APPENDIX

Interviews with mapping process

In these three interviews I used the mapping process to break down the experience of IDE Academy with three students who finished IDE Academy. The focus was the general experience of the course.

RESEARCH QUESTIONS

Can Interviews with mapping be used as a method to unveil tacit knowledge?

Can the results be used to create a taxonomy?

Can I collect the data efficiently?

I asked: How was the experience in IDE Academy? Then I unpacked with mapping process*. The three common questions were: What cause (x)? What happend? What do you think about (x)

*   pg. 36

👥 PARTICIPANT

3 students who finished the course IDE Academy

📋 RESULTS

Two of the three students identified that IDE Academy pushed them to make choices and they recognized to think about their future when choosing. On the contrary the other student enjoy the fail free environment,

✯✯ CONCLUSION

- The interview is very long and does not go in to depht.
- The interviewer lead the thought process of the participant.
- The data differ in quality.

METHOD
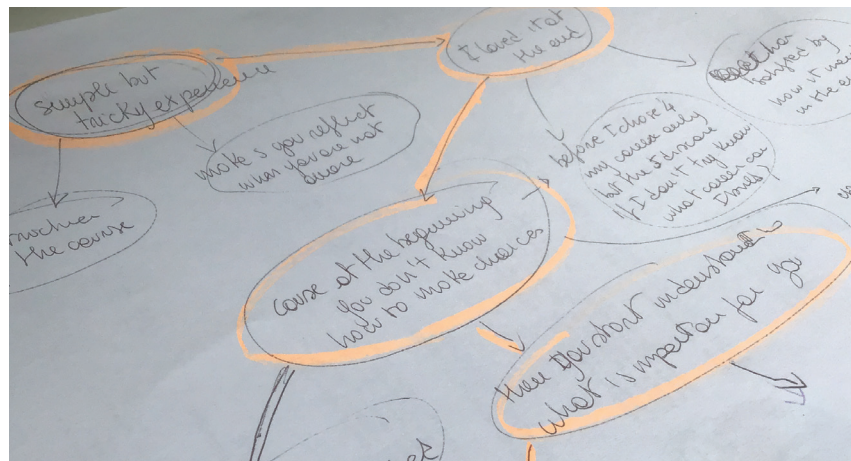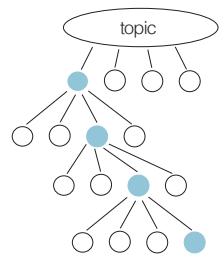
Probes with mapping process

In these probes I asked students to reflect after participating in a workshop. The focus is not on the overall experience of the course but on the workshops.

RESEARCH QUESTIONS

Can probes with mapping process be used as a method to unveil tacit knowledge?

Can the results be used to create a taxonomy?

Can I collect the data efficiently?

Student sent vocal message or text message to the interviewer after attending a workshop.
Students reflected on:
What I think I have learned?
What caused the learning?
What happened?
Why do I believe this is important?

👥 PARTICIPANT

8 students who currently follow IDE Academy

📋 RESULTS

Some students reconsidered some of their assumptions about their attitude towards a certain topic. Other student reported the explicit knowledge in the workshop. The results have been analysed qualitativly and with a
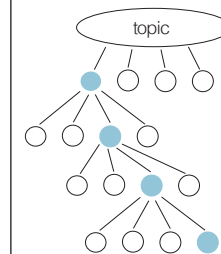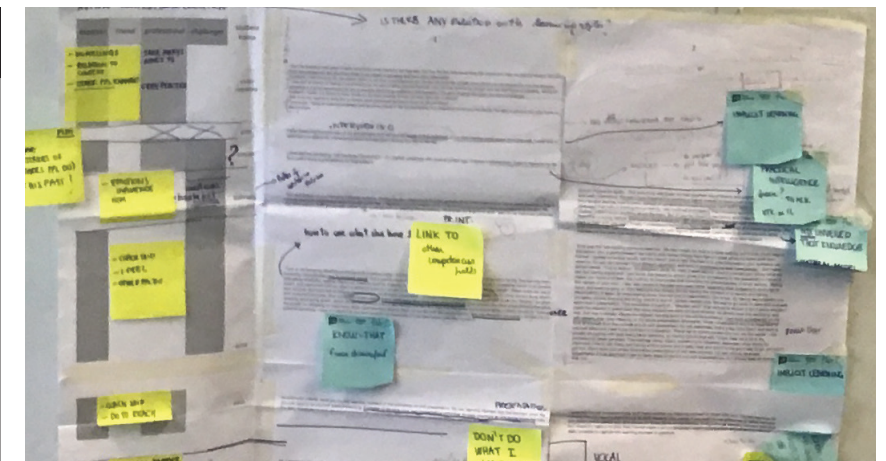
✯✯ CONCLUSION

- The collection of the data takes a long time.
- High level of interpretation by the interviewer.
- The data highly differ in quality.

METHOD

Simplified version

Probes with metaphors

In these probes I asked students to identify a metaphor to describe the workshop and then to answer three contextual questions. The metaphor has been used as an entry point to ask contextual questions.

RESEARCH QUESTIONS

Can probes with metaphors be used as a method to unveil tacit knowledge?

Can the results be used to create a taxonomy?

Can I collect the data efficiently?

PARTICIPANT

4 students who currently follow IDE Academy

RESEARCH   10" min–2weeks

Students used a metaphor to describe the workshop. Then I used the metaphor to ask these questions:
What does it mean to you?
What caused that?
What happened then? Why?

RESULTS

These results refers to the same workshop, therefore they are more comparable than the previous one. The metaphors create an easier understanding for the interviewer. The perceptions of the same workshop
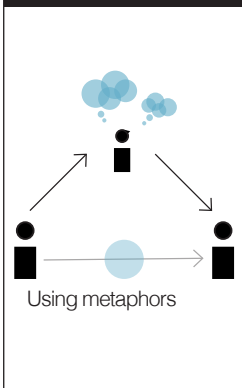
CONCLUSION

- The metaphor involves some abstraction and training of the participant.
- The data become more similar, although the number of reflection was higher.

METHOD

Using metaphors

Interview with Repertory Grid Technique

In this interview I used repertory Grid Technique to evaluate the experience of the course, IDE Academy. The student and I follow the steps of the Repertory Grid used in literature.

RESEARCH QUESTIONS

Can Interview with RGT be used as a method to unveil tacit knowledge?

Can the results be used to create a taxonomy?

Can I collect the data efficiently?

PARTICIPANT

2 students who finished IDE Academy

RESEARCH   4" hours

Workshop's experiences are compared to each other. The participants identify the similarities and differences among the workshops and then are asked to reflect upon the perceived similarity and difference.

RESULTS

The results are rich in depth. The participant noted his struggle in balancing openess with effectivness when learning. He noted it is his struggle when designing. The results are quite close to show
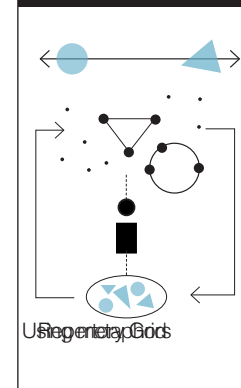
CONCLUSION
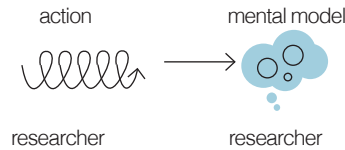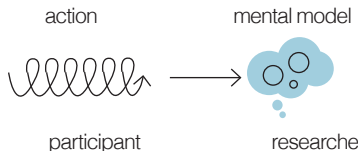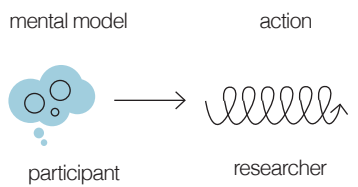
- The procedure is time and energy consuming. (I experienced as participant)
- The data trigger reflections in the participant.
- The data collected is

METHOD

Using Repertory Grids

VISUAL SUMMARY CYCLE A

Comparing the findings, the method used and the role of researcher and participant.
Then I explain which way to unveil I wil continue explore further.

	Insights from the research	**Results on the way to unveil**	**What is found by who**[*]
Interview with mapping process	Students have different overall experiences about the IDE Academy course. The course seem to trigger a sort of intuitive decision making .	The researcher leads the conversation. Mental model are hidden.	action → mental model / researcher — researcher
Probes with mapping process	When students are asked about their learnings, some of them only identify the explicit knowledge given by lecturer.	Mental model are hidden. The researcher higly interpret the data.	action → mental model / participant — researcher
Probes with metaphors	Students experience workshop differently.	Perspectives are more explicit, but the researcher higly interpret the data. The metaphors do not work with all the participants.	action → mental model / participant — researcher
Interview with Repertory Grid	Student noted the same struggles in learning and in designing.	Perspectives are quite explicit. The participant unveil his own mental model.	mental model → action / participant — researcher

REPERTORY GRID

I decided to proceed with Repertory Grid Technique which **directly unveil perspectives**, considering:

- **data results consistent** in quality and they are comparable to one another
- the participant reflect in **depth on the data**, and they look into details.
- the researcher can be not involved in the creation of the perspectives, thus can influence less the participants when reflecting on the mental model.
- **the data of the two participant became a trigger of discussion** between the two participants.
- the lenght and **complexity** of Repertory Grid Interview needs to be adressed.

Main insight
To unveil TK participants should unveil it themeselves.

In the next section I will show the basis of Repertory Grid and the further development of the research.
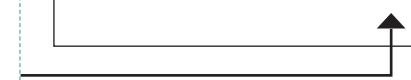
REPERTORY GRID

In this section I explain Repertory Grid and how it is structured, then I show on what I developed the tool further.

As I previously mention RGT is based on Kelly's Theory who claimed that people make use of very personal criteria "construct", which are used to construe a meaningful world. The construct is based on the polarity of the dichotomy the individual apply when make sense of something.

From Bjorklund (2008, pg 5):
*"The use of the RGT involves agreement on a **Topic;** the identification or provision of a series of cases, examples, or, in Kelly's terminology, "**Elements**"; and the use of a tightly structured interview in which a systematic comparison of elements enables the respondent to identify "**Constructs,**" i.e., the ways he or she has of making sense of, or construing, the elements. Constructs are frequently expressions of intuitions, [..] which the individual uses as a guide to action, without necessarily having verbalized them explicitly prior to the interview."*

On the right the visual to explain the steps to follow in a repertory grid technique interview.

In the next section I show on what the method needs to be developed.

Topic of the interview

1

Anything can be an element as long as
it is a sample related to the topic of the interview.

2

The elements are given in a triad to the participant multiple times.
In an interview the participant devolps aroun 5-7 contructs.

The construct is created by the participant answering the question:
"Can you choose two of this triad of elements, which are in some way alike and different from the other one?"
and then:
Define with one or two words each pole to remind you what you are thinking about when separeting the elements.

3

The elements are rated using the constructs as poles.

Plan for developing the tool
From the previous interview with Repertory Grid I found points to develop further. The points to discuss are: elements, constructs, reflection, efficiency and analysis.

ELEMENTS

What is the element that works best?
Understanding what elements work best and in which form is essential for unveiling perspectives
i.e. specific moments, learning moments, workshops..

Elements identifyed by the participant at the beginning of the session

Elements rephrased through the session
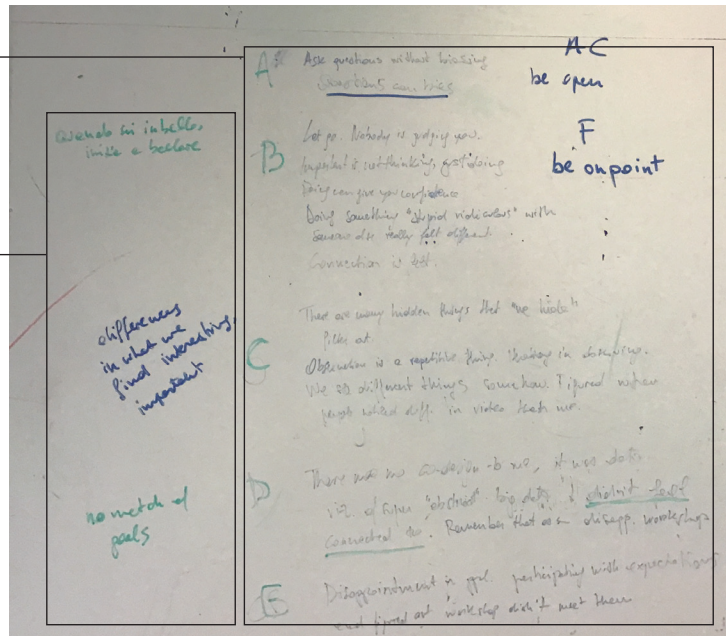
Elements on a white board from Repertory Grid Interview

CONSTRUCTS

How to express construct?
i.e. using words, concepts of words..

One participant struggled with one word

practice   be supported by practice

REFLECTION

How to trigger reflection on the construct?
In the Repertory Grid Interview I discovered that to reflect on the construct is important to create a trigger i.e. questions, dialogue or ..

The reflection has been triggered by the similarity of two pairs of constructs the two participant had.
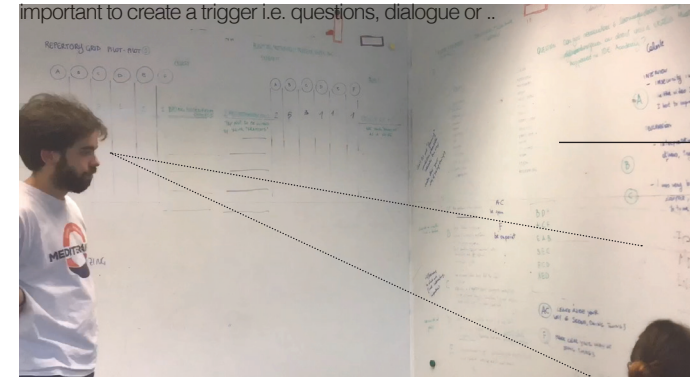
Discussion on constructs from Repertory Grid Interview

EFFICIENCY

How can be less energy and time consuming?

4H
4 PAIR OF

The participants struggled to mantain attention.

ANALYSIS

What data work best to analyse?
The data collected from Repertory Grid Technique is carried manually or by softwer to analyse the relationship among construct and among elements.
The rating among construct and elements becomes relevant if participants related to the same elements. In this research students have do not follow the same workshop or do not have the same learnings, therefore I need to find an alternative way to analyse the data.

Iteration of exploration from unveiling perspectives to unveil the hidden curriculum

RESEARCH QUESTIONS

Can a Group RGT Interview be used as a method to unveil tacit knowledge?

Can the results be used to create a taxonomy?

Can I collect the data efficiently?

PARTICIPANT

3 students who finished IDE Academy

WHAT HAPPEND

The participants are asked to think about 5 moments of learning in IDE Academy. They compared their learning with the RGT. They immediately started sharing their experience with one another. At the end of eliciting the constructs, they looked at them as overall and they speculate on the meaning that they have for them and for future students of IDE Academy.

ELEMENTS

The elements are moments of learning in any workshop. I asked the participants: what happened? What did you learn? Why do you think you learned it?

CONSTRUCTS

Constructs have a couple of words. They have been asked to try to use less words as possible.

REFLECTION

I asked the participants to look at the wall (fig.x) and look at the similarities of the pair of constructs among each other.

EFFICIENCY

I facilitate the session. Structuring the elements helps the efficiency. Having a general reflection helps to reduce time.

ANALYSIS

We analyse the data togheter with the group, I asked them I would they approach these results and what the results speak to them.
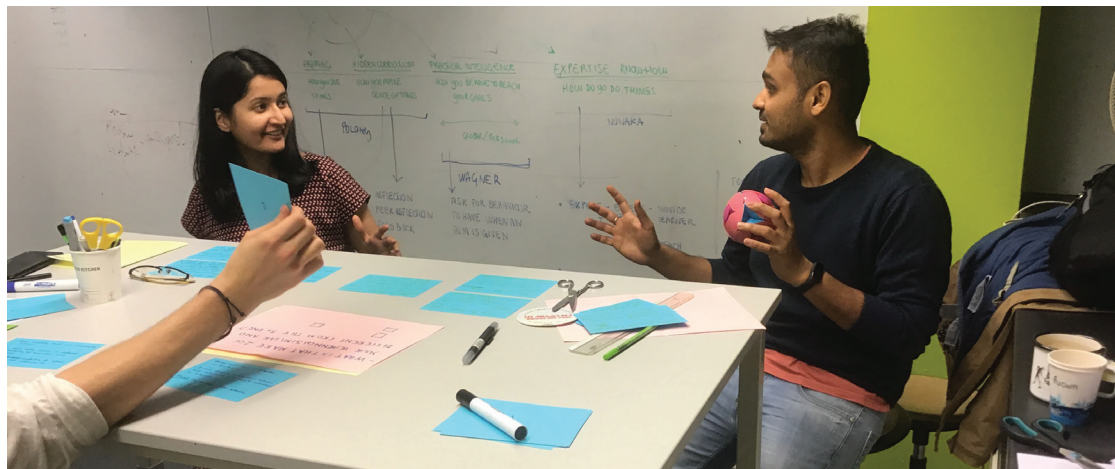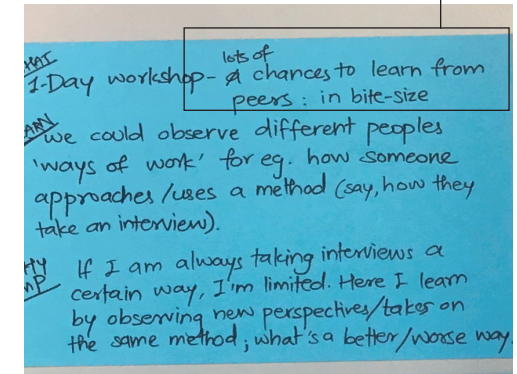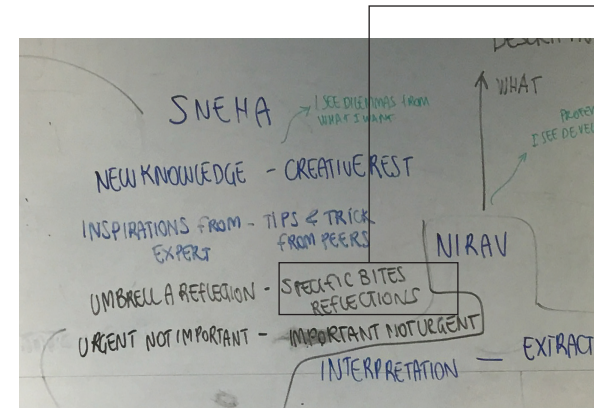
- The group instantly started comparing experience and perceptions of their learning.

- The words written in the elements influence the constructs, as shown in the visual above.

- The participant identify many pairs of constructs as **dilemmas** when they learn or when to make decision.

Below the second iteration. In this iteration I changed the construction of the elements, participants reflected on their own personal set of constructs. The constructs have been wrote by other participants.

RESEARCH QUESTIONS

Can RGT group discussion be used as a method to unveil tacit knowledge?

Can the results be used to create a taxonomy?

Can I collect the data efficiently?

PARTICIPANT

3 students who finished IDE Academy

WHAT HAPPEND

The participants are asked to think about 5 workshops on IDE Academy and their learning. They compared their learning with the RGT. In this case different perspectives on one workshop trigger discussion. At the end of eliciting the constructs, each participant explained why they believe elicited the constructs.

ELEMENTS

The elements are moments of learning in one workshop. I asked the participants: **What is the workshop? What did you learn? Why do you think you learned it?**

CONSTRUCTS

Constructs have a couple of words. They have been asked to try to use less words as possible.

REFLECTION

I asked the participants to look at others pairs of construct but then to **reflect only on their own set of constructs.**

EFFICIENCY

I facilitate the session, the long part is preparing the elements. I asked participant to ask each other **"Why do you have these constructs?".**

ANALYSIS

We analyse the data togheter with the group, I asked them how would they use these new **reflections abot themeselves**.
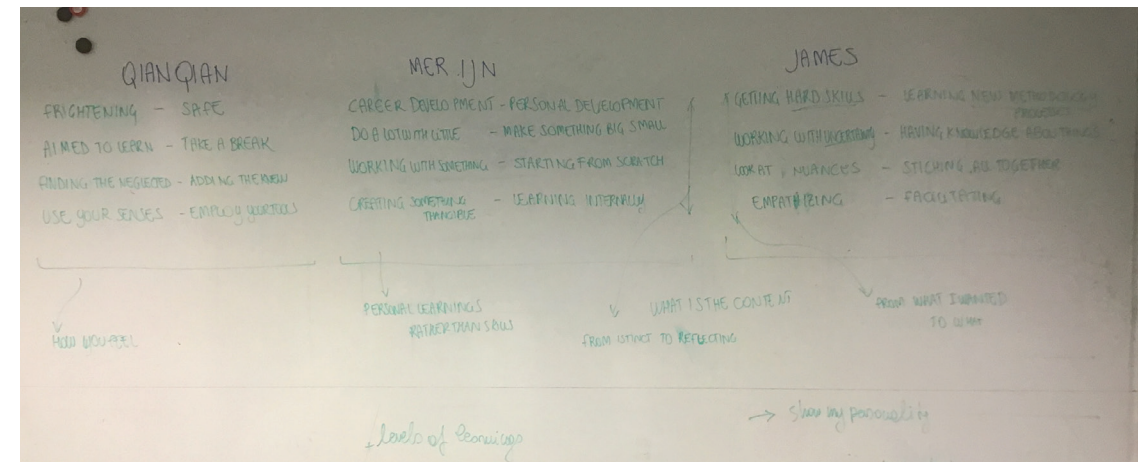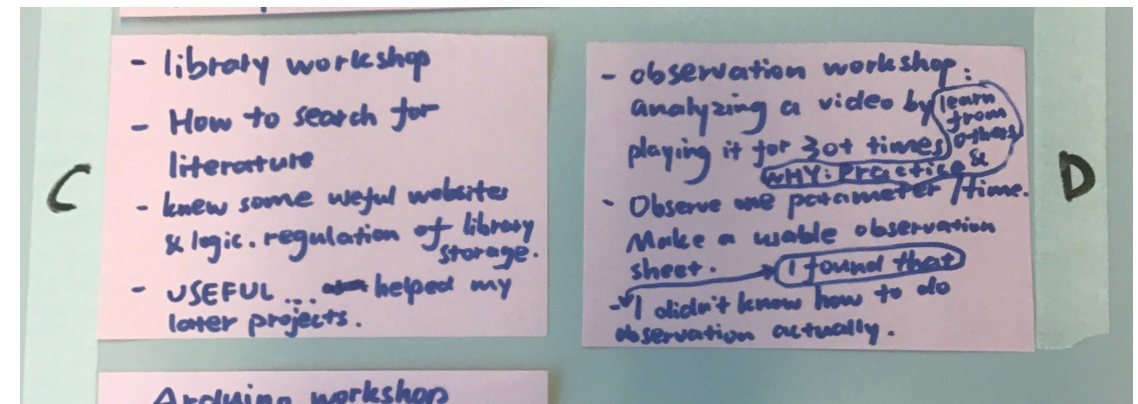
★★ CONCLUSION

- The exercise triggers **sparks**. One participant mentioned that helped him identify a definition of career development and miking him realize that he did not take enough steps towards his career development.
- While asking "why do you think you have these constructs?" if the answer of the participants strats with "I need,like,should,want.... etc" become personal.
- The participants exchanged some tips to solve some **"dilemmas"** at the end of the session.
- Participants carried most of the time the discussion by themselves because I asked them to help each other in creating the constructs.

Below the third iteration is shown. In this itearation I changed the format of the exercise. Then, I changed the construction of the element and the construct.

RESEARCH QUESTIONS

Can RGT group board be used as a method to unveil tacit knowledge?

Can the results be used to create a taxonomy?

Can I collect the data efficiently?

PARTICIPANT

3 students who finished IDE Academy

WHAT HAPPEND

Participants are given an introduction to the board and how to use it. They write down the workshops as elements, then they compare the workshops and create the construct. They write down what the constructs mean to them. Then they look at the differences and similarities of their perspectives.

ELEMENTS
The elements are workshops. There is no preparation for the constructs. Participants are asked to choose 5 workshops.

CONSTRUCTS
No word limits. Participant are asked to describe their experience when learning in the workshop. Participants do not write their own constructs, but someone else does.

REFLECTION
I asked participants: **Why do you have these two constructs?"** and **"What they mean as overall to you".**

EFFICIENCY
I introduced the session with a presentation (two slides are shown in fig.x)and then participants fill the board by themselves.

ANALYSIS
The analysis was carried by the researcher, the long sentences create more understanding but create also noise in the data.
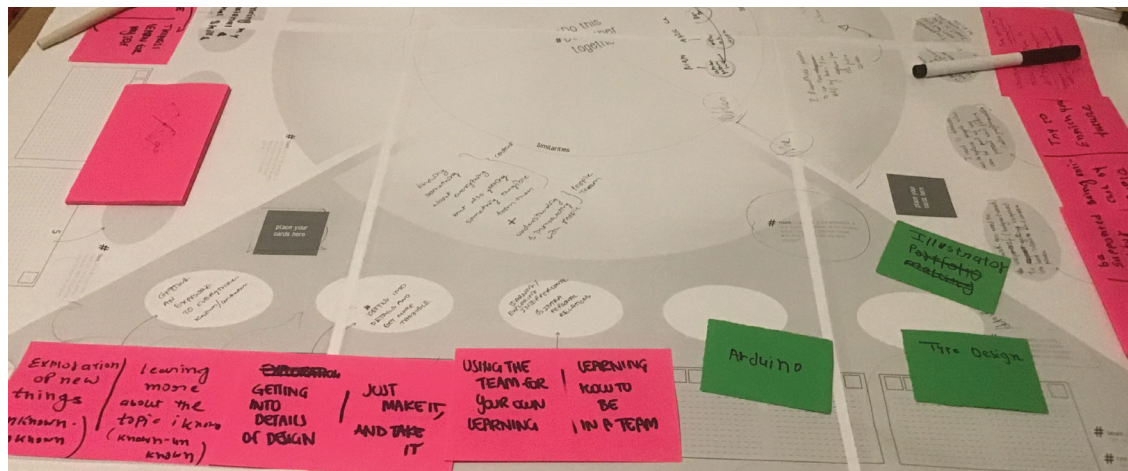
LET'S START TO UNVEIL!

WHAT IS THE EXERCISE?

FIND THE SIMILARITY BETWEEN THE TWO ELEMENTS THAT MAKE THEM DIFFERENT FROM THE THIRD ONE

NAME   NAME   NAME

Participants explain on what they choose workshops.

LET'S DO THE FIRST TOGETHER

Similarity | Difference

Similarity | Difference
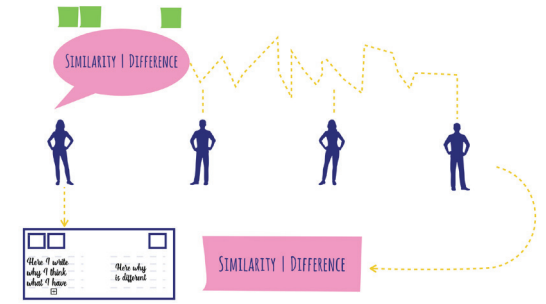
Long constructs, written by other participants.
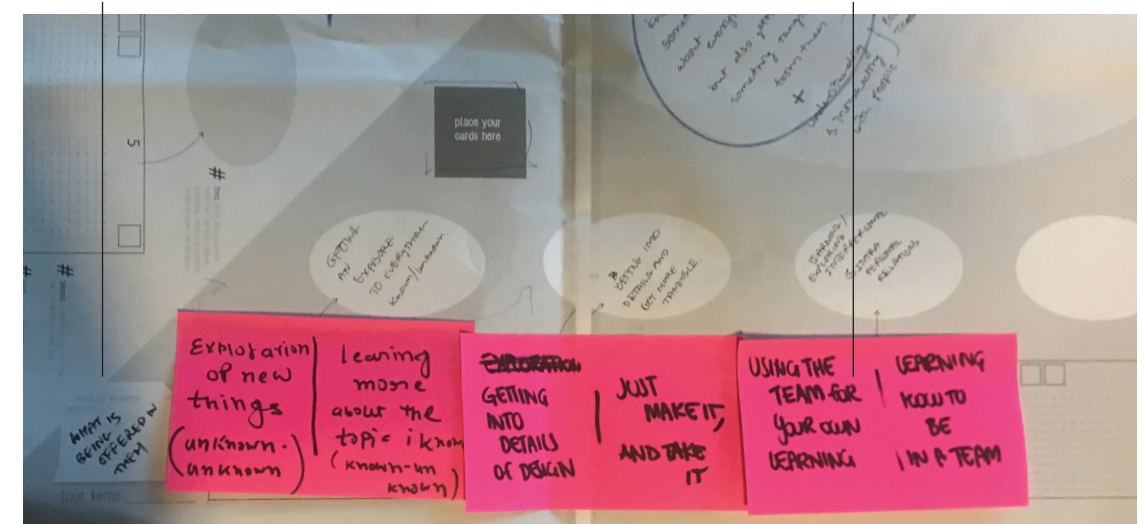
CONCLUSION

- When the construct are written by someonelse participants discuss more on the **framing of the experience,** but as overall results very complex.

- The participants introduced the workshops to the other participants. Two participants remember the same workshop very differently. This sparked a long discussion.

- The long constructs create more understanding for the research, but they create a lot of noyse in data analysis.

VISUAL SUMMARY OF CYCLE B

In the visual I show the changes from the interview with Repertory Grid to a board to unveil TK. I show the
final conclusion of the design of the board.

	First iteration	Second iteration	Third iteration	Conclusion based on the iterations
ELEMENTS	Learnings in IDE Academy + structured questions on their learnings.	One workshop + Structured questions on their experience.	Name of the workshops experienced.	Name of the workshop as elements
CONSTRUCTS	Short construct + facilitator write them down	Short construct + student write them for themselves	No word limit for construct + participants write each other constructs	Participant explain to the group the difference and similarities. Construct one word. Participant writes own constructs.
REFLECTION	Question used: What do you think about these constructs as a group?	Question used: Why do you you have these constructs? (to singular participants)	Questions used: Why do you have this pair of constructs? + What they mean as overall to you? The participant answer with: I….	On each pair of constructs reflection on "Why do you have this pair of constructs?" + General reflection
EFFICIENCY	The researcher is the facilitator. Prepping the elements slow down the process.	The researcher is the facilitator. Prepping the elements slow down the process.	The researcher explains the tool and the participant finish the board.	The researcher explains the tool and the participant finish the board.
ANALYSIS	The constructs alone do not create enough information.	The construct are related to the general reflection. In this way the data results contextualized.	The construct are long, they create depht, not necessary if the reflections are associated to the construct.	Data are: elements, constructs, reflection and general reflection.
INSIGHTS	The construct and reflection show personal dilemmas. The group discussion creates moments of tension or similarity which support unveiling TK.	The constructs and the reflection spark in the participant ways to reconsider some perspectives.	Talking when creating the construct to the group helps to frame in diverse way the experience.	
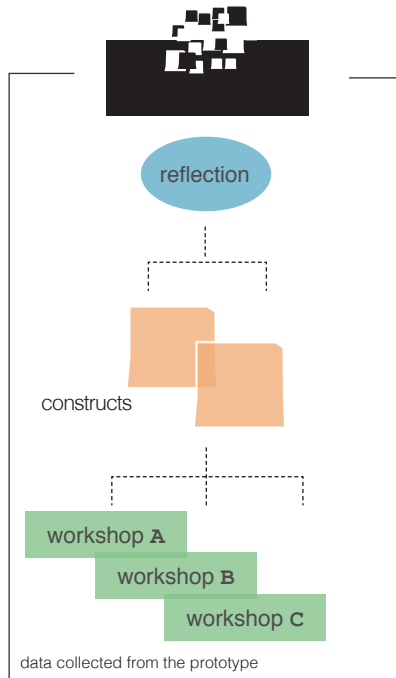
ITERATION OF DATA ANALYSIS

I collected the results of the last four pilots. I analyzed the data to: improve the tool for data gathering, find potential ways to analyze the data and check the quality of the data. I conclude with a plan to analyze the future data.

Two types of analysis are described:
1) Ways of association: the concepts of words have been connected through association of similarity and difference to find patterns in the constructs,
2) Workshops-students: the workshops and students constructs have been compared to identify possible typology of students and workshops.

In **Association** (fig.x), the data used are the pair of constructs, while the reflection related to them are taken into consideration. I kept together the concepts of the pair of constructs and clustered them for association. Then, I connected some cluster and/or constructs through the cluster because they were somehow related. In some cases, I found a clear relationship.

While exploring the pair of constructs and the reflection related to it, I found that some of the pair of constructs showed students' dilemmas in relation to a specific topic. For example: *Urgent not important–important not urgent.* In this pair , the student explains how she constantly deals with organizing the time efficiently to learn not only urgent skills for a school-project, but also skills which are important for her designer skill-set. Some constructs show a point of view on a specific topic.

In the next page, I shows three possible ways to cluster the findings: dilemma clusters, extremes clusters, associations.
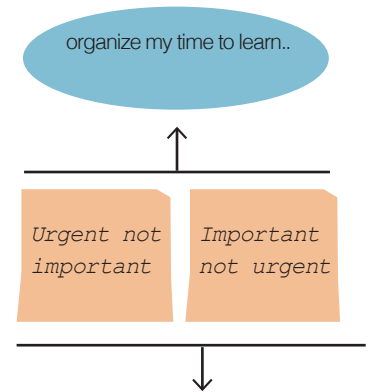
Student's dilemma: dedicate time for both the skills she wants to learn for divergent reasons

reflection

constructs

workshop **A**
workshop **B**
workshop **C**

data collected from the prototype

organize my time to learn..

Urgent not important | *Important not urgent*

1.
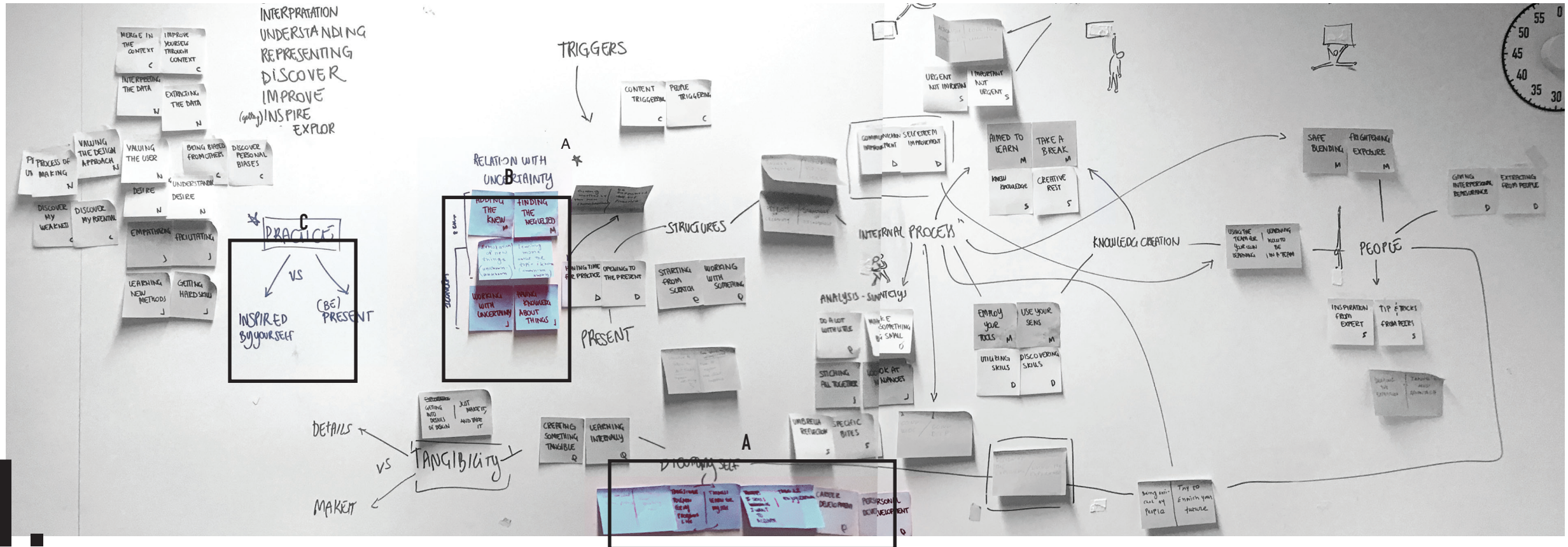
A) Dilemma-cluster

A) Dilemma-cluster

The dilemma-cluster I will explain is *Dichotomy of designer and self (see fig.A)*. The dilemma-cluster contains 4 pairs of constructs which show students' dilemma about learning for their self-development or for their profession. This cluster shows that for 3 students learning for self development differs from from learning for their professional development.

I looked at the `words` used for the two side of the dilemma-cluster and I found associations of words related to the two sides of the dilemma.
Words used for self-development are: *want, enjoy, for myself, learn for my self development*.
Words used for their professional development: *have to, need, skills to acquire*.
Focusing on the words and their associations seemed a promising way to analyze. Although, the constructs shaped as sentences were quite chaotic to work with.

A1) Dilemma-cluster-profile

One student showed the same dilemma three times.
Therefore, I looked to see if the construct of each students showed a specific "*profile*" or dilemma. Although, this has been an interesting insight, I did not find any relevant *recurrent dilemma* in other students, but I did find iterations of the same dilemma in one student. In some participants, the constructs are iterated, and identify similar extremes, but they enrich their understanding of their perspectives.
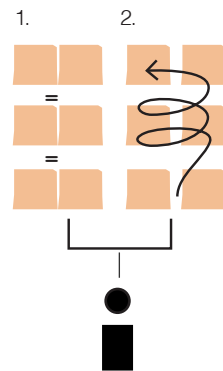
Constructs which show a profile.
1. Similar pair of constructs shows stuckness.
2. Iteration and development of the same extreme.

B) Extremes clusters

The cluster *Relation with uncertainty (B)* shows that student deal with uncertainty in the learning process, and they experience it in a diverse way. For example the pair of constructs *finding the neglected-adding the new* and its reflection show student's willingness to look for uncertainty in her learning path. Uncertainty has a positive meaning. While, *having knowledge about things-working with uncertainty* and its reflection show that this student prefers reducing uncertainty. Therefore, uncertainty is considered a negative thing to deal with. Another student, in the construct *exploring new things-learning more about things I know,* mentioned the need to be free to explore things he does not know to not know.

C) Words relationships

Another way to look at the data besides the clusters is looking at words and the connection they have among each other. For example: the word "practice" (**C**, in the visual) is considered the opposite of inspired and (being) present.
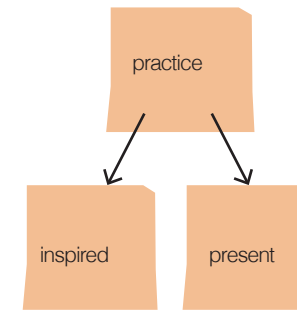
C. Words relationships

D) Word counting

I noticed that some words are used more frequently than other, therefore in the further research I will look at the most common words used by students and their interpretation in the constructs.

D. Words counting

B) Extremes-cluster

In **Workshops-students** (fig.x, next page) the data visualized are: the workshops in axis x, the constructs of each workshop in the y axes. Each construct per student is represented beneath the workshops axis. Underneath each workshop the X represents how many times the workshops are considered interesting by students.
The aim of this representation is to discover how each workshop is experienced by students. Although, the experience is different for each student, in many cases there are groups of similar experiences for each workshop .

For example: the two common workshops are `Interview techniques` and `Theatre`, respectively 6 and 5 students considered worthed to recall the workshop experience. In *Interview Techniques* the words *structure, methodology, support, practice,* show that in the context of IDE and IDE Academy the workshop is supportive and provides structure and space for practice. Whilst in Theatre, words like *"creative rest, take a break, inspired, living the experience"*, position the workshop as a break from the common experience of IDE. It is the only workshop showing a higher amount of words like *break, rest, wide, living.*

Looking at constructs in workshops helped me notice related dissimilar constructs. The dissimilar construct are useful to discover different student's experiences.
For example: In theatre, *"safe blending"* does not relate to or associate with another construct. I looked at the reflection of the student and it shows the fear of being in the spotlight. This means that the context of the workshop allowed the student to be in a safe place to learn and experiment. Clearly, for the students this was more important than to *be inspired, take a break or going wide.*

Noticing dissimilar use of words can be another way to discover student's experiences, but also dilemmas or mindset traits.
For example in *Interview Techniques, extracting data* belongs to the associated constructs but the word *extracting* sounded like a strong word (see fig.x). Therefore, I reflected on the students construct and interviewed him to clarify my thoughts. I discovered he was concerned with over using the users while interviewing them. In this case his core value is: respect for people. He then went

on to say he prefers research that is enriching for designers and users.

One way to look at the importance of workshop for students is to look at the number of time they mentioned the workshop. In addition, looking at the constructs explains how they are experienced, and looking at the reflection shows why. This becomes a way to evaluate workshops based on students individual experience.

Working with constructs as sentences resulted in being quite complex, therefore I decided to ask students to use one word only further in the tool, as advised by Jankowitcz (2004). The reflection already gives a clear explanation of the pair of constructs.

In the next page I show a visual summary of the ways to analyze the data.

Theatre	Interview Techniques
• living the experience	• structure of methodology
• going wide	• having a safety net
• getting inspired	• be supported by practice
• being enriched by people	• being enriched by people
• creative rest	• structure to follow quickly
• take a break	• process of understanding
• inspiration from expert	• understanding desire
• **a safe blending**	• **extracting** data

WORD COUNTING

challenging
tangible
surprise
developing
theory
process
individual
passive
user
team
analysing
familiar
external
creative
closed
new
skill
learning
novelty
certainty
receiving
present
practical
corporate
creation
interesting
personal
experience
academic
future
known
active
create
inspiration
observing
physical
group
digital
intuitive
exploring
discovering
relaxed
designer
theoretical
applying
hands
earth
expected
reflecting

Fig.8 Visualization of the most common words

Raw word counting

exploring	
individual	
new	x6
personal	
theory	
digital	
external	x5
thoeretical	
applying	
group	x4
learning	
active	
challenging	
developing	
familiar	
hands	
passive	
physical	
passive	x3
process	
reflecting	
skill	
surprise	
tangible	
team	
user	

Roots word counting

theor*	x11
explor*	x10
creat*	x8
appl*	x7
new	
personal	
individual	
external*	x6
practic*	
digital observ*	
surpris*	
group	x5
learning reflect*	
acti*	
challeng*	
design*	
develop*	x4
physical*	
discover*	
inspir*	
expect*	
comfort*	
familiar	
hands	x3
passive	

Fig. 9 Words counting -Word root counting

UNDERSTANDING DIMENSIONS
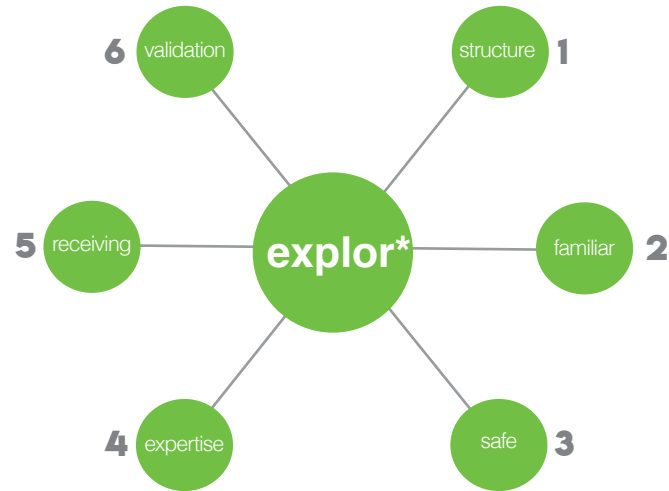
Opposite cluster: 1

Dilemma

I like when I understand the process structure behind, but at the same time I want to have the freedom to explore my own ideas and follow intuition.

I need structure in my *chaoticness* but I do like being chaotic.

Balance

I learn through exploration or specific structure.

Extreme

I like guidelines as starting point and restrictions help me to work more. efficiently

Determined,Pre-defined, Structure, Direct.
This opposite cluster shows that some students perceive the opposite of "exploring" as something *"defined, and structured"*. Looking at reflections students have different perception of it. For example, students have a dilemma between being free to explore and being in a sort of structure (dilemma). However, some students seems to find a balance between exploration, seen as sort of freedom, and structure (balance). Instead, one student explain the preference for guidance (extreme).
It is interesting to notice that the students that identify these pairs of constructs are all in search of a sort of structure/guidance.

Implication for IDE Academy
- From the overall course: students with a preference for structure will struggle to navigate during the academic year, because there are no guidelines. Students with a dilemma between freedom and structure could be supported to reflect

more.
- From the singular workshop perspective: Workshop with a strong structure can be supportive or oppressing and unstructured can let student express or leave students lost.

Opposite cluster: 2

Spark

Extreme

I tend to learn focused skills through the workshops.Things I know, but actually there are much more options.

I feel more interested in getting to know something new makes me feel more alive and gives the feeling that I'm doing the right thing.

I like to spend my time usefully learning new things.

Familiar, known, basic.
In this cluster, students perceive the opposite of "exploring" something already *"known and familiar"*. A student while using the tool realized that the attended workshops were mostly focused on known topics (spark). Other students share the need to learn new things (extreme).
Students which use the words familiar or known might consider these words as negative when they are related to exploration. In cluster 4 (after the next section) the words specializing or expertise can be the positive meaning of being familiar with.

Implication for the IDE Academy course
- For the overall course: as shown in the "spark" students risks to choose familiar workshops throughout the academic year. This is a risk for the course because it has been design to let student to try out new skills without fears. Thus, the fail-free space become not utilized.

In one workshop I was already familiar with these topics did not have any expectation but turn out pretty good, in the other I did not know what to expect and had a good day!

surprise surprise,surprise

Opposite cluster: 3

I consciously want to step out of my comfort zone but only sometimes

I felt no connection or trust with the coach.

I feel more secure at individual test, less comfortable in group.

Thinking about my future scares me.

Safe, secure, secureness, comfort.

In this cluster, the word exploration is the opposite of safe, secure. In the reflections of these constructs the concept of exploring is not considered unsafe per se. In the reflections below, it is shown that the event or the context resulted out-of-comfort. For example: *thinking about my future scares me, I feel more secure at individual tests,* I felt no connection with the coach.

Implication for the IDE Academy course:
- For the overall course: a possible outcome of being out of the safety-net is having a negative experience, and considered that experience quite unsafe. Students who explored and had a negative experience risk to not explore anymore.
- From the singular workshop perspective: singular workshops could be tailored to support reflection on the negative experience during the day.

This cluster does not appear as a mental model of students but rather an explorative attempt to follow workshops which did not work out well. Therefore I will not consider this cluster in the next phase of data analysis.

Opposite cluster: 4

Extreme

Balance

I like/want to learn about things I am interested in becoming an expert in that area.

I kind of know what I want to do and I would like to perfect more, then I just keep trying new areas.

I prefer to be an expert in the things I am doing so I will always want to improve skills and knowledge I have.

Not only learning things, but I also need to practice to polish the skills.

Expertise, specializing, perfecting, polishing empowering.

In this cluster students perceive exploring as the opposite of *"expertise"*. In the data, some students want to become an expert and have clear direction of what they want to learn, leaving no space to exploration (extreme white). In the general reflection, one student questions if the choices are a direction towards expertise or a sign of fixation. This cluster seems the positive perception of cluster 2 *(familiar, known, basic).*

Implication for IDE Academy:
- For the overall course: The risk of immediately creating expertise for students is that they do not make space for exploration. However, creating an attempt to build and test expertise is a part of the concept of exploration. This is quite a dilemma which I will expand in the later section.

Spark

I know quite well where I am going - am I fixating too early? It shows in my workshop choices.

Opposite cluster: 5

Balance

Extreme

Don't have preference over receiving or discovering? It depends on the context of the lecture.

I like to just work on projects on my own rather than listening to explanation

Exploring is essential to understand what gives you energy and motivation knowing your strengths and weaknesses.
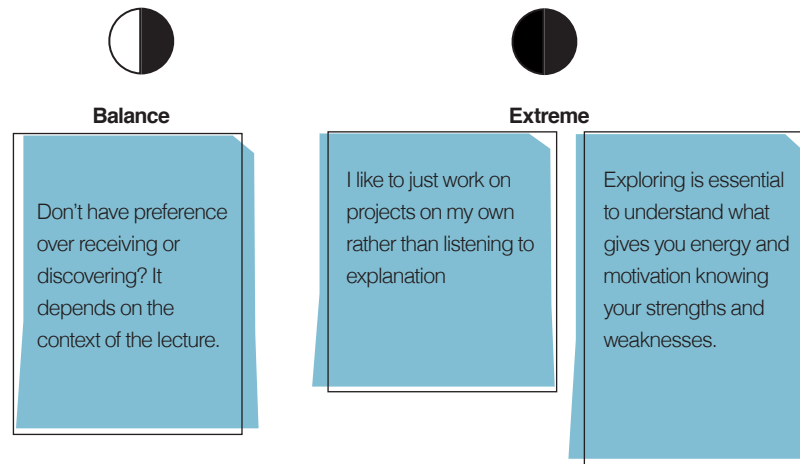
Receiving, boring, obzzerving.
In this cluster, students perceive the opposite of exploring as receiving. In one reflection (balance) the word receiving is opposed to discovering. In one reflection (extreme) students express the need to act rather than "listen". In the other one, the reflection shows that exploration is perceived as an active seeking. The former and the latter reflection have a similar perception of agency in exploring.

In this cluster the words used have quite a negative meaning and they refer somehow to structure. It is interesting to notice that in cluster 1 (*Determined, Pre-defined, Structure, Direct*) students identify the benefits of structure whilst in this cluster students see the benefits of exploration as sort of "agency".

Implication for IDE Academy:
- For the overall course: In the previous section I showed that choosing workshops involves decision making and judgment. It is likely that the overall course can be experienced as a way to explore decision and action. The course could provide more support for decision making and judgments during the academic year.
- For the singular workshops: the example of the student who "prefer to work on [his] own project rather than listening to explanation" risks to not gain anything from workshops which are more structured.

Opposite cluster: 6

Extreme

Dilemma

Extreme

I am more enjoying the process of exploration. Don't need a goal. Inspiring,exploring not planned

Exploring makes me more happy but shortcuts make me more confident

I like to learn new things and I am always enthusiastic about more things/ skills than I can actually pursue.

I try to improve my weakness, because I foresee myself to do something that I believe I cannot.

Validation, confirming, delivering, goal, short cuts.
This cluster shows that students perceive the opposite of exploring as *"accomplish an aim"*.
In two of the constructs (extreme black) the aim seems to create affirmation. On the contrary, (extreme white)a student expresses the enjoyment of not pursuing any goal. Another one shows a dilemma between short-cuts which in this case trigger confidence and exploration which is more enjoyable.

Implication for IDE Academy
- For the overall course: IDE Academy does not provide students with a final deliverable or goal. Recently has been introduced a final reflection of the course but has not been evaluated yet.
  It is interesting to notice that students can use workshop to validate weaknesses or to confirm skills. This shows that students improving skills and doing cases build a small skillset which supports their confidence.

Findings

The opposite clusters give a meaning to the word "exploring", which has been identified as the most common construct used in the IDE Academy course. To summarize, I identified the mindset of students related to the word "exploring", and provided students'perception of "exploring" (look at extreme, balance or dilemma).

Understanding these clusters create a rich picture of the tacit understanding of the course, which is exploration.
In the data analysis I noticed that some clusteres referred to the same "concept" but it was perceived with different meaning.
For example:
In cluster 1 and 3 students' reflections are related to structure in exploration. In cluster 1 structure has a positive meaning whilst in cluster 3 have a rather negative meaning. Conversely, in cluster 2 and 4 student's reflection are related to known skills to learn. In cluster 2 the meaning is negative, while in cluster 4 "known skills to learn" is seen as sign of expertise, thus it has a positive meaning.
In cluster 6, "confirmation of skills" has a double meaning, some students prefer confirmation and validation of their skills, while others enjoy the exploration as it is.

It appears that students with opposite perspectives see the risks of their counter part. For example: students looking for novelty see expertise as a risk towards familiarity.
With this in mind, I decided to integrate the cluster with associable reflections and pair of constructs, to create a richer understanding of the dimensions.

THE THREE DIMENSIONS OF EXPLORATION

Example of diagram for the dimension Novelty-Expertise
For the full overview of the diagrams go to Appendix (X)

Indecisiveness — **Expertise**

I like to mix different things so I learn more, on a wider spectrum. Even if it is sometimes uncomfortable. Or is it *indeciveness*?

I prefer to be an expert in the things I am doing so I will always want to improve skills and knowledge I have.

I like/want to learn about things I am interested in becoming an expert in that area.

Not only learning things, but I also need to practice to polish the skills.

I kind of know what I want to do and I would like to perfect more, than I just keep trying new areas.

I can be enthusiastic about familiar things but some thing needs inspired

I am self-driven, I get bored quickly if I am familiar with a subject.

I know quite well were I am going - am I fixating too early? It shows in my workshop choices.

I do unconsciously believe that without a previous knowledge can be difficult to learn.

I like to challenge my self to try out unfamiliarities

Novelty — **Familiarity**

Students driven to look for **novelty** and new things to learn are more open to surprise. They often enjoy novelty and feel it is the right direction for them, although some of them express a bit of uncomforted but the right way to go. Students looking for novelty explore easily new topics. There are unfortunately some drawbacks, boredom or indecisiveness can come in to place.

Students trying to develop their **expertise** specialize their skills.They prefer to improve existing skills and polish them. There might be some risks when striving for expertise if the driver is looking for familiarity (as shown in reflection above familiarity),also as suggested in "spark" could be a sign of fixation.

No goal ⟷ **Confirm**

The short happiness of delivering stuff makes me do practical tasks, but in the end I like exploring more. It's scary to be in the dark though.

Exploring makes me more happy but shortcuts make me more confident

I try to improve my weakness, because I foresee myself to do something that I believe I cannot.

I like to learn new things and I am always enthusiastic about more things/ skills than I can actually pursue.

I enjoy more the process of exploration. Don't need a goal. Inspiring,exploring not planned

I cannot relax until I have overcome negative expectation of not being able to pass, until I have learned is not an adversity

I don't care a lot about what a workshop can bring to me. I enjoy the casual exploration. Inspiring,exploring not planned

I am scared of making mistake in this environment.

I get inspired and challenged when I feel I can achieve a good result, otherwise I am less motivated.

Uncertainty ⟷ **Comfort**

Freedom ⟷ **Guidance**

I want to have the freedom to do what I want.

I need structure in my *chaoticness* but I do like being chaotic.

I prefer guidelines for both personal & team work to work more efficiently

I don't like to work in a controlled environment. Expressing my ideas and following my intuition tells me more than following the rules

I prefer have a good theoretical basis before I can work with the topic.

I like to just work on projects on my own rather than listen to explanations

I like when I understand the process structure behind, but at the same time I want to have the freedom to explore my own ideas and follow intuition.

I feel more interested in get to know something new. It makes me feel more alive and I know I am following the right way.

I explore to understand what gives me energy and motivation.

Do we learn when we have to figure out ourselves? Sometimes external help is needed.

I like guidelines as starting point and restrictions help me to work more. efficiently

Forced learning help me the best.

Inner compass ⟷ **Receiving**

Student able to be comfortable with **uncertainty** inexploration without a specific goal deal with uncertainty. Although, this makes comfortable within uncertainty, there are no boundaries and moments to (as suggested by top left corner reflection) "go back to yourself". In addition students

Students who look for **confirmation** in general need to confirm their skills or their learnings. Probably to increase confidence as suggested in one of the reflection (labeled with dilemma). Although, confirming skills is important to be comfortable with the skill learned the risk is to look for comfort, as shown in the extreme above the construct "comfort".
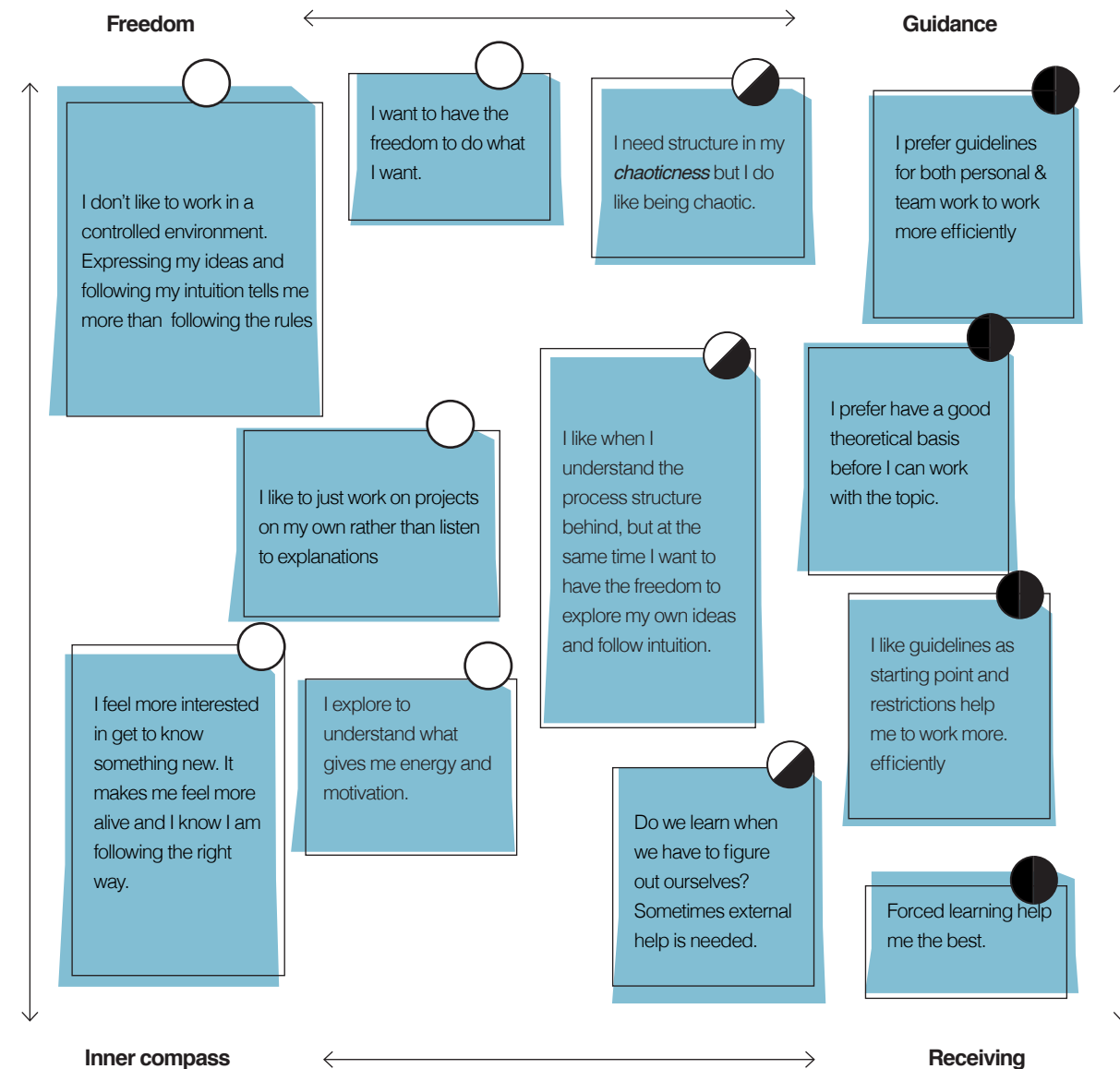
Students driven by an **inner compass** interpret exploring as discovery. The act of exploration seems natural for some, and brings energy and motivation to them. The risk of a well set inner compass is to struggle with rules and structure, see "I want to have the freedom to do what I want". The inner self which seems a leading tool in exploration risk to be also its opposite, a tool to close everything and everyone outside.

Student who look for **guidance** start from a good theoretical basis. In many occasion structure is related to efficiency or communicability.
The risk of needing structure is to receive information or getting used to forced learning or restrictions.

HIDDEN LEARNINGS IN IDE ACADEMY

3.3.4 Data
The data collected are reflections and the related constructs.

Extremes

Extremes

3.3.5 Process Analysis
To discover the **hidden learnings** I clustered similar reflections (1) Then I defined the connected the reflection to the construct (2) and I connected the cluster to the workshop set up (3).

3.3.6 Findings
The hidden learnings are related to choosing workshops and experiencing the workshops.
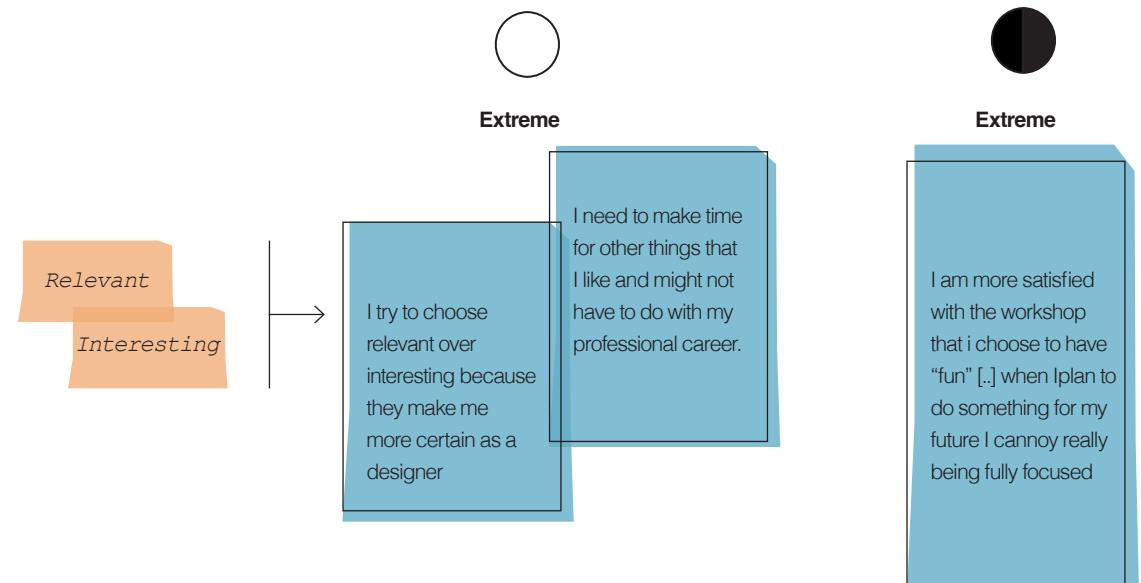In **"choosing workshops"** two common perspectives influence the hidden learnings:
Relevance - perceived relevance of the workshop
Challenge - perceived challenge of the workshop
These two are personal and effect the experience of the workshop.

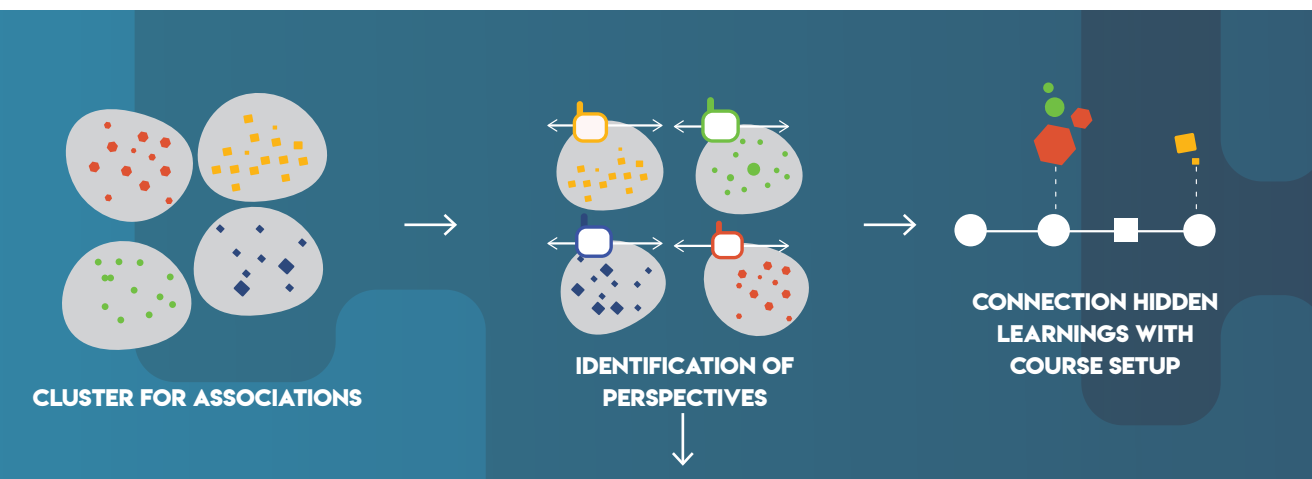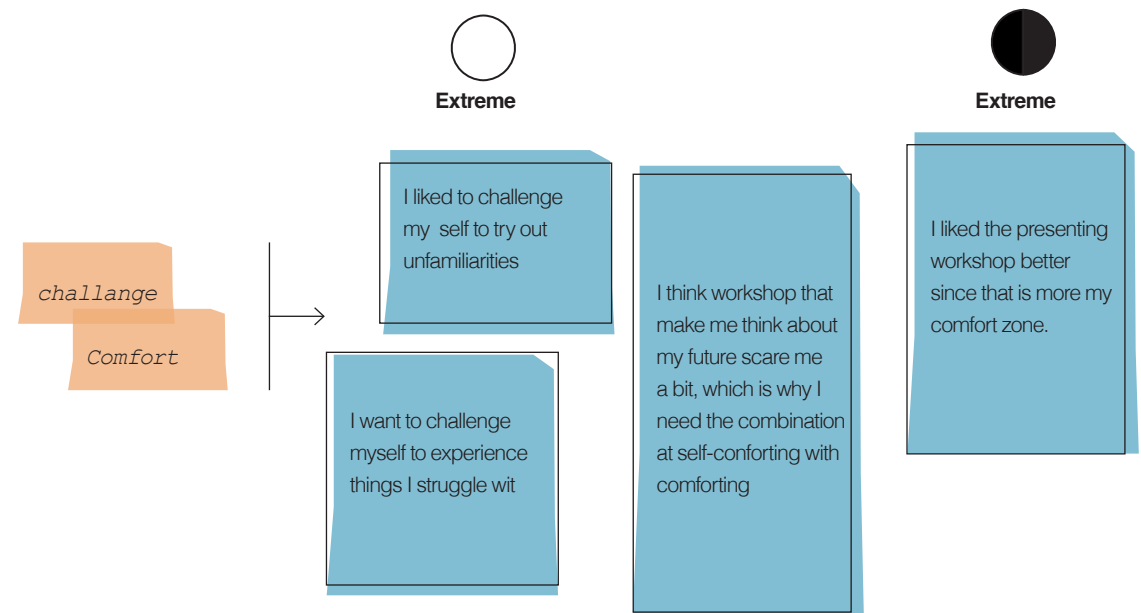In **"experiencing the workshop"** three common perspectives influence the hidden learnings:
Surprise - level of openness to the unexpected
Sociabliance - level of preferred interaction with others
Guidance - level of guidance during the project.
These three common perspectives are personal and interrelated with the context of the workshop.

CLUSTER FOR ASSOCIATIONS

IDENTIFICATION OF PERSPECTIVES

CONNECTION HIDDEN LEARNINGS WITH COURSE SETUP

Relevance - In relevance students choose workshop for the relevance in their career or their educational path or for the relevance in their personal interest.

Extreme

Extreme

Relevant

Interesting

I try to choose relevant over interesting because they make me more certain as a designer

I need to make time for other things that I like and might not have to do with my professional career.

I am more satisfied with the workshop that i choose to have "fun" [..] when Iplan to do something for my future I cannoy really being fully focused

Challenge - In challenge students choose workshop for challenge that they could experience. In some cases students look for high challenges and in others they just look for comfort.

Extreme

Extreme

challange

Comfort

I liked to challenge my self to try out unfamiliarities

I want to challenge myself to experience things I struggle wit

I think workshop that make me think about my future scare me a bit, which is why I need the combination at self-conforting with comforting

I liked the presenting workshop better since that is more my comfort zone.

Surprise - In surprise the level of openness to the unexpected influences the experience of the workshop. Some students are willing to be open while others struggle to loose the expectations.
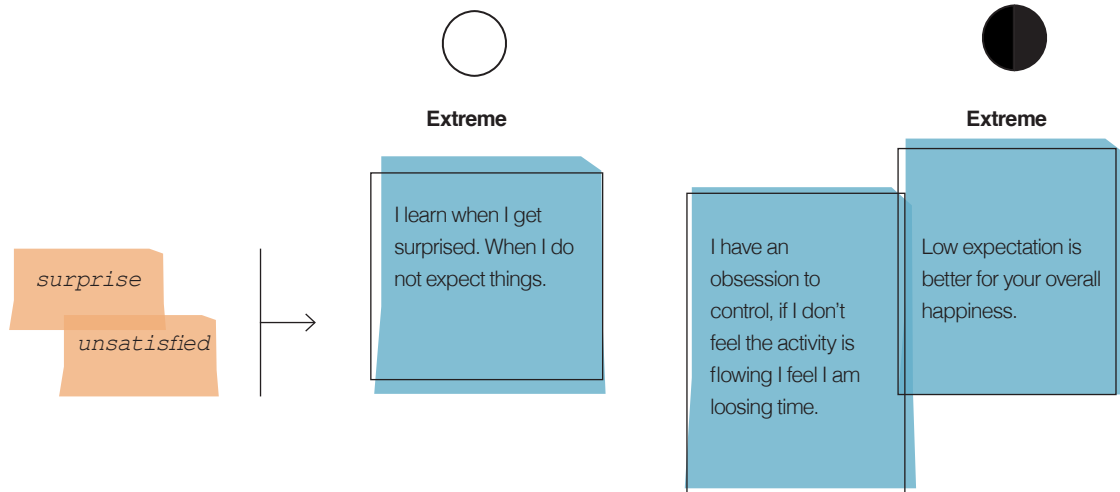
Guidance - The level of dealing with guidance and theory in workshop influences students' workshop experience. Some students are more in line with working with guidelines others prefer workshops in which they can express.

Extreme

Extreme

Extreme

Extreme

surprise

unsatisfied

I learn when I get surprised. When I do not expect things.

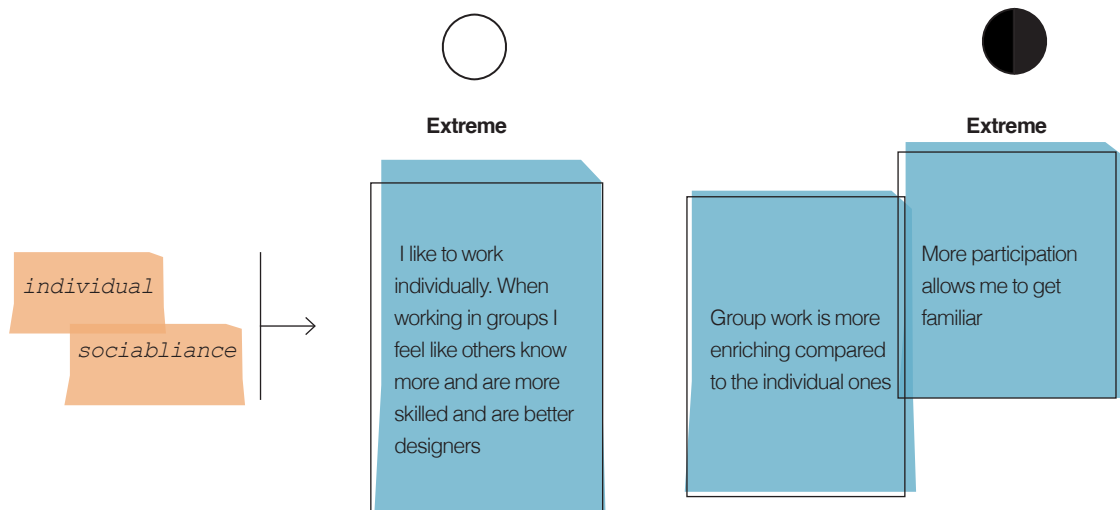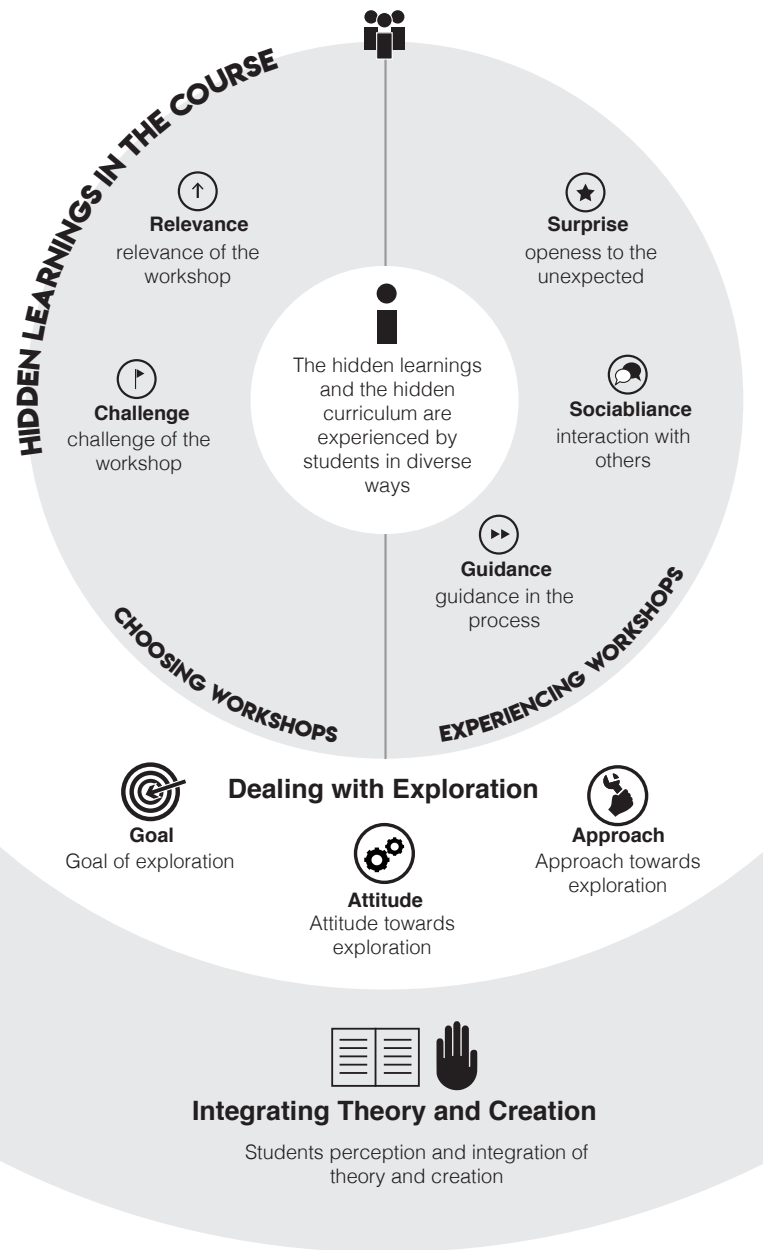I have an obsession to control, if I don't feel the activity is flowing I feel I am loosing time.

Low expectation is better for your overall happiness.

intuition

theory

Express my ideas and following my intuition tells me more than following rules.

I believe tools and theory for me are necessary to be comfortable with intuitive design.

Sociabliance - In sociabliance the level of openess to interactions and relation influence the workshops experience. Some students identify in interacting with other students or coaches a way to engage more in the workshops while some prefer less involvement with people.

Extreme

Extreme

individual

sociabliance

I like to work individually. When working in groups I feel like others know more and are more skilled and are better designers

Group work is more enriching compared to the individual ones

More participation allows me to get familiar

THE CULTURE OF IDE IN TU DELFT (?)

HIDDEN CURRICULUM OF THE COURSE

HIDDEN LEARNINGS IN THE COURSE

Relevance
relevance of the workshop

Surprise
openess to the unexpected

Challenge
challenge of the workshop

The hidden learnings and the hidden curriculum are experienced by students in diverse ways

Sociabliance
interaction with others

Guidance
guidance in the process

CHOOSING WORKSHOPS

EXPERIENCING WORKSHOPS

Dealing with Exploration

Goal
Goal of exploration

Attitude
Attitude towards exploration

Approach
Approach towards exploration

Integrating Theory and Creation
Students perception and integration of theory and creation

3.3.7 Conclusion

In this section I found the most common perspectives which influence students' hidden learnings. Challenge and Relevance are two hidden learnings which predominantly influence workshop choices.
Guidance, Sociabliance and Surprise are three hidden learnings which influence the experience of workshops.

The IDE Academy course has quite a unique structure as explained in Chapter 1, the students choose workshops and experience them without being graded. Giving students choice, makes the course different from the IDE Master. The uniqueness of the course can be seen in two hidden learnings: Relevance and Challenge.

3.3.8 Implications of hidden Learnings

The IDE Academy course has quite a unique structure, the students choose workshops and experience them without being graded. Giving students choice, makes the course different from the IDE Master. The uniqueness of the course can be seen in two hidden learnings: Relevance and Challenge.
These two hidden learnings are very specific to IDE Academy, whilst the other hidden learnings Surprise, Sociabliance and Guidance are likely to be found in other courses as well.

Speculation of integrating the hidden learnings
In the hidden Learning - **Relevance** - students choose if a skill or knowledge is relevant for their professional career or for their personal interest. This choice triggers them to define and identify what is their personal interest and what is an hypothetical direction for their career in each workshop.
By incorporating reflections upon these choices the students can understand what the meaning of relevance is for their career and for their personal interests and choose the related skills.
Possibly, students could be helped to integrate part of their personal interest in their career, or even, be supported in balancing their choices based on relevance or interest.

In the hidden Learning - **Challenge -** students identify what is a challenge for them and what is not.
This hidden learning involves in students: knowing what they are capable of or incapable of, and what is their weakness or their strength, and make decision upon it. The course can support students to challenge themselves and reflect upon it, but also support students to identify what skills are challenging and which are not.

hidden learnings and learnings objectives
The course coordinator will consider to define the hidden learnings as learnings objectives of the course. Discovering the hidden learnings allow the coordinator to comunicate better the purpose of the course.

COMMON USED WORDS IN THE REFLECTIONS
One participant is 3 sections
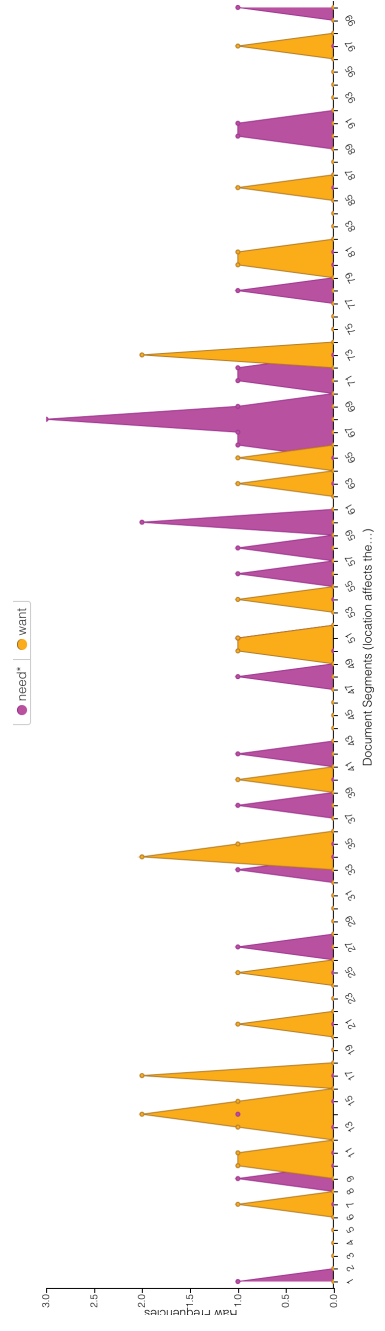
EXPERIMENTING WITH WORDS RELATIONSHIP
in the reflections