answering the questions. Takes off the pressure of initiating a dialogue and answering deep reflective questions.

In the next section I will describe the at

4.2.4 Concepts overview

In this section I present an overview of the three concepts, to facilitate identifying their main attributes:

reflection technique used, data collection method and how can the experience be documented.

Concept	Reflection technique	Data collection	Experience documentation
Taal-canvas A written journey	<p>1. Reflection in-action: folded version of the prototype for use on-the-go</p> <p>2. Reflection on-action: extended version to fill it in a desired moment and place</p>	<p>Students will write their stories and use stickers to describe important details.</p> <p>It collects: activities, resources from the class, emotions and a detailed description of the situation.</p> <p>The level of the details depends on the student and their preference.</p>	<p>Experiences will be documented in paper, which will be in possession of students when filling in their journeys, then, it will be provided to professors, who can keep it for further analysis and then shared with EDA team.</p>
Digi-taal A digital diary	<p>Reflection in and on-action since it can be used at any moment: after a situation or in a later moment</p>	<p>Students can select from the determined options which is the most suitable for their experience: what did they do, how did they feel and what resources from the class were useful (or not).</p> <p>Additional media can be collected, such as photos and voice recordings.</p>	<p>Experiences will be stored in a server which professors and EDA team would access at any time.</p>
Samen spelen Group reflection	<p>Reflection on-action it is used inside the classroom with other students. Not possible to do reflection in-action</p>	<p>Students will cross in their game card the aspects mentioned by other students (activity, emotion and resources from the class). Details about the experience are not documented since conversations are not recorded. The student will act as a reporter.</p>	<p>Experiences will be documented in the game cards, professors can keep them after the session and formulate insights from the selected elements. Sharing with EDA team is possible, it can be done in person.</p>

Table. 1 Overview of the three concepts

4.3 Testing the concepts

Concepts were tested in a workshop session (described in Chapter 1). In this section I will describe the preparations for the session.

• Sample (27 participants)

Three groups of students participated in this session:

Group 1 - Intermediate level conformed by 12 students

Group 2 - Advanced level conformed by 9 students

Group 3 - Intermediate level conformed by 6 students

• Workshop setting

The session was carried out during the class in 45-50 minutes. Students were provided with the three prototypes and tested each of them with a determined time (5-7 min).

• Evaluation method

Students evaluated each prototype by filling in a booklet. The evaluation consisted of questions (using a scale of 1 to 5) regarding to the support and structure provided to reflect, inspiration to reflect, willingness to share their stories with peers and professors and willingness to use. This questions helped analyse to assess the effectiveness of the reflective technique used in each prototype, related to RQ-2 (How can language use experiences can be learned, gathered, and documented?)

Additionally I got together with two professors to discuss their thoughts on the concepts. Finally, I proceeded to integrate insights from students and professors.



Fig. 17 Pictures of the evaluation booklet



Fig. 18 Taal-canvas prototype showing that the participant feels proud of themselves (heel trots op mezelf)



Fig. 19 Participants during the workshop session



Fig. 20 Testing Taal-canvas

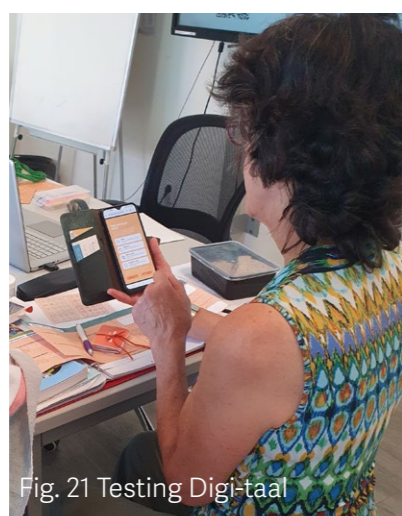


Fig. 21 Testing Digi-taal



Fig. 22 Testing Samen Spelen

4.4 Results

In this section I present the outcome of the evaluation session described in the previous section.

1. Reflection enabler - Students got the most inspiration from writing and playing with their journeys, most of them were immersed and the materials seemed to work well to enable reflection. Only a couple showed to be afraid of the "empty canvas". However, from their assessment, it was mentioned that they did not have enough time to complete their experience, which means that this tool format might take too long to interact with, as well as the amount of data depends on each student, some of them can get into very deep and personal details that are not in the scope of the project (ex. Work and family issues).

2. Willingness to use - The use of the digital app was smooth, and students could share their experiences, however, the fact that the prototype was not totally functional might influenced the assessment, where students explained that if the "app" was functional it would be a good tool.

4. Sharing stories - 70% of the 27 participants selected to stories with their classmates and almost 50% of the participants who wanted to share their stories also wanted their professor to initiate a group

discussion based on their story, which show there is an interest from students to bring their experiences to the classroom.

5. Empathy as driver for conversations

- Beginning a conversation was very interesting for participants with the Samen Spelen prototype, some students expressed that they have had similar experiences and were surprised and delighted to learn from the other's experiences. In a way, it was a perception of "I am not alone" or "I am not the only one" which was powerful and motivating. In the other hand, having the point system made it too difficult and lead to some frustration, this means that it is not necessary to include such method in order to foster conversations.

6. From professors perspective -

A great interest was shown while the students were exploring the prototypes, and incidentally helped them filling them up. For Taal-canvas and Samen Spelen, it was needed that the professor acted as a moderator, which enriched the knowledge of the students' experiences, in the other hand, in practice this would take a good amount of time of the classes. Professors mentioned that for them would be easier to read short sentences and emojis.

Decision Matrix

The final step to evaluate each concept was to display in a decision matrix, where I assess the

performance of each prototype according to the attributes presented in Table 1.

Concept	Reflection technique	Data collection	Experience documentation
Taal-can-vas A written journey	+ Positive reaction and engagement on writing their stories. -Students mentioned that it took more time than expected to complete their story.	+ Students appreciated the additional elements to share their stories (emojis and stickers) - High variation on level of detail: some students used key words, other wrote large paragraphs. "I would not like to have emojis in my pockets" - A physical prototype to use on-the-go was not practical	"I would like to share so I can be heard" + Most of the students agreed to share their stories with the class by marking the check box for sharing - Professors mentioned that it would take them extra time to process the data, since students configure their story to their preference, with a free format.
Digi-taal A digital diary	"I do not have to have anything extra; I can do it in my telephone" + Positive reaction towards a digital interface, the questions helped students to fill in their stories in a short amount of time. -Selecting options was not so inspiring for students.	+ Students explored and filled in each of the questions in order to fill in their stories. - Having determined aspects can limit students bringing up new aspects	"I can choose what to do at the end (Share with a message, audio, group discussion)" + Having alternative for additional media such as photos and audios was perceived as positive
Samen spelen Group reflection	"It was nice to listen to my classmates' experiences" + Engagement in discussions, where professors were also involved observing and making short comments -The points system did not contribute as an enabler of reflection, since it was perceived as an unrelated feature.	+ Conversations involved a high level of detail from students experiences - These level of detail was not considered in the points system	- Professors had to be present in order to learn details from students experiences, the points system was not effective in providing an accurate documentation.

4.5 Conclusion

This concept evaluation session helped me to identify the strenghts and weaknesses from each concept. After analysing the results, a final direction will integrate strong aspects from the three concepts according to RQ2 How can language use experiences can be learned, gathered, and documented? and the current context of NLtraining.

The aspects considered for the final design are the following:

- Writing a description of an experience
- Use of emojis to facilitate reflection and description of experiences
- Convenience to use on-the-go
- Ability to share additional media (photos and audios)
- Ability to share stories with others

In relation to the design goal: the final design should allow students to describe their stories in short sentences and share additional media through a tool that can be used on-the-go. This not only facilitates student reflection, but also professors to easily analyse and document such experiences.

Chapter 5. Final design



Fig. 23 Home screen of "Your Story"

In this chapter, I will present the final design and its validation. First, I will describe the concept, the prototype and the impact according to the design goal. Then, I will make a brief description of the validation procedure and I will finalize with a conclusion assessing the impact of the tool.

5.1 "Welcome to your story"

The final concept consists of a digital story-telling interface that allows students to transform their experiences with language use into "stories". By a set of questions, experiences become tangible and accessible to students enabling a structure for reflective practice and moreover, sharing with peers and professors.

It integrates attributes from the different concepts developed in the previous stage (Chapter 4). Being the key functions:

- Enabling reflection of students' experiences.
- Help identify and document resources from the course that were related in their experiences, in order to bridge their real-life context to the learning environment.
- Allow sharing stories with other students and professors.

The impact of this tool in relation to the design goal is that it will provide support to students to externalize their experiences, by making them tangible through the interface, professors would also receive collected data to avoid assumption based knowledge and help preparing the content of their classes according to the needs of their students.

Aspects collected by the interface were determined by SLA literature (Chapter 1 - Aspects of SLA) and the exploratory research carried out to students in the initial stage of the process (Chapter 3 - Understanding NLtraining's context) and were confirmed with the previous concept evaluation session.

The prototyping process included creating a paper flow, then a wireframe based on Digi-taal and then a polished version with NLtraining's brand guidelines.

The final prototype was built in Figma and imported to Protopie in both Dutch and English. Access to the prototypes is through the following links:

[English prototype](#)

[Dutch prototype](#)

The next section will describe in detail the flow of the interaction of "Your Story".

5.1.1 Core functions

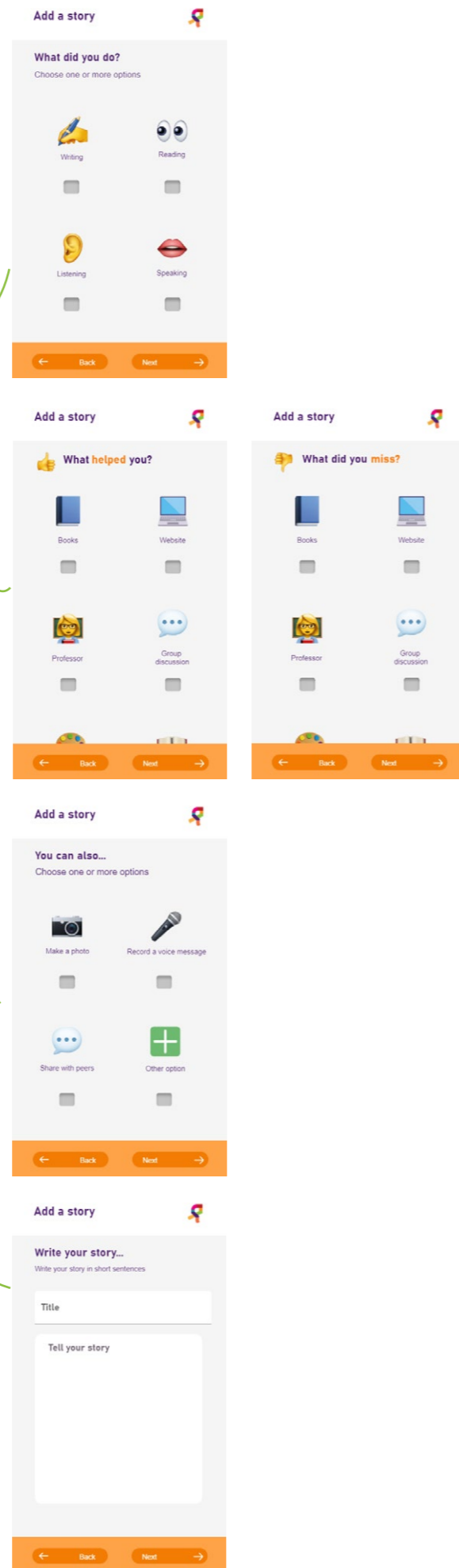
Reflecting about an experience

This is the core function of the interface, enabling a structure for student's reflection. It is achieved in two main actions:

1. Option selection - a set of options are displayed on the screen at three key moments: selecting the **activity performed** in the experience (reading, listening, reading or writing), **resources from the class that were useful (or not)**, and selecting additional **material to complement their reflection**: add a photo, voice message and submit in a group discussion, there is also the possibility to add an alternative option.

This aspects were selected from a correlation between (1) the learning modules from SLA theory and (2) the results from the exploratory research carried out with students: aspects that they consider relevant (or not).

2. Text input - Students can add a title to their story and describe in short sentences relevant details. This feature was implemented because from the previous concept testing session I learned that **students get engaged in a reflective practice**, this is confirmed in the literature about reflective practice being written journals an effective tool to enhance reflection.



Sharing your experiences

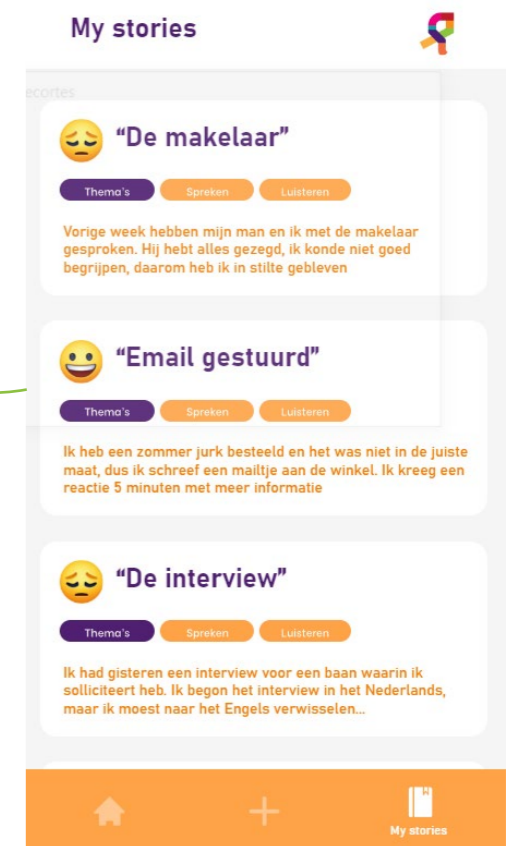
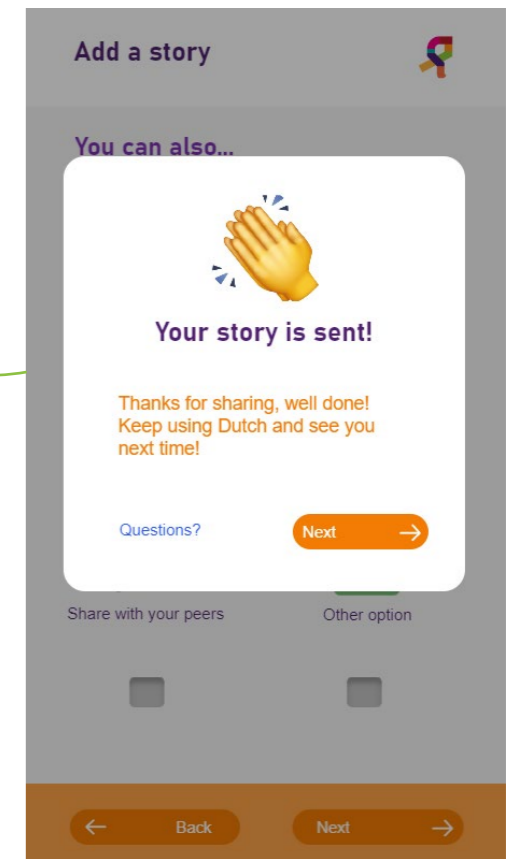
This feature helps students digitalizing their stories, **strengthening the link between their real context and the class**. From the previous research stages, students showed curiosity to know what other students found about their stories and if they had similar experiences.

By sharing their experiences, students are strengthening the bond with other students (and professors), which will **create a sense of belonging**, therefore aims to increase engagement with language use.

Source of inspiration

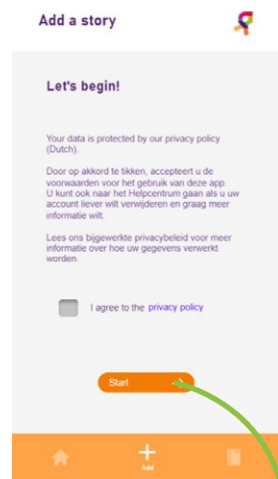
The interface will include an overview of the students' stories and from their classmates. These stories had been submitted and added to their profile and **are available for them to read, reflect and comment during the class**. Moreover, this section is available for professors and course designers to read and get inspired. Actions after reading students' stories might include: for professors, modifying the class materials and exercises, and for course designers, optimize the course design and communicate with clients about the outcomes.

In the next section I will introduce the use flow of the interface.



User-flow

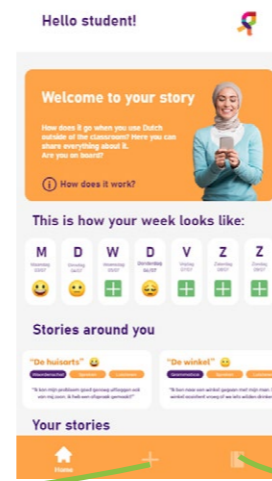
In this section I explain the interface flow and aspects that are collected.



Privacy policy and consent.

To ensure that the student is aware of privacy policies, the first step is to present the key information and a link to the full policy (in Dutch).

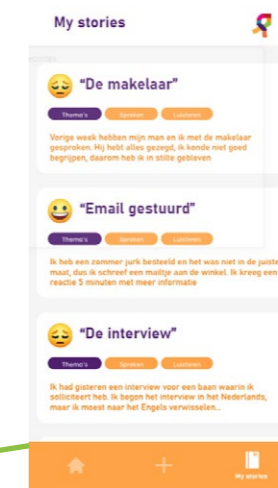
Home screen - Introduction



It is the introduction to the interface, shows an overview of stories shared in the week, stories shared by peers and instructions for new users.

A new story can be created by pressing the + symbol.

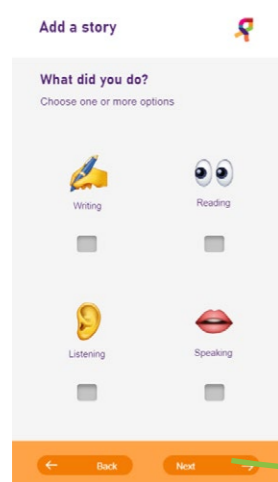
My stories - Library of experiences



This section present all the stories submitted by the student, if they decided to share with the group, they will appear in the home screen of their peers.

Professors would have access to this section and gain knowledge from students stories.

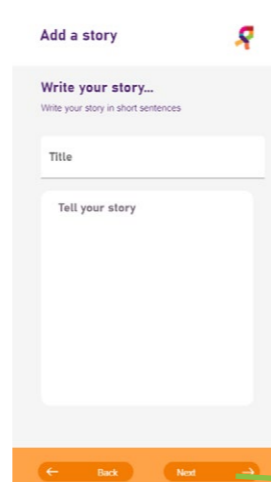
Activity - Triggering reflection



Documents the activity performed, more than one option is allowed, since some situations involve not just one activity.

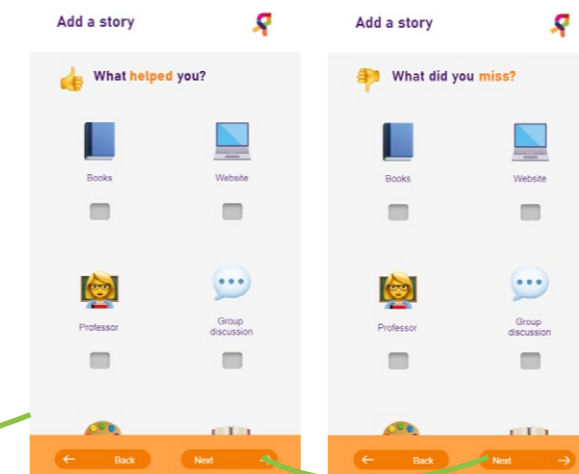
This works as a trigger to begin reflecting about experiences.

Text input - Enhancing reflection



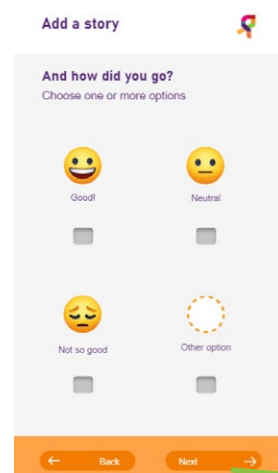
Core function that enables a deeper reflection by filling in with short sentences details about a story and adding a title according to their preference.

Course resources - "The bridge"



Presents a set of resources from the course, where the most relevant can be chosen beginning with enabling resources, then inhibiting resources. This aspect intends to bridge the student's real life to the learning environment.

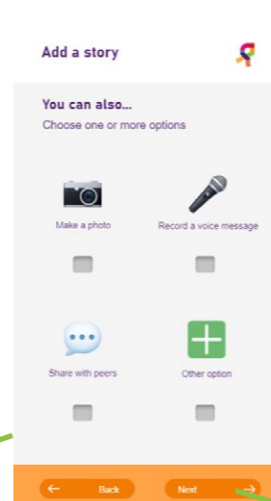
Emotion - Evaluating the experience



Students can share their emotion by selecting the option according to their experience: did it go well?, neutral? or not so good?

This complements finding enablers and inhibitors from language use experiences.

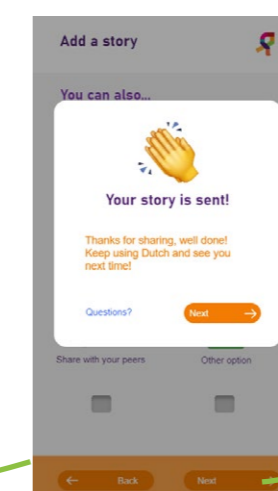
Additional media - Documenting



Students can summarize their stories adding photos, audios or engaging in a group discussion (upon request).

If a student does not have any additional media to add, the story will just be added to their documented stories.

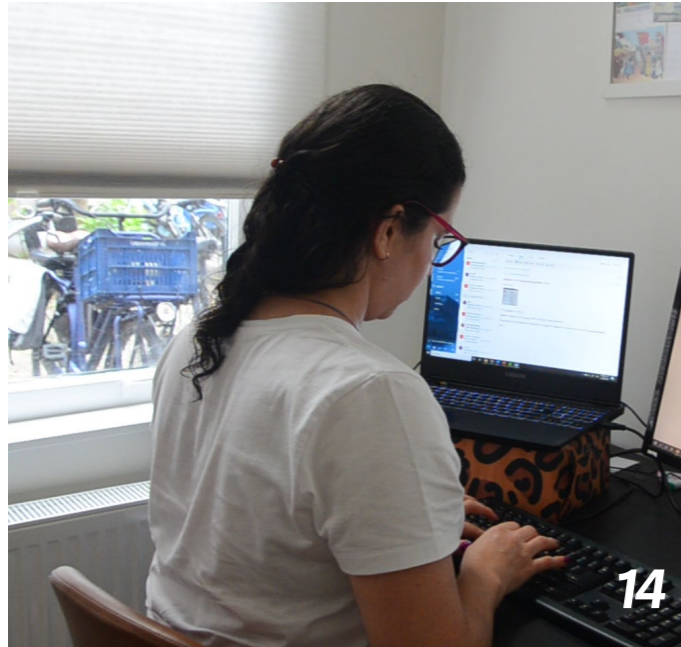
Confirmation of submission.



Intended use

In this section I will present a set of interactions that showcase the intended use of the interface.

One of the student participants agreed to represent this interactions.



Student "A" is applying for a job, she prepared her CV and motivation letter in Dutch and is writing an email to the recruiter. She feels nervous because she likes the job and she does not want to make mistakes.



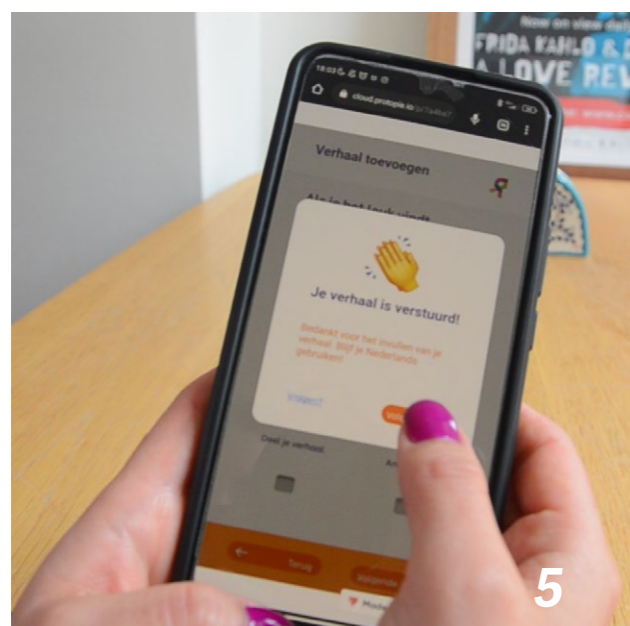
Student "A" sends the job application and goes for a walk to relax afterwards. During her walk she was repeating the last sentences in her head and wondered if they were grammatically correct, since in her mother tongue she would usually respond in that way.



Student "A" arrives back home, feeling a bit overwhelmed after her walk.



Student "A" opens "Your Story" in her phone and proceeded to fill in her experience, giving structure to her thoughts and identifying what sentences caused her confusion and what resources from the class would help her in the future.



Student "A" completes her story, and decides to share with the group and professor, then the story appears other students profile. She feels relieved by sharing her thoughts and feelings, curious about what her classmates think.



Student "B" saw student "A"'s story and engages in a conversation because student "B" applied for a job last year and had to write several emails and struggled with similar feelings, this makes student "A" feel she is not the only one.



The professor prepares an activity with the vocabulary from the book related to job search and verifies grammatical structures when students speak and provides feedback from their sentences. Student "A" feels supported and the professors feels satisfied.

5.2 Validating “Your Story”

In order to assess the impact of “Your Story” I carried out a validation stage. The first step was to determine the design criteria (Table. 3) according to:

RQ3 - How can language use data can be implemented in Dutch language learning services? .

Afterwards, I designed the validation procedure, explained in the next section.

Design consideration	Challenge	Design question
Enables reflection	Provide students with a clear support and structure to reflect (in and on-action)	What do you think about your story?
Involves emotion through positive and negative experience	Provide enough support to students to open up and relate emotions in the reflective practice	What did you learn from completing your story? Did you find anything surprising?
Helps identifying resources from the learning environment used in real life.	Students to understand the link knowledge from the course to their context, and address it	
Connects class resources with real life	Students to understand the link between the class and the real context, so they can relate and provide relevant data	Do think something could be improved (e.g., textbooks, course structure) to help you practice language outside of the classroom? Could you identify what was useful from the class when you used the language in your real life?
Sharing as an engagement tool	The flow and questions in the interface enable students to share their experiences and learnings with others, but also allow them to keep them for themselves.	What do you think your professor would learn from your story? What do you think your classmates would learn from your story?
Usability	Provide a clear and conspicuous flow within the interface.	Do you feel it was clear to follow? Do you think it was easy to follow? Was there enough information to guide you through the interface?
Graphic elements	Enabling a suitable brand image according to NLtraining’s guidelines	Do you think the emojis and graphic elements helped you to describe your story? Why?

Table. 3 Design criteria for validating “Your Story”

5.2.1 Setting up validation procedures

In order to validate “Your Story” with reliable feedback from students, I designed a test which was carried out in real context, in order to ensure that both reflection in and on-action were enabled.

• Sample

Upon agreement with professors, I visited their class and invited students who were interested on trying the prototype. The total amount of participants was three (one from intermediate group and two from advanced).

• Validation method

The goal of this session was to evaluate aspects such as whether if reflection in or on-action was achieved, and willingness to use in real life, therefore the setting was in a realistic context.

After recruiting participants, I proceeded to explain the concept and provide the link to the prototype, which could be installed in their phone screen to ensure a realistic experience.

The task was that students should use the prototype when they had an interaction with using the Dutch language in their daily life and send a

screen shot of the steps they followed in the interface.

The time frame to test was one week, where I was not present. Afterwards, we carried out an interview to evaluate their experience. Prior to the in

• Evaluation

After students experienced “Your Story”, they proceeded to share their thoughts in a semi-structured interview of 30 minutes. The questions were designed from the design criteria in Table. 3. Students responses and screen shots were documented and analysed.

Additionally I got together with two professors to show them samples of the stories from students and get to know their opinion. Questions to professors were related to their opinion of the stories format, whether it would help them optimize their course content and their willingness to use. The full script of the interview can be found in the Annex.

5.2.2 Results

In this section I present the results from the interviews explained in the previous section. To facilitate the overview of the results, I made use of quotes from students (P(S) 1, P(S) 2 and P(S) 3) and professors (P(P) 1 and P(P) 2).

Fig. 24 shows an example of the screenshots provided by one of the participants. The full list of examples can be found in the Annex. The original responses are in Dutch, a translation to English can be found below the image.

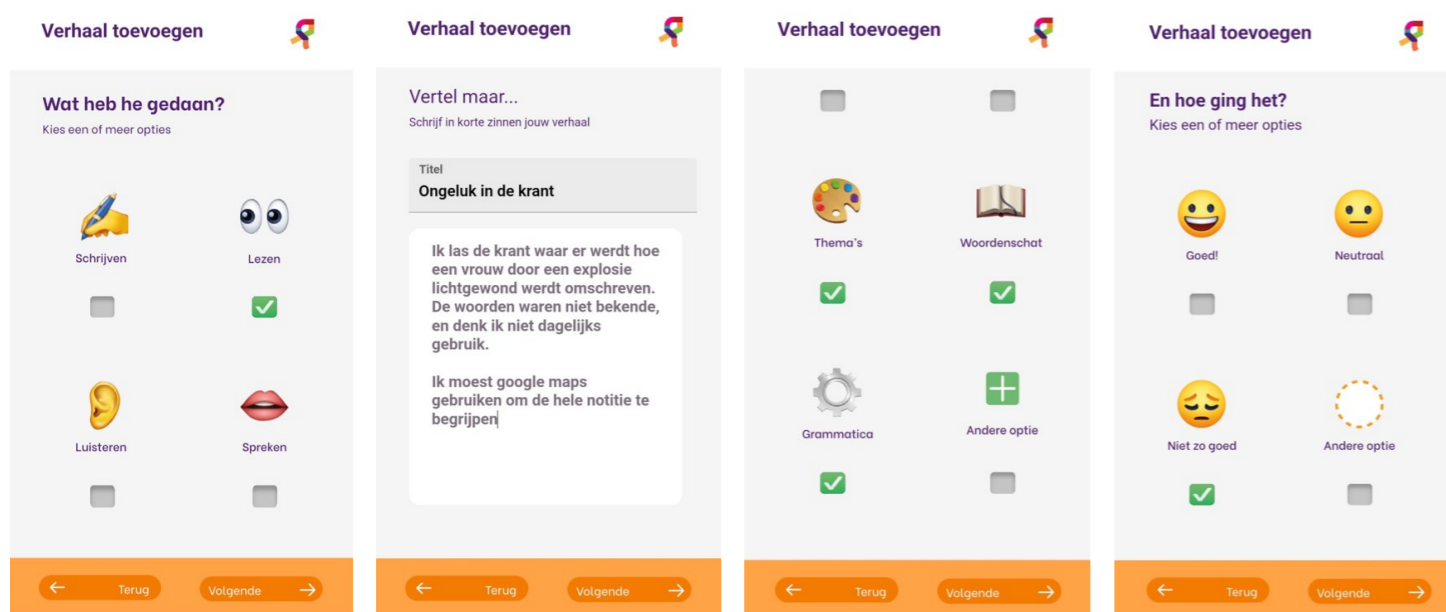


Fig. 24 Screenshots from participant post-interface use

What did you do?: Reading

Title: Accident in the news
I read the news that a lady was injured in a fire, I did not know the words, I think I don't use them in a normal day. I had to use google maps to understand the whole note.

Frequency of use

Two participants used the prototype one time and one participant used it twice in a one week period.

Willingness to use

Two out of the three students mentioned that they would use the app as part of the course, the participant who was not sure of her willingness to use said that for her was more relevant to learn from the official grading system, because she was not familiar (and interested) in implementing new learning strategies.

Enables reflection

Two participants carried out reflection in-action and one participant carried out reflection on-action. Interactions from reflection in-action were making an appointment with the hair-dresser, going to the hair-dresser and watching a movie. Reflection on-action was related to their progress learning Dutch.

Students mentioned that when they were filling the text, it was not possible to go back and correct their mistakes. This illustrates that students were interested on providing an appropriate use of the language.

"When I was writing the story I then checked if I made mistakes" P(S) 2

Emotion involvement

Emotions have been generalized into: good, neutral, and not so good. Which the participants found that there should be a wider space to share alternative options such as: disappointed.

"I wish there was an option to say that I felt disappointed, but then I choose good" P(S) 2

Connects class resources with real life

The amount and the detailed list of resources from the class seems to limit to some extent their reflection process because by having many options, it can create confusion if an aspect is related to two or more options. The advice from the student was to maintain a reduced amount and leaving space for them to include alternative options in case they need it. Having check boxes was proposed as a practicality measure, but in this case could be valuable to consider a text input.

"there were many options to select... It was a bit confusing" P(S) 3

Sharing as an engagement tool

One participant made a very interesting point, where she states that she is willing to share her stories with other students, however she considered a criterion of relevance to share. She filled in two similar stories related to hairdresser interactions, where she felt disappointed, despite her positive impression of the reflective process, these interactions were found not to be very relevant for other people from her perspective, but valuable for her to become aware of her language use. This confirms that students might use the interface to document stories for themselves.

Usability

“Oh, I did not noticed that I could see the other stories”

Since the core of the interface is to share and document their stories, one participant mentioned that she did not recall that she could also read their peers' stories.

Graphic elements

Graphic language was clear and concise, allowing students to follow the user experience.

In addition I spoke with two professors and showed them screenshots from students' tests. They mentioned that they were interested on only reading

the text, because they could identify which aspects from the course were involved. They think that filling the activity, resources from the class and emotion is more for the benefit of the student and the efficiency of the reflective practice.

“If I read the text, then I get a good image of what students are facing outside the class” P(P) 1

One of the professors said that this tool would complement current communication that students have in whatsapp: they send videos, photos and engage in conversations.

Fig. 25, 25, 27 show examples of interface use in real context. One of the participants acceded to do a representation from her stories.

5.3 The impact of “Your Story”

The results show that “Your Story” had a good acceptance between the participants since two out of the three mentioned they would like to use it in real-life. In addition both kinds of reflection types were used: in and on-action. This implies that “Your Story” provides an accessible and convenient interface for reflecting and then documenting students experiences.

The bridge between real-life and learning environment can be enhance with the use of “Your Story” because students are interested on sharing their stories and professors are interested and curious about students real context and by the use of the interface this is possible, moreover stories are kept for further analysis.

However, the options from check boxes for resources and emotions seemed to limit students, this could be optimized by adding text input.

As a conclusion, “Your Story” has a great potential to enhance NLtraining's current learning strategies.

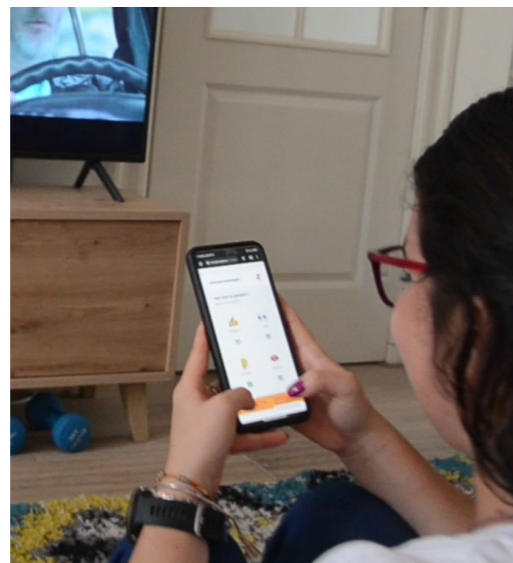


Fig. 25 Participant testing - reflection on-action

Fig. 26 Participant testing - reflection in-action

Fig. 27 Participant testing - reflection on-action

Chapter 6. Conclusion

6.1 Discussion

This project was proposed as an exploration of the application of a service design methodology in language learning services (NLtraining), this perspective aims to support current practices by bringing students real-life language use. In this section I present the main contributions from the findings brought by this project.

Students' experiences scoped in current SLA research

From the revision of current literature on language learning, I found that students' experience with the target language is not fully part of the scope, since it is focused on the learning process inside of the learning environment, therefore this project contributed to understand the value of learning from students' real experiences and integrate it in the agenda for professors and course designers.

Most used methods to learn from students' language use are ESM (experience sampling method) (Arndt et al., 2021), Önal et al. (2019), , which is applied in a questionnaire format to students, these kinds of tools do obtain relevant information such as frequency of use and kind of activity (reading, listening, writing, and reading), however, they do not provide a deep understanding of the context,

such as emotions, which according to Rodríguez-Kaarto & Hahn, (2015) is a crucial part of the learning process and valuable to learn from. **Therefore "Your Story" can serve as a complement for current practices by bringing students' translations through reflection.**

Reflective practice in language learning

During interviews with students in the first stage of the project, it was found that students are already carrying out complex reflective processes, which lack structure and have a great impact on their language use, mostly after negative experiences. By designing a tool that materializes such reflections, students become more engaged with their own learning process, moreover, they become aware of which aspects they need to improve to achieve their goals. In addition, normalizing sharing stories can encourage students to use the language with more frequency and overcome the barriers they face in their daily life.

From the professors' perspective, **it became clear that reflection can bring them knowledge that they can make use of when designing their classes and selecting the topics to work with during the class,** it is an invitation to enter in the student's shoes and generate empathy.

Service design as a versatile approach for NLtraining

The use of a service design methodology brought a new look into current language learning services, by bringing the students' voices to the learning environment and enabling other levels to learn from it: professors and course designers. In the particular case of NLtraining, this perspective brought valuable insights and a way of working that could be implemented in the future, strengthening communication between stakeholders and generating empathy.

Fig. 28 illustrates potential communication flows based on the stakeholder map presented in Chapter 3: the tool can enable insights to travel efficiently and prevent assumption based knowledge in NLtraining's ecosystem.

In relation to current research on service design, this project contributed by bringing an alternative perspective where language learning services were pictured as an (time, cost and compromise) investment for students as means for future development, compared to previous studies from service design in education focused on administrative and catering activities.

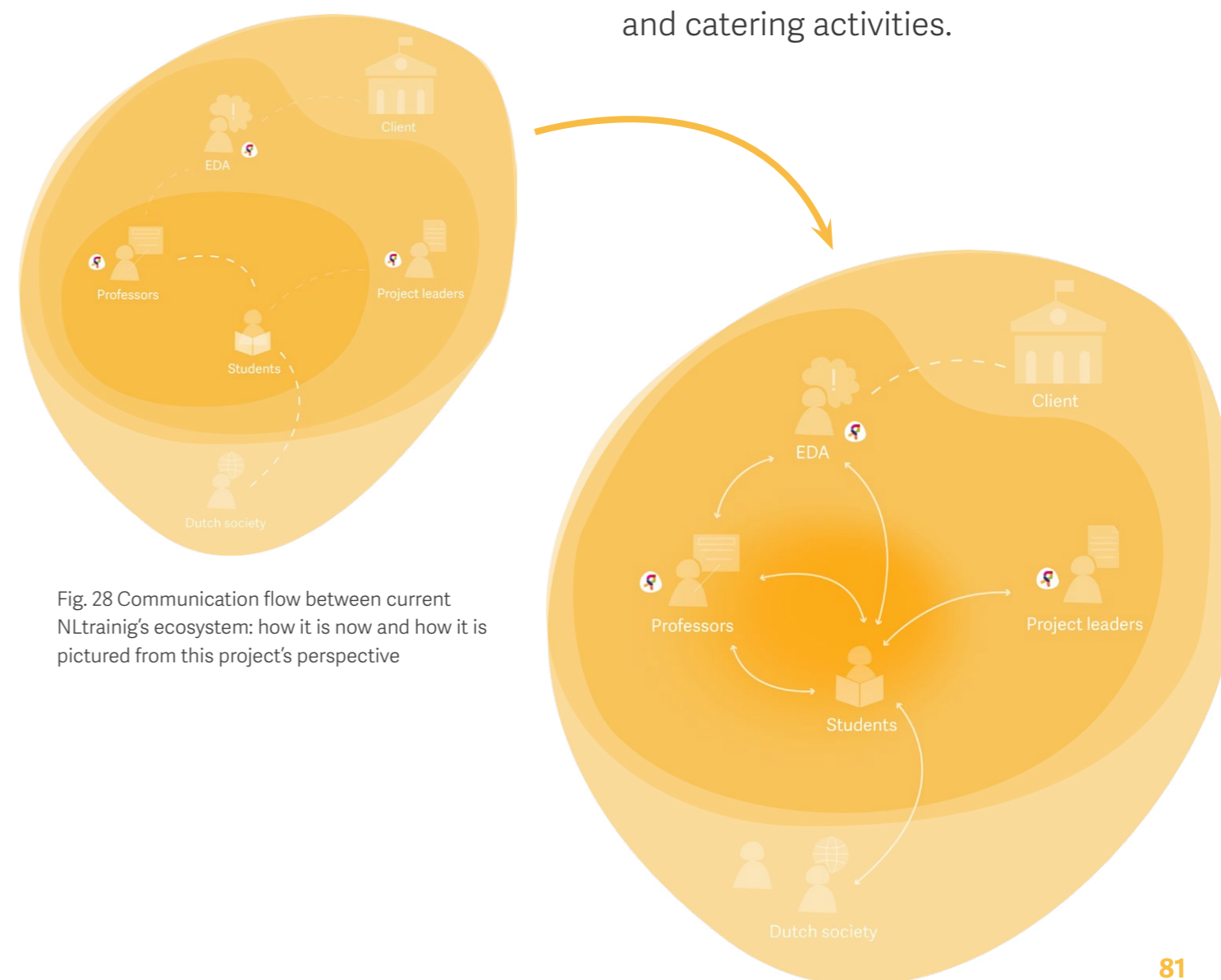


Fig. 28 Communication flow between current NLtraining's ecosystem: how it is now and how it is pictured from this project's perspective

6.1.1 Implications

Target group

This project involved groups from only two levels from the complete student body, excluding groups as: beginners, “low-educated” (laagopgeleide - which means students with no or scarce academic formation) and illiterate (students that do not know how to write and read).

Including this groups was not possible given the time and resources available, however, further research including such groups is needed.

Students’ context as part of the emerging activity

Findings from this project indicate that considering students’ experiences within the emerging activity is relevant because they bring insights that can help design set and epistemic elements that fit the students’ context.

Looking at the ACAD model used as inspiration, informal learning experiences can be integrated in the social design category, given the fact that they consist of communication with other people in organizations, personal social environment and academic instances. This insight could be a relevant topic for further research (Fig. 29).

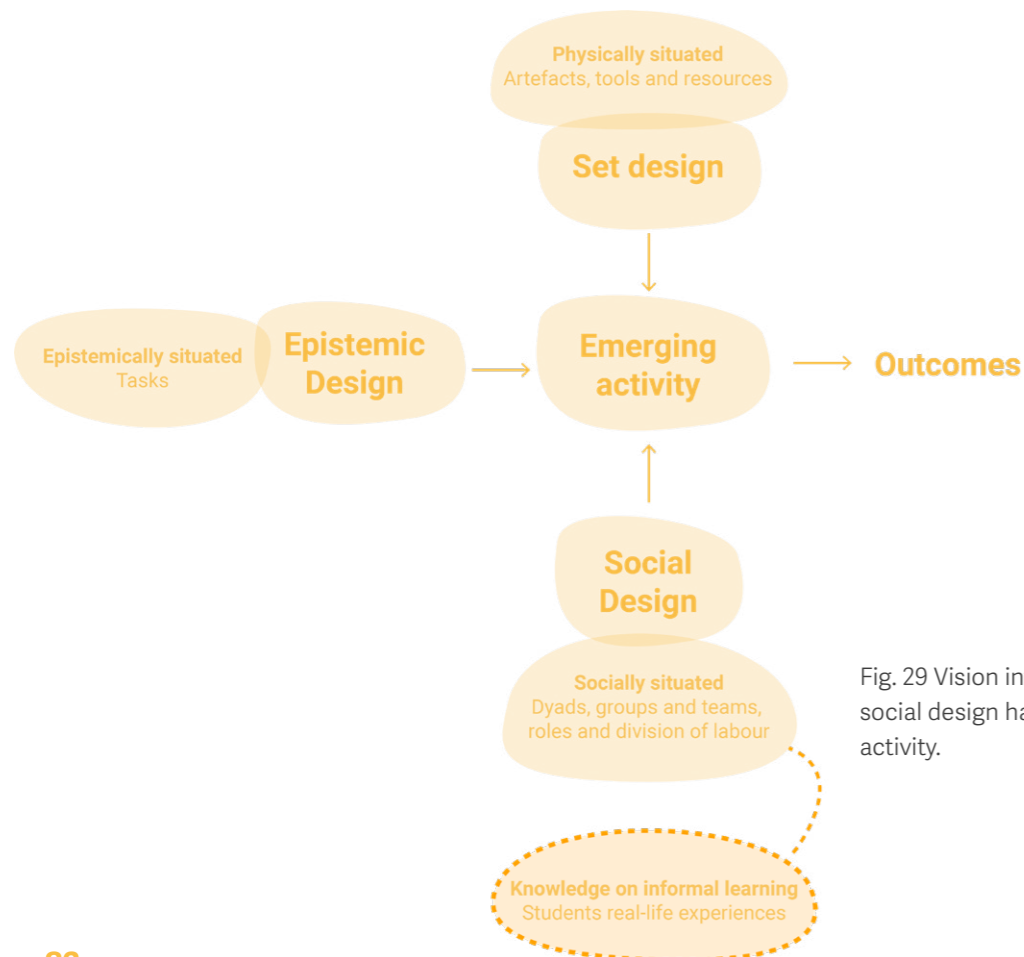


Fig. 29 Vision into integrating informal learning into social design having an impact on the emerging activity.

6.2 Reflection

This thesis project was a (personal) journey, which enabled me to deep dive on what the role of a designer is and how it can provide value to society. It was an invitation to a retrospectively reflect in my own story and my motivation to drive change, even if the challenges in society are complex.

I learned about resilience and how it is to lead a project, managing the timing, organization, and administrative processes. With aspects that I enjoyed more than others, I feel fortunate to have the chance to do what I enjoy the most: connecting with people and bringing their voices and stories to the table, making use of structured service design tools. I learned to adapt to the context and make a space for a designer in the education sector.

My biggest challenge was to go against my fear and insecurity for academic research, I learned to formulate and support my ideas, integrating my creative soul in the way. Since my experience as a designer has been built in empirical work inside design agencies. My biggest pleasure was to work together with students and professors, my communication abilities allowed me to break cultural and language barriers, where me, as a Dutch language student, could take the

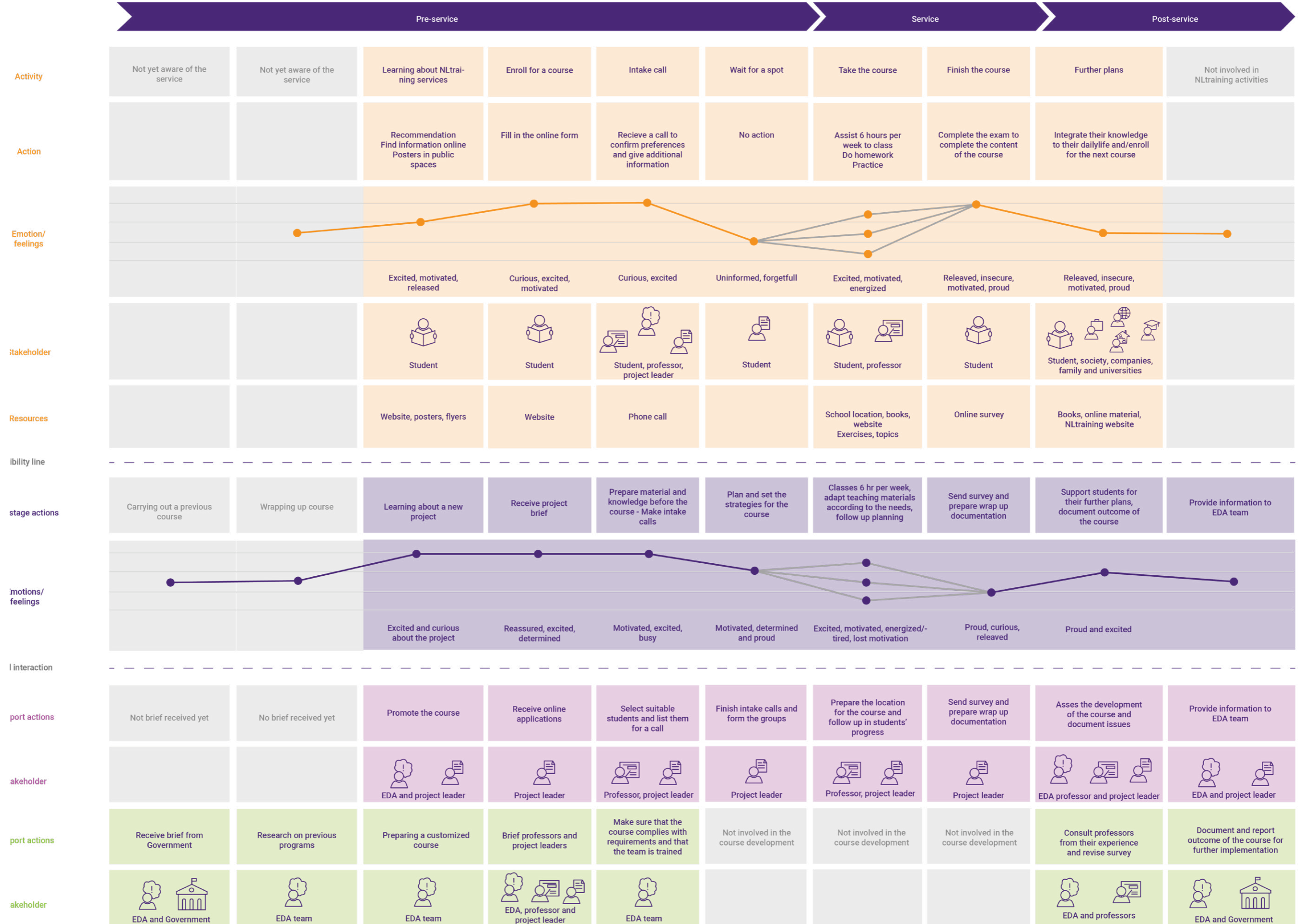
initiative to run sessions in Dutch and step out of my comfort zone.

Working as an individual designer in a multi-disciplinary and multi-cultural environment has shown me what path I would like to pursue after this project, my interest for the social domain increased and my ability to connect with people sustain my passion for designing with and for people. This project was a good practice on democratizing education, giving the voice of the students a place in the learning environment.

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1.1 Extended version of Journey map



1.2 Interview script - exploratory research (Chapter 3)

EN - PROFESSORS - Interview Script

1. **Introduction** - What is the project about and thanks for participating - **2 min**

Dear professor: thank you for your participation in this project!

My name is Mariana and I am a student from TU Delft finishing my degree as a Design for Interaction, where I design interfaces to improve peoples' experiences with products and services. In this case I am working with NL Training in order to bring the everyday experience of your students to the class and help improve the learning experience. It is important to mention that you are the expert in teaching the language and learning experience, so know that there is no good or bad answer. I want to learn from your experience, so the more details you feel comfortable sharing, the better.

We will begin with sharing the confidentiality agreement, where we will talk about the data we will use for the research, then we will talk about your intention to teach the language and the intention of your students to learn. Then we will talk about the tools you have to learn about your students' experiences and what would be helpful for you to use. Finally we will talk about reflection and how it relates to your teaching experience.

Please feel free to ask any question or to share any comment you think is interesting. So far, do you have any questions?

2. **Confidentiality** - Form and explanation of video recording (or just voice recording) **5 min**

To better document your responses I will record your voice and video, since it helps me understand. The material collected during this interview and further sessions will only be used for academic purposes to better illustrate the context of the project. Details such as name, address, or any private information will be confidential, as well as if you desire, your face can be faded (see example).

If you agree with the privacy statement, could you please sign, and if you wish you can get a copy. Do you have any questions? If not, we can keep going to the next section.

3. **Intention to use the service** - **5 min**

Let's talk about why you decided to teach this course.

1. Why do you teach your course?
2. When did you begin? and when will you finish?
3. Why do you think your students are taking the course?

4. **Analysis and documenting of current language use** **10 min**

Thanks for sharing, now I would like to ask you:

1. Do you know how and when your students use the language in their daily life?
2. How do you learn about their experiences?
3. How do you document it?

5. **Materials from the class involved in current language use** **5 min**

Thank you for telling me more about how you learn about your students' experiences with the language in their everyday life. Now I would like to talk about the class material that you think best helps students to use the language outside the classroom.

1. What kind of material do you think supports students in their daily life use of the language?
2. What material do you wish to have in order to help students use the language in their daily life?
3. Do you adapt your teaching materials to what your students need in everyday life?
4. If so, do you do it per student or as a group?

6. **Reflection** - To what level are students reflecting **3 min**

Thanks for sharing your thoughts. We are now in the last question of the interview: Reflection is an important part of the learning process, therefore it is important to allow students to reflect on their own experiences when using the language in their daily life.

1. Do you think your students reflect on their experience?
2. How do you help students to reflect?
3. How can their reflections help you with the planning of the classes?

7. **Wrap up** **1 min**

We are now finished with the questions, it was very nice to get to know your experience, thank you for sharing. Your opinion is very helpful for the development of this project.

Do you have any final questions? Would you like to add anything to your responses? If it happen that you have a question after this interview you can always reach out to me at:

EN - STUDENT - Interview Draft

1. Introduction - What is the project about and thanks for participating - 2 min

Dear student: thank you for your participation in this project!

My name is Mariana and I am a student from TU Delft finishing my degree as a Design for Interaction, where I design interfaces to improve peoples' experiences with products and services. In this case I am working with NLtraining in order to bring your everyday experience to the class and help improve the learning experience. It is important to mention that you are the expert in your experience, so there is no good or bad answer, also I am not assessing your knowledge of Dutch. I want to learn from your experience, so the more details you feel comfortable sharing, the better.

We will begin with sharing the confidentiality agreement, where we will talk about the data we will use for the research, then we will talk about your intention to learn the language, then about how, when and how you feel when you use the language in your daily life. Afterwards we will talk about the material from the class that you most use in your daily life and finally we will talk about reflection.

Please feel free to ask any question or to share any comment you think is interesting. So far, do you have any questions?

2. Confidentiality - Form and explanation of video recording (or just voice recording) 5 min

To better document your responses I will record your voice and video, since it helps me understand. The material collected during this interview and further sessions will only be used for academic purposes to better illustrate the context of the project. Details such as name, address, or any private information will be confidential, as well as if you desire, your face can be faded (see example).

If you agree with the privacy statement, could you please sign, and if you wish you can get a copy. Do you have any questions? If not, we can keep going to the next section.

3. Intention to use the service - 5 min

Let's talk about why you decided to enroll in this course.

1. What is the motive for you to take the course?
2. When did you begin with the course and when would it finish? OPT.
3. *If you do not remember or if it is not clear, don't worry, then can you tell me what are your plans when you finish the course?

4. Current state of language use (Frequency of use, situation and experience) 10 min

Thanks for sharing, now I would like to ask you:

1. Do you use the language in your everyday routine? Yes-no
2. How often do you use it?
3. Could you tell me where you most use it? work/education/private life (friends,etc) / organizations (gemeente, etc) / society (doctor, shops, etc)
4. In which situations do you hesitate and do not use it?
5. What is the main difficulty to use the language in your daily life?
6. How could you say your experience is? How do you feel when you use it?
7. Do you have a special case that you have in mind or that you remember really well? OPT* in case there was no specific situation mentioned in the previous question

5. Materials from the class involved in real context 5 min

Thank you for telling me more about your experience with using the language in your everyday life.

1. Now I would like to know if in any of the situations you mentioned, can you mention what resources from the class were involved? (books, texts, videos, exercises,etc).
2. What materials do you think are useful for you to use the language in such a situation?
3. What materials are not useful?
4. Is there any material that you think you would like to help you use the language in your everyday life?
5. How do you think the school can help you?

6. Reflection - To what level are students reflecting 3 min

Thanks for sharing your thoughts. We are now in the last question of the interview:

1. We have been doing a reflection on your use of the language in your daily life, have you done it before?
2. Do you usually reflect on what you have learned throughout the classes?
3. What would be the best way to do it: by yourself in your private space, in an open space by yourself or in a discussion with a group? OPT (Concept 3)

7. Wrap up 1 min

We are now finished with the questions, it was very nice to get to know your experience, thank you for sharing. Your opinion is very helpful for the development of this project.

Do you have any final questions? Would you like to add anything to your responses? If it happen that you have a question after this interview you can always reach out to me at:

1.3 Student booklet to test three different concepts

Prototype 1 - Samen spelen		Evaluatie	Prototype 1 - Samen spelen	
Instructies 1 - Gooi de dobbelstenen 2 - Pak je kaartje 3 - Uitspreken 4 - Puntjes tellen	Evaluatie Ik denk dat dit het beste van dit prototype is: Ik denk dat dit prototype zou beter zijn als:	1 Een groep discussie helpt mij om te reflecteren. 1 2 3 4 5 Waaron?	4 Ik zou dit prototype in praktijk willen gebruiken. 1 2 3 4 5 Waaron?	
		2 Ik vond de vragen inspirerend. 1 2 3 4 5 Waaron?	5 Ik vind dat mijn docent gaan van mijn ervaringen leren. 1 2 3 4 5 Waaron?	
		3 De punt systeem hebt ons geholpen om een discussie te beginnen. 1 2 3 4 5 Waaron?	6 Dit prototype past goed bij de les (dienst) van NItraining. 1 2 3 4 5 Waaron?	

Prototype 2 - Taal canvas		Evaluatie	Prototype 2 - Taal canvas	
Instructies 1 - Denk aan een situatie 2 - Vul het kleine kaartje in 3 - Laat het reflecteren 4 - Vul de rest van het canvas in	Evaluatie Ik denk dat dit het beste van dit prototype is: Ik denk dat dit prototype zou beter zijn als:	1 Ik vind dat schrijven helpt om me te reflecteren. 1 2 3 4 5 Waaron?	4 Ik zou met mijn groep mijn reflecties willen delen. 1 2 3 4 5 Waaron?	
		2 De emojis' waren nuttig om mijn verhaal te vertellen. 1 2 3 4 5 Waaron?	5 Ik zou dit prototype in praktijk willen gebruiken. 1 2 3 4 5 Waaron?	
		3 De emojis' waren nuttig om mijn verhaal te vertellen. 1 2 3 4 5 Waaron?	6 Dit prototype past goed bij de les (dienst) van NItraining. 1 2 3 4 5 Waaron?	

Prototype 3 - Digi-taal		Evaluatie	Prototype 3 - Digi-taal	
Instructies 1 - Ga naar de app 2 - Volg de instructies 3 - Laat het reflecteren	Evaluatie Ik denk dat dit het beste van dit prototype is: Ik denk dat dit prototype zou beter zijn als:	1 De vergelijking met het weer maakt het makkelijk om te reflecteren. 1 2 3 4 5 Waaron?	4 Ik zou met mijn groep mijn reflecties willen delen. 1 2 3 4 5 Waaron?	
		2 Ik vond de vragen - instructies inspirerend. 1 2 3 4 5 Waaron?	5 Ik zou dit prototype in praktijk willen gebruiken. 1 2 3 4 5 Waaron?	
		3 De digitaal app hebt me geholpen om te reflecteren. 1 2 3 4 5 Waaron?	6 Dit prototype past goed bij de les (dienst) van NItraining. 1 2 3 4 5 Waaron?	

1.4 Samples of Taal-canvas prototype

1.5 Interview script validation stage

Student concept validation interview

Goal of the session - Evaluate the impact of tool use in the service

Session setting – In person, I will get together with the participant in a 30-45 min interview.

Data outcome – I will prepare printed materials to facilitate students' engagement throughout the interview and facilitate understanding the questions

What was the task prior to the interview? – To use the interface in a real setting (when using the Dutch Language outside the classroom). Since the test is carried out with a semi-functional prototype, responses will be documented with screenshots of the screens of the participants

Structure of the interview – The session will consist of the following sections:

- Consent form and data management (2 min)
- Introduction: goal session (2 min)
- Discussion of the three main topics: (1) interface flow, (2) interface design and (3) interface impact on current service (15-20 min)
- Wrap up (5 min)

This document contains several relevant questions, however, some questions might serve as inspiration and can be answered within previous questions.

Consent form and data management

I will prepare a printed consent form, where I will explain to the participant what data would be collected from this session, further use and processing. The format can be found in the appendix.

Introduction

Thank you for joining this session, let's begin with a small game: what was the last thing you eat?, could you tell me how did you feel after eating? (I will show some emojis to help the participant answer this question)

After a short conversation (2 min), well this was a short reflection exercise, which we will come back to after some minutes. Thank you for sharing the screenshots from your previous use. The goal of this tool is to help you know more about how you use your Dutch outside the class and in this session, we will talk about what you think the app and how did it helped you in the last days. Do you have any question or comment before we begin with the questions? Then let's begin!

Interface flow

1. I have printed the screenshots that you sent me, I see that you used it XX amount of times, why did you use it as such?
2. What do you think about the order of the questions (activity, description, resources, emotion, and sharing)?
3. Do you feel it was clear to follow?
4. Do you think it was easy to follow?
5. Was there enough information to guide you through the interface?
6. Is there something you feel was missing or was too much?
7. How much time did you invest in each story?

Interface design

I would like to talk about how the app looks, because it is important that these elements help and guide you through the experience. Could you tell me the following?

1. Do you think emojis helped you to describe your story? Why?
2. What do you think about the balance of text and images?
3. What would you change from the current design? Why?

Interface impact on current service

Now we will talk about what you learned from the interface, remember that the goal is to learn about how you use the language, it is not the intention to evaluate your writing or speaking abilities. Now, would you share with me:

1. Outcome
 - a. What do you think about your story?
 - b. What did you learn from completing your story?
 - c. Did you find any surprising thing?
2. Reflection upon outcome
 - a. What helped you think about your story?
 - b. Did you find it easy to complete your story?
 - c. How did you feel after completing your story?
 - d. Where were you when you complete this story? Were you alone?
3. Impact of interface
 - a. I see that you selected ____ (take a photo, send voice note or hold a group discussion) option to share your story, why do you think you selected it? Do you think you would select the same option in other stories?
 - b. What do you think your professor would learn from your story?
 - c. What do you think your classmates would learn from your story?
 - d. Would you use this interface more frequently during the Dutch course?
4. Is there something that you would like to change?

Wrap up

Thank you for sharing your experience, do you have anything extra that you would like to share? Or do you have any questions?

1.6 Samples of student's screenshots for validation sessions

Participant 1 - Reflection in-action

Professor concept validation interview (Draft)

Professors will be shown the screenshots of the students (1 or 2) as a reference throughout the session. There will be two professors in the session, and we will begin with an ice-breaker technique to sensitize them into the topic.

Interview materials – I will use the journey map developed through the project to inspire professors to think about a holistic scope.

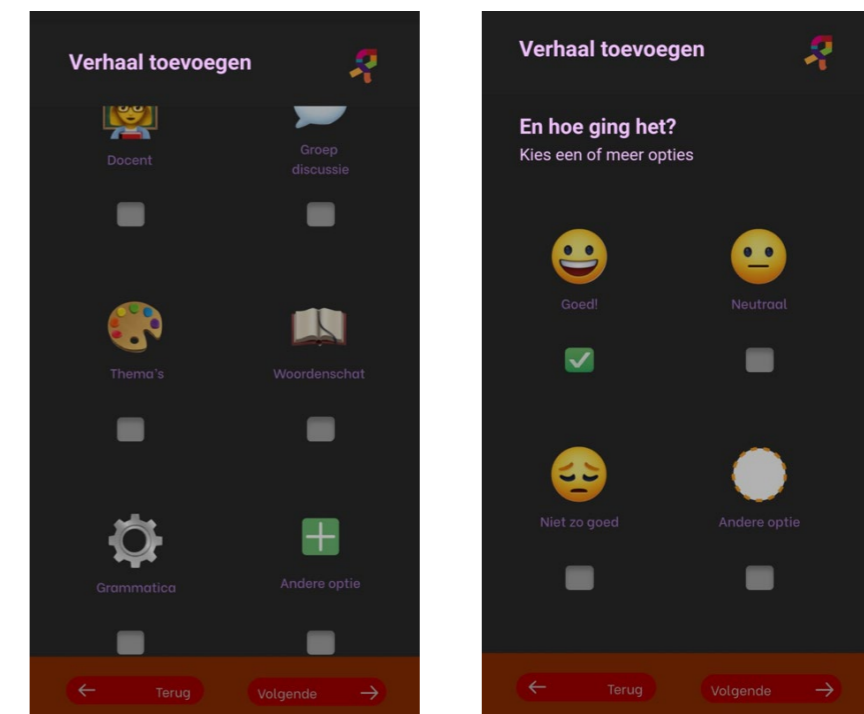
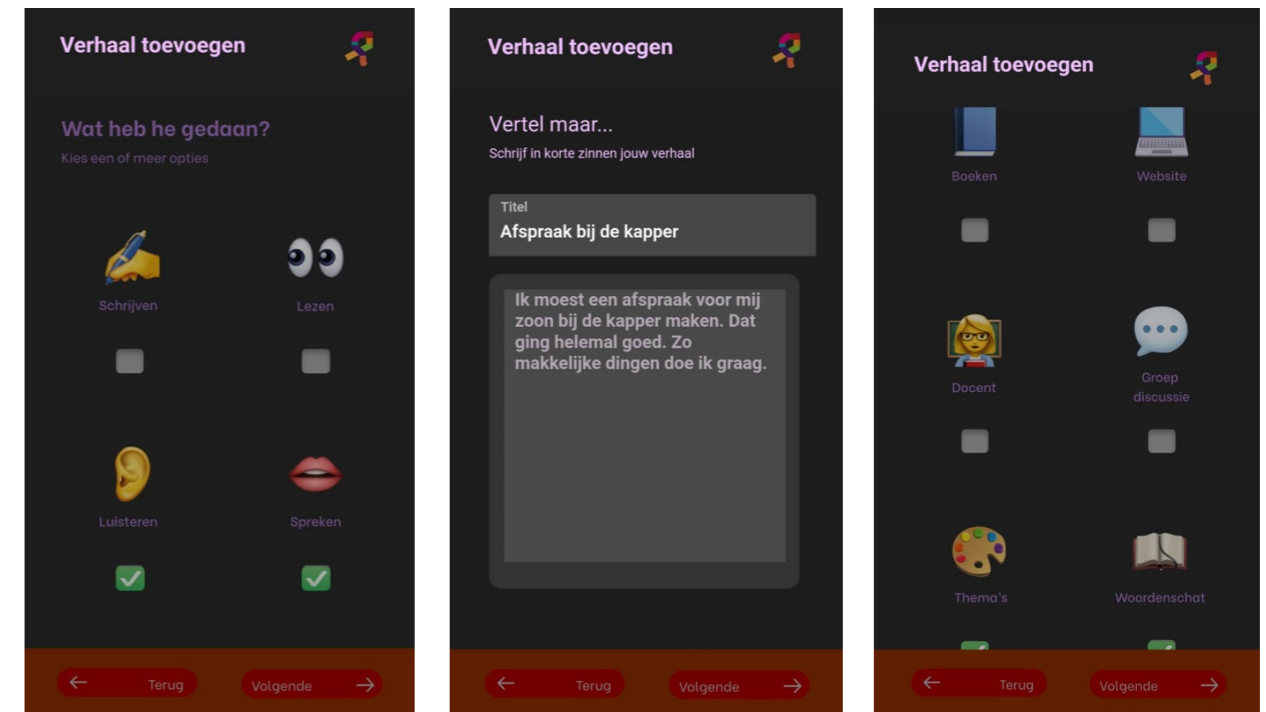
Interview goal – To understand what the impact of the stories for professors is and get ideas on how could it be implemented in their work.

Procedure:

1. Introduction
2. Stories exploration
3. Journey map game
4. Conclusions
5. Wrap up

Questions:

1. Stories exploration
 - a. What do you think about the story?
 - b. Do you see any surprising insight? Why?
 - c. Did you learn something similar throughout your class?
 - d. Do you implement this kind of practice in your class? When?
2. Interface evaluation
 - a. How relevant is the information from the screenshots for your work as professor? Why?
 - b. Do you think that this helps you better understand your students?
 - c. What do you think is the most important for you?
 - d. Is there something else that you would like to learn from your students' experiences?
3. Journey map game
 - a. Let's look at how the course looks like, when do you think you would like to use this kind of information from the interface? (Point out the moments) and why?
 - b. What would imply for you to use this interface in terms of preparation?
 - c. How often do you think you would like to learn from real experiences?
 - d. Do you think it will help you prepare for the classes?
 - e. How would you like to receive the information?
 - f. What would you do if you detect a trend from your students? (For example having negative experiences with health services?) To whom would you ask for support? (point out in the journey map)
4. Conclusions
 - a. Do you have any final thoughts on implementing this reflective practice within your courses?
 - b. What would you modify? What do you think works well?
5. Wrap up



Participant 2 - Reflection on-action

Participant 3 - Reflection in-action

The first screenshot shows the 'Verhaal toevoegen' screen with the question 'Wat heb he gedaan?' and four options: Schrijven (checked), Lezen, Luisteren (checked), and Spreken. The second screenshot shows the 'Verhaal toevoegen' screen with the question 'Vertel maar...' and a text input field containing 'Omgang met Nederlandse taal' and a text box with the text: 'Ik wil graag mijn Nederland te verbeteren omdat ik uiteindelijk kan werken zonder probleem met Nederlandse taal.' The third screenshot shows the 'Verhaal toevoegen' screen with a grid of icons: Boeken (checked), Website (checked), Docent, Groep discussie, Thema's (checked), and Woordenschat (checked). The fourth screenshot shows the 'Verhaal toevoegen' screen with the question 'Wat heb he gedaan?' and four options: Schrijven, Lezen (checked), Luisteren, and Spreken. The fifth screenshot shows the 'Verhaal toevoegen' screen with the question 'Vertel maar...' and a text input field containing 'Expositie in de bibliotheek' and a text box with the text: 'een document te printen, en daarna zie ik een expositie waar hangen photos en voorwerpen van de jaar 1920. Het was heel interessant, en ik heb bijna alles begrepen, maar sommige worden van onderwerpen wist ik niet, want zij waren heel oud. Er was niemand erbij waar ik vragen kunnen stellen.' The sixth screenshot shows the 'Verhaal toevoegen' screen with a grid of icons: Boeken, Website, Docent, Groep discussie (checked), Thema's (checked), and Woordenschat (checked).

The seventh screenshot shows the 'Verhaal toevoegen' screen with a grid of icons: Docent (checked), Groep discussie, Thema's, Woordenschat, Grammatica, and Andere optie (checked). The eighth screenshot shows the 'Verhaal toevoegen' screen with the question 'En hoe ging het?' and four options: Goed! (checked), Neutraal, Niet zo goed, and Andere optie. The ninth screenshot shows the 'Verhaal toevoegen' screen with the question 'Als je het leuk vindt...' and four options: Foto maken (checked), Spraakbericht maken, Deel je verhaal (checked), and Andere optie. The tenth screenshot shows the 'Verhaal toevoegen' screen with the question 'En hoe ging het?' and four options: Goed!, Neutraal (checked), Niet zo goed, and Andere optie. The eleventh screenshot shows the 'Verhaal toevoegen' screen with the question 'Als je het leuk vindt...' and four options: Foto maken (checked), Spraakbericht maken, Deel je verhaal, and Andere optie (checked).

1.7 Project brief

DESIGN FOR OUR future

6428

TU Delft

IDE Master Graduation

Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT

Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME

Save this form according the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy". Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1!

family name	<u>Mariana Pérez Contreras</u>	Your master programme (only select the options that apply to you):
initials		IDE master(s): <input type="checkbox"/> IPD <input checked="" type="checkbox"/> DfI <input type="checkbox"/> SPD
student number		2 nd non-IDE master: _____
street & no.		individual programme: _____ (give date of approval)
zipcode & city		honours programme: <input type="checkbox"/> Honours Programme Master
country		specialisation / annotation: <input type="checkbox"/> Medesign
phone		<input type="checkbox"/> Tech. in Sustainable Design
email		<input type="checkbox"/> Entrepreneurship

SUPERVISORY TEAM **

Fill in the required data for the supervisory team members. Please check the instructions on the right!

** chair	<u>Fernando Del Caro Secomandi</u>	dept. / section: <u>DOS</u>
** mentor	<u>Di Yan</u>	dept. / section: <u>SDE</u>
2 nd mentor	<u>Annelies De Boer</u>	
	organisation: <u>NL Training</u>	
	city: <u>Leiden</u>	country: <u>The Netherlands</u>

Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v.

Second mentor only applies in case the assignment is hosted by an external organisation.

Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

comments (optional)

Procedural Checks - IDE Master Graduation

APPROVAL PROJECT BRIEF

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

chair Fernando Del Caro Secomandi date 17 - 04 - 2023 signature Fernando Del Caro Secomandi

Digitally signed by Fernando Del Caro Secomandi
Date: 2023.04.17 17:14:36 +0200

CHECK STUDY PROGRESS

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

Master electives no. of EC accumulated in total: 12 EC YES all 1st year master courses passed
Of which, taking the conditional requirements into account, can be part of the exam programme 12 EC NO missing 1st year master courses are:

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

name Robin den Braber date 18 - 04 - 2023 signature _____

FORMAL APPROVAL GRADUATION PROJECT

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

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

Content: APPROVED NOT APPROVED

Procedure: APPROVED NOT APPROVED

comments

name Monique von Morgen date - KE 2/5/2023 signature MvM

Designing a participatory tool to support the Dutch learning process project title

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

start date 24 - 03 - 2023 end date 24 - 08 - 2023

INTRODUCTION **

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

The Netherlands is an international country, where people around the world find professional, academic, romantic, asylum opportunities (to mention some of them). One of the first challenges that people face upon their arrival is the Dutch language, even though English is well spoken in most of the activities, the understanding of Dutch is an essential part of the integration process. In order to achieve such integration, people get into learning the language, which involves gaining theoretical and practical knowledge, alongside its practice and exposure in the social context, which is an essential factor.

NL Training is a specialized organization that provides Dutch language courses to immigrants and expats, from basic to advanced. Their services are offered in different cities throughout the Netherlands, however for this project I will be working specifically in the location in Leiden. The groups are constituted by students with different cultural and professional backgrounds, which brings a diversity of experiences that makes the learning process interesting.

One of the learning objectives, within the services of NL Training, is that students are able to practice the language in real-life situations, which has been the main inspiration to this project, where I am going to make use of design to support and provide a different perspective to the educational development colleagues of NL Training.

The contribution from NL Training to this project is to support design activities by bringing the students and professors to participate and engage during the research, sharing knowledge related to the learning processes they currently use and provide insights from their current way of working.

The limitations for this project are the workload and availability of the participants, their language knowledge (Dutch, English, or native language), and could be the level of engagement during the courses.

space available for images / figures on next page

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 Initials & Name Mariana Pérez Contreras Student number 5504724
 Title of Project Designing a participatory tool to support the Dutch learning process

PROBLEM DEFINITION **

Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

The current Dutch learning process in NL Training is based on the acquisition of theoretical and practical knowledge in the format of courses that last around 6 months which include printed and digital material and take part in a classroom on location. Throughout the courses, the students can visualize their progress by filling in rubrics, which the professors can use as a reference to better support the students.

For this project, the learning experience offered by NL Training is considered as a service, where it is essential to bring aspects of the user experience to better understand the scope of the service. Translated to the context of the project: it means that it is necessary to gain a deeper understanding of not just the theoretical and practical knowledge, but of the application of such knowledge in real-life context and how is the experience that comes out of this application.

Current research on design and education are based on understanding which factors have an influence on the learning process (which can be named learning activity), such as epistemological resources, content and social interactions within education, but knowledge on how to understand the student's experience in real-life context is scarce. Therefore this project aims to explore possible ways to bring insights from the students as part of the factors that are currently scope of design and education.

By bringing insights from students' experiences, it won't just benefit the ongoing research on design and education, but will also provide professors with a better understanding on how to support students in a customized way, which represents a challenge in diversified groups.

ASSIGNMENT **

State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

The main assignment of the project is to develop a design intervention that helps understanding learning experiences in real-life contexts and enabling its reflection by using design methodologies, according to NL Training's scope.

The project will start with a literature review where I will deep dive into service design in the educational sector where I will take as an inspiration the ACAD (Activity Centered Analysis Design) model proposed by Carvalho and Goodyear (2017), where multiple aspects from the learning process as a service are presented and what is their implication within NL Training. At the same time I will research UCD (User Centered Design) theory, in participatory design specifically, to get a better understanding of the tools that can be used to bring user experience insights into the learning activity from the service design perspective.

After the literature review, I will carry out a co-design session with students and professors, where the main objective is to develop a design intervention through student's insights. For the session I will procure the materials needed, documentation and data analysis.

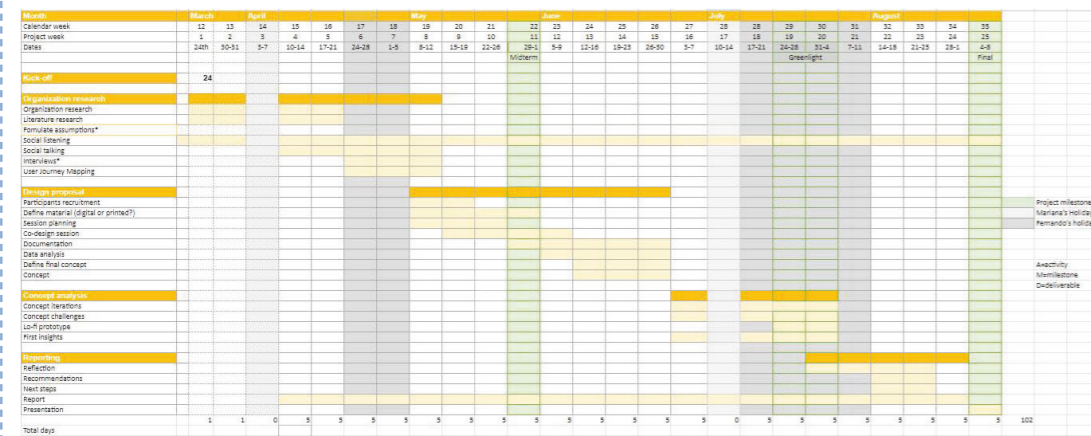
The main outcome will be, as mentioned previously, a lo-fi design intervention that will bring students real-life knowledge and experience, through its reflection, with the intention to provide professors with a deeper understanding of their students and contexts so then they can support learning activities, alongside with theoretical and practical knowledge. In addition, I will provide full documentation of the process, recommendations for iterations and further steps.

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PLANNING AND APPROACH **

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

start date 24 - 3 - 2023 end date 24 - 8 - 2023



MOTIVATION AND PERSONAL AMBITIONS

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

Self experience (Motivations):

- The initiative to carry out this project came from my personal experience while learning the language: I moved to the Netherlands just before pandemic times, which means that my integration process was isolated, and it was not just until I learned the language that I could feel more "home".
- People from my surroundings struggle with integrating in society due to the lack of the language, which can lead to mental health problems, isolation and desires to move back to the country of origin, which I find difficult to cope with, therefore I would like to intervene in such a learning process to improve the integrating experience.
- As a designer, I see this project as the perfect opportunity to bring the user voice to the learning process, and to contribute to the educational sector in a context where I was (or still am) part of the target group.

Ambitions (Learning goals):

- I would like to learn the dynamics of stakeholder management, where I am able to keep each party engaged during the process, listening to their needs and finding opportunities to keep a smooth process, including my interests as a designer.
- By doing this research, I aim to support NL Training's development, but I firmly believe that bringing students' contexts into the learning activity is a practice that can provide value in a broader sector than just language education, but also primary, secondary and academic education. This project can serve as inspiration for further educational challenges.
- Finally, polishing my abilities as a designer to carry out academic research that can be shared with non-academic organizations. I am familiar with the dynamic part of the process which is carrying out interviews and sessions, but working with theory is an aspect that I want to focus on during the project.

FINAL COMMENTS

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