netCademy Collaboration Games (Annen støtte - STUD-ENT)

Application Number: ES591704 Project Number: 0

Applicant

Project Owner

Institution / company (Norwegian name)	NTNU FAK FOR INFORMASJONSTEKNOLOGI, MATEMATIKK OG
Faculty	
Institute	
Department	
Address	
Postal code	7491
City	TRONDHEIM
Country	Norway
E-mail	postmottak@ime.ntnu.no
Website	
Enterprise number	881553562

eAdministration	

Project administrator

First name	Trond
Last name	Aalborg
Date of birth	270664
Personal number	
Gender	Male
Position/title	Associate Professor
Phone	976 31 088
E-mail	trond.aalberg@ntnu.no
Confirmation	✔ The application has been approved by the Project Owner

Project manager

First name	Lars
Last name	Føleide
Date of birth	301079
Personal number	
Gender	Male
Institution / company (Norwegian name)	NTNU
Faculty	IE
Institute	Institutt for datateknikk og informasjonsvitenskap
Department	
Address	Sverres Gate 3
Postal code	7012
City	Trondheim
Country	Norway
Position/title	Student
Academic degree	MSc
Preferred language	Bokmål
Phone	98 45 44 99
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Project info

Project title

Project title	netCademy Collaboration Games

Primary and secondary objectives of the project

Primary and secondary objectives	Develop a functional prototype and commercialize a collaborative game for learning IT development among kids and youth.

Project summary

Project summary	netCademy Collaboration Games (netCademy.com), a Kids.AI project, is our go-to-market product positioned to fit the new Centre of Excellence titled Excellent IT Education (ExcITEd: www.NTNU.edu/excited). netCademy will develop collaboration games for youth to learn basic programming concepts in a fun and engaging manner. Our platform seeks to provide kids and youth the skills necessary to thrive in a digitalized world. Through gamification we will inspire and engage kids to learn IT development.

Funding scheme

Supplementary info from applicant

Programme / activity	STUD-ENT
Application type	Annen støtte
Topics	
Other relevant programmes/ activities/projects	
Discipline(s)	FORNY StudENT
If applying for additional funding, specify project number	
Have any related applications been submitted to the Research Council and/or any other public funding scheme	No
If yes, please provide further information	

Progress plan

Project period

From date	20170601
To date	20180601

netCademy Collaboration Games (Annen støtte - STUD-ENT)

Application Number: ES591704 Project Number: 0

Main activities and milestones in the project period (year and quarter)

Milestones throughout the project	From		To	
Customer discovery and product development	2017	2	2017	3
Prototype	2017	3	2017	4
Final product	2017	4	2017	4
Commercialization	2018	1	2018	2

Dissemination of project results

Dissemination plan

Budget

Cost plan (in NOK 1000)

	2017	2018	2019	2020	2021	2022	2023	2024	Sum
Payroll and indirect expenses	500	500							1000
Procurement of R&D services		0							0
Equipment		0							0
Other operating expenses									0
Totals	500	500	0	0	0	0	0	0	1000

Specification

Cost code (in NOK 1000)

	2017	2018	2019	2020	2021	2022	2023	2024	Sum
Trade and industry	500	500							1000
Independent research institutes									0

	2017	2018	2019	2020	2021	2022	2023	2024	Sum
Universities and university colleges									0
Other sectors									0
Abroad									0
Totals	500	500	0	0	0	0	0	0	1000

Funding plan (in NOK 1000)

	2017	2018	2019	2020	2021	2022	2023	2024	Sum
Own financing									0
International funding									0
Public funding									0
Private funding									0
The Research Council	500	500							1000
Totals	500	500	0	0	0	0	0	0	1000

Specification

Fellowship

Type of fellowship
From date (yyyymmdd)
To date (yyyymmdd)

Partners

Partners under obligation to provide professional or financial resources for the implementation of the project

Attachments

Project description

Filename	netCademy Project Description.pdf
Reference	ES591704_001_1_Prosjektbeskrivelse_20170329

Other items

Filename	Shareholder declaration.pdf
Reference	ES591704_010_1_Annet_20170329

Filename	Project described in keywords.pdf
Reference	ES591704_010_2_Annet_20170329

Filename	Master NHH Studentweb.pdf
Reference	ES591704_010_3_Annet_20170329

Filename	Rights to the idea_signed.pdf
Reference	ES591704_010_4_Annet_20170329

Filename	TDT4245 Project Description Group 9.pdf
Reference	ES591704_010_5_Annet_20170329

Filename	TDT4245 Cooperation Technology and Social Media.pdf
Reference	ES591704_010_6_Annet_20170329

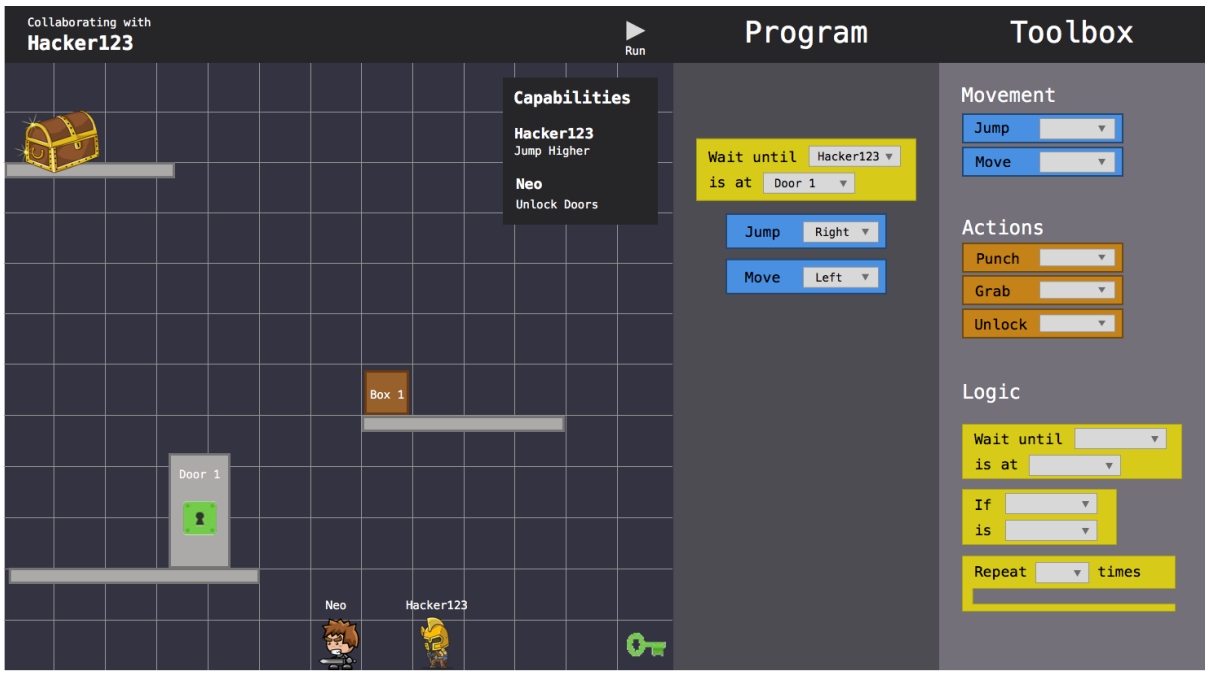
netCademy Collaboration Games (Annen støtte - STUD-ENT)

Application Number: ES591704 Project Number: 0

Filename	CV Lars Foleide.pdf
Reference	ES591704_010_7_Annet_20170329

netCademy Collaboration Games

Project description



1. Business idea

1.1 Brief description of the business idea

netCademy Collaboration Games (netCademy.com), a Kids.AI project, is our go-to-market product positioned to fit the new Centre of Excellence titled Excellent IT Education (ExcITEd: www.NTNU.edu/excited).

netCademy will develop collaboration games as illustrated above for youth to learn basic programming concepts in a fun and engaging manner. Our platform seeks to provide kids and youth the skills necessary to thrive in a digitalized world. Through gamification we will inspire and engage kids to learn IT development. Demand for IT professionals is growing in Norway, EU[1] and USA[2]. Projections shows that there is a significant increase in demand for ICT graduates in Norway towards 2030. Employment of persons with advanced ICT education has increased from just over 17.000 in 2000 to almost 31.000 people in 2010. In 2030, the number will increase to almost 55.000.

There is an increasing awareness about the importance of IT skills with all the focus on automation, robots, artificial intelligence and the sharing economy – making parents feel confused about what to do in order for their be prepared for a rapidly changing job market.

[1] ICT Skills Action Plan 2014-2018, "Government, Education and Industry working together to make Ireland a global leader in ICT talent" retrieved 27 March: http://www.hea.ie/sites/default/files/action_plan_ict_2014_4final_spr.pdf
[2] Bureau of Labor Statistics (2014-2015), Employment Projections 2010-2020, available at http://www.bls.gov/emp/

Members of the IT community have for years been pushing the ”Learn to Code” movement, with sites like Code.org. In Norway we have unique opportunity to expand existing efforts made by organization like the ”Learn Kids Coding” (www.KidsaKoder.no). We deliver a natural extension from the classroom to a collaborative environment with our digital platform. Our collaboration games for learning how to code enable kids and youth to learn basic programming logic in cooperation with others of same age and skills.

1.2 Origin of the business idea

Kids.AI is a business idea that first was conceived during a Singularity University event in Denmark, an idea made clearer in an application to FORNY a year ago, further refined in round 2 in the fall and through an application to Innovation Norway. Kids.AI is in continuous development now with phase 1 funding from Innovation Norway, and further clarified in this third application to Forny STUD-ENT as: netCademy Collaboration Games.

2. Customer insight and customer involvement

2.2 Customer insight

At the entrepreneurship conference Technoport we talked with one attendee (Katja Aigner) who is paying NOK 1000 per year to Tynker (www.Tynker.com) for her kids aged 10 and 12 to learn programming. She thinks it is important that her kids develop an interest in IT at an early stage in life, having recognized that our public education system is not doing enough to prepare our next generation in this rapid shift to a more digitalized life.

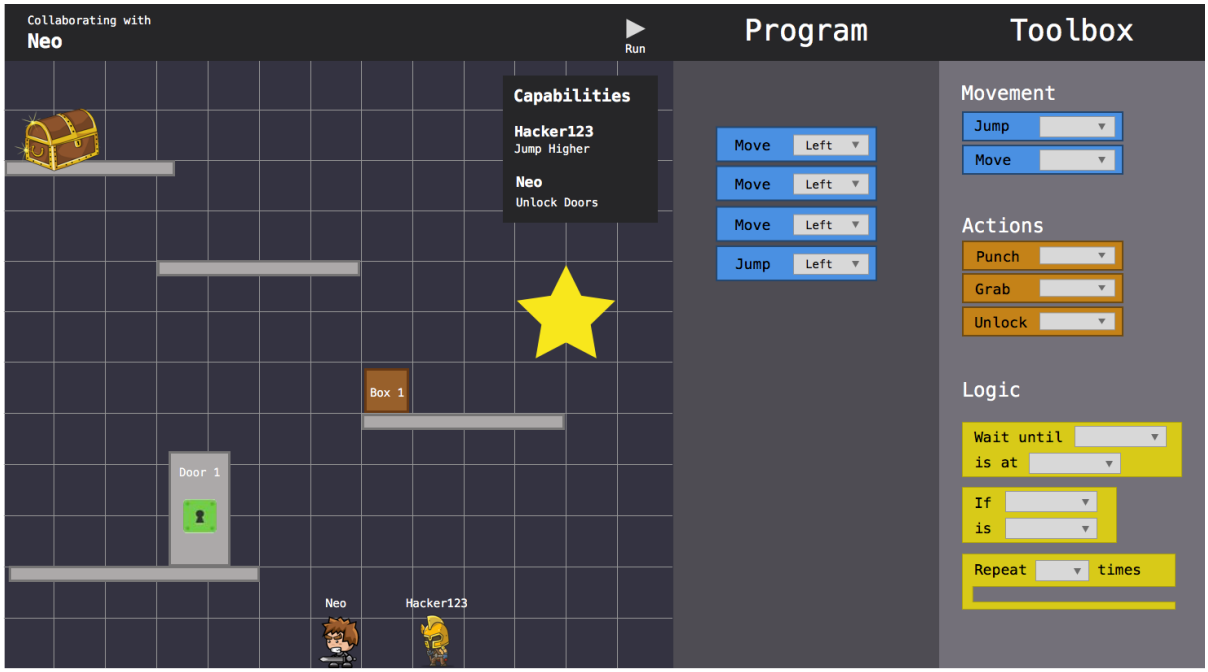
We agree with Katja Aigner, but as a company that seeks to have a larger impact in all of Norway, we recognize the ideology of free and public education in Norway - and therefore aim to ensure that parents like Katja will be able to enjoy similar services in the future, provided to her kids for free through our educational system.

Problem: Our world is rapidly becoming digitalized without there being educated enough IT students to meet the growing demand for IT professionals.

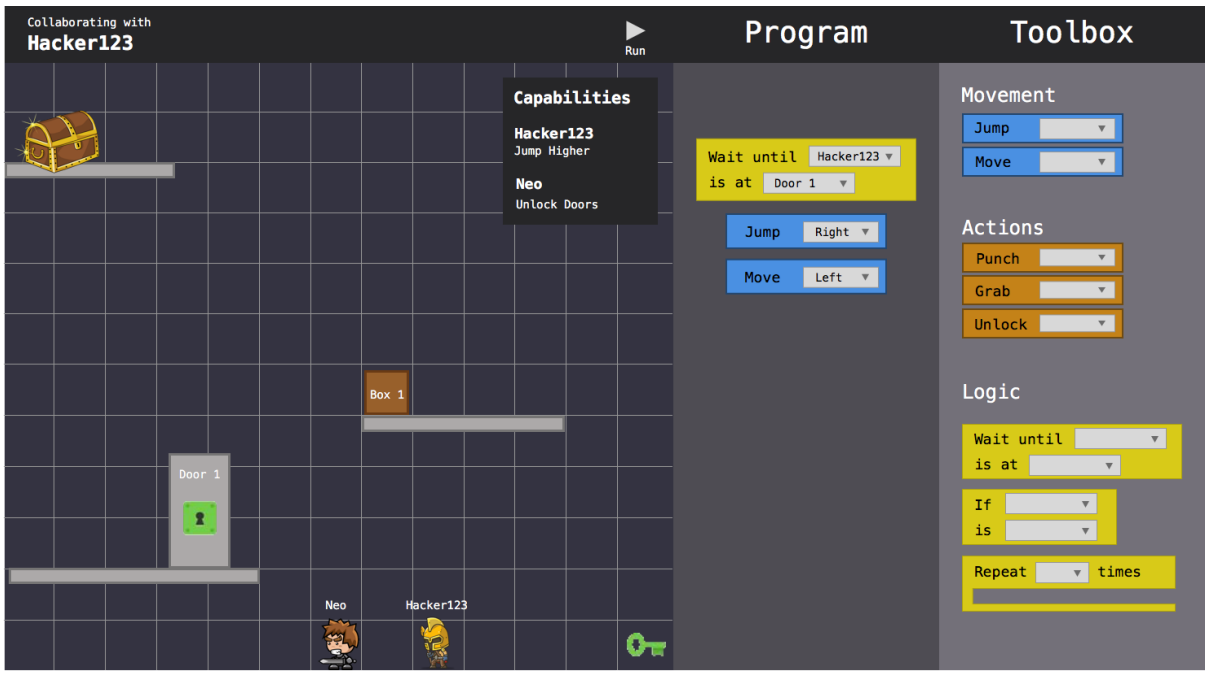
Solution: Our solution is to create engaging collaboration games for teenagers to learn how to code as social experience requiring cooperation with others.

Our first prototype (MVP) is being developed this semester through the class TDT4245 Cooperation Technology and Social Media. We are still in early phases of the development process, having primarily allocated our resources towards literature review with respect to what define an engaging multiplayer game for teaching teenagers IT development. Below are two screens which illustrate the views of the two players. Note the different elements visible to the players. Read more about this game in development in an attached TDT4245 project description.

Player 1 (Neo):



Player 2 (Hacker123):



The assignment given to us in the class TDT4245 Cooperation Technology and Social Media was:

> *Design and prototype with your group a multi-user game to teach to children IT development as a collaborative process.*

Learning can be a social experience, which made the task given in class (attached) an intriguing one.

It has similarities to a collaboration game presented at 2016 Norwegian Game Awards which won the Peoples Award. The challenge here is to make a collaboration game which facilitate IT development as a collaborative process.

2.3 Customer involvement

We have been in contact with ”Learn Kids Coding” (www.KidsaKoder.no) already, and they would be interested in recommending kids who come through their courses to continue learning programming at www.Kids.AI. Which for instance could be by issuing promo codes written on a flyer, which would allow for kids and parents to enjoy our services for free on the condition of providing information of how we can improve our service.

Students at NTNU also have a deep understanding of the multitude of games available on the market, also those from many years ago - like the puzzle game Braid (www.Braid-game.com) which has been receiving outstanding reviews. So when designing a new game that emphasis collaboration, there is a lot of resources for tapping into at NTNU. There are also places like PVV (Programvareverkstedet: Software Workshop) which has members that can answer just about any question about games.

There is a growing EdTech (Educational Technology) community in Trondheim that regularly do meetups. A unique place to find customers and gather feedback from early adopters.

3. Market insight and commercial potential

3.1 Market insight

Kids easily spend countless hours playing Minecraft. If a game can be made just as engaging while still being highly education, kids and youth around the world would go crazy! Since ultimately the entire nation benefit from the increased interest in IT, chances are good for obtaining public funding and getting public schools as customers.

While competitors like Tynker are on the market already, they have gained little traction in Norway. Partnership with organizations like ”Learn Kids Coding” (www.KidsaKoder.no) is critical for gaining any serious market penetration.

3.2 Commercial potential

With concerned mothers like Katja Aigner is willing to pay NOK 1000 per year for her two kids to learn coding, the commercial potential is solid.

Tynker (www.Tynker.com) have since 2012 been on a mission to make coding easy and accessible for kids, having April 2013 made their first launch: a creative computing platform for kids. Now millions of kids have learned to program and built games, apps and more. They offer self-paced online courses for children to learn coding at home, as well as an engaging programming curriculum for schools.

By paying NOK 1000 year, Katja Aigner motivates herself to engage her kids to learn how to code through this online service. It becomes similar to paying for access to the gym, with the high cost serving a motivator to become better at doing regular exercise. Katja Aigner is trying to be the best parent she can, wanting the best for her kids.

At netCademy Collaboration Games we find that self-paced online courses to be a suboptimal approach, only resulting in mothers like Katja Aigner to blame herself for not pushing her kids to use the service more.

We believe the right approach is to motivate kids and youth through collaboration, and with this approach we expect to capture market share from Tynker.

4. Realisation of the business idea

4.1 Financing after conclusion of the project period

Kids.AI founder Lars Føleide is already in dialog with Impact investors at Nordic Impact (www.NordicImpact.no) for expanding his startup house (www.Oslo.Startup.House) to include more houses in Trondheim (www.StartupHousing.com). Should those discussions prove fruitful, continued financing should not be of any issue.

4.2 Regulatory issues and IPR

To our awareness there are no competitors doing collaboration games for learning how to code. Being awarded software patents in Norway is impossible, but we will explore the possibility to get such a patent approved in the US.

4.3 “Achilles heels” of the project

NTNU students are drowning in offers and companies presenting themselves on a weekly basis. Funding will allow netCademy Collaboration Games to make competitive offers and attract developers for a faster go-to-market strategy.

5. Team and resources

5.1 Project team

Core team				
Name	**Position and responsibility**	**Relevant experience**	**Percentage of full-time equivalent**	**Student or recent Master's degree graduate?**
Lars Føleide	CEO	- Master Entrepreneurship - Master Finance 4 years in Silicon Valley	100%	Recent Master's degree graduate
Justyna Szynkiewicz	COO	2 Master degrees : - Social Science - International Economic Relations and Social Policy	100%	Recent Master's degree graduate
Simen Gangstad	CTO	App development experience	20%	Student
Sander S. Skjulsvik	CMO	Marketing experience	20%	Student
Christian Fredrik Kulsås	VP Quality Assurance	User testing experience	20%	Student
Torgeir A. Klevstuen	VP Sales	Sales experience	20%	Student

Mentors		
Name	**Workplace, position and responsibility**	**Relevant experience**
Jan Onarheim	NTNU. Rector's Staff. Prorector for innovation. Project Director.	Works with students at NTNU School of Entrepreneurship.
Kerstin Bach	NTNU. Associate Professor.	Works on Artificial Intelligence research projects.
Trond Aalberg	NTNU. Associate Professor.	Focus on learning technologies and innovative learning activities environments.

5.2 Contributions from the university/university college

Contribution from the university/university college	Tick here for "Yes"	Detailed description of the contribution
Specific scientific expertise in connection with technology development	X	The Department of Computer Science (IDI) is specialized in the areas of software development, interaction design, learning technologies and other technological aspects relevant for the project.
Agreements providing access to laboratories and testing facilities		*Not relevant*
Advisory services	X	Spark* mentorship and supervision by NTNU mentors
Assistance in testing and conducting surveys	X	NTNU has a university-school-collaboration which give basis for collaborating with high schools, setting up test groups and doing pilot studies.
Access to relevant networks	X	Possibility for collaboration and access to ExcITEd
Expertise in entrepreneurship	X	NTNU has a school of entrepreneurship and a unique environment for students to create startups
Access to other students who are writing papers on relevant topics for the project	X	netCademy will collaborate with professors supervising master thesis students that write about learning technologies
Office space	X	Possibility for office space at IDI or other locations at NTNU
Other		

6. Project plan and budget

6.1 What is the primary objective of the STUD-ENT project?

Develop a functional prototype and commercialize a collaborative game for learning IT development among kids and youth.

6.2 Milestones and activities plan

Customer discovery and product development: 2017 Q2 - 2017 Q3

Prototype: 2017 Q3 - 2017 Q4

Final product: 2017 Q4 - 2017 Q4

Commercialization: 2018 Q1 - 2018 Q2

Shareholder declaration

STUD-ENT project title: *netCademy Collaboration Games*

Share distribution/planned share distribution for the company/planned company				
Name	**Workplace, position**	**Shares (no.)**	**Shares (%)**	**Student or recent Master's degree graduate?**
Lars Føleide	CEO	1 million	100%	Recent Graduate

Total number of shares/planned shares for the company: 1.000.000 (1 million)

Any deviations from the above during the course of the STUD-ENT project period must be approved by the Research Council of Norway.

The undersigned shareholders confirm that the above information is correct:
All shareholders must sign this declaration form to confirm that the information provided above is correct.

Trondheim, March 28th 2017

Lars Føleide

Project described in keywords

Question	Keywords
What is the customer need/business opportunity?	*Prepare next generation for an active role in a digitalized future*
What is the solution?	*Collaboration games for learning how to code*
What is unique compared with existing solutions on the market?	*Emphasis on collaboration towards a more engaging form of developing IT skills*
Examples of typical customer groups?	*Schools and parents*
Which subject area can the project be classified under?	*Information Technology*
What type of expertise should the referees assessing the application have?	*IT, education, business development, public policy, partnering strategies, business development, game development and public procurement*

March 28th 2017

Lars Føleide
Sverres gate 3
7012 Trondheim

Trond Aalberg
NTNU IE
7491 Trondheim

Rights to the initial Kids.AI idea

Lars Føleide hold rights to the idea. This signed letter clarifies the rights of ownership to the project idea.

Trondheim, March 28th 2017

Trond Aalberg

Lars Føleide

TDT4245

Project description

Group09

Lars Føleide, William Henriksen, Sindre Skarås,
Magne Skjæran og Vegard Theriault

Introduction

This is a preliminary project idea for the course TDT4245: Cooperation Technology and Social Media.

The purpose of this project is to formulate a game concept and produce a prototype or an early implementation of a game meant to teach children an aspect of IT development as a collaborative process.

Learning objectives	● LO1: Learn how collaboration can achieve goals that could not be completed individually ● LO2: Learn how to build shared awareness of the workspace when there is information asymmetry ● LO3: Learn to communicate in an effective way to overcome the constraints of the in-game tasks ● LO4: Learn the basic elements of programming and programming logic ● LO5: Learn how players can coordinate work based on their different work capabilities
Genre	Two-player puzzle game, casual in a 2D CVE (Collaborative Virtual Environment)
Brief description	Two users have to cooperate to achieve a variety of tasks on a 2D map. This is done using one or more on-map actors that are programmed by one or both of the users. On different levels different constraints are applied such as information asymmetry, different abilities, and other things that force the players to collaborate and communicate in different ways.
Gaming activities	● Communication with the other player to establish a common understanding of the task at hand ● Programming of on-map actors ● Achieving coordination of on-map actors, including timing considerations
Constraints	- The game can be played in short (30-45 minutes) time spans - The players are not allowed to see one another's screen
Collaboration	The two players are located in the same room, allowing them to talk to one another
Target group	The game will be mainly targeted at middle school students with no previous experience with IT development

Achieving learning objectives

We came up with a set of five learning objectives that we want our game to help the user achieve. We've numbered these LO1 through LO5.
This section details how the game will support these learning objectives.

LO1 - Learn how collaboration can achieve goals that could not be completed individually

Most tasks in our games will be either extremely difficult or outright impossible to complete without cooperating with the other player. As an example, in one task only the first player might be able to view the map, while only the second can actually interact with it. Without communicating with the first player, the second player would be working blind, while the first player simply cannot complete the task except by helping the second player complete it.
By effectively forcing the players to cooperate, we hope to ensure the players acquire a better understanding of collaboration, and how it can often be more effective than working separately.

LO2 - Learn how to build shared awareness of the workspace when there is information asymmetry

The tasks in our game will often involve some degree of information asymmetry. The example for the previous example of one player being blind is a very clear case, while for most tasks it will not be quite this extreme. The players might for example have different starting positions, and thus see different things. Some tasks will use a line of sight system, meaning that if players are in different positions they'll see different parts of the map. Other tasks will have the players seeing different "layers" of the same map; one might be able to see electrical wiring under the floor for example, while the other would see it in the roof.
By introducing these forms of information asymmetry we ensure that the players must communicate in some way to one another in order to complete their tasks, making them establish a shared awareness of the workspace.

LO3 - Learn to communicate in an effective way to overcome the constraints of the in-game tasks

In order to complete the game's tasks, the players will need to communicate. Effective communication is further rewarded, as that will help them complete the tasks more quickly. The two learning objectives above further reinforce the learning of effective communication.
The game will also have a few features assisting communication. Most importantly, there will be a "ping" feature, that allows one to indicate a specific position on the map. As the players cannot see one another's screen, this is essential to ensuring the other player actually understands what you want them to do.
Second, there will be an indicator showing what direction the other player is in if they're not currently on-screen. This will assist the players in being aware of one another's actions.

LO4 - Learn the basic elements of programming and programming logic

The agents that the players of our game will play as will be programmed rather than controlled directly. This will be done through a drag and drop interface, similar for example to the programming language Scratch. The players can insert blocks like “move”, “turn left”, and “wait for event X to happen”. The players then click “run”, to see if their routine solved the current objective. If the routine described by the players doesn’t succeed, they will have to start over. They can then set breakpoints (a point in execution where the execution will pause), and step through block by block in order to figure out where they went wrong.

LO5 - Learn how players can coordinate work based on their different work capabilities

The players will have different special capabilities such as running faster, jumping higher, or unlocking specific locks. This means the players will have to coordinate who does which part of the current objective, based on those capabilities.
The players are also likely to differ in how quickly they’re able to understand and master the game. Our hope is that by communicating they’ll be able to boost one another’s learning by helping each other in the areas where one does better than the other.

Other supporting elements

We’ve taken a number of other steps in our design to help ensure a good learning experience. For one, we’ve considered the six guidelines presented in[1] for “effective game design for learning”.

First of all, Whitton suggests that the game environment should support active learning. We’ve tried to achieve this by making the players’ effect on the environment clear, and presenting them with problems that can be solved as long as one thinks them through.

Second, the environment should engender engagement. We try to achieve this by giving the players explicit goals on each level, but leaving how to solve it up to them.
Our programming-based approach means that each level will have many possible solutions.

Third, the gaming world should be appropriate for the learning context. The main form of interaction in our game is programming, thus teaching the players the basics of programming. By having the player characters be robots, we have a clear narrative connection to the learning objectives.

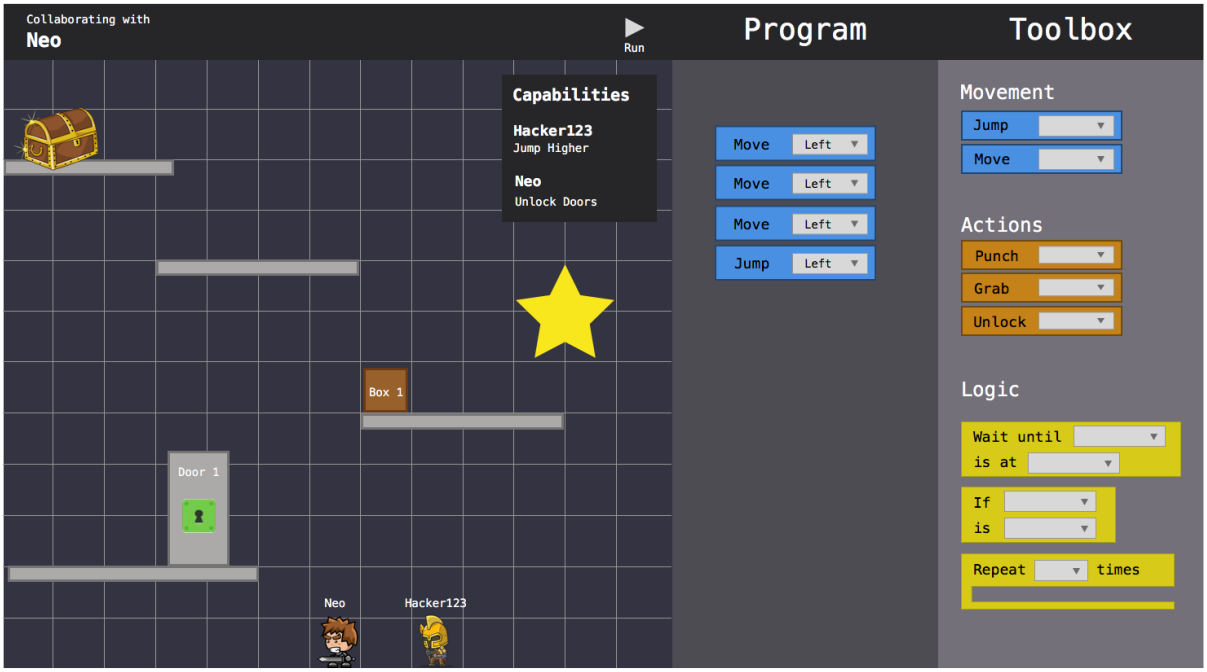
Fourth, the environment or associated activities should provide opportunities for reflection. This aspect we’ve left out, as we consider “associated activities” to be outside the scope of our work so far.

Fifth and sixth, the environment must provide an equitable experience to all users, and provide ongoing support. We try to achieve this largely by having the game start off easy and then gradually get more challenging, with the players allowed to bypass levels if they’re

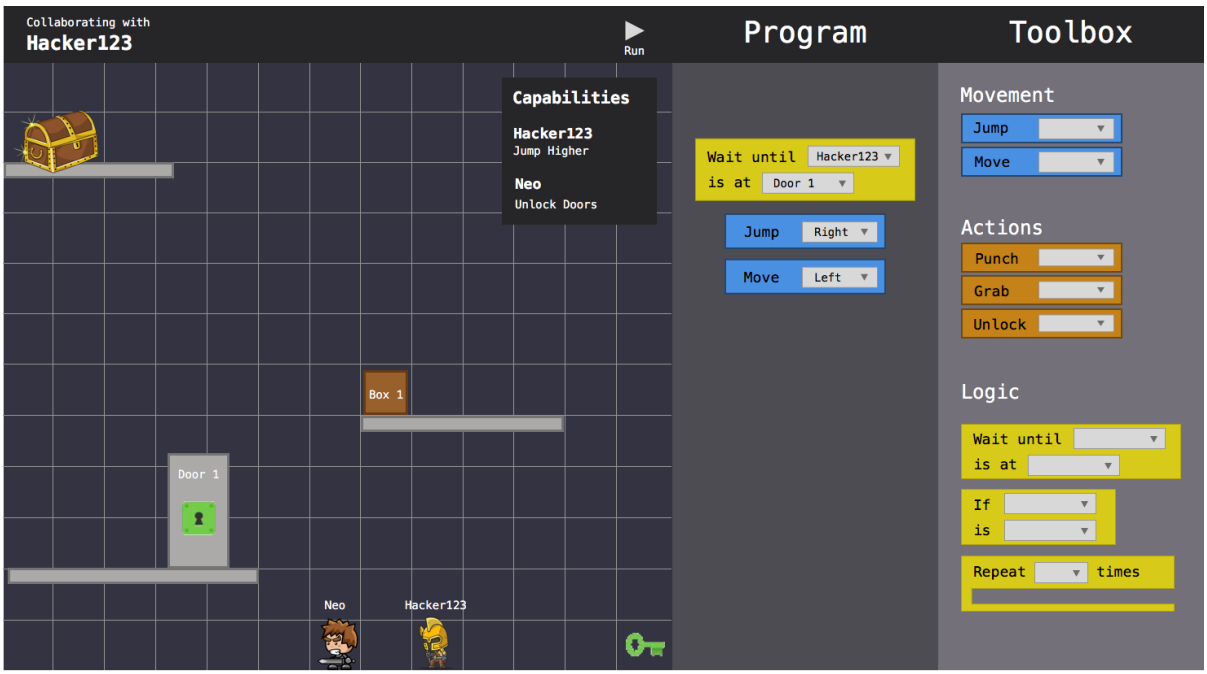
unable to complete them. This we hope will ensure that players of all skill levels can enjoy our game. This should ensure that players are able to feel like they're good at the game, as also mentioned on page 143.

Visual demonstrator of ideas

Player 1 (Neo)



Player 2 (Hacker123)



These two screens illustrate the views of the two players. Note the different elements visible to the players.

Functional specifications

Our functional specifications are based around the table presented in Whitton 2009[1], page 142.

	Functionality required
Environment	Players need to be able to see a map of the environment, with the artifacts present Players need to know all the instructions and syntax they can use to create a program Players must see the result of their program by the character going through a set of animations and movements
Navigation	Players must be able to navigate between the programming view and the execution view
Tasks	Each player will have different key info about the shared environment which they must make the other aware of. The players must agree and collaborate on how to win the level by moving, interacting and using their different capabilities and restrictions
Characters	Each player will receive a character with some recognized abilities and restrictions. One player's restrictions will usually be directly supported by the other's abilities
Objects	There will exist different objects in the environment that will pose some challenges and opportunities to the players The game will also have objects that may grant the player some new abilities, or even instructions for programming
Object interaction	Each object will be of different types, each of which pose some way for the player characters to interact with, be it pick up, push, spawn, destroy, etc.
Player interaction	The players can (sometimes) see each other's position and movement The player can communicate by placing a marker in the environment, which will draw the other player's attention
Status information	See which level players are at See the status of the characters (e.g. number of jumps remaining), if relevant to their characteristics See possible countdown timer See items collected See status about the program (instructions present, number of instructions, etc.)

Supporting collaboration activities

Communication

Communication is supported primarily through in-person verbal talking. This will be (intrinsically) informal and synchronous. The game will also allow the players to communicate using in-game actions and capabilities. The environment will be at least partially shared, and the players can see each other. They are also able to gesture to each other using movement (ex. show where to walk), “pings” made with the cursor on the map, and other interactions that affects the game world, such as one player raising a platform to show the other where they want them to look. These are all synchronous, informal types of communication, and we plan for the game to teach and encourage the effective use of these.

As for affordances, the premise of the game is to simulate difficulty by neglecting to give the players some essential affordances. These will take form of different world-views (visibility - different elements, audibility - some different audio clues, and tangibility - can touch/interact different things). The communication will also be supported by affordances in terms of some co-presence/visibility - knowing they share at least partly the same environment, as well as some similar visibility. Other factors that help enhance the communication will be the ability to move and show your movements in a sequential fashion, wherein a programming phase is followed and interchanged with a movement/execution phase. We’ll also consider communicating pieces of code, which will be inherently reviewable before sending.

Awareness

Now, teaching the players how to attain awareness is a another key component in this game. The game will direct the players to share awareness with all their available forms of communication - talking in-person, pinging on the map, and other, context-sensitive interactions with the map. The player will be taught to gather information from both the artifacts/environment, their mutual conversations, as well as the effects of each other’s actions on the environment. By having different views and abilities, all of which are needed for the solution, some interdependency is created between the players. This forces them to engage in sharing awareness both about what is present, but also about their own position and possibly the goal of the task. Because the game is about following instructions, it will in practice offer a history of movement and actions, as well as possible resulting events.

Coordination

We imagine the game will be simple enough not to demand any mechanisms that explicitly support coordination. Some coordination will already be inherently supported by the format of a programming phase, where players will be naturally inclined to discuss and plan the task. In addition, this coordination will build upon what has already been mentioned in the section about awareness and communication.

Information sharing

We don't see any big need to support information sharing more than what is already provided. That being said, information sharing will be essential for collaborating and completing the task. The game will encourage the players to share everything they see and think, quite possibly with a tutorial.

Social interaction

By being a multi-user game enabling collaborative gameplay in the same physical space, our game fosters a fair amount of social interaction. This is especially important by letting us use the constructivist learning approach, which encourages learning by discussion, sharing perspectives and finding a solution in unison, as described on page 47 in Whitton 2009[1]. Furthermore, in pages 38-39 Whitton identifies social interaction as one of the key motivators that makes (serious) games more enjoyable for players.

Reflection notes

Sources and knowledge evaluation

A lot of our design is grounded in the book Learning With Digital Games (Nicola Whitton, 2009)[1], particularly chapter 6, which encompasses "Designing a digital game for learning". We have also looked at "The Gamification of Learning and Instruction Fieldbook: Ideas into Practice"[2] for inspiration on the design process. We are also basing our design upon the lectures we've received in the course, and using the lecture notes as supporting literature.

Our knowledge at the moment is slightly limited by inexperience, the group has had few opportunities to gather because of scheduling conflicts, and designing a serious game is something we have no prior experience with.

The knowledge we need can most easily be acquired through the supporting literature, what we've read so far of "Designing a digital game for learning" has been very useful, and we aim to garner more knowledge and experience by studying this book.

Questions for other groups

<u>For experts:</u>

1. How do you ensure that your game is engaging and interesting to the target group, alternatively, what methods can be used to test your game without actually having access to test subjects in the target group?
2. How to evaluate success, what are the best metrics to use for checking if you actually have achieved your goals and made a solid product?
3. What do you do when the basic premise of the game has been nailed down, what is the natural next step?

For other groups:

1. How did you organize your design process, and what were the challenges you faced?
2. What did your process look like for brainstorming the basic premises of the game, and how did you decide on a final solution?

Competences

Prototyping

Several of our group members have done prototyping in other courses, and have experience in creating graphical user interfaces and concept designs.

Software development

Most of the group's members are somewhat experienced in software development, and have done the type of development that would be required for the kind of game we're designing. This gives us unique insight into how the product could be finalized after the prototype was done.

Game Development

Amongst the group, several members are taking the "Interaction Design, Game and Learning Technology" study and have experience in the kind of development process we're doing for TDT4245.

References:

Literature

[1] **Learning with digital games: a practical guide to engaging students in higher education** - Nicola Whitton - Routledge - 2009
[2] **The gamification of learning and instruction fieldbook: ideas into practice** - Karl Kapp, Lucas Blair, Rich Mesch - Wiley - 2014

Graphical resources

Chest: http://keywordsuggest.org/gallery/858914.html, downloaded 10. march
Warrior: https://gameartpartners.com/instructional-licenses/, downloaded 10. march
Knight: https://www.behance.net/gallery/20093679/Knight-Game-Character-Sprite-Sheet, downloaded 10. march
Lock and key: https://www.pinterest.com/pin/436497388859684177/, downloaded 10. march

Project Task

Design and prototype **with your group** a **multi-user** game **to teach to children IT development as a collaborative process**

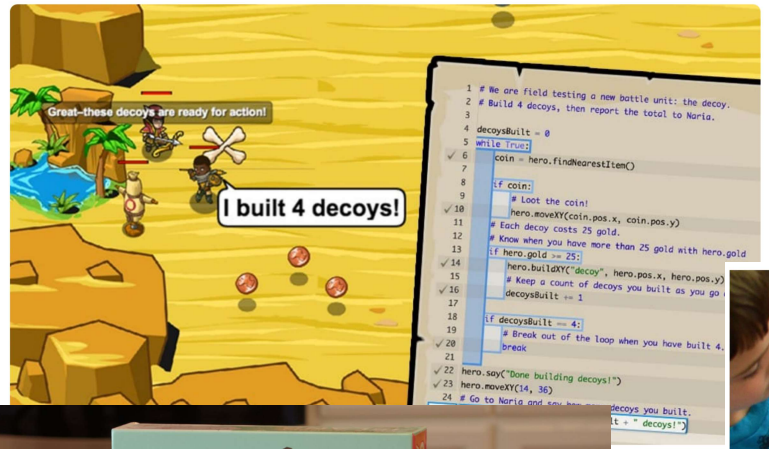
What you can learn with a game

- **Intellectual skills**: Concepts, rules and relationships, and making discriminations (e.g. using algebra to solve a mathematical puzzle).
- **Cognitive strategy**: Personal techniques for thought and action (e.g. developing a mental model of a problem).
- **Verbal information**: Relating facts (e.g. recalling the names of the bones in the hand).
- **Motor skill**: Actions that use the muscles (e.g. dancing).
- **Attitude**: Beliefs and feelings (e.g. choosing to read detective fiction).

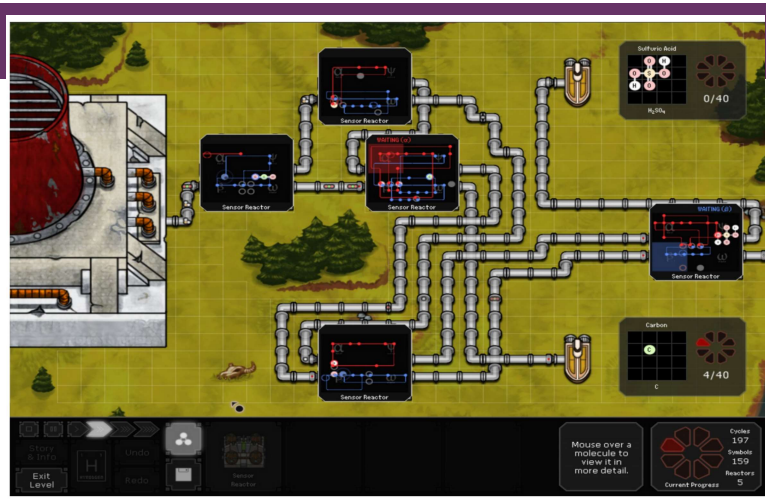
From [Whitton 2010)

Some examples

CodeCombat



spacechem



Above: Schools worldwide have used SpaceChem to support learning. It's still very much a game,

Robotturtles

CodeMonkeyIsland

Ludos

Above: Many schools use Bee-Bot to help introduce programming basics. Image Credit: Dan Crawley

Some starting point – if you need inspiration:

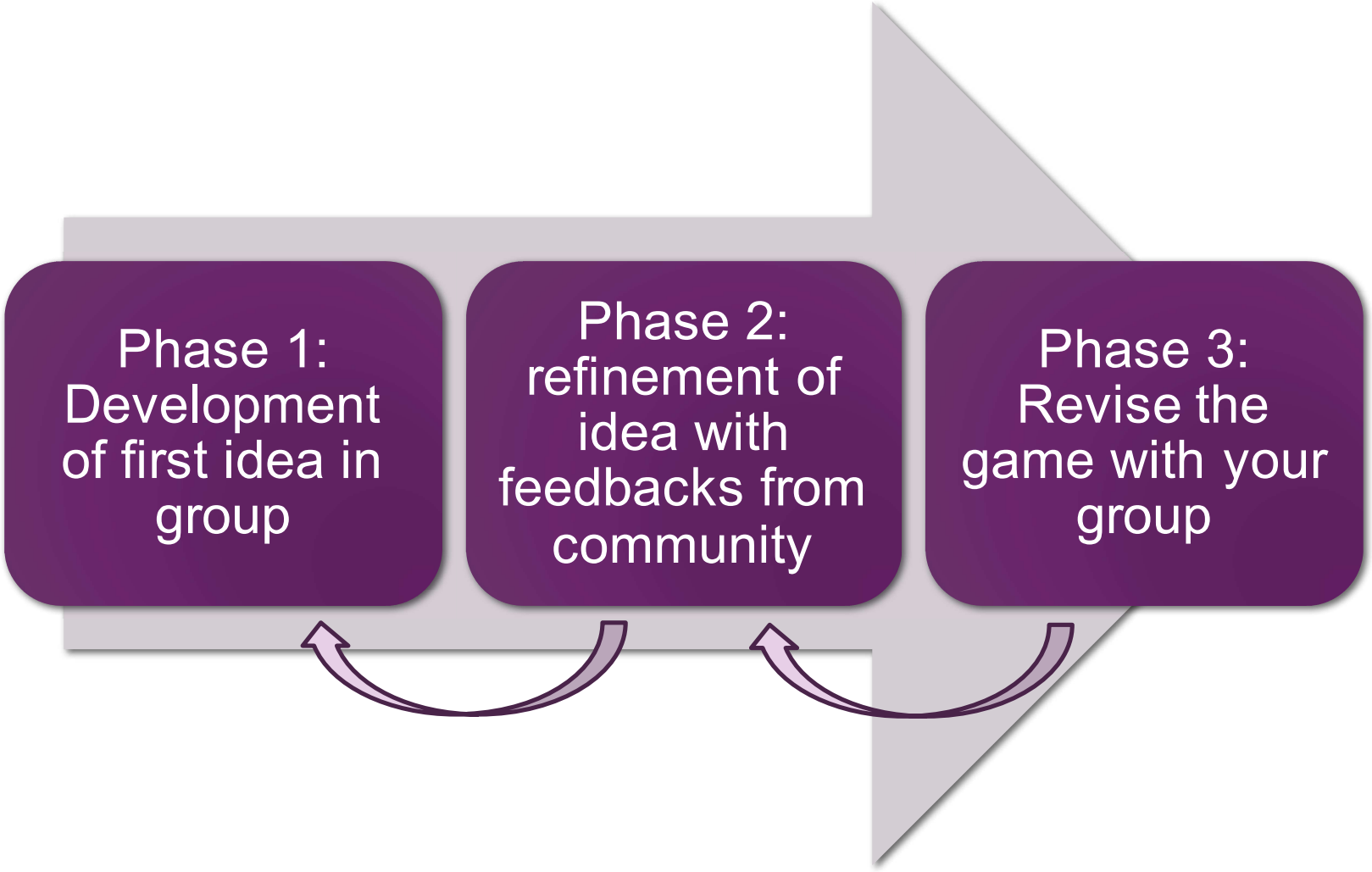
Different activities for teaching programming to pre-university students:

- http://kodeklubben.no/
- One hour of code - https://code.org/learn

- https://kodeloypa.wordpress.com/

- UMI-SCI-Ed - http://umi-sci-ed.eu/
- ExCITEd-P1 https://www.ntnu.edu/excited/informed-decision (under revision)

Project process



Learning objectives of the group project

Design and prototype **with your group** a **multi-user** game **to teach to children computing as a collaborative process**

YOUR PRODUCT →

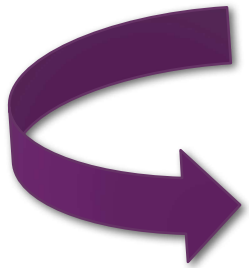
YOUR PROCESS →

Game - content

- By playing your game players are expected to learn [x]
- Where X is something connected to IT development (e.g. design of IoT, searching algorithm, scratch, Java …), **with focus on collaborative processes** (e.g. Peer programming, community sharing, open source projects, project coordination, ...)
- Games or game-like activities, e.g. storytelling; simulation in 3D CVE

An important remark: Making sure that learning takes place

- Reflective accounts
- Small groups
- Replaying the game
- Critique of the game
- Application of skills
- Production of artifacts
- Analysis of game activities, results, …



Reflect on playing

Game – cooperative mechanics

- Players have to interact and cooperate in the game

- Cooperation as intrinsic to the learning objectives
- AND / OR
- As part of the game dynamics, e.g. support coordination among players, promote awareness, sharing resources, …

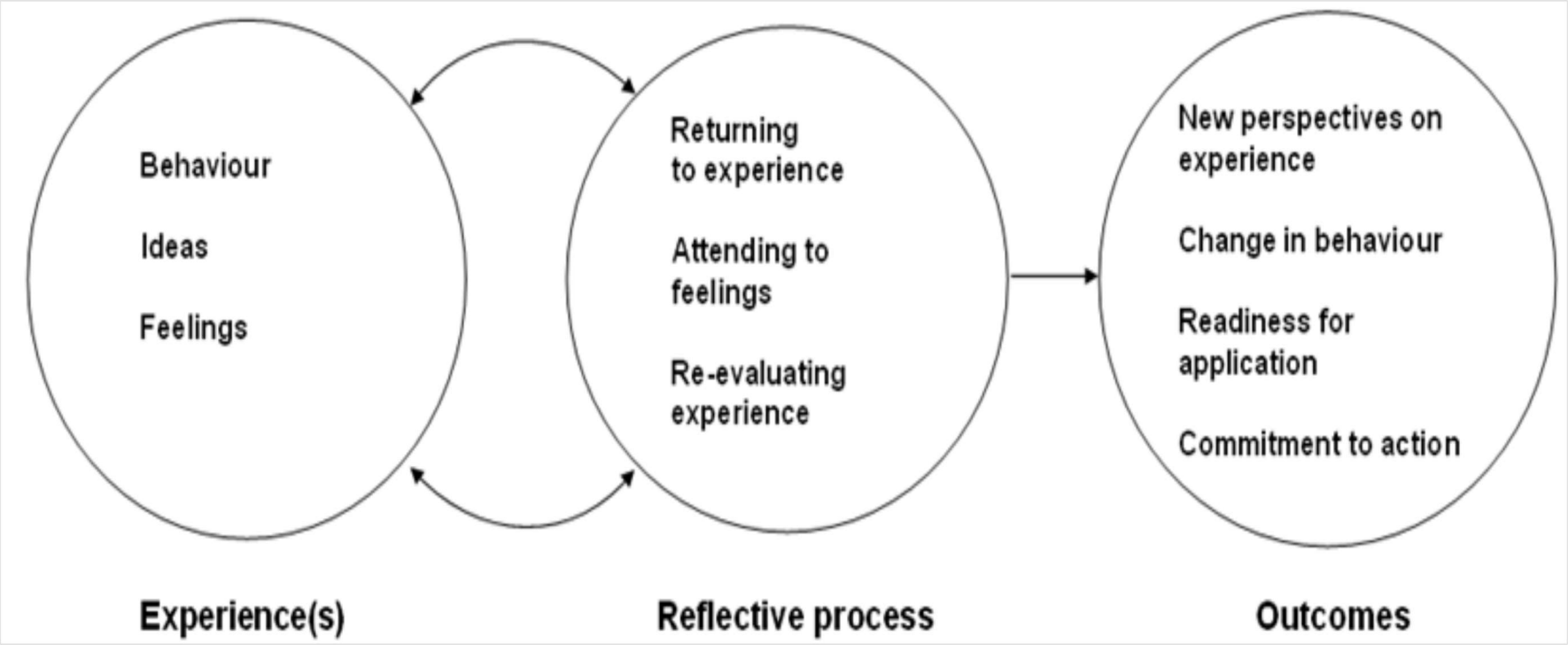
Cooperation in the game – From (Whitton 2010)

- Synchronous multi-player online games
- Asynchronous multi-player online games
- Multi-user games involve turn-taking in the same physical
- Single player games with synchronous online communication where players can discuss the game as it progresses
- Single-player games with face-to-face communication where two or more players collaborate in the same physical space
- Single-player games with community support
- Single-player games with face-to-face reflection
- Team games where groups of people work together (either online or offline) to achieve the goals of the game and compete against other teams.

Cooperation to create the game

- Group work, different phases have different requirements (phase 1&3)
- Community sharing (phase 2)

The reflective learning model



Reflection notes - Templates will be provided for each stage

Agenda

- Practicalities
- Learning objectives of the project
- Deadlines
- Evaluation Criteria

Important dates

- *See Project Important dates!!*

For documents…

Check detailed instructions in itslearning

What is expected from 1 deliverable

- *See instructions in itslearning*

Final demo

We play ☺

You do not need to have a fully functional prototype, but you need to provide the “game experience”

!!Dream big!!

Agenda

- Practicalities

- Learning objectives of the project
- Deadlines
- Evaluation Criteria

What counts for the grading?

- The PRODUCT - The game concept & game prototype: Relevance, grounding in the literature, originality, type of prototype (paper-based, wizard of oz, functional)
- The PROCESS: presentations and reflection notes – level of details, grounding in the literature

- The goal is to learn about cooperation technology and social media, so that is where the focus will be for the evaluation. !! It is NOT a course on game design or software development!!

Evaluation criteria (1)

- Relevance of the selected topic for the course subject
- Understanding of the addressed topic
- Design of the game with respect to learning objectives
- …

Evaluation criteria (2)

- Number of collaborative dynamics implemented in the game
- Relevance of the selected dynamics for the game
- Understanding of the dynamics wrt relevant course literature
- …

Example: minecraft game

From the report:

- ”The implemented game does not include strict rules of how to communicate, but it suggests two forms of out-of-game communications; face-to-face or by VOiP technology. Common for the two forms is that voice is used as the primary communication media. There are several perceived benefits to our games take on communication technology (here grouped by the relational categories proposed in the communication lecture): …
- …In addition to the vocal communication, players may communicate through Minecrafts instant messaging service. As presented in the lecture, benefits of instant messaging services include …”

Evaluation criteria (3)

- Quality of presentations and participation
- Adequate choices of group process and supporting tools
- Quality of reflection notes
- …

Example: iGuess

- After a brief introduction to coordination mechanisms (grounded in the literature), each tool used for supporting coordination is described

Google Calendar

Artifacts	A shared calendar called “TDT4245” on Google Calendar.
Protocol	All group meetings and deadlines are posted. Thus, all users are made aware of scheduling, with associated requirements to completed works and a plan for future agenda.
Policies and conventions	All postings must have time, place, agenda and prerequisites as parameters. Furthermore, all deadlines should have two “reminder” emails sent by Google Calendar, one 48 hours in advance, the other 24 hours in advance. For other postings, one email 24 hours in advance is sufficient.
Malleability	Number and timing of reminders can be changed, but apart from this the mechanism is not malleable. It is a fully featured shared calendar, nothing more.

Make sure…

- You read and follow NTNU ethical guidelines (available also in itslearning for your convenience).

- Check with the teacher if you are in doubt about anything

Curriculum Vitae

First name	Lars
Last name	Føleide
Address	Sverres Gate 3
Postal code	7012 Trondheim
Telephone	98 45 44 99
Email | Web	Lars@Foleide.com | www.about.me/Zyron
Date of birth	30th October 1979
Marital status	Not married

Research

2015:

1st term:

Scholar, Fil. Dr. Jan-U. Sandal Institute, Oslo, Norway

- International Study Course in Innovation Management
- International Study Course in Social Entrepreneurship

2014:

7th term:
(Spring 2014)

Visiting Scholar, Haas School of Business, University of California, Berkeley

Social Entrepreneurship Action Research efforts:

- Launched Sprun Personalized Diagnostics Platform: www.Sprun.org
- Launched Galea Financial Games Studio: www.Galea.com
- Teaching Impact Assessment: *www.DeCal.info/Impact*
- Teaching Qualitative Investing: *www.DeCal.info/Invest*
- Teaching Quantitative Trading: *www.DeCal.info/Quant*

2011 - 2013:

6th term:
(Fall 2013)

Visiting Scholar, University of California, Berkeley

Social Entrepreneurship Action Research efforts:

- Launched Neptus Impact Analysis Platform: www.Neptus.org
- Teaching Quantitative Trading: *www.DeCal.info/Quant*

5th term:
(Spring 2013)

Social Entrepreneurship Action Research efforts:

- Launched Berkeley Startup Housing: www.StartupHousing.org
- Launched Nevara Urban Farming Platform: www.Nevara.org
- Launched Zapan Loyalty Solutions: www.Zapan.org
- Teaching Quantitative Trading: *www.DeCal.info/Quant*

Business and Administration Courses:

- Impact Investing & Social Enterprises
- Leading Nonprofit and Social Enterprises

4th term:
(Fall 2012)

Social Entrepreneurship Action Research efforts:

- Launched Cal's first Residential Incubator: *www.AgoraStartupHouse.org*
- Launched Interactive Tour Guide: *www.GuidedArea.com*
- Teaching Quantitative Trading: *www.DeCal.info/Quant*

3rd term:
(Spring 2012)

Master of Business and Administration (MBA) Weekend Evening Course:

- Lean LaunchPad with serial entrepreneur and author Steve Blank

2nd term:
(Fall 2011)

Master of Business and Administration (MBA) Course:

- Entrepreneurship Workshop for Startups
  - Project: Agora Startup House *(Grade: **A**)*

1st term:
(Spring 2011)

Master of Business and Administration (MBA) Course:

- Opportunity Recognition: Technology and Entrepreneurship in Silicon Valley

Computer Science Courses:

- User Interfaces Design and Development (CS160)
- Software Engineering (CS169)

(All classes have been audited)

Education	**2015 - :**	**Master of Science in Informatics**, Interaction Design, Gaming- and EdTech NTNU - Norwegian University of Science and Technology
	2015 - :	**Master of Science in Entrepreneurship, Innovation and Society**, NTNU - Norwegian University of Science and Technology
	2010 - :	**PhD in Innovation and Entrepreneurship**, Norwegian School of Management BI *60 ECTS is required in the Ph.D. program. 64 ECTS completed.*
	4th term: (6 ECTS)	*Specialization Course:* • Current Research in Innovation Management and Entrepreneurship
	3rd term: (6 ECTS)	*Specialization Course:* • Foundations of Innovation and Industrial Dynamics
	2nd term: (22 ECTS)	*Elective Course:* • Case Study Research Methods, Oslo Summer School, UiO Given by: Professor Andrew Bennett, author of "Case Studies and Theory Development in the Social Sciences", winner of the Giovanni Sartori Prize for the best book on qualitative methods. • Time Series Econometrics *(Specialization Course, PhD Program: Economics)* *Specialization Course:* • Current Research in Innovation and Industrial Dynamics
	1st term: (30 ECTS)	*Common Courses:* • Research Design and Methodological Choices • Qualitative Methods: Data and Analysis • Quantitative Research Methods: Multivariate Statistics *Specialization Course:* • Foundations in Innovation Management and Entrepreneurship
	2008 – 2016:	**Master of Science in Economics and Business Administration**, NHH - Norwegian School of Economics and Business Administration *120 ECTS required in the Master program. 247.5 ECTS completed.*
	3rd term: (22.5 ECTS)	*Major in Financial Economics:* Econometrics, Applied Portfolio Management, M&A and Valuation
	2nd term: *(120 ECTS)*	*Major in Financial Economics:* Cases in Corporate Finance, Applied Finance, Behavioral Finance and Wealth Management, International Finance, Investment Management, International financial markets and financial stability, Economic Analysis, Growth and architecture of financial systems, Empirical Analyzes of Financial and Commodity Markets *Minor in Strategy and Leadership:* Competitive Strategy, Corporate Social Responsibility, Process modeling and analysis, Management and organizational decisions, Strategic alliances and networks *Minor in Business Analysis and Performance Management:* Business Valuation and Strategic Accounting Analysis, Simulation of business processes
	1st term: *(75 ECTS)*	*Major in Financial Economics:* Financial markets, Corporate finance, Financial Crises, Personal Finance, IPOs and Venture Capital *Minor in Strategy and Leadership:* Negotiations, Team and Team Management, Leadership and Leadership Psychology *Minor in Business Analysis and Performance Management:* Strategic Accounting Analysis *Electives:* Spanish Business Language and Culture

2006 - 2008:	**Master of Science in Innovation and Entrepreneurship**, University of Oslo *Average grade (120 ECTS):* ***A*** *(4.83 / 5.00)*
Includes:	Business, Management, Strategy, Marketing, Economics, Finance, Analysis, Organizational Development, Project Management, Commercialization, Internationalization, Innovation Theory, Research and Development
Master Thesis:	Networked business models and strategies for modern e-commerce: Case study of a generic business concept • *Discusses business models that makes use of network effects, and look at possible strategies within e-commerce based on a given concept* Grade: **A**
Spring 2006:	**Diploma: Advanced Entrepreneurship Program (Gründerskolen)** School of Management, Boston University, USA - *Average grade (30 ECTS):* ***A***
Includes:	• Establishment, innovation and management of businesses of all sizes • The choice of focus, organization, financing and marketing • Other key words: sales, negotiations, efficiency and commercialization
2003 - 2005:	**Bachelor in Export Marketing**, Aalesund University College
Includes:	Marketing, Economics, Finance, Analysis, Exports, Organizational Development, Business Development, Leadership, Strategy, Project Management, Commercialization, Internationalization
Bachelor Thesis:	*Open Source Portal Marketing Plan:* A marketing plan focusing on "*Diffusion of innovations*" (Rogers, 1995) which deal with the adoption curve for new technology and "*Crossing the Chasm: Marketing and selling high-tech goods two mainstream customers*" (Moore, 1991) that marks the transition from technology to solutions.
2002 - 2003:	**Economics and Management**, Aalesund University College
Includes:	Economics, Finance, Management, Analysis, Organizational Development, Business Development, Strategy, Project Management and Commercialization
1999 - 2002:	**Computer Science Engineer (Bachelor)**, Aalesund University College
Includes:	Operation and Security of Computer Networks, Visualization and Simulation, Information Systems and Databases, Software Engineering and Programming, Data Communication, Problem understanding, Planning and Formulation, Security Solutions, Internet and Mobile Applications, Distributed Systems, Web access, Industrial Finance, Project Management and Technology Management
Bachelor Thesis:	*Multi-functional Web Browser:* The framework .NET was first released in February 2002, just in time for both to learn more about Microsoft's new area of priority and learn enough throughout the semester to develop a web browser in C# with integrated e-mail, forum, messenger, SMS and chat in one application.
1998 - 1999:	**Completed Military Service**, achieved title: *Leading Private*

Includes:	• Local Computer Support at Håkonsvern, Bergen
	  ○ Responsible for support and maintenance, and participated in various courses
	• Completed the course Ex.phil through the University of Bergen
	  ○ Grade: 2.3 - with honors (laud), 15 ECTS

1995 - 1998:	**General competence (general studies)**, Eid High School
Includes:	Specialization in Mathematics, Physics and English.

Work experience	**2010 - 2014:**	**Doctoral Research Fellow,** Norwegian School of Management BI *PhD Scholar Program: Innovation and Entrepreneurship* • Responsibilities include 36 hours teaching every year, with additional lecture preparations, exam preparation and grading (A course is typically 3 hours per week over 12 weeks, a total of 36 hours) • Research Fellows are also expected to supervise master students working with their thesis
	2007 - 2008: Includes:	**Customer Consultant**, Netcom Ucan2, Oslo • Renewal of contracts and customer support • Sales to family, friends and acquaintances of existing customers • Best part-time seller 2007 and 2008
	Spring 2007: Includes:	**Internship**, InCent Norway (mobile marketing agency), Oslo • Examined the market conditions for marketing towards bluetooth-mobiles • Contacted a number of shopping centers in Oslo for testing the technology
	Winter 2007: Includes:	**Customer Consultant**, Saga Communications, Oslo (sales agent for NewPhone Norway) • Business to Business (B2B) sales • Booked meetings • Conducted sales meetings all over eastern part of Norway
	Fall 2006: Includes:	**Recruitment Manager Region East**, Center for Entrepreneurship, University of Oslo • Recruitment of new Entrepreneurship Students at colleges and universities in the eastern part of Norway • Held presentation in class, and held stands throughout the day
	Fall 2006: Includes:	**Security Consultant**, Hafslund Security, Oslo • Inspection of real estate for consideration of appropriate security package • Presentation of a system for residential alarm • Field sales with an assigned postal code • Earned more than $400 / 2.000 NOK per day, some days more than $1,600 / 8.000 NOK
	Spring 2006: Includes:	**Internship**, Optaros (IT consulting company), Boston, USA • Market Analysis, assessing potential for *Support* as a *Software as a Service* • Presented the results fist to senior management, and later to the remaining 50 employees • Participated in development work related to a Web 2.0 project
	2004: Includes:	**Consultancy**, for *The Norwegian Coastal Administration* through my company *netSite* • Migration to a new *Content Management System*
	2004 - : Includes:	**Managing Director**, netSite DA • Established a consulting company in cooperation with 5 fellow students • Revenue of more than $20,000 / 100.000 NOK after only 6 months of operation • I were in addition to regular consulting assignments responsible for finance, billing, accounting, web pages and all paper work
	2003 - 2004: Includes:	**Customer Consultant**, Elkjøp Stormarked Ålesund • Sold everything from notebooks to mobile phones in the Computers and Telecommunications department Sold electronic equipment including mobile phones and computers • Achieved highest revenue July 2003 • Sold most accompanying insurance plans August 2003

	2003:	**Managing Director**, Chairman and founder of a Student Company
	Includes:	• Took initiative to start a Student Company under supervision of *Junior Entrepreneurship* together with 5 fellow students • Responsible for all the paper work, applications, arranging meetings, economics, etc.
	2002:	**Head of the Student Parliament**, Aalesund University College
	Includes:	• Paid position with engagement for the summer months • Represented students in board meetings, the University College Board and various committees • Achieved Norway's highest student participation in the parliamentary election
	2001:	**Summer Job**, Babysitter, Ålesund
	Includes:	• Stepped in as babysitter for my 1 year old sister when it became clear that my mother were not able to put her in a kindergarten • I would get her delivered at my apartment every day before 7 am, and provide all the love, consideration and care she needed • We would go for walks every day, even going downtown when the big attraction "Cutty Sark Tall Ship Race 2001" came to Ålesund
	2000:	**Summer Job**, Vestlandske Salgslag, Ålesund
	Includes:	• Registration and Dispatch Department, packaged and priced goods from Gilde
	1999 - 2001:	**Teacher Assistant**, Aalesund University College
	Includes:	• Assisted first year students in Basic Computer Science and the second year in Java
	1998:	**Summer Job,** Vestlandske Salgslag, Nordfjordeid
	Includes:	• Facility maintenance
	1996 - 1998:	**Web developer and designer**, NetParadise AS, Oslo
	Includes:	• Developed web applications such as competitions, games, chats, etc. • Tested scripts, corrected bugs and administered hosting • Was an Internet developer pioneer in Norway during the early dotcom days, which resulted in me being headhunted at only 16 years of age – offered $40 / 200 NOK per hour for my expertise
Committee positions	**2016 - :**	**Representative** (supplementary) of The Welfare Council (NTNU)
	2016 - :	**Representative** (supplementary) of Learning Environment Committee (NTNU)
	2015 - :	**Representative** of NTNU Student Parliament
	2014:	**Board member** of Berkeley Rotary Club, California. The board is responsible for managing the overall direction forward for our service organization.
	2013 - 2014:	**Board member** of Humanities & Social Science Association, UC Berkeley. HSSA are responsible for preparing activities for 2000 scholars at Cal. I was one of the founding board members.
	2011 - :	**Member** of Berkeley Rotary Club, California. A service organization that meet for lunch weekly, engaged in helping those in need both locally and internationally in collaboration with Rotary International.
	Fall 2010:	**Board member** of OSI Dance, responsible for booking instructors, booking and preparing the dance hall, providing salsa music in relation to weekly Salsa gatherings featuring various introduction courses the first hour.
	Fall 2010:	**Mentor** for new international students, NHH
	2010:	**Board member** at the BI School of Management delegation of the Norwegian Association of Researchers (2 year engagement)

2010:	**Salary Negotiation Committee member** representing PhD Scholars in salary negotiations between the management at BI School of Management and the Norwegian Association of Researchers • State paid PhD Scholars have always earned more the BI PhD Scholars, but negotiation outcome introduced a completion bonus which for the first time in history give BI PhD Scholars the highest salary throughout the period • Much of the successful negotiation outcome can be attributed to what I learned in a negotiations course at the business school NHH
Spring 2010:	**Mentor** for new international students, NHH
Fall 2009:	**Mentor** for new international students, NHH
2008 - 2009:	**Board member** of NHHI Squash
Spring 2009:	**Class Representative** for Economic Analysis (FIE403), NHH
Fall 2008:	**Class Representative** for Financial Markets (FIE400), NHH
2007 - 2008:	**Leader** of Eyde, the student representation committee for *Master of Entrepreneurship and Innovation*, University of Oslo
2006:	**Board member** of Eyde
2004: Includes:	**Finance Manager** for the Mentor Committee, Aalesund University College • Responsible, in cooperation with the leader, for a record number of events during a 3 week mentor period. • My tasks also included creating the newspaper, flyers and the website for *Mentor 2004.*
2004:	**Leader** of Golf Group
2003 - 2004:	**Finance Manager** for the Linux Group
2002 - 2003:	**Leader** of the Linux Group
2002 - 2003: Includes:	**Member** of the Business Committee, Aalesund University College • Recruited companies in Ålesund for our Career Day 2003, by booking meetings and informing about the benefits. • Developed web pages and informed about the advantages of starting a Student Company.
2002 - 2003:	**Representative** for students at the Board of Aalesund University College
Fall 2002:	**Mentor** for new international students, Aalesund University College
2002: Includes:	**Leader** of the Student Parliament, Aalesund University College • Participation in the Board, various committees and arranging a new parliamentary election • Collected tender for a Kick-Off seminar, gave an opening speech for the entire University College, presented the Student Parliament for new students and worked actively to get people to sign up for the election and to accept responsibility for the different committees in the Parliament • Achieved election participation at more than twice the average in Norway, resulting in the best result in Norway with a wide margin to the runner up. • Performed many tasks as the only person remaining throughout the summer of a deficient parliament board. It was also expected that the leader would do *everything*, since it was the only paid position on the board. Combined with the unusually short deadlines that year, a solid basis was put for coping with stress during periods of long and intensive workdays.
2001 - 2002:	**Representative** at the Faculty Board of *Engineers and Maritime*
1999 - 2002:	**Representative** at the Student Parliament, Aalesund University College

Courses	**2010:**	**Theory Construction Seminar held by Editor of Journal of Marketing, Ajay Kohli,** organized by *Department of Marketing* at *BI Norwegian School of Management* Professor Kohli has to read and critique 3 articles every day as an editor. He shared his insight with us during this two day seminar.
	2010:	**Longitudinal Modeling with Structural Equation Models (SEMs) 2010 Workshop**, organized by *Centre for Applied Statistics* at *BI Norwegian School of Management* The workshop was held by Ken Bollen, one of the leading and most cited researchers in social science statistics. The workshop introduced modern structural equation modeling techniques for analyzing longitudinal data in the social and behavioral sciences. SEM approaches to fixed and random effects models, latent (growth) curve models, and autoregressive latent trajectory (ALT) models was discussed. 
	2004:	**Idea Spark**, organized by *Innovation Norway* and *Molde Knowledge Park* Course for those with a business concept. Got tips and advice in the formulation of a business plan that was at the end of the course presented to investors in the local community.
	2004:	**Idea Generator**, organized by *University College Aalesund*, *Molde University College*, *Innovation Norway*, *Ålesund Knowledge Park* and *Molde Knowledge Park*. A course (6 ECTS) requiring a completed and approved business plan.
	2002:	**The Alchemist**, organized by *Innovation Norway* (formerly *National Industrial and Regional Fund*) Consisted of 3 meetings lasting 3 days in the county *Sogn og Fjordane*, with the goal of developing a business plan - and a final presentation to investors.
	1999:	**Ex.phil.**, Introductory University Course, University of Bergen A course (15 ECTS) I did during military under anticipation of a future University education. Garde: 2.3 – with honors (laud)
Competitions	**2015:**	**Startup Weekend Trondheim**, as a winning team we were selected to participate in the 6 month NTNU program AppLab to further develop our app concept Live Now.
	2009:	**L'Oreal EStrat Business Game 2009**, became the only Scandinavian team who advanced to the semifinals. Over 50,000 students participated in more than 17,000 teams battled for the first prize of €10,000. Each team, consisting of 3 students from finance schools around the world must work hard to be among the 300 best teams that advance to the semifinals. We finally ranked 33rd, with the 13th best business plan. *Prize:* One Year Subscription of BusinessWeek
	2004:	**West Cup (VestlandsCup)**, arranged by *Aalesund University College*, *University of Bergen*, *Stavanger University College* and *University College of Sogn og Fjordane*. A competition for winners of the Innovation Cup at the colleges listed above for the best business idea. I won first prize of $2,000 / 10.000 NOK.
	2003:	**Innovation Cup (NyskapingsCup)**, arranged by *Aalesund University College* A competition for employees and students of Aalesund University College for the best business idea. I won first prize of $1,200 / 5.000 NOK.

Language skills	**Norwegian:**	**Fluent** (mother tongue), both *nynorsk* and *bokmål*, written and oral.
	English:	**Fluent**, both written and oral. *Have been living in the United States and spoken English on a daily basis since 2004.* *Have used English extensively on the Internet ever since I went online at age 16.* *Obtained the grade A in an oral examination on the Bachelor level.* *Achieved 643 of 677 (95%) under TOEFL.ITP: Listening Comprehension 61/68, Structure & Written Expression Reading Comprehension 68/68 and 64/67.*
	Spanish:	**Communicate well**, both written and oral. *Have lived a year in Spain. Done Spanish course at both bachelor and master level, and communicated daily in Spanish over a period of more than 4 years*.
	German:	**Understand a lot**, but practice the language too little to achieve flow. *Have previously lived in Germany, where I took a language course. Have through school learned German for 4 years at elementary school and high school*.
	Swedish:	**Communicate well**, both written and oral. *10% of Oslo's population is Swedish, with lots of exposure to Swedish through TV and professors. Many of my friends speak Swedish, which I've also been living with.*
	Danish:	**Communicate well**, both written and oral. *Have been numerous times to Denmark, and have attained a good enough level to communicate fluently.*
References	**NTNU:**	**Kerstin Bach**, Associate Professor, Department of Computer Science, Norwegian University of Science and Technology (NTNU). Email: Kerstin@IDI.NTNU.no Phone: (+47) 73 59 74 10 Cell: (+47) 93 03 24 00
	NHH:	**Jøril Mæland**, Associate Professor in a class I was the class representative, Department of Finance, Norwegian School of Economics (NHH). Email: Joril.Maeland@NHH.no Phone: (+47) 55 95 93 13
	UiO:	**Tomas Hellström**, Director and Professor, Center for Entrepreneurship, University of Oslo (UiO). Email: Tomas.Hellstrom@circle.lu.se Phone: (+46) 46-222 33 79
	UiO:	**Tor Borgar Hansen**, Master of Science supervisor, Center for Entrepreneurship, University of Oslo (UiO). Email: tbh@oxford.no Phone: (+47) 40 00 57 93

References	**UCB:**	**Jerome S. Engel** Adjunct Professor, Haas School of Business Senior Fellow and Founding Executive Director Emeritus Lester Center for Entrepreneurship Faculty Director, Venture Capital Executive Program University of California, Berkeley Entrepreneurship.Berkeley.edu www.Haas.Berkeley.edu/faculty/engel.html Email: Engel@Haas.Berkeley.edu Phone: 510 642 8096
	Rotary:	**Edward Church, Ph.D.** Institute for Environmental Entrepreneurship The David Brower Center 2150 Allston Way, Suite 280 Berkeley, CA 94704 *Fellow Rotary Member* Email: Church@EnviroInstitute.org Phone: 510 665 5656
	Rotary:	**Dan Thomas** President at Thomas-Chen Associates *Fellow Rotary Member* Email: DThomas@TC-Associates.com Phone: 510 533 5993

Extra Curricular Activities	Student Parliament, The Welfare Council, Learning Environment Committee, Student Association: Triple Helix, AppLab, Hackerspace, AppKom (Student Association: Online), Water.Gift NTNU and NTNUI Squash.
Leisure	Enjoys Squash, Dancing, Yoga, Swimming, Tennis, Slalom, Snowboard, Spinning, Cycling and Golf.
Driving license	Class B.
Other qualifications	Reliable, patient, accurate, outgoing, positive, service-minded, responsible, and I quickly gain knowledge, insight and understanding.