EINDHOVEN UNIVERSITY OF TECHNOLOGY,
BACHELOR COLLEGE MAJOR INDUSTRIAL DESIGN

MY TOKEN CHALLENGE

PLAY TO LEARN, LEARN TO PLAY
DPB100 - PROJECT 1 DESIGN

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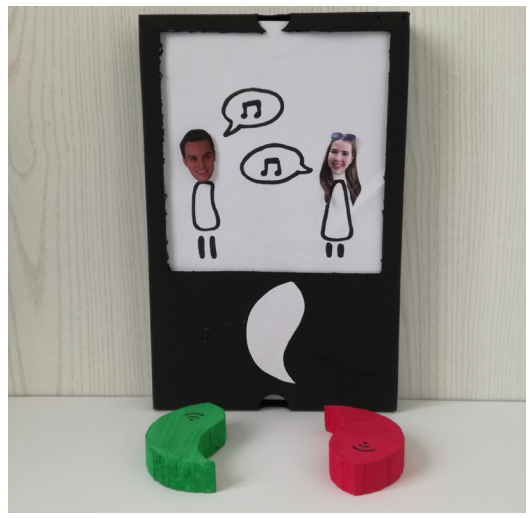
INTRODUCTION



The project squad Play to learn, learn to play is about letting the user learn by playful interactions.

We had the assignment to make a new player fit in a team. During the project we were forwarded with different exercises, which helped us to have a structured project and let us focus on every aspect of a design project. Later on, the assignment became more broad so we started designing for a new person in a group. After some time we decided that we wanted to focus on designing for children at primary school. In this report you will find the process from the first pressure cooker to the end result.

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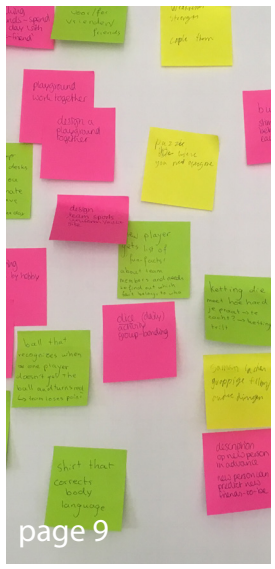

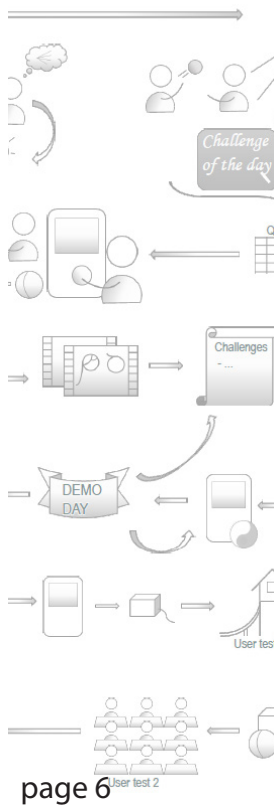

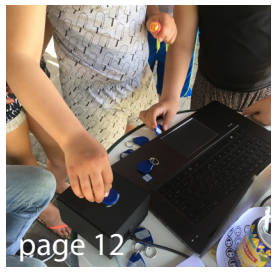

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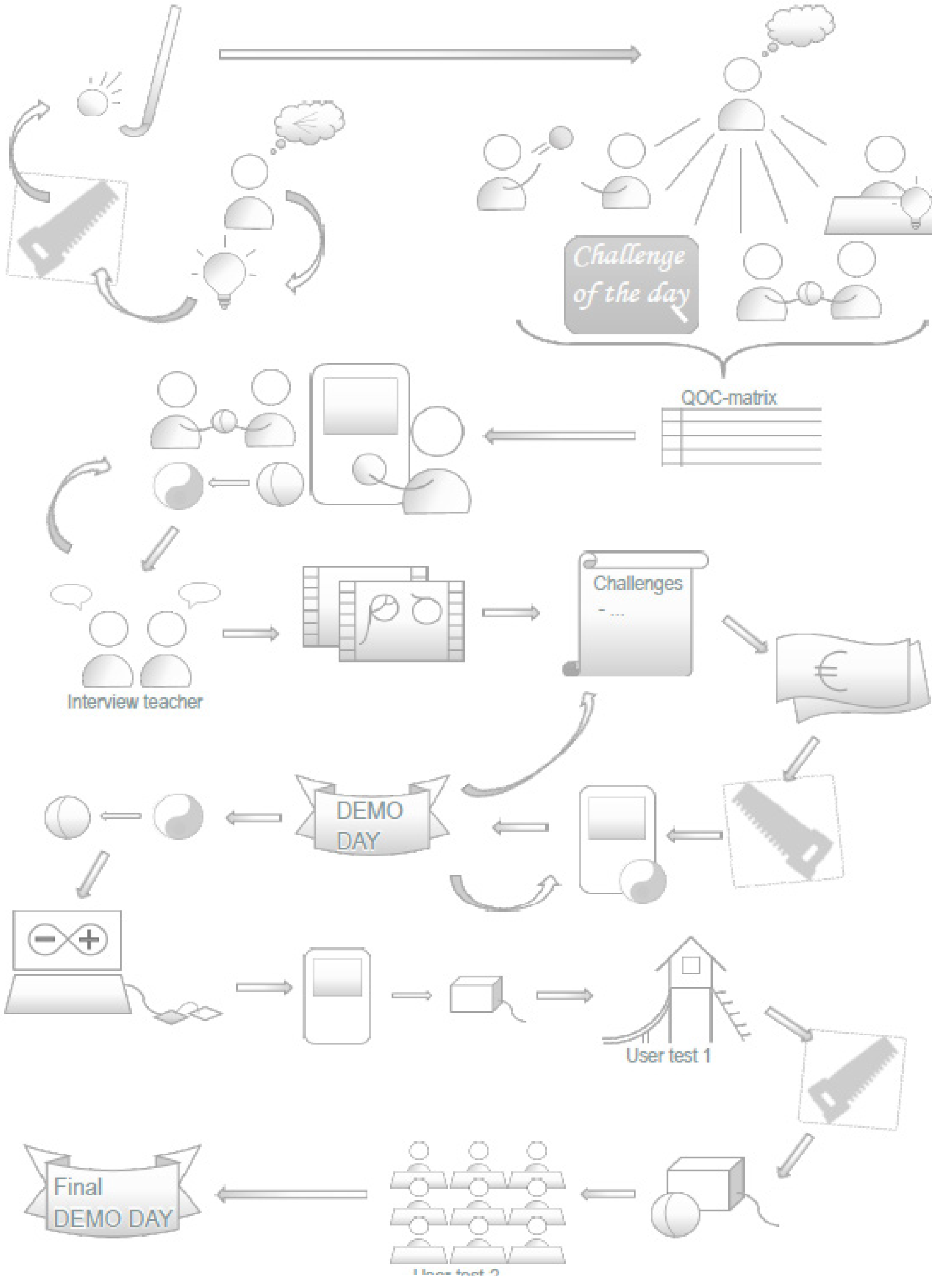
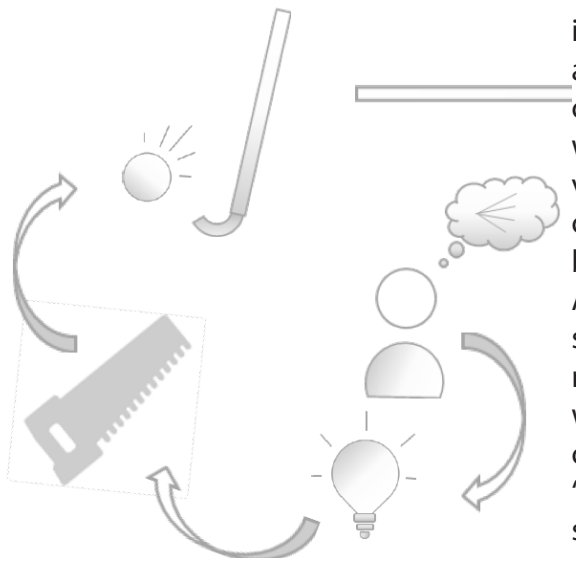
PROJECT GOALS

WE LEARN BY playing. By imagining, trying out, competing, collaborating and making decisions, we become physically active and adopt other ways of thinking. Most importantly, we do this in a fun and engaging way, which draws our attention and immerses us in complex interactions, ultimately leading to fulfilling, intense and new experiences. This is our first semester project and therefore we want to gain more knowledge in the design process. Furthermore, we want to gain more knowledge in the expertise areas and apply it. Our goal with the design is to stimulate the development of social skills of children in primary school and to connect different children in a group with each other on a deeper level. Besides, this should make it easier for new children in a group to feel connected to and accepted by the other children. And above all, it has to be in a playful and engaging way.


Challenge of the day
QOC-matrix
Challenges
- ...
Interview teacher
DEMO DAY
User test 1
Final DEMO DAY

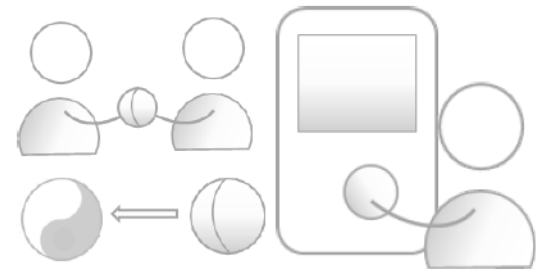
PROCESS

We started with doing a pressure cooker, which is one iteration, as you can see in the picture below. For this, we were assigned to the topic of "New player at team sports".



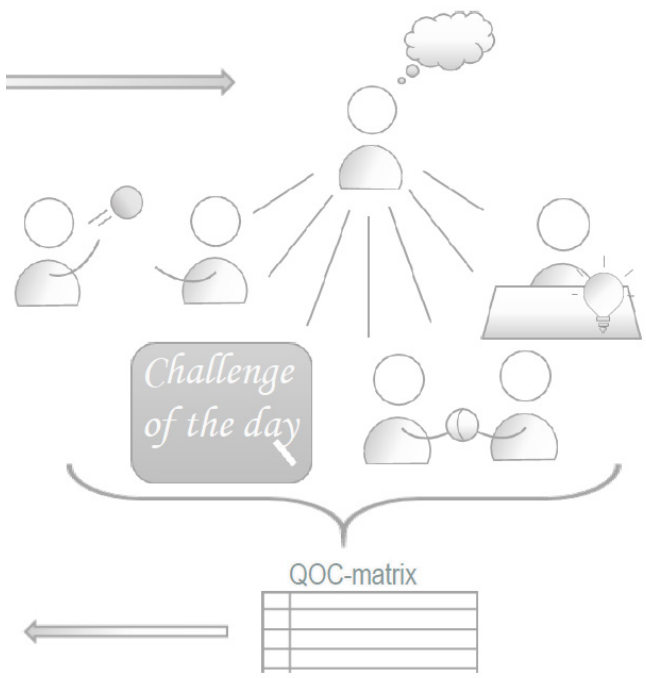
We started ideating individually and choose one to continue with. Next, we made a video to visualize the concept, https://youtu.be/Wivoz87FUMY. After the feedback session, we decided not to continue with that idea and changed the topic "New player at team sports" into "Newcomer in class".

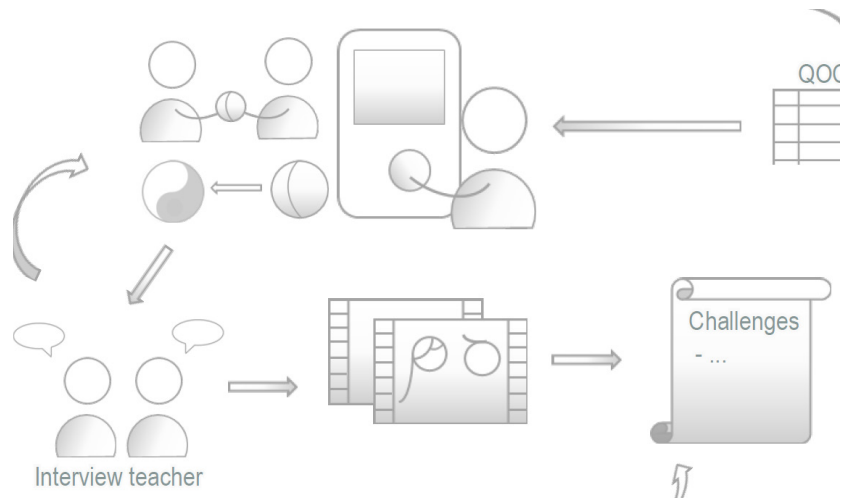
During the design process, we simplified the concept to make it stronger. We decided not to include the tables into the design. Finally, we ended up with the following system, also visible in the picture on the right: "Every child has their own token which they have to scan under a screen when they enter the classroom. When they scan the token a challenge appears and they have to do that challenge during the day. During this activity they have to connect the token. When they are done they will disconnect the tokens and the teacher would be able to see how long they did the challenge." Then, we decided to focus on the topic "Social skills in class". First, we drew the tokens for MyTokenChallenge like two half orbs, but quickly came up with the yin-yang shape for a better fitting for connecting.



We started with ideation for all user groups around newcomers and used several ideation methods. Then, we chose four ideas and made a QOC-matrix to decide which ideas satisfied our goal best. Finally, we chose to combine the 3 best scoring ideas because they can complement each other, see picture below.

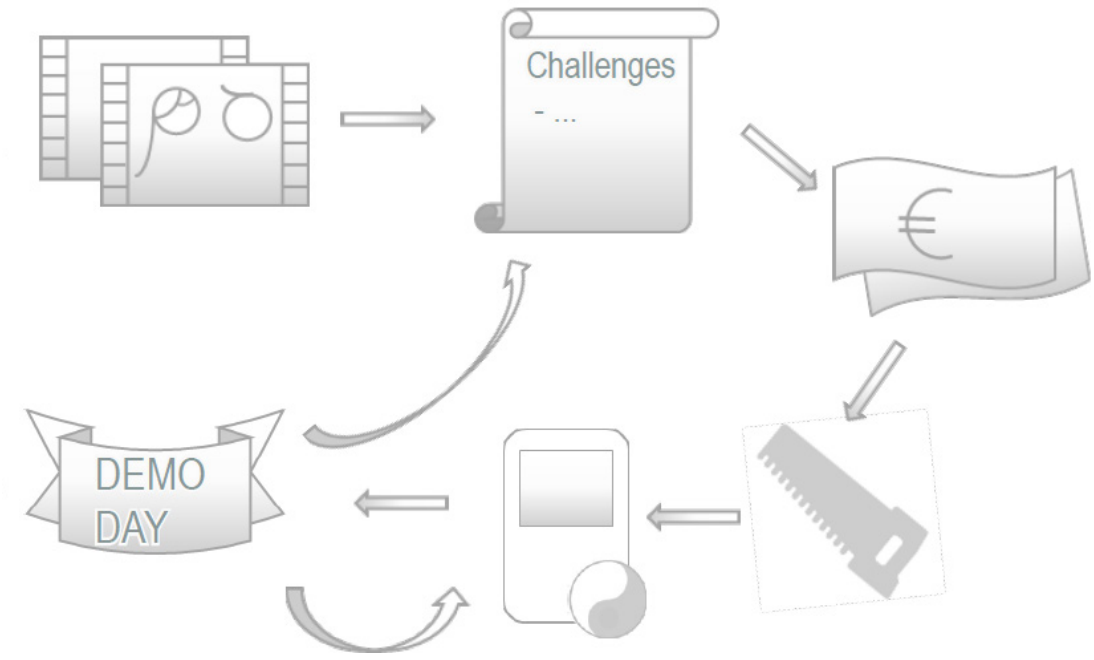
For some feedback on our concept, we did some interviews with teachers and looked back at the concept and improved the challenges. After this, we made a scenario, as is visible below.



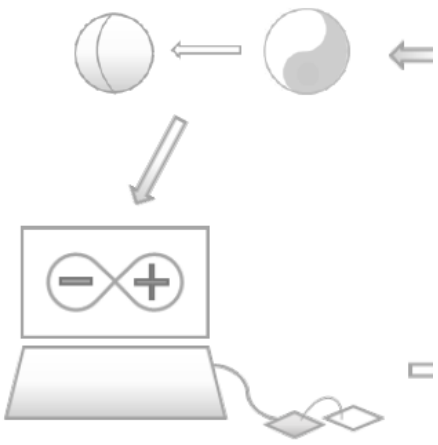


PROCESS

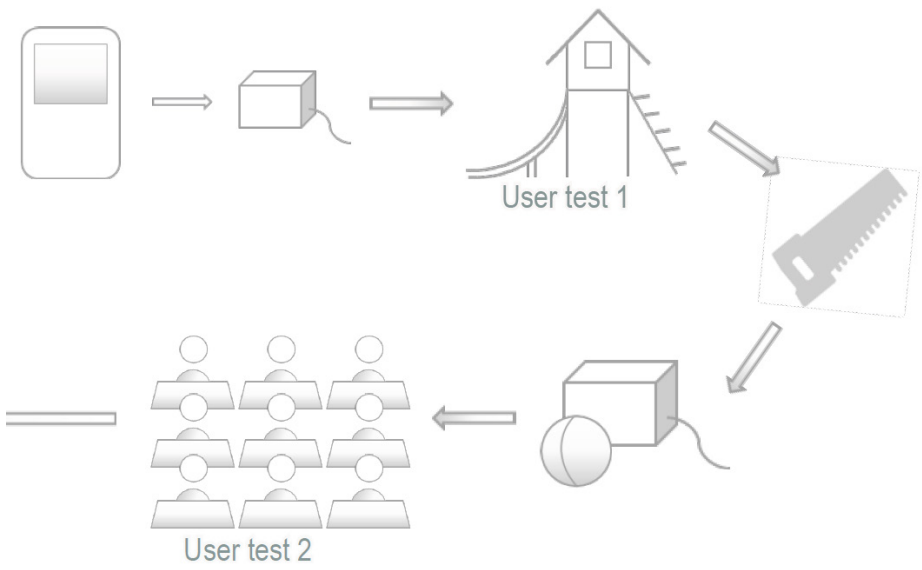
To get a better insight into the realization of our concept, we made a business plan. We also made a more professional looking prototype for shape and a low fidelity prototype for the screen, just to make the idea clear. As for the challenges, we thought of challenges of conversation topics, but we changed this into more creative challenges that require personal aspects from both.
After the demo day, we looked back at our design having the feedback we received in mind, as is shown in the picture below.



We came across some difficulties with getting the components into the object and including the still unknown mechanism to click them together. So, we choose to go back to the half ball shape and made it out of soft squishy foam. Below is a visual representation.



For financial reasons, we put the token scanning electronics in a small box to be connected with a computer already present at schools.
We did our first user test at the "Speeltuinvereniging Philipsdorp" and improved our design with the feedback in mind. Having finished the tokens and improved the design, we conducted a second user test at the "Openbare Basisschool Brandevoort", as is shown in the picture below. Finally, we presented our design at the final demo day.



ITERATIONS

PRESSURE COOKER

We started this project with a pressure cooker, an entire design process in one week. This way we got more acquainted with the process, got to know each other as teammates and we learned how to design a product in a very short period of time time. For this pressure cooker, we were assigned to the topic of "New player at team sports".

After discussing the topic and doing some research together, we started ideating individually. Later we came together and choose one concept to continue with: a "LED-ball". We all liked this concept and believed it had the best potential in comparison to our other ideas. With this product the players will get to know each other and in the meantime it would not interrupt their time to practice their sport.

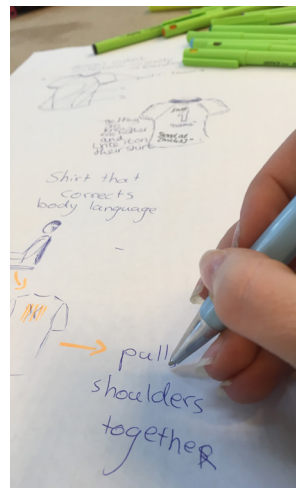
Every player would wear a colored T-shirt and the ball changes into the color to whom it should be played, as is shown in the figure above, while saying the specific player's name. The one who has the ball looks for the player with the matching-colored T-shirt. This way they would get to know each other's names faster and thus would go talk to each other more quickly.

The video we filmed to illustrate the concept better can be watched with the following link: https://www.youtube.com/watch?v=Wivoz87FUMY&feature=youtu.be

However, during the feedback session we found that this would indeed be useful for the newcomer but not as much for the rest. Besides that, it turned out that there were not many games that could be played with this system. So, we decided not to continue with this concept.

IDEATION

We changed the topic "New player at team sports" into "Newcomer in class", since we thought children at primary school



would be a more interesting user group. We started with ideation for newcomers in groups and used several ideation methods; we sketched, did "3-3-5 brainwriting", 3 people writing down 3 ideas every five minutes, and we made a mindmap. We selected our four ideas that had the most potential and made a matrix to decide which satisfied our goal best. The matrix is shown in table below.

	WEIGHT FACTOR	LIGHTS ON TABLES[1]	TOKEN[2]	CHALLENGE OF THE DAY[3]	PASS ALONG BALL[4]
fun for children	3x	2	3	3	3
nough interaction between children	3x	3	5	5	4
child getting accepted by group	4x	3	4	4	3
not too much expenses	1x	5	1	3	2
Clarity, learnability	2x	5	4	4	3
fficiency of actions and use	2x	5	4	2	3
total score		**52**	**57**	**55**	**47**

Table 1.1 QOC Matrix for choosing an idea

[1]) The classroom seats change 'owner' every day and every child has a color. On each table there is a light, child has to sit on the table with his/her color light. So, every day they sit next to someone else to get to know better.
[2]) Each child has a token. They have to hold tokens together for a certain period of time to get a point. This way, the children will have to talk to each other.
[3]) There is a screen when you enter the classroom. Every child has to look for its name and next to the name there will be a challenge of the day along with "talk to X today".
[4]) Sitting in a circle and telling your names (and secondly something about yourself) while passing the ball around, which records the names. Then the ball tells a name and child holding the ball has to throw it to that person.

Finally, we chose to combine the 3 best scoring ideas because they can complement each other and we came up with the following: "Every child has a their own token, which they can scan under a screen, right next to the classroom door. After scanning the token, a number will appear. Each table in the classroom will have a number in this situation. Another possibility is that a map appears and the specific table will light up. So, each day the children sit next to someone else. They will also receive a challenge of the day. For each challenge the child will need to interact with another child and they will need to hold their tokens together for a certain period of time."

CONCEPTUALIZATION

To test our newly chosen concept we decided to interview two primary school teachers. The table below shows the results from those interviews ordered by the advantages and disadvantages of this first concept.

ADVANTAGES	DISADVANTAGES
It would be a lot of work to do the work this system does as a teacher yourself. "Just imagine if I had to gather all the children and assign them challenges myself EACH day! It would quickly turn into a monthly thing rather than daily." - W. Peeters	You can't control if the children really did the challenge
The challenges don't always have to be necessarily playful. You will also be able to connect a math genius with a child who struggles with it and let them work on math exercises together so they can learn from each other.	"I would get rid of the table lights, it would get really messy if each child got a new place every day." - M. Dieker
Thanks to this product the matching of children will seem less forced as when the teacher does it personally. The children will be more open for collaboration with the other child this way.	In principle the teacher would be able to do this work themselves.
Children are always really excited when it comes to technology. They will really like something like this scanner.	It's really rare that a new child comes in the group. Maybe change the project goal to something more broad.
It is fun that there are a lot of different challenges.	
If your goal is to improve social skills this would be a really nice and useful concept. Especially at the higher classes of elementary schools.	

Table 1.2 Results from interviews with two teachers

After evaluation of these interviews, we expanded the challenge 'new child in a class' to the goal to design a product that will improve the social skills of children and will let the different children in a group connect with each other on a deeper level. Besides, this would make it easier for new children in a group to feel connected to and accepted by the other children.
We would focus mainly on the higher classes of primary schools. Since the children here are too old for classroom games like the group discussion, or "kringgesprek" in Dutch and thus no longer have this social training.
With improved social and collaboration skills a newcomer would feel welcome faster, but the product will also still be useful after a longer period of time and the rest of the children would learn something as well. Besides that, the lack of training in social skills would cause insecurity and poor teamwork skills later in life. See quote Calvin Eleby.

During the design process, we simplified the concept to make it stronger. We decided to not include the tables into the design, since it would be too complex. Finally, we ended up with the following system: "Every child has their own token which they have to scan under a screen when they enter the classroom. When they scan the token a challenge appears and they have to do that challenge during the day. During this activity they have to connect the token and when they are done they will disconnect the tokens." This way, the teacher would be able to see whether and how long they did the challenge, as is drawn in the scenario of the figure on the right. They do not have to hand in the results of the challenge per se, since it is not about for instance their drawing skills, but about the interaction between the children.

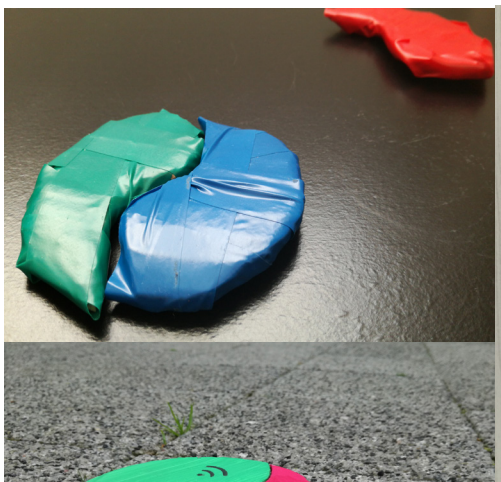
The video of the scenario we wrote can be watched with the following link: https://www.youtube.com/watch?v=ObfhFPttq_c&t=13s

Calvin Eleby mentioned the following:

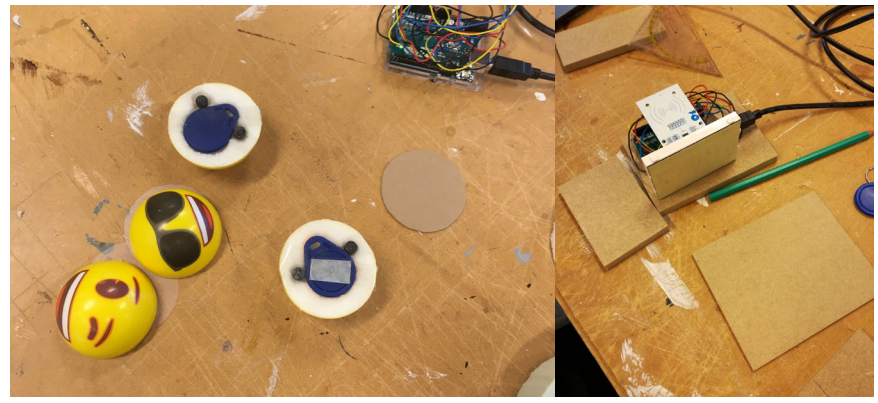
"..., the impact of the lack of social skills on the student academic skills have shown to existed in the student's ability to engage in proper studying skills, problem-solving, decision-making, content mastery, performance skills, and task management skills."

As for the challenges, we thought of challenges that would spark conversation topics. We tried to implement this into more creative challenges that require input from both. This way each child has to speak up and develop their social skills. That will be very useful later on when working in teams and it helps to reduce insecurity and bullying. We also thought that making groups by hobby would stimulate friendship, since both children are really interested in that particular topic. The assigning of the teams and challenges would be done by the teacher on a software. A random button would be included as well. The teacher would have to assign the children to these groups of two every day. This way, the teacher will have a hand at group dynamics in a better way.

REALIZATION



The first time we drew the tokens for MyTokenChallenge, we drew them like two half orbs, but quickly came up with the yin-yang shape for a better fitting, since the two tokens should be clicked into each other when the children will be doing the challenge.
We made a quick prototype of both those shapes and went for the yin-yang shape, because it has a nicer grip. After that we made a more professional looking prototype for shape and a low fidelity prototype for the screen, just to make the idea clear, which is shown in the left three pictures above.
After the demo-day however, we received some feedback that we should maybe make the tokens more playful and fun. We also came across some difficulties with getting the components into the token, including the still unknown mechanism to click them together. We choose to go back to the half ball since this shape would solve all these problems. These new tokens were also made out of soft squishy foam. This way it would only be an actual ball to play with when it's connected and we thought it would be an incentive for doing the challenge.
As for the screen on which the token should be scanned, we first thought of using a tablet or fake it with our laptop to present our idea, but later on thought of putting the token scanning electronics in a box to be connected with a USB-cable to a computer, which are already available at schools, for financial



reasons. Since the screen was the most expensive aspect of our product this decision made the product more attractive for schools to buy. It would also be more easy to use, since the box can easily be plugged into any computer.
We left out all the parts which weren't essential for our user tests. That is the software. The prototype for the first user test consisted of a token scanner and standard bare tokens.
The prototype for the second user test, at an actual primary school, consisted of a token scanner and tokens with fully finished and child proof casings.

VALIDATION

We had some trouble finding a school where we could conduct a user test, due to their busy schedule. So, we looked for alternatives and contacted "Speeltuinvereniging Philipsdorp". After receiving a positive response, we did the user test at that playground. We found out that the children had some difficulties reading the challenges in time and thus needed to scan the token several times. Therefore we prolonged the time the challenges are on the screen and made shorter and easily understandable sentences afterwards.
There was also confusion about which token belonged to whom again and one token was already accidently dropped in water. To prevent this from happening next time we adjusted the casing of the tokens. We chose to use a bright yellow colored half ball, so they are easier to find when lost, and to use a bounceable ball, and can handle a reasonable amount of water.
We tested with very young kids, about 4 years old, and found that they did not work together at all during the challenges and therefore did not get to know the other better. The older kids, about 10 years old, understood the challenges better and worked together. Even if they did not like each other, a quote from one 10-years-old girl is: "Oh no! I do not want to be paired up with him!" However, the team still fulfilled the challenge successfully. In the questionnaire we let the children fill in afterwards, we found that that they liked the excitement of questioning with whom they would be paired up. They wanted to try the system at school and really liked the challenges, as is visible in the graphs in the appendix.

User test at Speeltuinvereniging Philipsdorp (left) and OBS Brandevoort (right).

In the meantime, we continued contacting primary schools. Eventually, the "Openbare Basisschool Brandevoort" was interested, we made an appointment and conducted another user test, now to test whether connecting the token had a better effect and used the yellow half ball tokens for the first time. (foto invoegen)
The main difference with the other user test is that the children here were a lot calmer than in the playground and actually took their time scanning and testing the product. They were really excited and saw it as something way more fun than the usual learning material. The changes we made in the token also turned out to be an improvement and definitely liked them over the bare tokens. Furthermore, making a connection felt more engaging to them. Some quotes from the children are: "why do you get the smiley and I get this thing?" and "Oeh, these smileys connect! how cool!" although we had to tell them that that was possible beforehand, this would have to be improved by including an indication for that. And again sometimes there was a struggle reading and remembering the challenge. So, this is a clear point of attention.
Everyone liked the challenges and wanted to do this more often, on a daily or weekly basis. The collaboration went well and they generally talked more than usual. Unfortunately, some were already good friends and did not get to know each better, as is shown in the graph.
In addition, the teacher, Aukje, gave some interesting feedback; some of the challenges are a little too personal, since their home situation might be emphasised. Other than that, she thought "[MyTokenChallenge would bring the children closer together, because] they will focus on the assignment and make contact more easily, because both would want to complete the challenge successfully." She also said that she would like to do this every week. The questionnaire of the teacher is included in the appendix.

OVERALL RESULTS

The final outcome of our product 'MyTokenChallenge' consists of three parts, the tokens, the scanner and software. On the computer software, that will be kept up to date, the teacher will be able to make pairs and to assign them to one of the challenges every day. Or press the 'random' button, so the system will do this for him or her. Each child from the class will have their own personal token which they can scan on the scanner in the morning, preferably already when entering the classroom. When they do this on the laptop/digibord the scanner is connected to, their challenge of the day will appear. The challenge will be formulated in a simple way and illustrated to make it clear to the child what it needs to do, but there is also room for each child to give their own interpretation of the challenge. Under the challenge will be written with which classmate they need to fulfill the challenge and a picture of this person. When the children come together, either in the break or during a time specially assigned by the teacher to work on the challenge, the two children will need to connect their two tokens. When they do this, their tokens will measure how long they've been connected with the other token and send this information to the software on the laptop of the teacher. This way on the end of the day, the teacher will be able to check if and for how long all children had worked together. The tokens are bright colored, bouncy, easy recognisable and funny. They have been "childproofed" when this turned out to be necessary after the first user test.

CONCLUSION

The original assignment we received was to design a playful product that would make a new child feel at ease in a new group faster. While brainstorming, we expanded this challenge to the goal to design a product that will improve the social skills of children and will let the different children in a group connect with each other on a deeper level. After all, this would make it easier for new children in a group to feel connected to and accepted by the other children.
We are glad to say that we fully achieved this project goal. MyTokenChallenge will improve the social and teamwork skills of children by letting them work together with all children with different kinds of personalities. In the challenges the children will need to share and discuss personal information in one-on-one groups and thus they will get to know each other better and connect on a deeper level. This all while playing fun and engaging games.
Looking back, maybe we should have focussed more on high schools rather than primary schools. Because here MyTokenChallenge will fit even better than in primary school, since in all the children there already have known each other for years while in high schools the children get new classmates regularly. But blinded by our project goals, which stated 'children' rather than teens, we realized this too late. We learned from our mistake and in future projects we will keep in mind to research all possible user groups.
Besides this, we are glad with the final results and that teachers as well as students see a lot of potential in it.

REFERENCES

1) Marlies Dieker (group 6) (BS Starrebos hilvarenbeek)
2) C Eleby (2009). The Impact of a Student's Lack of Social Skills
3) on their Academic Skills in High School, p. 12
4) Aukje Berkers (group 6c) (OBS Brandevoort)
5) Wendy Peeters (group 5a) (BS Swentibold)

REFLECTIONS

Fabienne Crans

This reflection is about looking back at my first semester project in the squad Play to learn, learn to play. I will reflect on the expertise area's applied, the guided design process and my professional skills.

I integrated a lot of the expertise area Creativity and Aesthetics in the project; I used several ideation techniques, but found out that my best ideas came from doing it my way, by "research ideating". To prevent having problems ideating in the future, I will use sketching and prototyping apart from that. Next, I got acquainted with the Adobe programs InDesign, Illustrator and Premiere, which I think are convenient for clearly presenting a design. I made the poster for the mid-term demo day in InDesign, but I used Word and Paint for the logo, which I will use these less in the future. As for Illustrator, I practiced with making shapes and color gradients and made the final logo. I think it is professional-looking and suits the target group, kids, since it has bright colors, but still doesn't look childish. I will keep improving my skills in these programs, since I think presentation is 'everything'. I also started working with Adobe Premiere and edited two videos, but I did not thought it out thoroughly in advance. Next time, I will prepare this better.

As for User and Society, we used the QOC-matrix with requirements to decide on the concept, which I thought was very useful, also for in the future. I organized a user test with group 6 of the Openbare Basisschool Brandevoort and I got some very positive reactions and results. Next time, I will perform a more official user test with consent form and think about the goal per question of the questionnaire and go more in depth. In addition, I will perform a cognitive walkthrough and heuristic evaluation to have optimal results from the final user tests in later projects.

Within the expertise area Technology and Realization, and Math, Data and Computing, I didn't program anything of the RFID system with Arduino or Processing, since it was a one-person's task, but I will be more involved in the programming part next project. I did however work on the prototypes, but they were still a bit low-fidelity because of the squishy foam. In the future I will focus more on high-fidelity prototyping. And I did make a report for the elective Creative Mechanical Engineering about the tokens of Project 1 with regard of the material choice and physics, but this wasn't finished yet.

Within the expertise area of business and entrepreneurship, I only made a part of the business model for Project 1. Unfortunately, this isn't very accurate, since the costs were not exactly known. Afterwards, we thought about reducing the costs by adjusting our design.

The design process was structurally guided and I think that was very helpful for the first project and now I have an idea of how it could be done, but I am glad that next projects will not be guided by a planning.

I think the planning should shift to the front; the ideation and conceptualization took too long and thus we had little time for realization. The communication and collaboration within my project group went smoothly and we distributed the tasks fairly. Moreover, we all had a hand in the design. We only were a bit hesitant with decisions. I will try to better this by taking initiative more often in projects to come. As for presenting and pitching, which fortunately we practiced a lot in the project meetings, went well during the final demo day, though it is not perfect yet. I will prepare and practice pitching more in the projects to come. Finally, while writing the report I had difficulties with distinguishing the different chapters' content, but asked for extra feedback and after that I understood the difference better, nevertheless I will find my own way of reporting in the projects to come.

Kyara Fasen

During project 1 I went through my first actual design process. It was the course in which I learned the most this entire year. Not because of the useful lectures, like the pitching workshop, but mainly because here I got to put all the things I learned in my other courses into action. And develop in all these different skills. My main learning points this half year were, the ideation, the realization, the user tests, both the demo days and the structure of which steps we needed to take in the design process.

I was really happy with the structure that was presented to us by project coaches Carl Megens and Daniel Tetteroo, with this structure we always knew what to do and if we were ahead or behind schedule. Thanks to it we were even ready for the demo day a week early. Every week I wrote down what we needed to in a separate file. I will use and try to follow this structure again in future design processes I will be going through.

During the ideation phase I learned a lot about the different ideation methods, I already learned about these in my course 'from idea to design' but never got to put them to practice. We tried to use as many different techniques as possible while coming up with product ideas. I now know which techniques work for me and which don't. So was 'sketching' really fun but it didn't really gave me new insides. While the '3-3-5 brainwriting technique' really sparked my creativity. The 'QOC Matrix' also turned out to be extremely useful and is probably my favorite method. The techniques I will use again are that once which worked for me. I'm really thankful that I now have this knowledge so next time, when I maybe won't have as much time, I know which ones I should use.

I've done a lot of thing I didn't saw myself capable of in the beginning of the project in the realization phase. Never have I made so many prototypes before. Especially the making of the tokens was a challenge because the choice which materials to use was really hard. We ended up making over 5 different prototypes for the tokens, all of different materials. I really learned a lot from this since the only material I worked with before was wood. While making these prototypes I learned how to work with all these materials and what their properties are. This knowledge will be really useful for me while making other prototypes in the future. While prototyping I also needed to work with the large woodworking devices in Vertigo. I was first a bit scared of using the big devices in vertigo, but since none of us knew how to work with them I couldn't just ask one of my teammates to do all the cutting. The first time using the saws in vertigo was a big victory for me. I noticed how it really wasn't that hard, I could do this again. So I did. Now I worked will almost all the machines in Vertigo. I'm really glad that I now have a basis of woodworking, since it is a skill one really needs here at Industrial Design.

While preparing the user tests a lot of things went wrong. We had so much luck we were ahead of schedule otherwise we would have had a big problem. In total it took us 4 weeks before we could user test in a preschool. We emailed and called so many schools but everyone declined our proposal. So we asked around and talked to our project coach Carl Megens about how to handle this.
I learned a lot from all these tips! I learned for example that one should always offer something back for the help and how to best structure my emails. This will all be really useful when I'm contacting users again in the future! Also the tip to user test in a playground if schools kept declining was really golden. Eventually we were even able to get a school to let us come test there.
And at last, were do I even to describe what I learned from my first two demo-days. I expanded my Illustrator skills by designing posters and business cards. My pitching got so much better, also thanks to the workshops. The inspiration I got on those days from seeing the other teams projects was enormous. I was incredibly nervous my first demo day and I'm so happy that I'm able to say that it was actually quite fun.

I believe that this course 'project 1' is the most important one I followed this year. While following it I improved all the skills I will need in my career as Industrial Designer. Not only the techniques I now understand and knowledge I gained but also my improved teamwork skills will definitely bring me closer to being a good designer in the future.

Tijn Dieker

I In project 1 we worked in a 3 person group and did go through an iterative design process. The process consisted of five iterations: pressure cooker, ideation, conceptualization, realization, and validation. Our subject was “learn to play and play how to learn”. Within that subject, we had the assignment to design a product that could help a new player fit faster within a team.

The pressure cooker is the first thing we did. I was not aware that this was something that you can do in a design process. At the start of the pressure cooker, I was anxious that we would not have a good outcome. I learned that you can do a lot more in a short time than you think. Although I was not totally pleased with the outcome, I gave me a lot of insight about the assignment.

During the ideation phase, we did differ brainstorm techniques. One of them was the drawing brainstorm technique. I am not good drawing so I did not do it often. However, I leaned that it is very useful for thinking freely. In the future, I am going to use this more often. What I also learned that it is easy to have your ideas on separate paper so you can group and organize them.

In the conceptualization phase, I contacted a teacher to verifiy if our idea could work. Before I learned in the course “user centered design” that contacting an expert was something you could do. However, I did not do that before. Now I have experience in contacting and interviewing someone. We also created a scenario where we really focused on creating a good story. This helped us to Cleary our concept. In the future, I am going to use this because I learned that is really helpful.

At the beginning of the realization phase, I was afraid that our product would be too hard to make a prototype of. I thought we had to make every aspect of it but I learned that you only can do parts and still have a good prototype. So I came to know the way to make a part of our prototype. I also fully made the part with the RFID-sensor, Arduino and the processing program. Therefore my Arduino and programming skills expanded. Al of this, I did totally by myself consequently nobody else of my group did know how to do these things. In the future, I want to involve other group members so they also learn about it.

Far before we actually were in the validation face we came to know that our user test subjects (schools) were really hard to reach. I learned from this that you have to think forward in the design process. As predicted we had trouble finding schools to cooperate. So I learned that we had to search for alternatives when you can user test where you want. While user testing I found out that I found it fun to work with children. However, there are also some down points: children are unpredictable, it matters a lot how you ask questions and they say things different than they mean.

In general, the collaboration went very well. Every group member did an equal part of the workload and everyone did come in time. Despite all the good, there were also points of improvement. Our meetings did take a long time, mostly unnecessary. During the process, we improved this by setting goals for each meeting. The meetings were also taking a long time because we could not make decisions. There was no dominant person in our group this was the most important factor of that. I wanted to continue often when we were in doubt about something. However, I was not able to do that most of the time because I did not want to push my opinion too much. In the future, I want to find a way to stimulate the process but not come across too blunt.

All in all, I learned a lot in this design project. The most important thing I have learned is that I can be a valuable member of a team that is doing a design project.

APPENDIX

Video links

link to pressure cooker video:	https://youtu.be/Wivoz87FUMY
link to first product video shot without sound:	https://youtu.be/Tj8-fp6p65I
link to scenario video:	https://www.youtube.com/watch?v=ObfhFPttq_c&t=4s
link to final demo day slide show:	https://youtu.be/I_EPD3GqPKA

List of challenges

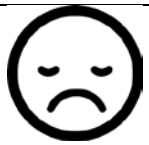
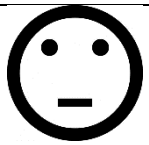
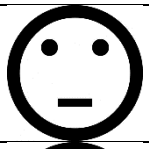
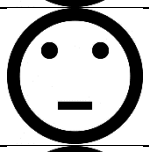
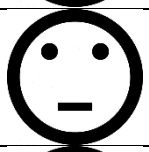
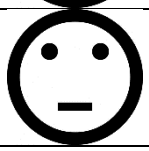
Teken samen jullie ideale speelplaats
Teken een fantasiedier van jullie lievelings dieren
Teken of beschrijf een superheld met de twee superkrachten die jullie zouden willen hebben
Maak 3 lijstjes van 5 dingen die jullie allebei heel leuk vinden
Schrijf een zo lang mogelijk verhaal door ieder om de beurt een regel te bedenken
Ontwerp en teken een droomhuis
Bedenk samen een plot voor een nieuwe tv show
Ontwerp en teken een outfit
Bedenk een spel voor tijdens gymnastiek
Help elkaar met huiswerk maken

Business model

Key Partners	Key Activities	Value Propositions	Customer Relationships	Customer Segments
Schools The government Lesson methods Investors	Putting it together and getting the platform for matching up and running	improve social skills of children way for preschool teachers to intervene and interfere with group dynamics quality one-on-one time between children	buy the product set software updates	We create value for children using this product, their teachers and in long term, our society.
	Key Resources Money for fabrication and organization supply for the electronical parts		Channels Lesson methods	

Cost Structure	Revenue Streams
Production transportation Design	Around € 400 euros

Enquête Speeltuinvereniging Philipsdorp

	nee totaal niet	nee	een beetje	ja	ja heel erg
1 Ken je elkaar nu beter?					
2 Wil je nog wel eens iets met dit maatje doen?					
3 Hadden jullie anders ook met elkaar gespeeld?					
4 zou je dit op school in de klas willen doen?					
5 wat vond je van de challenge?					

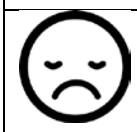
Enquête OBS Brandevoort

Ben je een meisje ◯ of een jongen ◯ ?

2. **Wat was jouw opdracht?**

◯ Teken samen jullie ideale speelplaats
◯ Teken een fantasiedier van jullie lievelings dieren
◯ Teken of beschrijf een superheld met de twee superkrachten die jullie zouden willen hebben
◯ Maak 3 lijstjes van 5 dingen die jullie allebei heel leuk vinden
◯ Schrijf een zo lang mogelijk verhaal door ieder om de beurt een regel te bedenken

3. **Wat vond je van de uitdaging/challenge? (kleur smiley in)**

heel stom	niet leuk	mwah	leuk	heel leuk
				

Wat vond je er leuk aan en wat niet? ……

4. **Zou je dit vaker willen doen?**

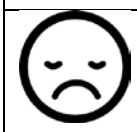
◯ Ja, ik zou dit wel **elke dag** willen doen
◯ Ja, ik zou dit wel **om de dag** willen doen
◯ Ja, ik zou dit wel **elke week** willen doen
◯ Nee, ik denk dat dit snel verveeld, zelfs als er nieuwe uitdagingen/challenges komen
◯ Nee, want ……

5. **Hoe ging het samenwerken?**

heel moeilijk	moeilijk	matig	goed	heel goed
				

Wat ging er goed/fout? ……

6. **Kende je de klasgenoot waarmee je hebt samengewerkt al goed?**

slecht		Een beetje		Heel goed
				

7. **Heb je het gevoel dat je hem/haar nu wat beter kent?**

nee		Een beetje		heel beter
				

Waardoor? ……

8. **Hebben jullie er allebei evenveel aan gewerkt?**

nee				ja
				

9. **Hebben jullie meer met elkaar gepraat dan op andere dagen/dan je normaal zou doen?**

Nee, totaal niet				Ja, veel meer
				

10. **Wat vind je van de MyTokenChallenge? (meerdere antwoorden mag)**

◯ Ik denk dat kinderen zo beter worden in groepswerk
◯ Ik denk **niet** dat kinderen zo beter worden in groepswerk
◯ Ik denk dat een nieuwe klasgenoot zo sneller vrienden maakt
◯ Ik denk **niet** dat een nieuwe klasgenoot zo sneller vrienden maakt
◯ Ik vindt het **niet** nuttig
◯ (anders:)……

11. **Ben je ooit van school gewisseld?**

◯ Ja ◯ Nee

Zo ja, voelde je je meteen thuis en maakte je snel vrienden? Of vond je dit moeilijk?.....

.....

12. **Wat lijken je leuke uitdagingen/challenges? (meerdere antwoorden mag)**

- ◯ Teken samen jullie ideale speelplaats
- ◯ Teken een fantasiedier van jullie lievelings dieren
- ◯ Teken of beschrijf een superheld met de twee superkrachten die jullie zouden willen hebben
- ◯ Maak 3 lijstjes van 5 dingen die jullie allebei heel leuk vinden
- ◯ Schrijf een zo lang mogelijk verhaal door ieder om de beurt een regel te bedenken
- ◯ Ontwerp en teken een droomhuis
- ◯ Bedenk samen een plot voor een nieuwe tv show
- ◯ Ontwerp en teken een outfit
- ◯ Bedenk een spel voor tijdens gymnastiek
- ◯ Help elkaar met huiswerk maken
- ◯ (Anders:).....

13. **Wat zou jij veranderen aan MyTokenChallenge?** .....

Enquête OBS Brandevoort - leraar

1. **Hoe goed is de relatie tussen de leerlingen onderling? Zijn er vaker problemen?**

Goed ◯ ◯ ◯ ◯ ◯ Slecht

"De kinderen hebben duidelijke voorkeuren voor vriendjes en vriendinnetjes in de groep, maar kunnen goed met elkaar samenwerken. De problemen die er zijn, die doen zich voor in de pauze."

2. **Wat vindt u van de MyTokenChallenge? (meerdere antwoorden mag)**

- ◯ Ik denk dat het de sociale vaardigheden stimuleert
- ◯ Ik denk niet dat het de sociale vaardigheden stimuleert
- ◯ Ik denk dat een nieuwe klasgenoot zo sneller vrienden maakt
- ◯ Ik denk niet dat een nieuwe klasgenoot zo sneller vrienden maakt
- ◯ Ik zie de toegevoegde waarde niet
- ◯ "*Goed om kinderen spelenderwijs aan elkaar te koppelen en in gesprek te brengen.*"

3. **Zou het doen van uitdagingen/challenges de leerlingen dichter bij elkaar brengen?**

Ja ◯ ◯ ◯ ◯ ◯ Nee

Waarom? "*Op deze manier richten ze zich op de opdracht en gaat contact leggen soepeler, omdat ze beide de uitdaging tot een succes willen brengen. De uitdagingen zullen talenten van kinderen naar boven brengen, waardoor ze met vertrouwen in contact zijn met elkaar. Ze hebben elkaar nodig.*"

4. **Wat lijkt u leuke uitdagingen/challenges? (meerdere antwoorden mag)**

- ◯ Teken samen jullie ideale speelplaats
- ◯ Teken een fantasiedier van jullie lievelings dieren
- ◯ Teken of beschrijf een superheld met de twee superkrachten die jullie zouden willen hebben
- ◯ Maak 3 lijstjes van 5 dingen die jullie allebei heel leuk vinden
- ◯ Schrijf een zo lang mogelijk verhaal door ieder om de beurt een regel te bedenken
- ◯ Ontwerp en teken een droomhuis
- ◯ Bedenk samen een plot voor een nieuwe tv show
- ◯ Ontwerp en teken een outfit
- ◯ Bedenk een spel voor tijdens gymnastiek
- ◯ Help elkaar met huiswerk maken
- ◯ (Anders:).....

5. **Zou u dit in de toekomst vaker met uw leerlingen willen doen?**

- ◯ Ja, ik zou dit wel elke dag willen doen
- ◯ Ja, ik zou dit wel om de dag willen doen
- ◯ Ja, ik zou dit wel elke week willen doen
- ◯ Nee, ik denk dat dit snel verveeld, zelfs als er nieuwe uitdagingen/challenges komen

◯ Nee, want …….

6. **Zou een product als dit ooit echt kunnen werken in uw klas?**

Ja, heel goed ◯ ◯ ◯ ◯ ◯ Nee, (nog niet)

Waarom wel/(nog) niet? *"De inhoud en de visie van het product vind ik erg sterk. De praktische kant is nog een aandachtspunt. Hoe kan een hele klas dit tegelijk doen? In kleine groepjes is het organisatorisch wel te doen, maar moeilijker in te passen en wordt het misschien te weinig gebruikt."*

7. **Wat zou u aanpassen aan het concept/product?**

"De challenges die ik niet gekleurd heb, die gaan over persoonlijke materialen (huis/kleding). Ik vind deze minder passend, omdat hier de onderlinge verschillen van de thuissituatie benadrukt kunnen worden. Dit kan juist kinderen dominant of onzeker maken, dat het sociale contact niet ten goede komt."

8. **Is er een verificatie nodig als de uitdaging/challenge is uitgevoerd?**

Ja ◯ ◯ ◯ ◯ ◯ Nee

"Terugkoppeling in een vorm zou interessant zijn. Vooral gericht op het gesprek en de samenwerking die is ontstaan. Niet perse gericht op de challenge zelf."

9. **Zou u automatisch willekeurige teams willen krijgen of zou u ze zelf willen samenstellen met een app?**

"Beide zou perfect zijn. Willekeurig, zodat er tweetallen ontstaan die misschien niet in het beeld liggen van de leerkracht. Zelf samenstellen kan in situaties helpen om een relatie te herstellen waar nodig."

What we did per week

Q3		
WEEK 1	**February 6 meeting 1**	Brainstorming ideas for the pressure cooker. **Homework: think of at least 5 more product ideas for the next meeting**
	February 7 meeting 2	**Picking an idea**. We chose the idea of the color changing (and name speaking) ball
	February 8 meeting 3	**Building the prototype**. We made the hockey sticks, for our presentation, in vertigo.
WEEK 2	**February 13 meeting 4**	**going through presentation**. who is going to say what.
	February 15 meeting 5	**coming up with 101 ideas.** brainstorming, sketching, mindmapping, 3-3-5 technique.
WEEK 3	**February 20 meeting 6**	**make selection of ideas** we chose our top 3 favorite ideas
	February 22 meeting 7	**chose final idea** used matrix
WEEK4	**March 6 meeting 8**	**Write video script + make prototype**. We also contacted some primary schools in the neighborhood to ask for permission to film our wordless-video here.
	March 10 meeting 9	**Filming the video + editing**. We filmed the wordless-video and made a start at editing the video. We also searched for the right music to put under the video.
WEEK 6	**March 20 meeting 13**	**study dragon's den business pitches for inspiration**. Make a template of what to say in our pitch according to what we learned from the dragon's den pitches
	March 22 meeting 14	**write business pitch + fill in business model**
	March 23 meeting 15	interview older students and designers about their vision and identity
WEEK	**27 march meeting 16**	**divide the final tasks for the demo day**. to do: A3 poster, business cards, video, slide show, improved business model, 1 minute pitch, 5 minute pitch, poster according template, poster stand, prototype. homework: make all 3 quick poster designs and 3 quick business card designs for the next meeting.
	29 march meeting 17	**building improved prototype + choosing a poster and business card idea**
	31 march meeting 18	**building the poster stand + printing the posters, business cards and business model + making the slideshow** homework for next meeting (demo day): learn pitch
WEEK 8	**april 3 meeting 19**	**midterm demo day**

Q4		
WEEK 1	**april 24 meeting 20**	**divide the tasks + collecting all the materials for our prototype** who will build the electronics, who will build the prototype
	april 25 meeting 21	**building prototype** we build a wooden case in Vertigo and finished to coding for our prototype
	1 may meeting 22	**putting all the pieces together** put the electronics in the prototype
WEEK 2	**1 may meeting 23**	**make to do list + order extra parts for prototype** our prototype is already ready for user tests so instead of working on it a lot further we will go user testing earlier than the others
	3 may meeting 24	**contact users + final touch to make prototype user test ready** we contacted users, make questionnaires for the children and the teacher and also came up with some more challenges. The extra parts of our prototype arrived and our prototype is now user test ready
WEEK 3	**8 may meeting 25**	**making a planning** of what to do before the final demo day
	10 may meeting 26	**call schools + come up with alternatives for user test**
WEEK 4	**15 may meeting 27**	**final preparation first user test**
	17 may meeting 28	**User test 1 at playground 'SPEELTUINVERENIGING PHILIPSDORP'**
WEEK 5	**22 may meeting 29**	**reflection on user test 1**
	24 may meeting 30	**improving prototype after feedback user test 1** Tokens are now more 'fun' + more playful. They are more waterproof, bouncier, harder to break, more recognizable, and easier to find when lost.
WEEK 6	**29 may meeting 31**	**final preparations user test 2** improving questionnaire, making exact planning, gathering final props.
	1 june meeting 32	**user test 2 at primary school 'openbare basisschool Brandevoort'**
WEEK 7	**5 june meeting 33**	**personal deadline posters, video, and challenges ready for final demo day**
	7 june meeting 34	**try-out demo day**
	9 june meeting 35	**final preparations for final demo day**
WEEK 8	**12 june meeting 36**	**final demo day**