

| APPENDIX

The Language of Reflection:

**A Linguistic Exploration of Reflection
Written by Design Students**

Master Graduation Project

Strategic Product Design

Deflt University of Technology

Faculty of Industrial Design
Engineering

August 2023

Nupura Kulkarni

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APPENDIX A: GRADUATION BRIEF

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.

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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 Kulkarni
 initials NC given name Nupura
 student number _____
 street & no. _____
 zipcode & city _____
 country _____
 phone _____
 email _____

Your master programme (only select the options that apply to you):

IDE master(s): IPD Dfl SPD

2nd non-IDE master: _____

individual programme: - - (give date of approval)

honours programme: Honours Programme Master

specialisation / annotation: Medisign

Tech. in Sustainable Design

Entrepreneurship

SUPERVISORY TEAM **

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

** chair Peter Lloyd dept. / section: DOS - MOD
 ** mentor Senthil Chandrasegaran dept. / section: DOS - MOD
 2nd mentor _____
 organisation: _____
 city: _____ country: _____

comments
(optional)
:
:
:

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.

APPROVAL PROJECT BRIEF

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

 chair Peter Lloyd date 22 - 03 - 2023 signature _____

CHECK STUDY PROGRESS

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

 Master electives no. of EC accumulated in total: 30 EC

 YES all 1st year master courses passed

 Of which, taking the conditional requirements into account, can be part of the exam programme 30 EC

 NO missing 1st year master courses are:

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

ID4070 IDE Academy (4,0)

Variant for Engineers

 name Robin den Braber date 29 - 03 - 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

- the missing course ID4070 should be finished before the green light meeting

comments

 name Monique von Morgen date - KE 4/4/2023 signature _____

Understanding Reflection in Design: A Linguistic Analysis Approach 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 06 - 03 - 2023 01 - 09 - 2023 end date

INTRODUCTION **

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

Reflective practice is an important part of professional development, especially in the field of design. Reflection allows designers to critically review their work, evaluate their decision-making, and discover areas for improvement. In recent years, the use of technology in design, such as machine learning and artificial intelligence tools, has become increasingly prevalent. These tools can be of great help to designers in understanding their reflective practices.

Donald Schön's (1983) theory of reflective practice has an impact on many industries, including design. According to Schön's (1983) theory, professionals typically reflect in order to get a deeper understanding of their work and continuously enhance their skills. Gillie Bolton (2010) describes the reflective practice as paying critical attention to the practical values and theories which inform everyday actions, by examining practice reflectively and reflexively. This leads to developmental insight. Reflective practitioners don't simply look back on their previous actions and events; they also consciously examine their emotions, experiences, behaviors, and responses. Using this information contributes to his or her existing knowledge base and helps in attaining a higher level of understanding (Paterson & Chapman, 2013). Basically, stepping back from the action permits critical reflection on a sequence of events. Reflective practice in the design field may assist designers to reflect on their work and make improvements that lead to more effective design solutions. Donald Schön sees designing as a reflective conversation with a situation. The theory of the reflective practice describes the two main types of reflection, namely, reflection-in-action (thinking about doing while doing it) and reflection-on-action (thinking about doing after doing it). In both types, the experience of the designer contributes to the quality of the reflection and its contribution to the novelty of the outcome. Therefore, developing an approach for examining the reflective behaviour of novice and experienced designers can help in understanding their reflective practice. Studying all these different types of reflections and their impact on the design process and the designers involved can also help in identifying new roles for different people involved in this process (like facilitators and designers).

Recent years have seen a transformation in the way we do research and analysis due to the rapid developments of machine learning and artificial intelligence. Understanding human behavior through linguistic analysis of verbal or text representations is one area in which these technologies have proven particularly beneficial. To aid in this study, tools such as LIWC and Empath have been developed, allowing researchers to get insight into patterns and themes within text data that could otherwise go overlooked. Researchers can gain an insightful understanding of human behavior and thought processes by utilizing machine learning and linguistic analysis, which has the potential to advance numerous fields and applications. The software tool LIWC, developed by Pennebaker and colleagues (Tausczik & Pennebaker, 2009), analyzes spoken or written language and clusters words according to their linguistic properties. LIWC is fast, simple to understand, and extensively validated. Empath, on the other hand, is a tool developed by Fast, Chen, and Bernstein (Fast et al., 2016) that is more versatile than LIWC in certain ways since it uses a living corpus that is mined from the modern text on the web. Empath enables researchers to quickly create and test new lexical categories.

The goal of this research project is to use machine learning tools like LIWC and Empath to understand the linguistic characteristics of reflection, which will help researchers gain a better understanding of how designers reflect. This project aims to identify the types and quality of reflections as well as develop a new linguistic dictionary for reflection by examining the reflections of design students.

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introduction (continued): space for images

TO PLACE YOUR IMAGE IN THIS AREA:

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- **CLICK AREA TO PLACE IMAGE / FIGURE**

PLEASE NOTE:

- **IMAGE WILL SCALE TO FIT AUTOMATICALLY**
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image / figure 1: _____

TO PLACE YOUR IMAGE IN THIS AREA:

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image / figure 2: _____

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 focus of this study project will be on examining design students' reflections during the Design Theory and Methodology course (DTM). Students submit final reflections on their learning process about design theory and methods as part of this course. The goal of this research study is to develop a new linguistic dictionary for reflection that will help in examining students' reflections, classifying different types of reflections done by students, and assessing the quality of their reflections.

The research project will address the issue of the need for a deeper understanding of design students' reflective practices in design theory and methodology courses. Reflective thinking is seen as an important component of the design process since it enables designers to assess their efforts and make improvements. Manual content analysis of self-reported reflections is one of the most common traditional methods of evaluating reflective thinking, however, it can be biased and unreliable. In order to comprehend reflective thinking, there is growing interest in applying machine learning and linguistic analysis (Ullmann, 2019).

Also, the other problem that my graduation project seeks to address is the limited capability of current reflective practice tools (like LIWC and Empath) in analyzing the type and quality of reflection done by design students. In order to comprehend the complexities of reflection in design approaches, it is clear that tools for machine learning and linguistic analysis like LIWC and Empath have some limits. These techniques were created to analyze the psychological meaning of words and emotions in text, as noted in the literature (Tausczik & Pennebaker, 2009; Fast et al., 2016), although they might not fully capture the complex linguistic characteristics of reflection.

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.

Creating value for design researchers by providing a more objective and reliable method of evaluating reflective thinking and understanding reflective practices of design students using machine learning and linguistic analysis.

The main goal of this research is to develop a method using linguistic analysis to examine design students' final reflections in the Design Theory and Methods course. By using machine learning and linguistic analysis to understand the reflective practices of design students, this project will provide insights into the cognitive processes and decision-making strategies used in design. These insights can help design educators and practitioners in organizations to develop more effective design teaching methods, improve design processes and outcomes, and develop new tools and technologies to support the design process.

Objectives:

1. Conduct a literature review on reflection, reflective practices in design education, linguistic analysis and tools for linguistic analysis.
2. Collect a dataset of reflective writing samples from design students with the approval from ethics committee to analyze the linguistic characteristics (using tools like LIWC or Empath).
3. Developing the dictionary specific to reflection using the dataset, validating it and updating the dictionary accordingly: An iterative process.
4. Develop a method to automatically classify reflective writing based on its linguistic characteristics to assess the quality of reflections.
5. Exploring the potential of the developed approach through a small case study to analyze a different dataset.

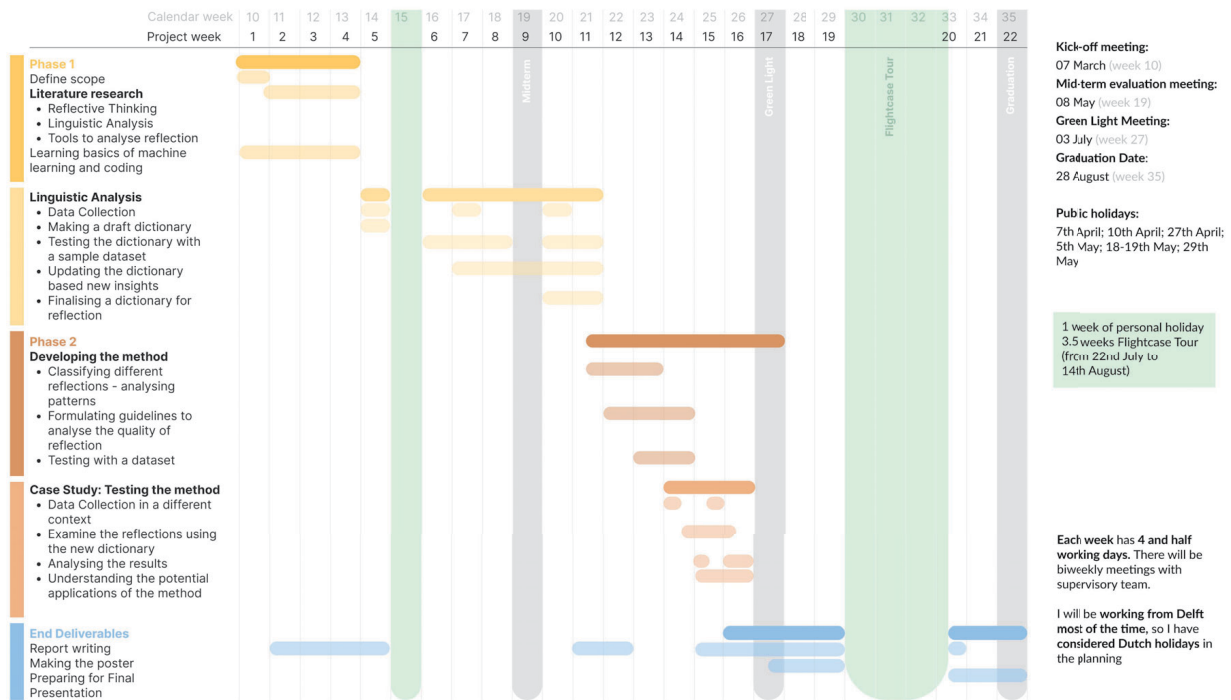
PLANNING AND APPROACH **

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 6 - 3 - 2023

1 - 9 - 2023

end date



The initial phase of the project will involve a thorough literature review of reflection, reflective practices in design, and linguistic analysis to gain a better understanding of the language of reflection. This will provide a strong foundation for developing the dictionary and the subsequent analysis of reflective writing samples.

The core of the approach in this project is to build a dictionary that can identify reflection and assess the quality of reflection based on linguistic analysis. The linguistic analysis is a critical component of this project as it allows for the development of an automated method for classifying reflective writing and assessing its quality. This approach consists of an iterative process of creating and validating the dictionary using a dataset of reflective writing samples from design students. The process involves testing the dictionary, analyzing the results, and updating the dictionary accordingly until the desired amount of accuracy is reached.

After creating the dictionary and validating it with the reflective writing samples from design students, the next step is to develop a method to automatically classify reflective writing based on its linguistic characteristics to assess the quality of reflections. This is where the dictionary comes into play, as it will serve as the backbone of the method.

Once the dictionary is developed, the next step is to explore the potential of the developed approach through a small case study to analyze a different dataset. This small case study will allow us to see how well the dictionary performs in a different context and to further demonstrate the potential of this approach in assessing the quality of reflective writing.

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.

As an electronics engineer now pursuing a Master's degree in Strategic Product Design at the Department of Industrial Design Engineering, I am fascinated by the impact of Artificial Intelligence (AI) on the field of design and the design process. I am very eager to begin a graduation project that will investigate the different roles that AI may play in design and innovation.

I've had the opportunity to study the intersection of design thinking and business strategy as a student of strategic product design, and I feel that bringing reflective practice into this discipline is critical for driving organizational success. I am aware that the rapidly changing business environment in which strategic designers function can provide substantial problems. I'm looking forward to investigating how reflective practice might assist strategic designers in navigating these challenges and creating more effective solutions that support organizational success. Previously, I had the opportunity to work with IBM on a project that studied the value tensions that develop when using AI in the banking industry. Throughout this project, I grew increasingly aware of the effect that artificial intelligence will have on our lives in the near future. This inspired me to investigate the potential applications of AI in design and its impact on the design process further. My interest in this area was sparked even more during the 'Machine Learning for Designers' class, where we experimented with several AI tools like GPT3 and DALL.E. It was fascinating to see how these technologies might influence how we design in the future. Using previous research as a foundation, I did a literature study on how AI-generated visual and text stimuli could improve the quality and novelty of ideas created during group brainstorming sessions. This prompted me to propose a combination of AI-generated visual and text stimuli for use in group brainstorming sessions to boost creativity.

Considering my background in electronics engineering and strategic design, I am optimistic that I can contribute to understanding how AI will affect the future of designers and how design consultancies will adapt to this transformation in the near future. As a result, I am eager to work on a graduation project that dives deep into this topic, not just to improve my personal skills and knowledge but also to contribute to the broad field of strategic product design.

References used in the brief:

- Bolton, G. (2010). *Reflective Practice: Writing and Professional Development*. Sage Publications Ltd. Fast, E., Chen, B., & Bernstein, M. S. (2016). Empath. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. <https://doi.org/10.1145/2858036.2858535>
- Paterson, C. R., & Chapman, J. G. (2013). Enhancing skills of critical reflection to evidence learning in professional practice. *Physical Therapy in Sport*, 14(3), 133–138. <https://doi.org/10.1016/j.ptsp.2013.03.004>
- Schön, D. A. (1983). *Reflective Practitioner: How professionals think in action*. Basic Books.
- Tausczik, Y. R., & Pennebaker, J. W. (2009). The Psychological Meaning of Words: LIWC and Computerized Text Analysis Methods. *Journal of Language and Social Psychology*, 29(1), 24–54. <https://doi.org/10.1177/0261927x09351676>
- Ullmann, T. D. (2019). Automated Analysis of Reflection in Writing: Validating Machine Learning Approaches. *International Journal of Artificial Intelligence in Education*, 29(2), 217–257. <https://doi.org/10.1007/s40593-019-00174-2>

FINAL COMMENTS

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

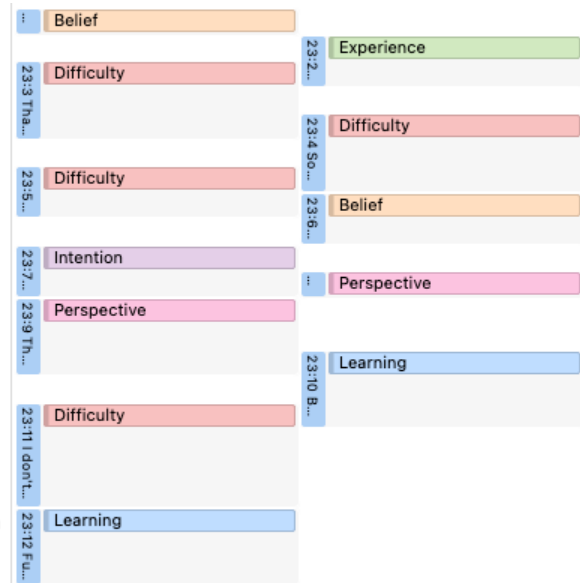
APPENDIX B: REFLECTION COMPONENTS CASE STUDIES

In this section, the examples of reflections for each reflection component are presented. The coded reflection followed by the LIWC case study of that reflection highlighting the specific LIWC categories related to that reflection component is provided.

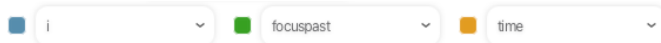
01 EXPERIENCE

ID 23: Coded Reflection

How could this essay change my future practice as a designer?
As a beginning designer, I usually have a hard time making choices in the design process. That is because I want to base my choices on methods to substantiate, validate, and justify my choices to stakeholders, coaches, clients, etc. Sometimes the outcome of a method goes against my intuition or gut feeling, but I still prefer not to listen to it. The reason for this is that I want to be able to substantiate and justify my choices. Besides, I feel that I do not yet have enough experience to have developed a good intuition.
Therefore, I will also continue to use design methods in my future design projects. It ensures that one does not make a biased choice. The criteria provide that all options are considered when making a decision, no opportunities are overlooked, and the choices can be substantiated. But I have started to realise through this essay that when I have a strong gut feeling that I should make a choice other than the result that comes out of the method, I should listen to it. I don't have much working experience as a designer, but I have built up a good foundation by following a good design course and learning from experienced designers, which is also the basis of our intuition. Furthermore, I now believe that we as designers must use our intuition because this is what distinguishes us from other disciplines, such as engineers.



ID 23: LIWC Case Study¹



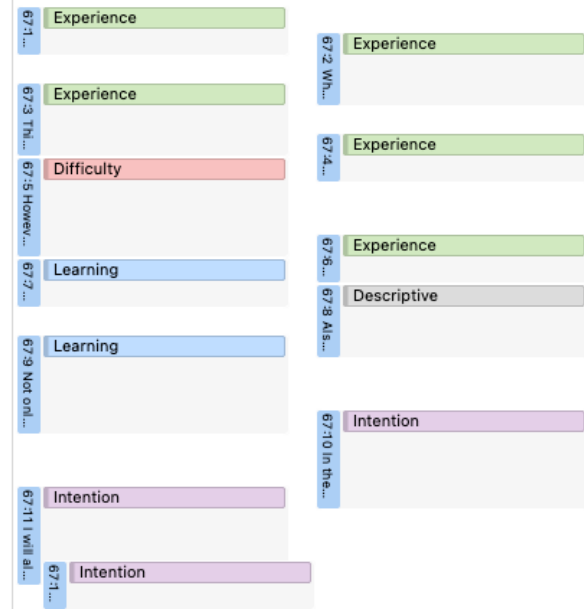
How could this essay **change my future** practice as a designer? As a **beginning** designer, **I usually** have a hard time making choices in the design process. That is because **I** want to base **my** choices on methods to substantiate, validate, and justify **my** choices to stakeholders, coaches, clients, etc. **Sometimes** the outcome of a method goes against **my** intuition or gut feeling, but **I** still prefer not to listen to it. The reason for this is that **I** want to be able to substantiate and justify **my** choices. Besides, **I** feel that **I** do not **yet** have enough experience to have developed a good intuition. Therefore, **I** will also **continue** to use design methods in **my future** design projects. It ensures that one does not make a biased choice. The criteria provide that all options are **considered when** making a decision, no opportunities are overlooked, and the choices can be substantiated. But I have **started** to realise through this essay that **when I** have a strong gut feeling that **I** should make a choice other than the result that comes out of the method, **I** should listen to it. **I** don't have much working experience as a designer, but **I** have built up a good foundation by following a good design course and learning from experienced designers, which is also the basis of our intuition. Furthermore, **I now** believe that we as designers must use our intuition because this is what distinguishes us from other disciplines, such as engineers.

¹ It should be noted that in the LIWC case studies, the order in which the categories are selected affects the color coding due to the overlap in the dictionaries for some LIWC categories. For example, the word 'started' belongs to 'time' and 'focuspast' LIWC categories but since focuspast has the priority it's highlighted in green.

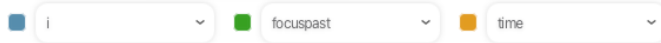
01 EXPERIENCE

ID 60: Coded Reflection

This topic bothered me when I was working on my previous design project. When I first started studying design as an undergraduate, I often followed my intuition and used design methods to justify it due to a lack of proficiency in design methods. This approach would usually remove my designs from the initial design requirements and add unnecessary functionality. Later on, I would often use the design method formulaically, hoping that all design results would be reasoned out. However, this stalled my designs, and I often wandered from taking the first step to generating a design idea. And the resulting design concepts did not sell well to clients. As a result of the DTM course, I explored this issue very well in the recommended reading list. I was able to understand the relationship between intuition and design methods. Also, when using design methods, one should always be ready to change and even innovate new ideas for the project itself. Not only that, but I found that there are ways of studying design methods and conducting qualitative and quantitative research, which gave me an insight into design theory research. In the future, I will continue to learn more about new and innovative design methods without losing sight of the project context in which each method is used, focusing on how experienced designers have used and adapted the methods and analysing more case studies. I will also revisit my past projects and reflect on my design process and whether there was a better way of doing things and the reasons for failure. I will consider more about the process for upcoming projects and focus more on the project itself.



ID 60: LIWC Case Study



This topic bothered me when I was working on my previous design project. When I first started studying design as an undergraduate, I often followed my intuition and used design methods to justify it due to a lack of proficiency in design methods. This approach would usually remove my designs from the initial design requirements and add unnecessary functionality. Later on, I would often use the design method formulaically, hoping that all design results would be reasoned out. However, this stalled my designs, and I often wandered from taking the first step to generating a design idea. And the resulting design concepts did not sell well to clients. As a result of the DTM course, I explored this issue very well in the recommended reading list. I was able to understand the relationship between intuition and design methods. Also, when using design methods, one should always be ready to change and even innovate new ideas for the project itself. Not only that, but I found that there are ways of studying design methods and conducting qualitative and quantitative research, which gave me an insight into design theory research. In the future, I will continue to learn more about new and innovative design methods without losing sight of the project context in which each method is used, focusing on how experienced designers have used and adapted the methods and analysing more case studies. I will also revisit my past projects and reflect on my design process and whether there was a better way of doing things and the reasons for failure. I will consider more about the process for upcoming projects and focus more on the project itself.

02 BELIEF

ID 42: Coded Reflection

Before all, I have to acknowledge that I didn't understand the design vision at all before writing this article, and I didn't think about whether I should consider longer-term goals or benefits in each design practice. As criticized in the reference, I prefer to deal with ""small issue"" to ""big issue"", because ""small issue"" is easier to be noticed and handled. There was a time when I considered whether to start to consider a ""big issue""; But I gave up because I felt I didn't have such capability to deal with it. After writing this article, I think it's time to take a longer view and consider more about social responsibility as a designer and the life goal as a person. In the following study, I will consciously consider the design vision and keep reviewing whether my design vision is in a safe area. On the one hand, I am worried that too many design visions or biases will affect my judgment; On the other hand, I hope they can provide me with more inspiration and motivation. Just like the conclusion I got in this article, I think design vision is very valuable as a good tool broadening the vision of designers. At present, I am very interested in the role of design vision in the formation of problem framework; I hope that in my next design practice, in the stage of analyzing problems, I will take myself as an observation sample, introduce the design vision and observe what it brings to me. After that, I will learn from experience. I hope it can be integrated into my design methodology as a supplement to enrich my knowledge framework. In the end, I want to pick up some topics that I have put aside for a long time. I have been wondering whether I can use design to help people think about them.

48:1 Bef...	Experience	48:2 As...	Difficulty
48:3 Th...	Difficulty	48:4 Art...	Belief
48:5 Int...	Intention	48:6 On the...	Belief
48:7...	Belief	48:6 On the...	Feeling
48:9 No...	Intention	48:8...	Belief
48:1...	Intention	48:1...	Intention
48:1...	Belief	48:1...	Intention

ID 42: LIWC Case Study

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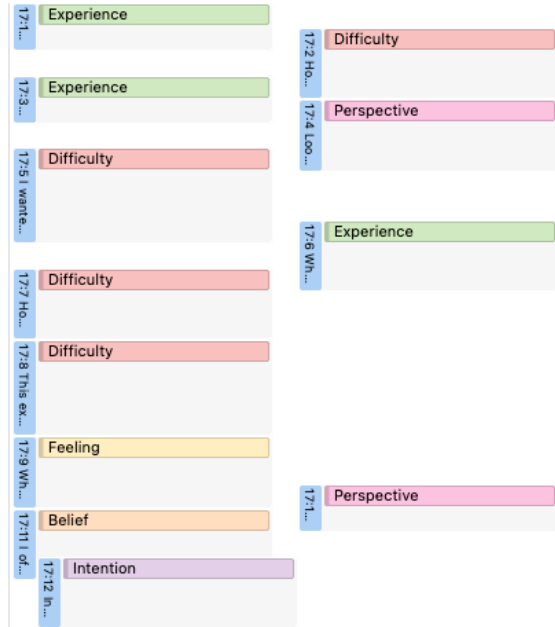
Before all, I have to acknowledge that I didn't understand the design vision at all before writing this article, and I didn't think about whether I should consider longer-term goals or benefits in each design practice. As criticized in the reference, I prefer to deal with ""small issue"" to ""big issue"", because ""small issue"" is easier to be noticed and handled. There was a time when I considered whether to start to consider a ""big issue""; But I gave up because I felt I didn't have such capability to deal with it. After writing this article, I think it's time to take a longer view and consider more about social responsibility as a designer and the life goal as a person. In the following study, I will consciously consider the design vision and keep reviewing whether my design vision is in a safe area. On the one hand, I am worried that too many design visions or biases will affect my judgment; On the other hand, I hope they can provide me with more inspiration and motivation. Just like the conclusion I got in this article, I think design vision is very valuable as a good tool broadening the vision of designers. At present, I am very interested in the role of design vision in the formation of problem framework; I hope that in my next design practice, in the stage of analyzing problems, I will take myself as an observation sample, introduce the design vision and observe what it brings to me. After that, I will learn from experience. I hope it can be integrated into my design methodology as a supplement to enrich my knowledge framework. In the end, I want to pick up some topics that I have put aside for a long time. I have been wondering whether I can use design to help people think about them.

03 DIFFICULTY

ID 17: Coded Reflection

In previous projects I have had the tendency to try to quickly formulate a goal or design vision in order to get going. However, this has sometimes led to making assumptions about the situation and target group based on previous experiences and my own beliefs and interests. This was definitely the case during my Bachelor End Project. Looking back I recognize the avoidance of uncertainty as described by Tracey and Hutchinson (2016) and the preference effect (Nikander et al., 2014). I wanted to create a product that brought nature into the home in a way that increases happiness and serenity, but didn't have a clear enough idea of what people appreciate about nature and how they interact with it. When I got stuck halfway through the project, I forced myself to take a day to just sit in the park and observe, even though deadlines were approaching and this seemed like a waste of time. However, these observations enabled me to more clearly envision what I wanted my product to offer the user and ultimately led to a breakthrough.

This experience has caused me to take more time at the beginning of a project to analyze the case and formulate a goal, but to also be open to a change in perspective or direction with new insights and input as I get further into the project. Where I can still improve is daring to put my ideas to the test sooner. When I am excited about an idea, a fear of having to accept that it doesn't meet the needs or wishes of the user can result in me keeping it to myself for too long. The three cases analyzed by Crilly and Moroşanu Firth (2019) show the negative result of only staying in your own head. I often think that in order to test something with valuable results, the exact right participants, prototypes and environment are needed. In future project I want to work on letting this go and try out play making (Liao and Person, 2015) to literally put myself in another's shoes and put things to the test in a simple and interactive way.



ID 17: LIWC Case Study



In previous projects I have had the tendency to try to quickly formulate a goal **or** design vision in order to get going. **However, this has** sometimes **led to making** assumptions about the situation and target group **based** on previous experiences and my own beliefs and interests. **This** was definitely the case during my Bachelor End Project. Looking back I recognize the avoidance of uncertainty as described by Tracey and Hutchinson (2016) and the preference **effect** (Nikander et al., 2014). I wanted to create a product **that** brought nature into the home in a way **that** increases happiness and serenity, **but didn't have** a clear enough idea of **what** people appreciate about nature and **how** they **interact** with **it**. When I got stuck halfway through the project, I **forced** myself to take a day to just sit in the park and observe, even **though** deadlines were approaching and **this** seemed like a waste of time. **However, these** observations **enabled** me to more clearly envision **what** I wanted my product to offer the user and ultimately **led** to a breakthrough. **This** experience **has caused** me to take more time at the beginning of a project to analyze the case and formulate a goal, **but** to also be open to a **change** in perspective **or** direction with new insights and input as I get further into the project. Where I **can** still improve **is** daring to put my ideas to the test sooner. When I **am** excited about an idea, a fear of having to accept **that it doesn't** meet the **needs or** wishes of the user **can result** in me keeping **it** to myself for too long. The three cases analyzed by Crilly and Moroşanu Firth (2019) show the negative **result** of only staying in your own head. I often think **that** in order to test **something** with valuable **results**, the exact right participants, prototypes and environment **are** needed. In future project I want to work on letting **this** go and try out play **making** (Liao and Person, 2015) to literally put myself in another's shoes and put **things** to the test in a simple and **interactive** way.

04 PERSPECTIVE

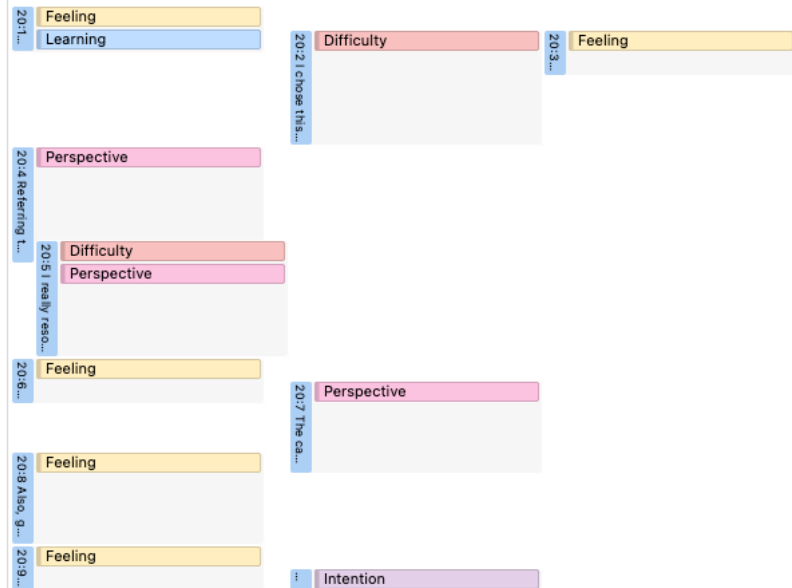
ID 20: Coded Reflection

This topic was really challenging and provided me a lot of insight on my own design practices. I chose this question because design visions really intrigue me, especially in a global business or organizational context where most projects tackle multi-faceted and possibly wicked problems.

Referring to the paper by Huybrechts et al., I can feel a connection to their approach through one of our courses: Design Roadmapping, in which we articulated our visions in the form of extensive future-oriented visual artifacts. I really resonated with their research because repoliticising design is definitely a need for today, where we need to change our visions to target not just the smaller issues but bigger, complex problems as well.

Crilly and Firth's research on creativity and fixation was also an inspiring one. The case studies being very relatable, I could see a lot of myself in them and it helped me reflect on my own methods and how I tackle fixation. Also, getting stuck and fixated is one of the most frustrating parts of the design process and knowing that even experienced designers struggle with it also provides some relief.

I don't feel satisfied with the amount of research I have currently done on this topic and plan to explore it more.



ID 20: LIWC Case Study

shehe they quantity focuspresent discrep

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05 FEELING

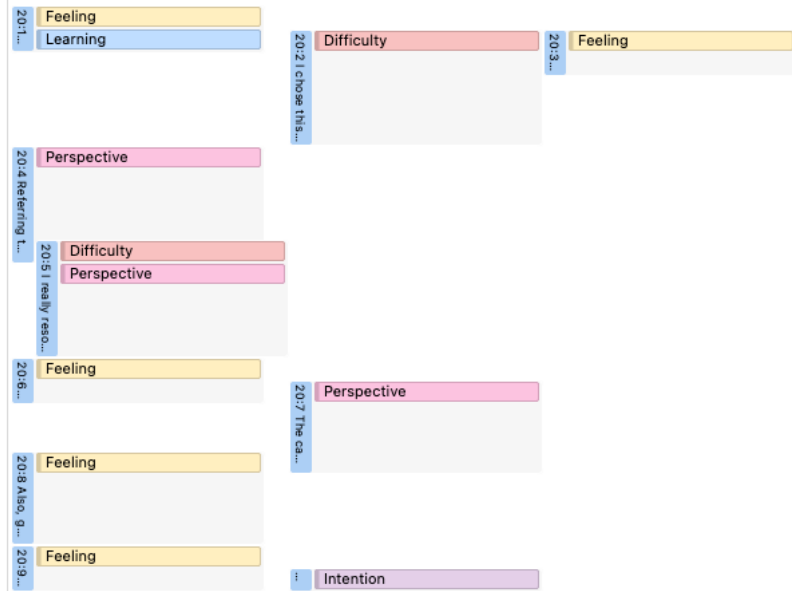
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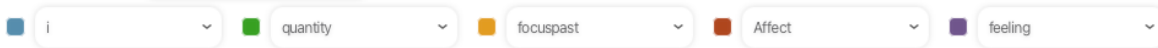
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ID 20: LIWC Case Study

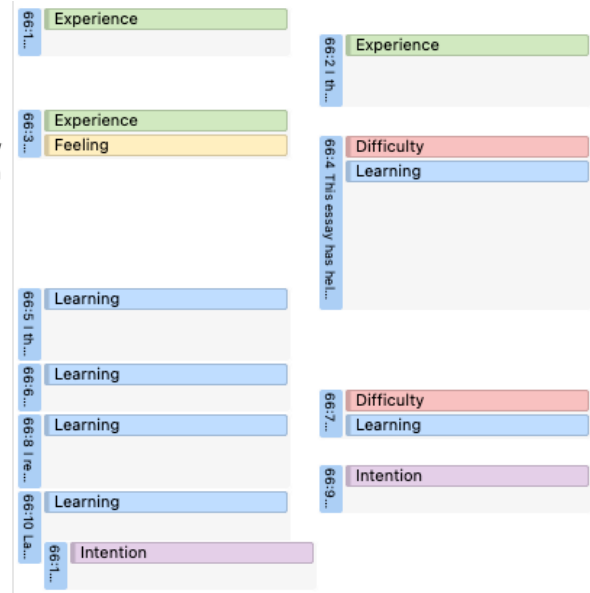


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06 LEARNING

ID 59: Coded Reflection

Writing this essay was very useful to consciously think about the decision-making process in the design process. I think it was very interesting to evaluate both of the options and look at the benefits and drawbacks of both trusting your intuition and using a design method. During the design process, I have sometimes felt stressed about how to choose a concept, or what direction to continue working into. This essay has helped me to realize that the manner in which to come to a decision is not as important, first of all because I realized that there does not exist such a thing as 'the right decision', and secondly because both manners of coming to a decision offer different benefits and drawbacks and both could be more beneficial in a specific situation compared to the other. I think it is good to realize that there are two strategies for making a decision which can be seen as equally appropriate depending on the situation, and could be considered equally as an option. Furthermore, I learned the importance of learning both strategies to get the hang of it. This essay helped me to realize that not only intuition needs to be learned, but using a design method as well. I realized the importance of seeking apprenticeship for both manners of making decisions, and I will try to ask for more advice and feedback in future decision-making processes. Lastly, I realized that I unconsciously make many decisions simply because my paradigms point me in specific direction. In future design practice, I will try to become more conscious about this, and try to consciously consider different alternatives.



ID 59: LIWC Case Study



Writing this essay **was** very useful to **consciously think** about the **decision-making** process in the design process. **I think** it **was** very interesting to **evaluate** both of the options and look at the benefits and drawbacks of both trusting your **intuition** and using a design method. During the design process, **I** have sometimes **felt** stressed about **how** to **choose a concept**, or what direction to continue working into. This essay has **helped me** to **realize** that the manner in which to come to a **decision** is not as important, first of all because **I realized** that there does not exist such a thing as 'the right **decision**', and secondly because both manners of coming to a **decision** offer different benefits and drawbacks and both could be more beneficial in a specific situation compared to the other. **I think** it is good to **realize** that there are two strategies for making a **decision** which can be **seen** as equally appropriate depending on the situation, and could be **considered** equally as an option. Furthermore, **I learned** the importance of **learning** both strategies to get the hang of it. This essay **helped me** to **realize** that not only **intuition** needs to be **learned**, but using a design method as well. **I realized** the importance of seeking apprenticeship for both manners of making **decisions**, and **I will** try to ask for more advice and **feedback** in **future decision-making** processes. Lastly, **I realized** that **I** unconsciously make many **decisions** simply because **my** paradigms point **me** in specific direction. In **future** design practice, **I will** try to become more **conscious** about this, and try to **consciously consider** different alternatives.

07 INTENTION

ID 14: Coded Reflection

In the light of everything learned through this course and through all of the given articles and pod- casts, I will be more confident in using my previous experience in my design process. I knew from my previous experience in design, even though I'm just at the beginning of my design journey, that experience really does make a difference and can make your design process either more structured or more courageous, but in any case, it definitely makes you a better designer, and this research has confirmed that. In the future, I will try to incorporate all my experience in my process, from knowing what actions to avoid and which to always do, to using personal experience, such as guided introspection, as a design method, in order to provide the best possible human- centered design. I am looking forward to getting more experience in designing, and being able to use it to better my designs and design processes.

14:1 In the l...	Intention	14:2...	Experience
14:4 In the future, l...	Intention	14:3 I knew from my...	Belief Difficulty
14:5 I a...	Intention		

ID 14: LIWC Case Study

i focusfuture achieve

In the light of everything learned through this course and through all of the given articles and pod- casts, I can say that I will be more confident in using my previous experience in my design process. I knew from my previous experience in design, even though I'm just at the beginning of my design journey, that experience really does make a difference and can make your design process either more structured or more courageous, but in any case, it definitely makes you a better designer, and this research has confirmed that. In the future, I will try to incorporate all my experience in my process, from knowing what actions to avoid and which to always do, to using personal experience, such as guided introspection, as a design method, in order to provide the best possible human- centered design. I am looking forward to getting more experience in designing, and being able to use it to better my designs and design processes.

08 DESCRIPTIVE

ID 43: Coded Reflection

Before writing assignment 3 with the topic of trusting design methods or intuition in decision making, I have not thought about the main factors that support my decisions. After writing and thinking, I believe that it is necessary to consider design methods as one of the most important roles in the selecting stages for many reasons. These reasons are discussed in the paper above. Design methods provide ways for designers to generate information, validate designs, seek new inspirations and more. I have deeper learning on the design methods' usage. Design methods can make our design process more structured when feeling lost in the design. In the paper, I discussed that design methods have diverse use. The flexibility brings the ability that we can use design methods in different circumstances in the design stages. Design is multipipeline work and requires processing much information. Design methods are ways we could generate and convert useful information. We can use design methods to transfer information to a meaningful outcome. For learning about design methods, designers should not limit themselves only to knowing how to use them. We should also think of the inner logic of design methods themselves and integrate them into our professional practices innovatively. Design methods can be evaluated, developed, and changed to fit in many designs' contexts. It is not a fixed concept but can be optimized. Furthermore, intuition is interesting, and I think it is designers' natural that is different between individuals. But clear reasonings for decisions for the design process is necessary. The existence of intuition is based on previous experience and learning. It can also be because of other reasons that can be easily ignored. For example, not being familiar with methods that implement in the process, unclear connections between different design methods' elements and lack of converted information that support design decisions.

49:1 Bel...	Experience	49:2 Att...	Belief
49:3 ...	Descriptive	49:4 ...	Descriptive
49:5 ...	Experience	49:9 ...	Descriptive
49:6 ...	Experience	49:7 ...	Descriptive
49:8 ...	Descriptive	49:1 ...	Descriptive
49:1 ...	Belief	49:12 Fo...	Descriptive
49:13 W...	Difficulty	49:1 ...	Descriptive
...	Descriptive	49:1 ...	Belief
49:1 ...	Difficulty	49:1 ...	Descriptive
49:1 ...	Difficulty	49:20 F...	Difficulty

ID 43: LIWC Case Study

they focuspresent discrep cause differ

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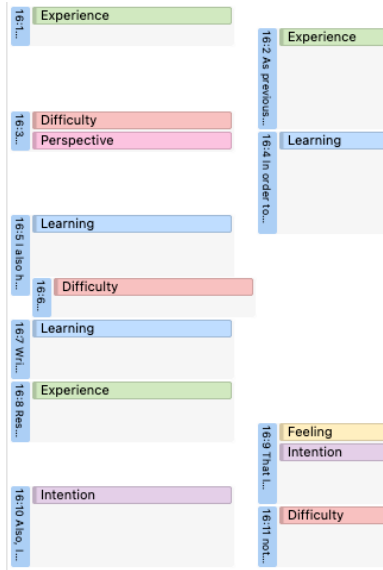
APPENDIX C: GRADE RANGE EXAMPLES

In this section, the examples of reflections for all four grade ranges (Excellent [E], Good [G], Moderate [M], and Poor [P]) are presented with the coded reflection, grade and coach's comment for that reflection.

01 EXCELLENT [E]: HOLISTIC NARRATORS

ID 16 | Grade 10: Coded Reflection

My experience of the design process and what I expect from myself have changed. As previously, I have been aiming for an Evidence-Based Decision- Making model of the design process; after understanding the role of abstract patterns within the design process, I aim to trust my intuition more and don't rationalise every next gambit with factual evidence. Therefore I aim my design process to follow the model of Directed creative exploration (Adams et al, 2011). In order to achieve that adaptability of the design process and master reflection-in-action, I realise I still lack my experience in design (3 years) and the library of schemata and gambits to be more confident in my design process. I also have made a particular observation on my previous experience within the law (8 years), that the type of abstract thinking used within the law to create a schematic model of a particular relationship is helping me to "see" the structure. However, I still am de learning the analytical way of approaching the problems. Writing the essay helped me realise that personal leans and a particular uncommon way of framing the problems, which is an imprint of a lived experience, is a strong factor in building expertise. Resolving my ontological "why" and serving a greater purpose for the benefit of society was motivating me to explore the unknown "frames" and take risks within my project. That I will continue to embrace, understanding that brings me confidence and reinforces my confidence to negotiate my way of seeing within the professional environment. Also, I will include drawing a schematic representation of my design process in every project, not only as a means to communicate the work to the client but as a reflection and learning point for my expertise development.



COACH'S COMMENT

Excellent reflection that engages well with the themes covered in the essay. Good work!

01 EXCELLENT [E]: IN-DEPTH EXPLORERS

ID 17 | Grade 10: Coded Reflection

In previous projects I have had the tendency to try to quickly formulate a goal or design vision in order to get going. However, this has sometimes led to making assumptions about the situation and target group based on previous experiences and my own beliefs and interests. This was definitely the case during my Bachelor End Project. Looking back I recognize the avoidance of uncertainty as described by Tracey and Hutchinson (2016) and the preference effect (Nikander et al., 2014). I wanted to create a product that brought nature into the home in a way that increases happiness and serenity, but didn't have a clear enough idea of what people appreciate about nature and how they interact with it. When I got stuck halfway through the project, I forced myself to take a day to just sit in the park and observe, even though deadlines were approaching and this seemed like a waste of time. However, these observations enabled me to more clearly envision what I wanted my product to offer the user and ultimately led to a breakthrough. This experience has caused me to take more time at the beginning of a project to analyze the case and formulate a goal, but to also be open to a change in perspective or direction with new insights and input as I get further into the project. Where I can still improve is daring to put my ideas to the test sooner. When I am excited about an idea, a fear of having to accept that it doesn't meet the needs or wishes of the user can result in me keeping it to myself for too long. The three cases analyzed by Crilly and Moroşanu Firth (2019) show the negative result of only staying in your own head. I often think that in order to test something with valuable results, the exact right participants, prototypes and environment are needed. In future project I want to work on letting this go and try out play making (Liao and Person, 2015) to literally put myself in another's shoes and put things to the test in a simple and interactive way.



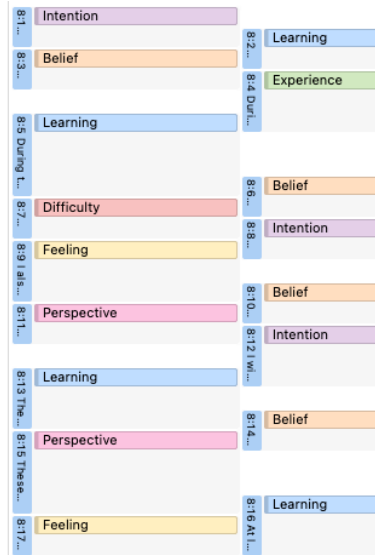
COACH'S COMMENT

Well written reflection that connects with the concepts discussed in the paper. Nice work!

02 GOOD [G]

ID 8 | Grade 8: Coded Reflection

Not only the knowledge that I gained from reading the papers is something I will take with me in my future design. Also the journey of writing this essay was helpful for my future design career. Reflecting is something that I do a lot subconsciously. During my minor Education I had to write down a lot of my reflection on paper so you will not forget the recommendations that you wrote to yourself. During this time I recognized the value of writing down your reflection and during this realisation moment I also saw the value of raw sketching in design. To me this is a way of analysing, observing, reflecting and progressing in one go. Therefore the paper of the logbook was the most confirming to me. The reflective sketching is therefore one of the things I will definitely take with me in my future design practice. I also liked the papers that discussed Schön's theory of reflection in/on/for action and the podcast about this subject. I saw reflection as one broad concept with a lot of different form to act on it. Because of these definitions a lot of thoughts became more clear to me. I will definitely observe myself in the future and reflect on which way of reflection I am using. The last thing that really helped me is realizing that conscious reflection can also be used during a process and does not always have to be afterwards. The methods you use to reflect are most of the time after you already got a design. These papers showed me that during a process you don't always have to trust on you natural reflection, but you can also reflect on purpose by using a method that works for you. At last I learned a lot of writing this essay, because it is my first expository essay and it is nice to have something to reflect on later.



COACH'S COMMENT

Good connections between two of the papers discussed in the essay and reflection, but it would have been better to engage thematically with the content such as having a personal vision, reflecting on instances from experience where fixation was helpful/harmful etc.

03 MODERATE [M]

ID 7 | Grade 7: Coded Reflection

The reason I chose this subject for my essay was that I have always appreciated the value of reflecting in general and certainly within the design process. However, reflection used to be just looking back at my process to me, but this essay made me realise that there are multiple types of reflection that each serve different purposes. Formulating the purpose of a reflection first will therefore help me greatly during my future reflective practices, because it makes you think about your reflective approach and gives structure during the otherwise vague and confronting reflection activity. I also established that reflecting, even in the smallest iterations, is a conscious process that requires effort. On the one hand does this seem like an exhausting process, but on the other hand does this mean that I can always influence my reflective state, which would not be the case if it was an unconscious process. I also found that reflecting can be trained, which improves the overall quality of the reflection and causes the reflective practices to require less effort as they become routine (which does not make them less essential). In my essay I did not go into detail what is the right scaffolding for learning to reflect, but a huge part comes down to just doing it as much as possible. This once again shows the complex nature of design: being a good designer requires good reflective practicing, but being able to this requires you to be a good designer. Lastly, I also learned that I can never foresee all unintended consequences and I have come to accept this. They might be surprises or discoveries which improve my design project and help me with reflecting for future projects. This is the process of me gaining experience and marks my growth as a designer.



COACH'S COMMENT

The reflection could have done more to connect to the themes covered in the reference articles. As such it reflects on whether and how methods and intuition should be balanced and mentions the Method Mindset concept, but does not go much beyond it.

04 POOR [P]

ID 45 | Grade 6.5: Coded Reflection

From a mechanical engineering background, we were taught the importance of following the scientific or design method in order to create a successful design. Reflection is often dismissed, not taken seriously, or merely an extra graded assignment at the end of the course. Although from the readings and this essay, I have determined it to be not enough without the inclusion of reflective practices and it will negatively impact my future as a designer without these careful considerations. Reflection not only benefits the project but us as designers to determine and evaluate our strengths and weaknesses through on-going learning. I believe that there is no such thing as an expert designer due to the fact we are always evolving with the current trends and there is always new knowledge to acquire to develop meaningful products. Even though growth of the trends is something we cannot control, we can control how we can be prepared or react in these contexts to successfully tackle them. Something that I can take into consideration and work to implement more often is reflection-in-action. We think of reflection as, "if you had the chance to redo this project, what would you do differently?" when it is more of adapting to the current context and being able to think on your feet. In the end, this is a useful practice to carry onto my future practice as a designer and to be relayed to those under me.

51:1 From...	Experience	51:2 Refl...	Descriptive
51:3 Althoug...	Intention	51:4 Refl...	Difficulty
51:5 I believ...	Belief	51:6 Refl...	Difficulty
51:7 So...	Intention	51:8 Ew...	Belief
51:9 In L...	Learning	51:9 Refl...	

COACH'S COMMENT

The language used here (and also in the essay) is quite difficult to follow. Try and state what you mean more clearly. There is some reflection and thoughts about future practice.

ID 19 | Grade 6: Coded Reflection

As a designer I have always had a rather strong sense of how things should be. So coming up with a vision for a design was never really a problem for me. The question whether these visions were actually forms of bias never occurred to me though. Digging into the provided literature and writing the essay made me realize that I should be more aware of this. The most significant insight for me came from (2021). More often than not we as designers take the design problem for granted. Of course I usually try to create a little more freedom by taking the widest interpretation of the problem. However, in the end the given design problem is what should be solved. When working with a client it would be interesting to see how framing the problem in a more innovative manner could help design more creative solutions. The clients needs to be open to this though. I am also curious to know whether this effect still holds when one is aware of the reframing because it makes you biased about the framing of the question. Another concept that is very applicable to my style of designing is fixation as described in (Crilly & Moroşanu Firth, 2019). I get fixated on an idea rather quickly. In most design projects I have had until now I had an idea at an early stage and went with it. The advantage of this was that it made me work efficiently. It would be a good practice though to reflect more often during the process and formulate the original design problem in different ways during the process.

19:1 ...	Belief	19:2 So...	Experience
19:3 The...	Experience	19:4 Desig...	Learning
19:5 ...	Perspective	19:6 Mo...	Perspective
19:7 Of...	Belief	19:8 Ho...	Difficulty
19:9 When w...	Intention	19:1 ...	Descriptive
19:11 am also c...	Difficulty	19:1 ...	Feeling
19:13 An...	Perspective	19:1 ...	Belief
19:15 In...	Experience	19:16 Th...	Difficulty
19:17 It woul...	Learning		

COACH'S COMMENT

The reflection engages somewhat with concepts of framing and fixation. It would have been better to show a greater engagement with the themes that should have been addressed in the essay.

APPENDIX D: WORD CLOUDS FOR SELECTED LIWC CATEGORIES

In this section, the words that were used in the reflections by the design students are presented in the form of word clouds for selected LIWC categories (ones that can be used as the indicators of reflection components). These word clouds show the variation between frequency occurrence of these words.

01 I (FIRST PERSON SINGULAR)



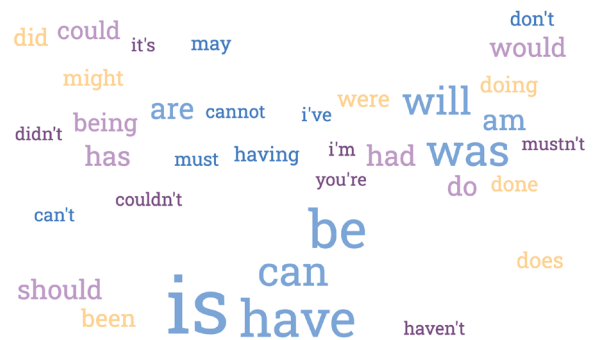
05 IPRON (IMPERSONAL PRONOUNS)



02 SHEHE (THIRD PERSON SINGULAR)



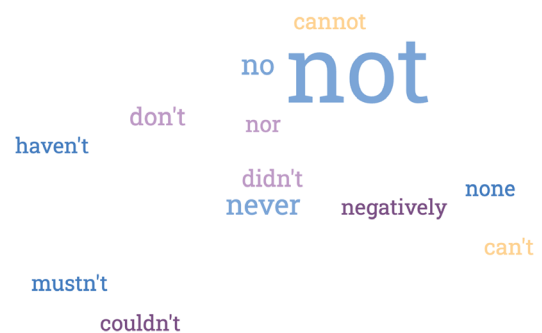
06 AUXVERB (AUXILIARY VERB)



03 THEY (THIRD PERSON PLURAL)



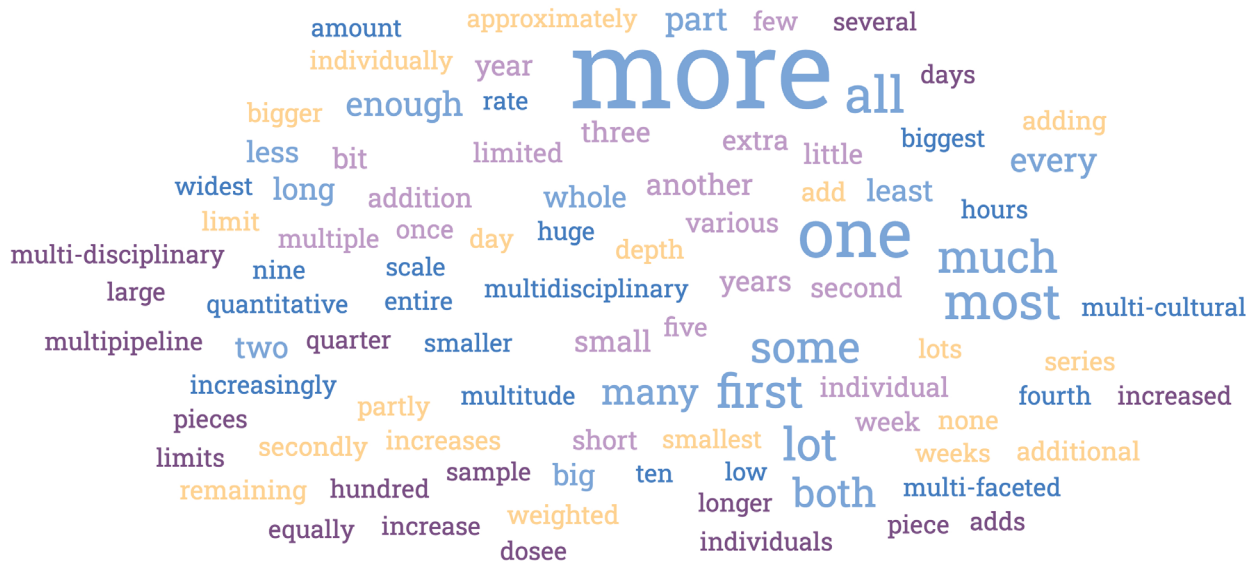
07 NEGATE



04 FEELING



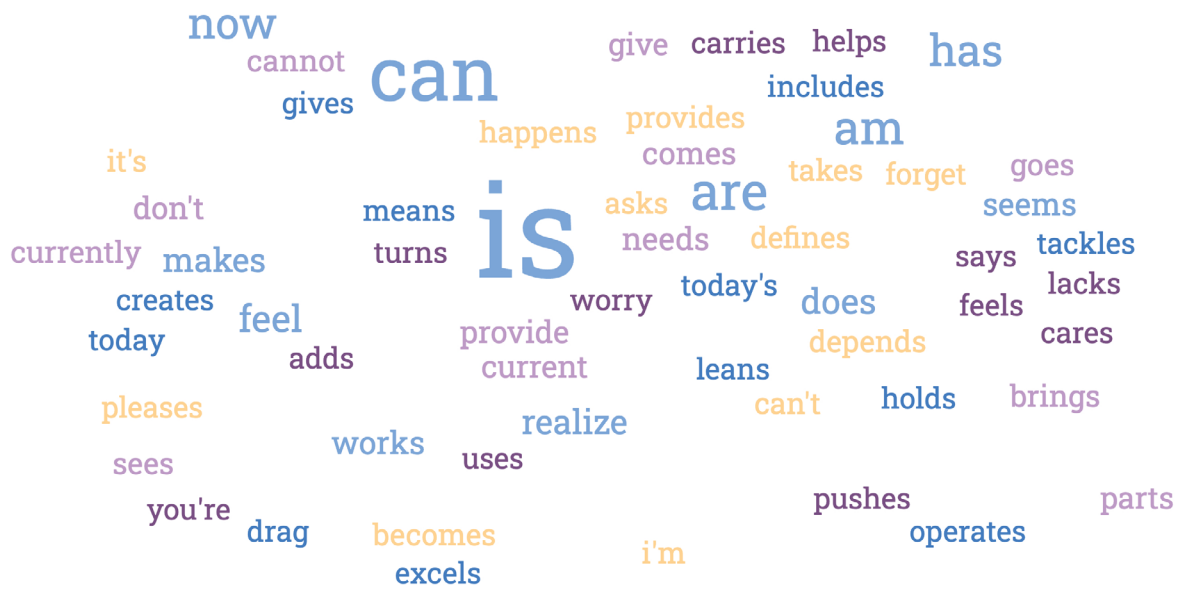
08 QUANTITY



09 ACHIEVE



18 FOCUSPRESENT



19 FOCUSFUTURE

