

Master's thesis

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Design Recommendations for Playful Social Experiences at University Campus

Master's thesis in Informatics

Supervisor: Yngve Dahl

June 2020



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Abstract

Recent reports have shown that numerous students struggle with feelings of isolation. This thesis explores the use of mobile interactive games to help remedy the issue by encouraging social inclusion among students through playful interactions. By utilizing qualitative user-centered research methods, we built and evaluated a prototype that enabled co-located social play. We performed semi-structured interviews, co-design workshops, and field experiments to gain valuable insights from the users' perspective. As a result, we identified nine recommendations for designing mobile games for social inclusion and developed a game that reflected these recommendations.

Sammendrag

Nyere rapporter har vist at mange studenter sliter med følelser av ensomhet. Denne studien undersøker bruken av mobile interaktive spill for å ta tak i problematikken, ved å oppmuntre til sosial inkludering blant studentene gjennom lekne interaksjoner. Ved å bruke kvalitative brukersentrerte forskningsmetoder bygde og evaluerte vi en prototype som muliggjorde samlokalisert sosial lek. Vi benyttet semistrukturerte intervjuer, co-design workshops og felteksperimenter for å få verdifull innsikt fra brukernes perspektiv. Som et resultat identifiserte vi ni anbefalinger for å designe mobilspill for sosial inkludering og utviklet et spillkonsept som gjenspeilet disse anbefalingene.

Preface

This thesis concludes my five years as a student in Informatics at the Norwegian University of Science and Technology (NTNU) in Trondheim. The work was divided into two semesters and constituted the assessment in the course IT3906. The quotes and observations from the design activities are translated into English and have unique identifiers. The appendix contains the results in their original language with their respective IDs. The conclusion of the work is based on the evaluation of the field experiment in iteration 2, as COVID-19 restrictions prevented us from executing a final assessment of the proposed game with students independent of the design process.

I would like to express gratitude to my supervisor, Professor Yngve Dahl, for providing valuable guidance throughout the project and sharing his knowledge and experience with conducting user-centered design activities. Further, I express a deep appreciation towards the students that participated in the design process. By openly and enthusiastically expressing their thoughts and opinions, we gained critical insights that would not have been possible without their involvement. Moreover, I would like to thank my fellow students, Ine Arnesen and Håvard Aasmo. They participated in the execution of the activities, the latter of which also helped to develop the functional prototype. Finally, I extend my gratitude to Professor Hallvard Trætteberg for his helpful inputs during the workshops.

Silje Marie Tyrihjell - Trondheim, June 9, 2020

Contents

1	Introduction	1
2	Background	4
2.1	Loneliness Defined	4
2.2	Loneliness among Students	4
2.3	Preventing and Reducing Loneliness	5
3	Related Work in Game and Interaction Design	7
3.1	Playfulness in Mobile Games	7
3.2	Examples of Games	9
3.2.1	<i>Who's Next</i>	9
3.2.2	<i>Table Tilt</i>	11
3.2.3	<i>LocoSnake</i>	11
3.3	Designing for Co-Located Social Play	13
3.3.1	Fellowship	13
3.3.2	Challenge	15
3.3.3	Completion	16
3.3.4	Competition	16
3.3.5	Captivation	17
3.3.6	Summary	17
4	Research Design	19
4.1	User-Centered Design	19

4.2	Implementation of UCD in the Current Project	22
4.2.1	Iteration 1	23
4.2.2	Iteration 2	23
5	Designing the Prototype - Initial Steps	25
5.1	Plan the Human-Centered Design Process	26
5.2	Interviews	26
5.2.1	Data Collection	26
5.2.2	Participants	26
5.2.3	Interview Subject 1	27
5.2.4	Interview Subject 2	27
5.2.5	Interview Subject 3	28
5.3	Specify the User Requirements	30
6	Designing the Prototype - Co-Design Workshops	31
6.1	The Execution of the Workshops	32
6.1.1	Physical Setting	32
6.1.2	Participants	32
6.1.3	Materials	33
6.1.4	Workshop Structure	34
6.1.5	Data Collection and Transcription	36
6.2	Results	36
6.2.1	Concept Ideas	36
6.2.2	Important Considerations	45
7	Designing the Prototype - Towards a Functional Prototype	50
7.1	Specify the User Requirements	51
7.2	Developing the Functional Prototype	51
7.2.1	Digital Puzzles	52
7.2.2	Time-Limit	52
7.2.3	Scoring System	52
7.2.4	Composition of Teams	53
7.3	The Prototype	53
7.3.1	Instructional View	54

CONTENTS

7.3.2	Map View	54
7.3.3	The Activities	56
7.3.4	Score-Keeping Feature	60
8	Evaluating the Prototype - Methods for Data Gathering and Analysis	62
8.1	Field Experiment	63
8.1.1	Participants	63
8.1.2	Field Experiment Structure	64
8.1.3	Data Collection and Transcription	65
8.2	Coding	65
8.3	PLEX Framework	66
9	Evaluating the Prototype - Results	67
9.1	A1: Facilitating Social Interaction	68
9.1.1	Freshers' Week	68
9.1.2	Study Breaks and Exam Periods	70
9.1.3	Flexible Participation	71
9.2	A2: Game Aspects	71
9.2.1	Ticket-to-talk	71
9.2.2	Walking in a Group	72
9.2.3	Reward System	73
9.2.4	Individual Scores	74
9.2.5	Aspect of Time	74
9.2.6	Screen Usage	75
9.2.7	Varying Activities	76
9.3	A3: Quest Activities	77
9.3.1	Rebuses and Crosswords	78
9.3.2	Quiz	79
9.3.3	Common Denominator	80
9.3.4	IQ	81
9.4	A4: Motivations for Playing	81
9.5	A5: Evaluating the Playfulness	82
9.5.1	Fellowship	82

9.5.2	Challenge	84
9.5.3	Completion	87
9.5.4	Submission	88
9.5.5	Competition	88
9.5.6	Captivation	89
9.6	A6: Improving the Experience	89
9.6.1	Difficulty Levels	90
9.6.2	Streaks	90
9.6.3	Leaderboard	91
9.6.4	Vibration	91
9.6.5	Location of the Quests	92
9.6.6	Rewarding a Player	92
9.6.7	Dividing Quests into Categories	93
10	Discussion	94
10.1	DC1: Facilitate Walking in Groups	95
10.2	DC2: Reduce Screen-Based Interaction while on the Move	96
10.3	DC3: Provide Topics for Conversation (Tickets-to-talk)	96
10.4	DC4: Mind Temporal Aspects	97
10.5	DC5: Offer Collaboration through Activities	98
10.6	DC6: Provide Challenging Activities	99
10.7	DC7: Provide Repetitive Patterns with Varying Contents	100
10.8	DC8: Design for Flexible Participation	100
10.9	DC9: Show the Players' Performances	102
11	Methodological Considerations	104
12	Summary and Conclusion	107
A	Appendix	119
A.1	Quotes and Observations in their Original form (Norwegian)	119
A.1.1	Chapter 5	119
A.1.2	Chapter 6	121
A.1.3	Chapter 9	126

List of Figures

- 3.1 Who's Next 10
- 3.2 Table Tilt 12
- 3.3 LocoSnake 13

- 4.1 User-Centered Design Activities (ISO 2010, p. 11) 21
- 4.2 Our User-Centered Design Approach 22

- 6.1 Inspirational Social Plays and Map over Campus 33
- 6.2 Iphone Wireframes and Post-it Notes and Pens 34
- 6.3 Warm-up Exercise 35
- 6.4 Co-Design Sprint 35
- 6.5 Design Sketches provided by Group 1 37
- 6.6 Design Sketches provided by Group 2 40
- 6.7 Design Sketches provided by Group 3 42
- 6.8 Design Sketches provided by Group 4 44

- 7.1 Instructions View 55
- 7.2 Map View 55
- 7.3 Rebus 1: Vacation 56
- 7.4 Rebus 2: Phantom Blot 57
- 7.5 Common Denominator: Green 57
- 7.6 Crossword: Cute 58
- 7.7 Movie Quiz: Kingsman 58

LIST OF FIGURES

7.8	Superhero Quiz: Batman	59
7.9	Geography Quiz: France	59
7.10	IQ: 2	60
7.11	Score System	61
9.1	Cooperating to Solve a Quest	83
9.2	Connecting with Co-Players on the Move	84
9.3	Expressing Feelings of Frustration	85
9.4	Expressing Joy over the Completion of a Quest	87

List of Tables

- 5.1 Interview Participants 27
- 6.1 Workshop Participants 33
- 7.1 Requirements From the Co-Design Activity 51
- 7.2 Requirements for the Functional Prototype 54
- 8.1 Field Experiment Participants 64

Chapter 1

Introduction

According to Lee et al. (2011), the transition to student life is associated with social, structural, and behavioral changes, which can be related to feelings of loneliness. Several surveys, including Studententenes Helse- og Trivselsundersøkelse (SHOT) (Knapstad et al. 2018) and Nutrition and Physical Activity in Adolescence Study (NuPhA) (referred to in Diehl et al. (2018)) that examine the health and well-being of Norwegian and German students, indicate that loneliness is prevalent in universities, with 29 and 32 percent, respectively. Also, the Unite Students Insight Report (USIR) (Unite Students 2019) announces that 25 percent of first-year students in the UK struggle with isolation, and they, along with Lee et al. (2011) suggest a connection between loneliness and lack of social support networks.

The question of how ICT can help remedy the problem of loneliness among students is an interesting, yet unanswered question. With respect to fostering social relationships, ICT can play an ambiguous role. Studies (Kraut et al. 1998, Lee et al. 2011, Spraggins 2009, Song et al. 2014) show that ICT can increase feelings of loneliness. Kraut et al. (1998) found that ICT substitutes time devoted to

engaging in co-located social activities, and they, along with the other scholars, identify online communication as inadequate compared with face-to-face communication to improve psychological well-being. Lee et al. (2011) further explain that online interpersonal communication is associated with shallow interactions and difficulty in building social support systems, as the communication lacks depth and non-verbal cues.

However, recent studies suggest that ICT, particularly mobile interactive games, can broaden social experiences (Jarusriboonchai et al. 2016, Powell et al. 2012). Before 2000, practically all electronic games were considered individual play, regardless of the games' collective nature (Zagal et al. 2000, Costikyan 2002). Today, with the presence of network-supported multiplayer games, virtual worlds, and countless games incorporated on social networking sites, digital gameplay is far from solitary (Montola et al. 2009). Yet, as recent studies suggest that face-to-face interactions increase positive mood and satisfy social belongingness that buffer feelings of isolation and emotional disconnection (Olsson et al. 2020), there is a need to design mobile games that function as enablers for co-located *social play* (Segura & Isbister 2015), which focuses on scenarios of *same time, same place* (Ellis et al. 1991) interaction.

This work starts from the basis that there are several unexplored opportunities related to the use of mobile interactive games in increasing social interaction among students, especially as an enabler for social encounters in public spaces. We have taken the concept of *playfulness* (Webster & Martocchio 1992) as a starting point for our exploration and investigated how to elicit a playful user experience that encourages play and secures positive interaction among the students. The main aim of this exploration has been to answer the following research question:

How can we design mobile interactive games that help foster social inclusion among students through playful interactions?

To answer the above research question, we followed a qualitative user-centered design approach, where representatives from the user group (i.e., students) were

actively involved in designing and evaluating a prototype through interviews, co-design workshops, and field experiments. The physical and social use context for the prototype was the university campus *Gløshaugen*, NTNU, in Trondheim.

The main contributions of the current work are (1) a set of *design recommendations*, defined as helpful guidelines toward best practices in design (Interaction Design Foundation 2016), aiming to inform designers of future mobile games for social interaction; and (2) a suggestion for a concrete game concept that reflects these recommendations.

The thesis is structured as follows. We initiate the study by describing appropriate background theory in Chapter 2. The following chapter presents relevant works in the field of game and interaction design. Chapter 4 explains our approach to the user-centered design process, and we cover our two human-centered design iterations in Chapters 5 through 9. Chapters 5 and 6 cover the first iteration and include the execution of both the semi-structured interviews, and the co-design workshops, and contain the results. Chapters 7, 8, and 9 cover the second and final iteration, where the former addresses the requirements and considerations that emerged through the design activities to create the functional prototype. We explain how we evaluated the functional prototype through field experiments in Chapter 8, whereas the results are presented in Chapter 9 before we discuss the findings in Chapter 10. Further, we include a chapter on methodological considerations, and finally, summarize and conclude the thesis in Chapter 12.

Chapter 2

Background

2.1 Loneliness Defined

Loneliness is an unpleasant feeling of being alone and isolated, which occurs when there is a discrepancy between a desired and current level of social relationships (Perlman & Peplau 1981). Weiss (1975) divides the term into two categories: *emotional* loneliness and *social* loneliness, and emphasizes that one cannot counterbalance the other. The former refers to feelings of isolation that arises when there is a deficiency of close and intimate relationships, such as a best friend or a partner. Social loneliness, on the other hand, is a result of not having a sufficient network of social ties, where the person is not socially integrated, such as in a group of friends who share common interests.

2.2 Loneliness among Students

Numbers from SHOT show that loneliness is most prevalent among young students in the age of 18-20 (Knapstad et al. (2018), p. 84), which is consistent with Weiss (1975)' views that social loneliness is most prevalent among young adults that have moved to an area where they are newcomers. Another inter-

esting finding is the correlation between physical inactivity and loneliness among university students (Diehl et al. 2018, Page & Hammermeister 1995). Matthews et al. (2019) underline the importance of facilitating measures against loneliness for students at the early stage in their transition, where they have recently left their family, friends, and familiar routines behind. Otherwise, they can be trapped in loneliness as they age.

Besides Freshers' Week, a week consisting of social events that aim to help new students immerse into university life, the USIR report asserts that the students lack opportunities to connect and make friends. They emphasize the importance of looking at the Freshers' Week as the beginning of an incremental process to enable new students to adapt adequately, which is critical for the students' well-being (Unite Students 2019). Wivi Amundsen, a student at NTNU, agrees with these findings and adds that in her experience, the week is promoting heavy drinking, which is sending a message that the students must be party animals to fit into university. Therefore, she believes the period can contribute to the opposite of its aim, to more loneliness and social isolation (Kringstad & Skjærseth 2018).

2.3 Preventing and Reducing Loneliness

Cutrona highlights the value of establishing new friendships during disruptive transition periods (referred to in Shaver et al. (1985)). Similarly, the findings from USIR suggest facilitating for social integration as a measure to help young adults settle and thrive in their new environment (Unite Students 2017). Based on the ideas of Rook (1984), developing satisfying relationships are the most obvious approach in tackling loneliness, and she, along with Nicolaisen & Thorsen (2017), identify these relationships as buffers against loneliness.

According to Kraut et al. (1998), the development of strong ties is supported through physical proximity. Further, Lee et al. (2011) argue that co-located communication is considered a positive contribution towards improving quality of life, and Sacco & Ismail (2014) identify an increase in mood and social belongingness related to human-to-human interactions. In light of these discoveries, we

explore how to facilitate co-located social interaction, which centers on scenarios of same time, same place (Ellis et al. 1991) communication, through *play* and *playfulness*.

Numerous scholars (Huizinga 1949, Caillois 1961, Garris et al. 2002) describe play as a voluntary and meaningful activity in which the players participate for their own sake rather than as an obligation. Their findings suggest that players have a more positive attitude towards gameplay if they are allowed the freedom to decide when to participate. That includes the choice to quit, which is a crucial aspect of the definition of play. Otherwise, the play will lose its attractive and liberating qualities.

Playfulness is defined as a state that attracts players' attention and involves them during play (Webster & Martocchio 1992). Providing playful experiences can function as interventions for increasing positive emotions (Fredrickson 2001) and resilience when faced with stressors (Magnuson & Barnett 2013), which can work as buffers against loneliness (Chang et al. 2013). Moreover, Killick (2012) asserts that playfulness is an excellent way to secure positive interaction among individuals.

Even though social interaction is at the core of reducing loneliness, Staiano & Calvert (2011) identify physical play as an important component. Conducting movement while playing with others is an excellent way of increasing self-esteem (Barton et al. 2012, Legrand 2014) and life satisfaction (Bastug & Duman 2010, Magnusdottir 2017, Valois et al. 2004). Furthermore, walking with a group provides a sense of belonging (Heart Foundation 2016). Hence, the positive pleasures related to movement can buffer against loneliness (Matthews et al. 2019, Perlman & Peplau 1981, Cutrona CE 1980, Mellor et al. 2008).

Chapter 3

Related Work in Game and Interaction Design

Mobile games offer opportunities to interact socially with friends, family, and strangers in co-located and remote settings. The findings from Chapter 2 suggest that co-located human interaction proves to increase mood and social belongingness, and promoting playfulness can buffer feelings of loneliness. In light of these discoveries, we explore how mobile games can enable and enhance co-located social play.

3.1 Playfulness in Mobile Games

As playfulness is considered a state of mind that produces player enjoyment, it represents an appropriate construct in the topic of human-computer interaction. Designing for playfulness is an emerging approach in game design, which involves incorporating design elements that promote fun experiences and encourage individuals into playful behavior. It serves as an important component in the context of social play, as promoting playfulness contributes to secure positive interaction

among the players (Section 2.3).

De Kort & Ijsselsteijn (2008) conclude that playing with a co-located other significantly enrich the game experience in terms of fun, challenge, and perceived competence. They argue that the positive effects of co-located play is influenced by the social presence experienced as a result of the communication and interaction between the players. In line with their results, Ravaja et al. (2006) identify increased arousal, engagement, and positive emotions related to co-located co-play. Also, De Kort & Ijsselsteijn (2008) and Jakobs et al. (1996) argue that playing with others in a shared environment positively affects performance since the players' efforts are visible to others. These results combined indicate that co-located gameplay significantly adds to the game experience.

If a game functions as a context for communication, mediated through social interaction, it can be framed as social play. De Kort & Ijsselsteijn (2008) explain that the game must not only contain the presence of others, but provide opportunities to monitor the actions, performance, and emotions of their co-players. Friedl (2003) explains that in social play, the primary driving force underlying a person's play activities is not related to the game itself, but to the games' potential of initiating social events. Motivational factors include socialization, communication, meeting others, making new friendships, and discussing both game-related and non-game-specific topics.

Thus, the primary objective of designing games for social play is to provide pleasurable social contexts, which is found to increase engagement, arousal, and positive emotions (Ravaja et al. 2006, Mandryk et al. 2006). Also, several studies reveal that including co-located physical play in social contexts impacts the players' energy level (Isbister, Rao, Hayward & Lidasan 2011), further improves their arousal (Isbister, Schwekendiek & Frye 2011), engagement (Lindley et al. 2008, Bianchi-Berthouze et al. 2007), and positive sentiments (Ravaja et al. 2006, Mandryk et al. 2006), and shapes social interaction (Lindley et al. 2008, Isbister, Schwekendiek & Frye 2011) that facilitates more social play.

3.2 Examples of Games

As social play always has been an essential human activity, the emergence of social play in digital games has been a popular topic of study in the last decade (Segura & Isbister 2015). In the following two sections, we present prototypes that scholars have designed to investigate the role of mobile games in social play. These relevant works explain games that not only allow social interaction, but also take an active part in attempting to increase its quality, value, or extent. Since adding physical movement can further enhance the positive attributes of social play, we look at a mobile *exergame*, a game that encourages exercise, in Section 3.2.3. The game promotes physical play, yet serves as a great source of inspiration as the authors identify a prominent opportunity to add a strong social component. Through analyzing these relevant games, we gain a better perspective on how to design meaningful social play for mobile platforms.

3.2.1 *Who's Next*

Jarusriboonchai et al. (2016) investigate how mobile technology can facilitate collaboration between strangers through the design of a multiplayer quiz-game, *Who's Next*, which utilizes cooperative ice-breaking activities that relieve tension and supports people in social environments. Through user studies, they assess the social implications and user experiences related to the game, aiming to increase the understanding of designing technology-based tools for social interaction.

Their results suggest that the participants felt comfortable sharing information about themselves and getting to know unfamiliar people. The activities contributed to a playful and relaxed atmosphere and facilitated face-to-face interaction among the players throughout the game. The participants felt comfortable in the social situation, and they all agreed that the game served its purpose as an ice-breaker. Thus, the authors conclude that mobile technology has a prominent potential for encouraging social interaction between strangers.

As for providing a pleasurable user experience and motivate interaction between the players, the scholars implemented elements of gamification in their prototype.

The game utilizes content based on the information the players provide (e.g., favorite hobby, worst fear), where the players must select the correct person behind a given answer to a question (Figure 3.1). These answers functioned as sources for conversation, *tickets-to-talk* (Sacks 1992), in which the players encouraged elaboration from those who provided the given information. To promote a playful atmosphere, they incorporated a countdown timer related to the answering of the questions. Also, the players received an overall time-limit that decided the length of the game.

The designers incorporated a reward system where the players received separate scores. Still, they also accumulated a group score to create a sense of common goal and social pressure to perform. They hypothesized that the system would prevent the players from randomly guessing the answers. As a supplement to minus points related to incorrect solutions, vibration and sound effects were played. Despite their attempts, they observed some guessing behaviors instead of collaborating to find the correct person in which the answer related. However, the participants often laughed and commented on their mistakes and encouraged discussion after each question.

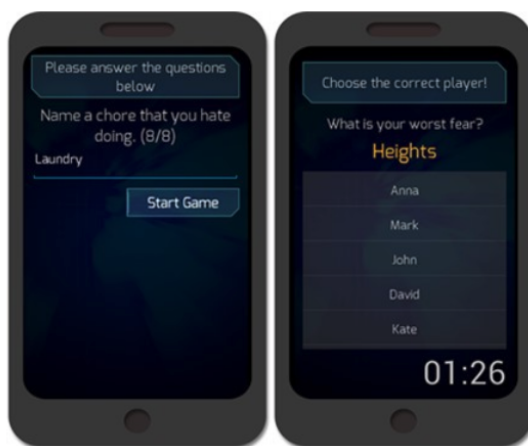


Figure 3.1: Who's Next

3.2.2 *Table Tilt*

Powell et al. (2012) designed Table Tilt as a two-minute ice-breaker mobile game for a group of co-located players, intending to facilitate team building and help individuals build social networks. The game was designed in conjunction with Snag'em (Powell et al. 2010), a mobile game that facilitates social networking through a human scavenger hunt, where the players search for others who share interests or activities. By merging the games in two different steps; first Snag'em and then Table Tilt, they promote collaboration in a fun environment and provide opportunities for people to meet and play through shared interests. They utilized game sociability features to shape a meaningful and shareable play experience, which is a critical element to meaningful play in context with games used for social networking purposes.

Table Tilt consists of balls and multiple holes distributed across several mobile devices, making the players co-dependent on each other to succeed. The players must maneuver the balls into different holes and communicate with each other to tilt the ball off their screen to another player's screen (Figure 3.2). The goal is to roll the balls into their color-matching holes collaboratively. The number of balls and obstacles increases as the levels progress, and the level will reset if the ball falls into the wrong hole. To win the game, the players must complete all levels before the timer runs out.

When evaluating the game, the players expressed willingness to purchase the game and use it as a means for connecting with others. 100% of the players responded that the game was fun and enjoyed the collaborative nature of the game. Also, they indicated that the game involved lots of communication that inspired team-bonding, which they identified as the most important element of fun.

3.2.3 *LocoSnake*

Chittaro & Sioni (2012) explore physical play that encourages walking through the design of a location-based mobile exergame, LocoSnake. The authors transformed the classic Snake mobile game into a real-world game that uses GPS

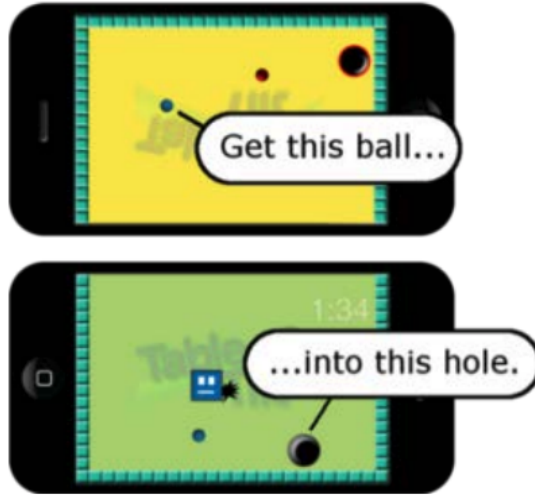


Figure 3.2: Table Tilt

localization to let the players bring the snake into any real-world location. To engage the players in walking, they embody the snake and must walk to control it (Figure 3.3). The designers incorporated a scoring system related to the players' performance in walking to a fruit positioned inside the playing field. Moreover, they included a five-minute timer and three different difficulty levels to provide elements of challenge.

Their evaluation suggests that users enjoyed the game, particularly those with a more sedentary lifestyle. They liked the connection between the game and the real world, as well as the link between physical movement and mobile gaming. The aspect of challenge was also highly enjoyable. The participants further responded that they temporarily forgot worries about everyday life while playing.

However, a concern that arose during play was the level of screen usage. Two participants found the screen to affect their experience of the game negatively. They argue that walking is an activity associated with stress relief, which is recognized to buffer feelings of loneliness (Marselle et al. 2013), and having to use

a mobile screen while walking could deprive the users of the associated benefits.

One participant also recognized a need for social interaction while playing. The designers of the game acknowledge the importance of adding a social dimension into LocoSnake, and state that it would make the game more interesting and engaging for people regardless of their activity level. They also emphasize that having individuals jointly participate would positively contribute to the experience.



Figure 3.3: LocoSnake

3.3 Designing for Co-Located Social Play

To analyze the games from a playfulness perspective, we look at the Playful Experience (PLEX) framework (Arrasvuori et al. 2010). According to Lucero et al. (2013), the framework shows significant potential as an evaluation tool for assessing different attributes of the playfulness of a product or service. The following sections describe how the games elicited playfulness through components in the PLEX framework.

3.3.1 Fellowship

Who's Next and Table Tilt consist of communicative and collaborative elements, in which the players form a team and strive for a shared goal, which according

to Deutsch (1962), is how collaboration happens. Price et al. (2003) recognize the level of cooperation as a modifier of games' playfulness, and according to Arrasvuori et al. (2010), promotes fellowship that elicits playful experiences. Thus, designing collaboration into meaningful play through social elements fosters a sense of togetherness associated with playfulness.

Table Tilt aims to engage people in joint activity that requires collaboration by several actors to succeed in a shared goal. They facilitate collaboration through making the players interdependent of each other, by utilizing all the players' screen. According to Deutsch (1949), succeeding in a cooperative task can increase the players' liking towards their collaborators. Also, scholars (Johnson & Johnson 1989, Mullen & Copper 1994) have discovered a solid causal link between satisfactory performance outcomes and interpersonal attraction. Based on these findings, the aspect of cooperation can be a great contributor in facilitating a social connection between individuals. Also, the players of Table Tilt identified the teamwork component as the most important to ensure a fun experience, confirming a relationship between cooperation and user experience.

The game Who's Next acquires the role of an ice-breaker, aiming to relieve tension and support people in social environments, and provide the players with a common group score to create a sense of a shared goal. The designers of the game state that sharing information with others in a playful manner would help shy individuals engage in social participation. Therefore, providing ice-breakers are especially important in situations in which new people gather together to begin a collaboration, to help identify conversation topics (West 1999), which Sacks (1992) introduces as tickets-to-talk. Tickets function as stimuli for face-to-face communication between unacquainted people (Jarusriboonchai et al. 2014), which Who's Next utilizes through the quiz' solution word. This element can help establish solid relationships and thus enhance feelings of happiness and fulfillment (Sunnafrank & Miller 1981).

3.3.2 Challenge

All the designers incorporated gamification elements in their game to provide a challenging environment, which is recognized as an effective way of increasing playfulness (Arrasvuori et al. 2010). Malone (1981) explain that succeeding in challenging activities can trigger happy feelings toward itself and build self-confidence. However, the author underlines that if the players fail in succeeding, the activity can lower their self-esteem and possibly decrease their interest in participating. Therefore, it is of great importance to provide challenging elements that fit the players' level of ability (Arrasvuori et al. 2010).

All the game designers incorporated countdown-timers in their solution, which are known to affect player performance and engagement. Lomas et al. (2013) studied the effects of time pressure, and conclude that more extended time limits increase success and engagement. In contrast, short time limits contribute to disengagement. As for Table Tilt, which only provide 2 minutes until the completion of the game, their evaluation suggest the players enjoyed the fast-paced nature of the game. Observations from LocoSnake suggested an increase in walking pace relative to the duration of time, yet the players did not directly indicate the aspect of time affecting their overall game experience. The players of Who's Next, however, experienced a social barrier associated with the timer, as they were quickly forced to end their current conversation and proceed forward with a new topic.

Coyne (2003) explains that repetition, variation, and rules are essential factors in producing playfulness. All the games follow a repetitive pattern, which is at the core of play quality. However, to enhance the gameplay experience, they include variation in their repetitive operations, and Table Tilt and LocoSnake promote diversification through different challenge degrees, which is identified by Hong et al. (2009) as a fundamental part of playfulness. When it comes to Who's Next, the variation component lies in the conversation topics that emerge through the diverse questions.

3.3.3 Completion

Arrasvuori et al. (2010) recognize completion as a prominent playful component that is central to all activities. Garneau (2001) explains that everybody enjoys progressing in activities and getting closer to their end, and all the games incorporated time limits to provide the players with the satisfaction of completing a game, including happy feelings and positive lasting impressions. Although completion is first and foremost related to finishing a game, it can also manifest through reward systems (Arrasvuori et al. 2010). In such cases, the players receive visible recognition of completing a task, which makes their outcomes discernible, encourage them to continue, and ensures a fun environment (Huizinga 1949, Malone 1981).

Ferrara (2012) underlines the importance of providing systems that are intrinsically rewarding, meaning the individual engages for the enjoyment of the game and its underlying purposes as opposed to money, prizes, or privileges. The players in *Who's Next* and *LocoSnake* receive individual scores related to their performance, which is considered external rewards. However, the author argues that such pleasures are part of the gameplay experience, and reward systems are not problematic unless they regress outward from the game into the real world. Only then can the reward cloud the intrinsic pleasures of engaging with the game, which is destructive to the overall user experience.

3.3.4 Competition

According to Arrasvuori et al. (2010), competition is a playful element that involves contest against oneself or others, which is prevalent in all the game solutions. As the designers incorporated a way for players to measure their performance, they also opened up for possible competitive behaviors. However, this particular playful approach must be considered with care, as competition could cloud cooperative and social behavior which are crucial in social play (Powell et al. 2012).

Ferrara (2012) explains that points are useless unless the players have a way of comparing them to other instances of play. Due to *LocoSnake's* missing social

component, the scores did not provide any additional pleasures beside for the purpose of competing against oneself. In *Who's Next*, the players were eager to share their scores, which added to their social interaction and competitive spirit that enhanced the game experience.

Ferrara (2012) mentions the significance of leaderboards in providing the players with an objective they can work toward. Seeing their performance relative to other players can function as a great motivation booster and buffer their competitive state. For the particular case of *Who's Next*, they enjoyed choosing whether to share their performance. Thus, the element of a leaderboard would probably not be of relevance in this context. However, it could potentially promote more social interaction, as the players could invite their friends to compete against them, and their performance could provide a topic of conversation.

3.3.5 Captivation

Finally, captivation is identified by Arrasvuori et al. (2010) as a critical factor in playfulness, which includes the experience of forgetting one's surroundings and sense of time while playing. *LocoSnake* was the only game that evaluated and reported on captivating behaviors, in which the players' enthusiasm and enjoyment caused them to forget about their worries outside the game. Yet, that does not mean the other games did not result in such experiences.

3.3.6 Summary

Examining the results in context with Arrasvuori et al. (2010)'s PLEX framework provided an understanding of the playful aspects of the game experiences. A summary of the five playful components identified, with the design elements that underlie the findings, can be seen below.

Fellowship

Developing friendships and social connections, and increasing social participation, by including collaborative elements, letting the players share a common goal, utilizing all the players' screens, and providing ice-breaking activities with tickets of conversation.

Challenge	Testing abilities in a demanding task through a countdown-timer and different challenge degrees
Completion	Incorporating a countdown-timer to reach a feeling of closure, and receive recognition in terms of score when finishing a task
Competition	Contest with oneself or an opponent by utilizing scores
Captivation	Forgetting one's surroundings by providing a fun environment with physical movement

Chapter 4

Research Design

This chapter covers our user-centered design approach. First, we describe the principles of user-centered design, followed by an introduction to the iterative process of the design activities. Finally, we present our user-centered design implementation in the current project, including the methods used in this context.

4.1 User-Centered Design

The user-centered design (UCD) approach, as described in ISO 9241-210 (ISO 2010), aims to make systems more useful and usable by integrating the users, their needs, and their requirements in the process. There are many benefits to adopting such an approach, including greater user satisfaction and an overall improvement of users' well-being. The standard lists six principles that should be followed when using the approach (p. 5–8), which are summarized below.

- 1 *The design is based upon an explicit understanding of users, tasks and environments:* Understanding the users, tasks, and environments (i.e., the context of use) of a system, product, or service are critical to ensure a positive user experience. Identifying the actors, map the tasks, and analyze the environments provide essential input to the design process.
- 2 *Users are involved throughout design and development:* Involving users with capabilities, characteristics and experiences that reflect the target users of a system provide valuable insights about the context of use, the tasks, and how the users are likely to work with the system.
- 3 *The design is driven and refined by user-centered evaluation:* Obtaining feedback from users is a critical source of information. Involving the users in the evaluation of the designs and conducting improvements based on their feedback minimizes the risk of not meeting their needs.
- 4 *The process is iterative:* When developing interactive systems, it is usually not possible to achieve the most appropriate design without iteration. Revising and refining the specifications and prototypes based on emerging information, gradually eliminates uncertainty and improves the likelihood of targeting the users' needs.
- 5 *The design addresses the whole user experience:* User experience is a consequence of the users' prior experiences, attitudes, skills, habits, and personality, and the interactive system's presentation, functionality, performance, behavior, and assistive capabilities.
- 6 *The design team includes multidisciplinary skills and perspectives:* The standard emphasizes the importance of securing multidisciplinary competence within the team to collaboratively make decisions concerning the design and implementation.

Figure 4.1 illustrates the iterative process of the human-centered activities. The steps are further elaborated under the figure, based on their description in the standard (p. 10–19). Before beginning the iterative process, the design process

must be planned and integrated into all phases of the product life cycle. When completing the process, the design meets the user requirements.

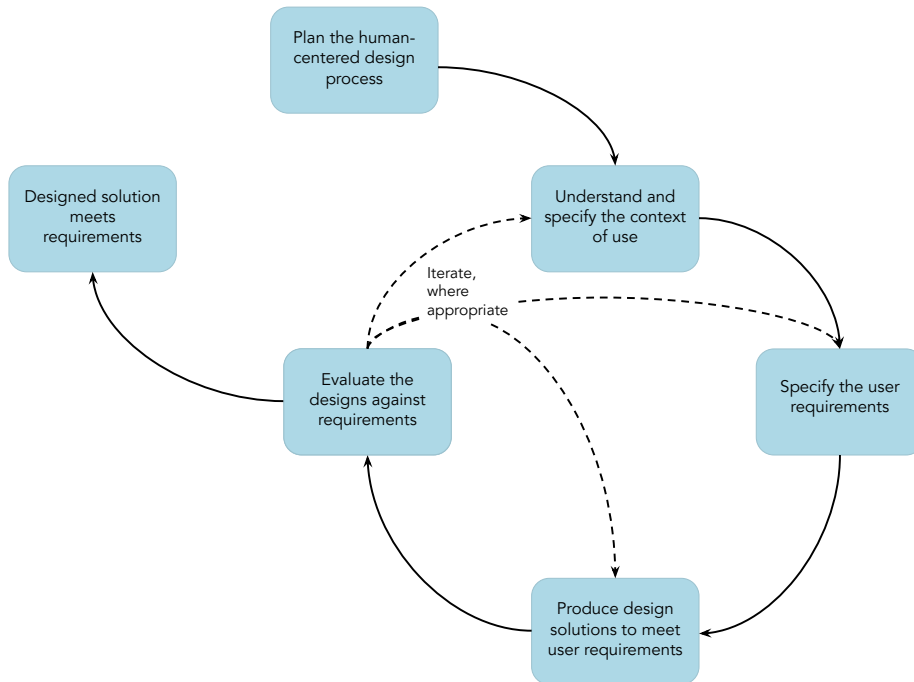


Figure 4.1: User-Centered Design Activities (ISO 2010, p. 11)

- 1 *Understand and specify the context of use:* It is beneficial to gather insights into the current context in order to understand, and then specify, the context that will apply to the future system.
- 2 *Specify the user requirement:* In human-centered design, it is essential to identify user needs, and deriving requirements from the user needs and the context of use. The specifications provide the basis for the design and evaluation of interactive systems to meet the user necessities.

- 3 *Produce design solutions to meet user requirements:* The solutions are produced by taking into account the context of use and user requirements. When designing the solutions, it is essential to consider the whole user experience. This step includes prototyping, and altering the solutions based on user-centered evaluation and feedback.
- 4 *Evaluate the designs against requirements:* Evaluating the designs based on the users' perspective is a required human-centered design activity. The purpose of this step is to obtain a better understanding of the users' needs and identify the strengths and weaknesses of the designs. Further, evaluating the solution in a real-life environment provides valuable insights into the user experience.

4.2 Implementation of UCD in the Current Project

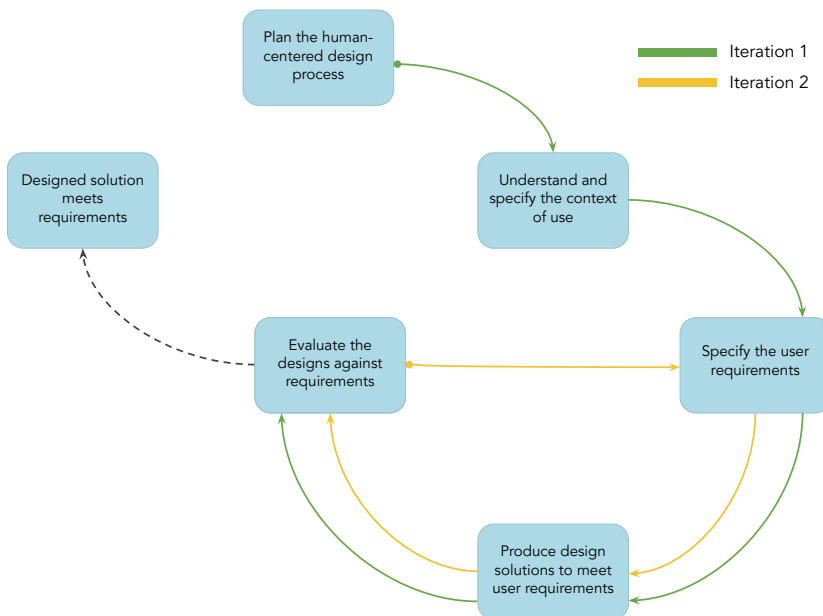


Figure 4.2: Our User-Centered Design Approach

In search of the answer to the research question, we employed the user-centered design process, in which we took advantage of research methods that correspond to the design activities described in ISO (2010). We conducted two iterations, as seen in Figure 4.2, and the following sections explain how we utilized the design activities throughout the project.

4.2.1 Iteration 1

Understand and Specify the Context of Use

Initially, we possessed little knowledge of how to design a mobile game for social inclusion. Conducting background research and studying related works provided us with some valuable insights. To further assess the need for increasing social inclusion among students, and investigate the potential use of the mobile game, we conducted interview sessions with three students at NTNU that held lots of knowledge related to the issue at hand.

Specify the User Requirements

We defined some requirements by analyzing the findings concerning the use context. These requirements functioned as restrictions for the participants to work within.

Produce Design Solutions to Meet User Requirements

We constructed co-design workshops to produce low-fidelity design solutions that reflected the participants' perspectives and considerations.

Evaluate the Designs against Requirements

This step was executed during the co-design workshop by the participants.

4.2.2 Iteration 2

Specify the User Requirements

Many thoughts and considerations emerged from the co-design workshop, which we analyzed and gathered to form requirements that reflected their views.

Produce Design Solutions to Meet User Requirements

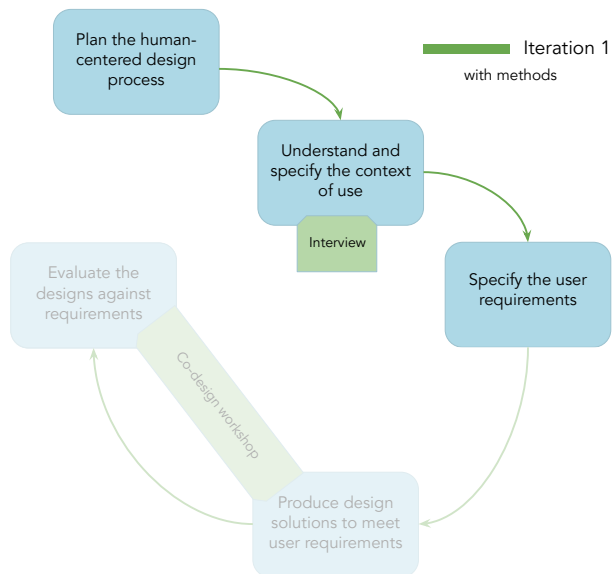
Based on the user requirements and the low-fidelity design prototypes presented by the participants, we designed a high-fidelity prototype using the prototyping tool Balsamiq Mockups. Further, we programmed a simple, functional prototype in React that reflected the design, to conduct the field experiments.

Evaluate the Designs against Requirements

We conducted field experiments with the majority of participants from the workshop to evaluate the usability of the design, and obtain information and feedback related to different aspects of the design proposal. Our solution served as a tool to uncover critical considerations for designing mobile games that promote social interaction.

Chapter 5

Designing the Prototype - Initial Steps



5.1 Plan the Human-Centered Design Process

To initiate the user-centered design process, we created a project plan. First, we identified and selected methods. Then, we recruited participants and made arrangements for the design activities. Once the planning and decision making were completed, we began the four linked human-centered design activities. Detail-planning occurred in advance of each activity.

5.2 Interviews

We used qualitative research methods to answer questions about experience and perspective from the participants' standpoint (Hammarberg et al. 2016). Among the techniques were semi-structured interviews, which follow a predetermined set of questions, but can be freely modified to support the topic under discussion if relevant to the subject at hand (Lazar et al. 2010). Such interviews are advantageous when faced with phenomenological and explorative design contexts, to be able to explore interesting topics that may surface during the sessions (Rosseland & Berge 2013).

5.2.1 Data Collection

For collecting data, we audio-recorded the interview sessions. Rosseland & Berge (2013) explain that audio recording is a method that alleviates the cognitive load on the interviewer or note-takers and thus allowing the interviewer to focus on the conversation as opposed to writing essential syllables. Further, they explain that this focus includes being more attentive in the conversation and observing non-verbal communication, such as body language, which helps to build a better connection with the recipient of information.

5.2.2 Participants

We interviewed three students that took an active role in securing the students' social well-being (Table 5.1) to understand the need to offer a solution that facilitates social interaction among the students. P1 was actively involved in the process of socializing first-year students during the Freshers' Week, while P2 was responsible for the well-being of the students throughout their studies. As for

P3, he was an essential contributor to the whole design process. The participant held lots of knowledge concerning social activities as a former member and leader of the social event committee in his field of study.

Table 5.1: Interview Participants

ID	Study year and potential role
P1	5th year, welcoming committee member
P2	2nd year, student organization leader
P3	5th year, event committee leader

5.2.3 Interview Subject 1

P1 expressed a difficulty in finding activities that contribute to fun experiences and to the development of friendships at the Freshers' Week (1). The interview subject recognized a need for offering fun, non-alcoholic activities and looked at mobile games as intriguing supplements (2).

- (1) It's hard to find something that everyone likes and wants to be part of. It may be easier to join drinking events because then it's just a fun atmosphere. While with alcohol-free events, I feel that something must happen. And then it's hard to find something that fits everyone.
- (2) We have not yet used any digital mobile games to promote social interaction in the Freshers' Week. It could be exciting to try, as there is a need to find activities that suit more students.

5.2.4 Interview Subject 2

P2 underlined the importance of offering rich social opportunities for new students and stated that the Freshers' Week and the selection of social events throughout the semester contributed to the formation of his circle of friends (3). Further, the participant explained that the members of their student organization, Leonardo,

organize events that include all their students at Industrial Design, as they provide many variations in their social gatherings (4). Hence, their students would possibly not see any need for further social offers (5). However, he mentioned that other, bigger student organizations might advantage from providing a mobile application as a social platform (6). In that case, the students might need to gain something more than just social communication to participate (7).

- (3) For me, it was very, very important. First and foremost, the Freshers' Week, which the student organization arranged, was very social. But afterward, we were invited to many social events. For me, the student organization contributed to the social circle I have today.
- (4) One of my main focuses is to provide events that include everyone. That we provide great variations in our events.
- (5) With us, there is so much going on, so I think maybe there are plenty of social offers already. So, I don't think people feel the need to use an app to do even more.
- (6) We are a very small student organization, but I know there exist larger ones that may have a greater need than us to provide additional social offers. They may be in need of an app that socializes students.
- (7) The gains of using the app must be social outcomes. But it probably takes more to download it.

5.2.5 Interview Subject 3

P3 has been actively involved in arranging social events for students. In his three years of being a member of the event committee for students at Informatics, including one year as the leader, the student held a lot of knowledge related to the problem at hand. P3 specified the critical importance of helping students develop strong support networks at the beginning of their study period. The interview subject further identified socializing as more important than schoolwork the first year and argued that without friends, students could isolate themselves, experience feelings of loneliness, and not manage to be productive at school (8).

- (8) Socialization is the most important thing, it's almost more important than school in the first year. If you are going to be able to do something productive, you must manage to function. And to function, you must feel good. A big factor in feeling good is to have limited concerns, and especially a network of support players. So having friends in the beginning and throughout the studies is severely important to get something done at all. Otherwise, it is very easy to fall out and get lonely, and stop being effective at school. You need a support network with people to talk to, that is number one most critical factor on the list, I think at least.

Further, the student provided an explanation as to why some students fail to show up at social events. Having to force themselves into social settings without a network of friends is difficult for many. Providing social events that only offer talking activities, such as parties, is regarded as having a high threshold for participation. For that reason of lowering the threshold, the event committee tries to plan other events, although finding the right ones is a really difficult task (9). Due to the subjective nature of enjoyment, the members try to attract different personalities by covering the whole specter of interests (10).

- (9) At least on Informatics, many struggle socially and are afraid of social settings. It is difficult for many to force themselves into a social environment without a network of support or friends, especially if the events only provide opportunities to talk to others, such as parties. Then you must initiate other social activities to lower the threshold for participation without acquaintances. But finding these events, it's severely difficult!
- (10) Different events attract different personalities. We try to cover the entire spectrum and include everyone who studies Informatics to join on more than one occasion.

Hence, the biggest challenge to getting the students to participate in social ac-

tivities is to lower the threshold for meeting others (11). To achieve that, P3 expressed the need for targeting the many and provide activities in which other students get inspired to participate when they see others play. It is crucial not to feel undermined through participation (12). As an approach, he recommended designing an application in which the social pleasures occur as a positive effect, rather than as a forced experience (13).

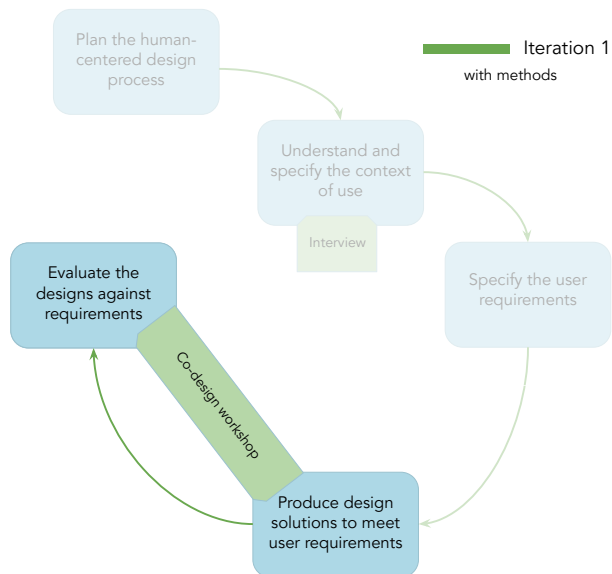
- (11) The biggest challenge in getting people to socialize is to lower the threshold to meet others. Accomplishing that is great, but one thing that works for some, may not work for others. Specifically targeting those who spend a lot of time at home alone may exclude others from using it. So the solution must attract everyone.
- (12) People should not feel sorry for those who use the app: "Oh yeah, you're one of those who need an app to make friends." It should rather intrigue others to participate when they see it in use.
- (13) If your main goal is to achieve happiness and continuously try to reach it, you will never succeed. Happiness is a by-product of all the things you do. It is the sum of your friends, what you do in your everyday life, how happy you are with what you do. That's the degree of happiness. But if you are only looking for happiness, you end up in a dark hole and never find it. Therefore, if you are looking to create a social app, do not create it only for the social benefits. Make social pleasures occur as a by-product. But it isn't easy.

5.3 Specify the User Requirements

Some requirements were defined to set the foundation of the mobile game based on the interview subjects' feedback and the research conducted before the concept development. These terms functioned as guidelines for the students participating in the co-design workshop and included: (1) the game must involve activities that promote social play; (2) the players must be co-located; and (3) the game must utilize the players' location on campus, Gløshaugen, NTNU.

Chapter 6

Designing the Prototype - Co-Design Workshops



Co-design workshops provide environments for creative collaboration. Co-design builds on the underlying principles of *Participatory Design* (Simonsen & Robertson 2012), which assumes that users are experts in their domain and should, therefore, be actively involved in the design process. Hence, the emphasis of co-design is to create with the people as opposed to designing for the people.

The technique helps discover and explore opportunities related to the problem at hand, rather than producing final solutions. Research identifies the methodology as a powerful tool, particularly in the early phases of the design process, when it is vital to engage with users and stakeholders to identify needs and ideas for design solutions (Dahl et al. 2014).

6.1 The Execution of the Workshops

To get insights into considerations that help design the user experience, we conducted four workshops. They also contributed to get input on specific design solutions that we could further work on and realize.

6.1.1 Physical Setting

The two workshops were conducted at the facilities of NTNU. For both workshops, the participants were divided into two groups during the co-design sprint. One group was placed in the usability laboratory with pre-installed recording equipment, while the other took place in a meeting room with an external video recorder.

6.1.2 Participants

A total of eight students participated in the co-design workshop. Among them was P3, which, as mentioned in Section 5.2.2, contributed throughout the process. The following students recruited, P4-P11 (Table 6.1), represented students in various age groups, genders, and fields of study.

Table 6.1: Workshop Participants

Participant ID with study year and potential role			
P3	5th year, event committee leader	P8	2nd year
P4	5th year	P9	2nd year
P5	5th year	P10	First year
P6	5th year	P11	First year
P7	5th year		

6.1.3 Materials

Printed materials were provided to give the participants a starting point for their co-design activity. The materials included printed pictures of social plays that functioned as sources of inspiration, as well as a map over the location in which the application takes place (Figure 6.1), and iPhone wireframe templates (Figure 6.2). In addition to the printed materials, the participants were supplied with post-it notes, paper and pens (Figure 6.2).



Figure 6.1: Inspirational Social Plays and Map over Campus



Figure 6.2: Iphone Wireframes and Post-it Notes and Pens

6.1.4 Workshop Structure

The workshop consisted of three parts: (1) warm-up exercise; (2) co-design sprint; and (3) presentations.

Warm-up Exercise

A simple warm-up exercise was introduced to make the participants feel comfortable sharing opinions, and communicate design ideas to each other. The exercise session also aimed to get the participants to think creatively and reflectively, by focusing their thoughts on social plays they have encountered that either led to a positive or negative experience. For a period of five minutes, the participants wrote down a maximum of five notes containing the plays or games, with a few keywords describing their experience with the encounter. Afterwards, they presented their notes to the rest of the group (Figure 6.3).

Co-Design Sprint

Figure 6.4 shows the co-design activity in action. First, the participants were divided into two small groups, with one or two facilitators present. They were then asked to share their reflections and thoughts throughout the design process. As facilitators, we attempted to enable the collective creativity of the non-designers to dominate the design activities. Our primary role was to guide the participants in the process and ask follow-up questions related to their mock-ups and reflections on social considerations. By limiting our influence on the creative process, we allowed the low-fidelity solutions to reflect the participants' collective vision of future solutions primarily.

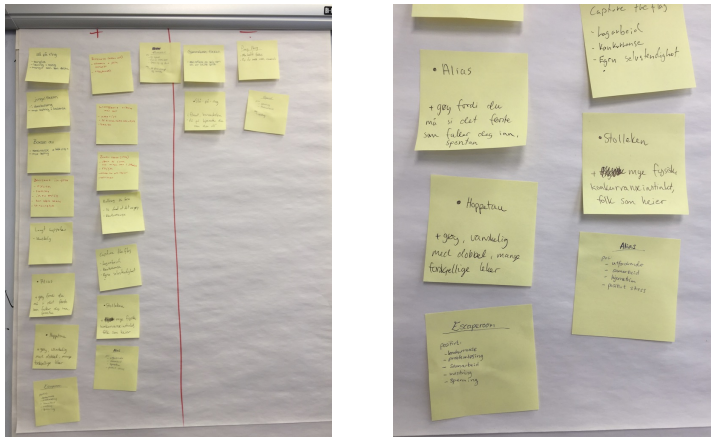


Figure 6.3: Warm-up Exercise



Figure 6.4: Co-Design Sprint

Presentations

After the students had worked separately on co-designing their mock-up solution, they gathered to present and discuss their work in plenary.

6.1.5 Data Collection and Transcription

We utilized video cameras for audio and video recordings of the workshops, which reduced the need for extensive note-taking during the sessions. Further, we transcribed the materials, which allowed us to perform a content analysis in search of critical design concept considerations that surfaced throughout the workshops.

6.2 Results

6.2.1 Concept Ideas

Group 1 with Participant P3, P4 and P9

The sketches designed by the group are shown in Figure 6.5. Group 1 was triggered by the idea of gathering people and looked at Pokemon Go as an inspiration source where they use beacons to attract individuals to the same location (14, 15). The participants designed a team-based game, called Campus Quest, where the student must sign up to be part of a team, and walk to a location on campus to solve a quest. The players can sign up for hidden groups, where they must be approved by the existing team members to join. Also, they can register for open teams by showing up on a specific location at a particular time, where they can meet others and socialize before starting the game together. This approach can lower the threshold for students without a stable social network to participate. Also, there is a low threshold for the players to create and change teams if they want to socialize with others.

- (14) P4: Pokemon Go was a huge success all over the world. We must find a concept that all students agree is a little exciting or cool.
- (15) P3: In Pokemon Go, you could use beacons to gather people. So an idea is that beacons pop up, in which for example a minimum of 20 people is needed to perform a fun activity.

The players receive notifications when a quest opens, and they can see how many participants are needed to solve the quest. The map on the app shows the quest's

location, and the players must walk to its position to unlock it. Further, the players each receive one unique part of a rebus on their phones, and they depend on each other to solve it by finding the right solution word.

The players will receive team points for typing the correct word, and they earn bonus points if they are more players than necessary to solve the task. Their points appear at the leaderboard, where all the teams show their scores. When moving from quest to quest in different periods, the players will see a number or an object (inspired by dot-to-dot), which they can submit each month to receive bonus points. The score will reset each month or semester so that new players can easily participate in the game.

The quest should take about 10 minutes to solve so that students can play during their study breaks. After completing the task, the next quest will open at another time. The group suggested that the game can check the students' availability if allowed by the players, to find the best suitable times for opening a quest. As another approach, the players could manually provide information about their school schedule, or choose appropriate times for attending the game.

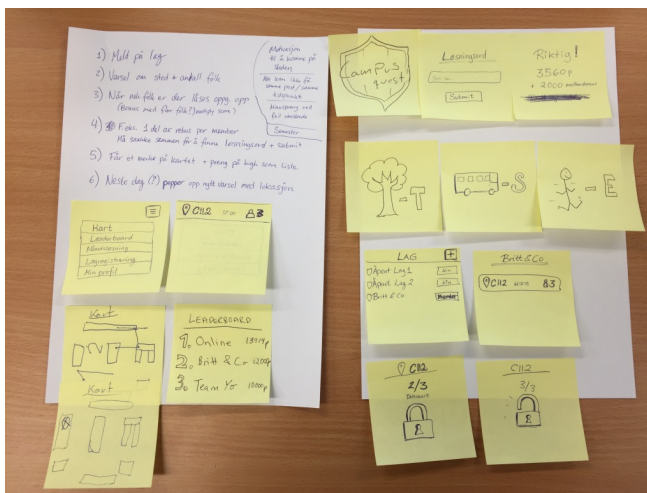


Figure 6.5: Design Sketches provided by Group 1

Group 2 with Participant P6 and P7

The sketches designed by the group are shown in Figure 6.6. Group 2 emphasizes the importance of collaboration to facilitate social interaction (16). Similar to the previous group, they found Pokemon Go to be inspiring. They looked at the raid bosses, which are oversized, empowered Pokemons that can be captured if the players work together (17). A raid provides an arena for players to interact and collaborate, as the players must show up at a specific location in a short time-frame. Instead of using Pokemons, the group proposed a social arena that includes collaborative behaviors through a game of common denominator. The players receive a unique part of a puzzle and share their piece with fellow students to find the solution (18, 19). Each game session contains a series of puzzles that must be solved at the location, and the players always begin at level 1.

- (16) P7: If the goal is to be social, it must be an advantage to do things together. It should be advantageous being more people; the more, the merrier.
- (17) P6: What I found fun about Pokemon Go, it wasn't collecting Pokemon alone, it was the raid bosses where you gather a group of people to cooperate. The activity is not possible to perform without collaboration and requires a minimum of participants. I don't believe Pokemon Go is particularly social, but I think it is very effective in gathering people. So, if instead of the goal being to fight a boss, it could be to do something together and communicate with each other to become better acquainted.
- (18) P7: For example that you need to gather some information. Say you must meet in the room R5, and you have required a piece of information that you must communicate to others at the location. And the more information you gather, the more points you get. You need to physically talk to others and enter the correct word in the app to get points.

- (19) P6: Say it's a riddle and the app determines the location where people need to gather to solve it. People are assigned different pieces, and you have to collect enough pieces of the puzzle to find the correct solution word. Everyone who participated in finding the correct word receives a reward. In this concept, people gather and must approach others to ask if they have a missing piece.

Group 2 also looked at Hold for inspiration, an application where the users collect points and unlock great rewards for not using their phone. They argued that the app functions as a means for doing something else, which is the aim of this game concept; provide a game that functions as a tool for the players to be socially involved and get to know their fellow students (20). Further, they underlined the application's effectiveness in terms of facilitating social communication (21). Finally, they looked at how it utilizes the users' scores outside the digital world (22).

- (20) P7: We will use an app to do something else; to be social. We will end up with an app where the focus is not on the app itself.
- (21) P6: With Hold, you get more points if nearby mobiles also use it. Therefore, to receive more points, you tell those around you to put on the app. Then we can talk together instead. It is surprisingly effective to be so simple.
- (22) P6: If you have enough points, you can buy something outside of the app, such as a banana.

A digital map is incorporated to display the location of the game session. When the players are co-located inside the quest's radius, they can begin to collaborate with fellow players to find the common denominator. P6 explained that the difficulty is related to the number of participants present at the quest. The more players, the easier it is to exclude options and find the correct solution. Hence, it is advantageous to be more players.

When the players solve the quest, they will earn points that appear at the leaderboard and rank up to the next level, where they receive new images that require more players to find a connection. New players that show up at the location will start at the lowest level, and the players that have already solved the quest will benefit from helping them up to their level, as more images equal a better chance of finding the correct common denominator. Hence, a new player will hold great value for the other players, making the threshold for participating low.

For example, level 1 requires two players. One player receives an image of a car, the other a scooter. Their common denominator, hence the correct solution word, is *vehicle*. In the next level, they receive a rainbow and a sun, making it less apparent that the solution word is *yellow*. Therefore, they help two other players rank up to their level, where they receive images of a yellow house and a yellow car. Now they see a clear connection between the pictures and type in the correct solution word. All the players rank up to level 3, where they need even more players. And so it continues. If there are not enough players at the location to find the correct solution word, they may want to reach out to friends and other students to download the app and get started.

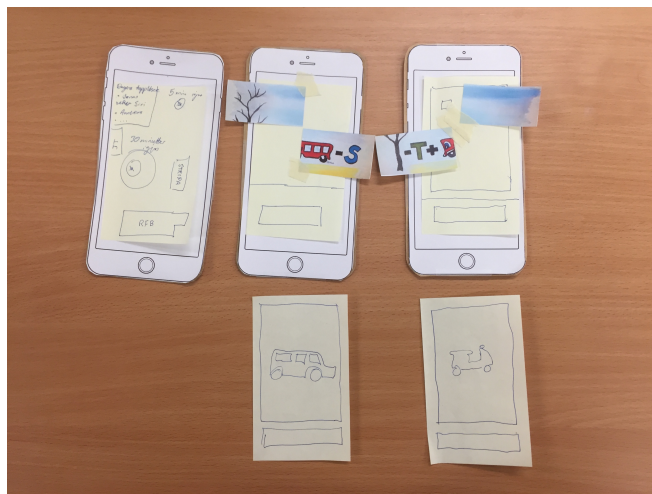


Figure 6.6: Design Sketches provided by Group 2

Group 3 with Participant P5 and P8

The sketches designed by the group are shown in Figure 6.7. Group 3 wanted to design a game that consisted of social challenges and task-related quests outside the digital world. The players can view the location of numerous active quests on a map of campus, displayed in the game. Individual players could then walk to an active quest, which physically shows a QR code that they must scan to unlock. Further, they must pair their device with other students present at the quest to receive points.

The social challenges include giving compliments, handshakes, hugs, etc., to the paired students. They argued that these small tasks could help initiate the process of being social (23). The players will not receive scores, however, they receive recognition and streaks for completing the challenges. As for task-related quest, the group specified providing collaborative activities, such as working together to create a sculpture. For these quests, they receive points by taking a photograph of their creation. Drawing inspiration from Hold (24), they suggested giving players opportunities to utilize their scores externally.

- (23) P6: Sometimes talking to people can be difficult. Having to accomplish small social challenges could help the players become more comfortable in social settings.
- (24) P8: In Hold, you get points for not using your mobile phone. And those points can be used to buy something external in, for example, the cafeteria.

The participants underlined the importance of resetting the scores each semester to ensure a low participation threshold (Section 6.2.2). Also, they would like to present the game to the students after the Freshers' Week, to provide a way for students to socialize throughout the remaining semester (25).

Once the players scan the QR code, they receive instructions on how the quest is solved. The task will either be digital or physical, in which the latter requires collaboration beyond only interacting or looking at their screens. The group mentioned building the tallest pyramid of Lego as an example of such a quest (27). As for the digital ones, they suggested providing rebuses, which are solved by typing a solution word (28). Further, they proposed having quiz questions, where the players could receive school-specific tasks at the Freshers' Week. Throughout the semester, they could receive questions specific to the subjects lectured at the buildings where the quests are located (29). They also specified that their solution's social dimension is to collaborate to solve a task (30).

- (27) P10: One task can be to create the highest possible pyramid with six other people, and when done, one person takes a picture of the pyramid so that everyone who participates gets points.
- (28) P11: You have to find four people, in which each person has one letter. Then you have to collaborate to find the correct word by assembling the letters. Finally, you enter the solution word and get points.
- (29) P10: In the Freshers' Week, you can provide the students with school-specific questions, so they might receive answers to something they have been wondering about. During the semester, they can get questions related to the facilities. For example, if you are outside the Chemistry building, you can get chemical questions.
- (30) P10: The social aspect resides in the element of collaboration, in which several people have to solve a problem together.

The players receive points related to their performance, which are shown in a leaderboard. As an approach to earn more points, the players can press a button in the application where they get connected with other players through a chat (31). They can decide, based on profile information that includes a name and a field of study, who they want to get in touch with. For example, if a student wants to get better acquainted with someone who studies Computer Science, he

or she can contact the person in the application through the chat-functionality.

- (31) P11: If you're pretty far down the list, we've included a way to collect extra points. You can press a chat button to contact other players. All the players that press the button can be contacted. Then they can reach out and ask: "Shall we meet in half an hour? So that we can walk around to the locations together?"

The chat will function as a means for meeting and conversing with other students. They receive points for walking around campus together at specific positions, displayed on the map. Only one spot is visible at the time, meaning the players must walk to the first location before the next one shows. This concept is separate from the quests, in which they only need to scan QR codes, not participating in activities, or cooperate in any way.

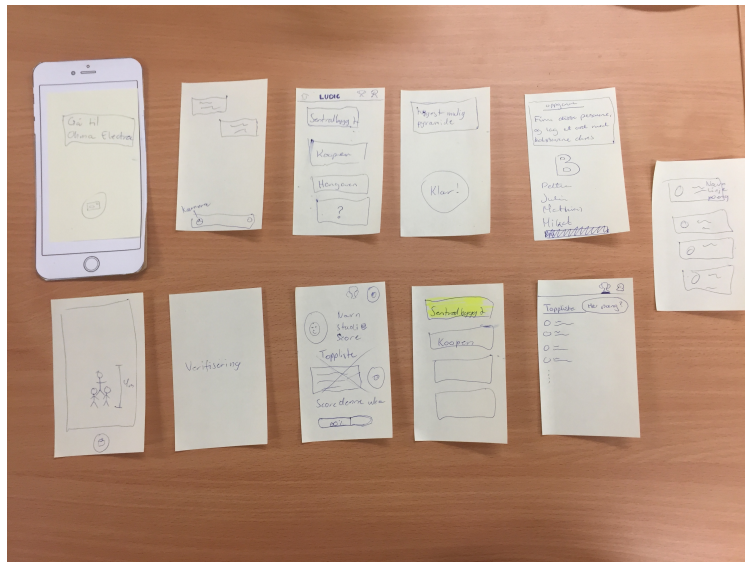


Figure 6.8: Design Sketches provided by Group 4

6.2.2 Important Considerations

Series of Quests

All the concepts presented by the groups centered on having a series of quests where the players must solve problems. Groups 1, 3, and 4 proposed to provide a set of quests across different game sessions, where only one is open in a given time. Group 2, however, suggested having a game session that includes solving multiple quests at the same location. Group 4 also recommended, as a supplement to the quests, to walk together with new acquaintances across different campus locations. Combining their propositions, we designed the game to contain a series of quests across campus, in which the players must solve one task before the next appears. In this way, we exploit joint walking activities, which can provide a sense of belonging and enhance the players' well-being (Chapter 2).

Types of Quests

Groups 1, 2, and 4 suggested having the players indulge in digital problem-solving quests with solution words to ensure a fun experience (32). Group 4 also proposed supplementing activities outside the digital world. As for Group 3, they only mentioned having non-digital quests. An important design consideration that emerged by Group 2 was to ensure the element of competition was subtle. They argued that from a social point of view, it is more important to focus on collaboration (33). Hence, activities should promote collaborative behaviors.

(32) P7: I'm over medium fond of introducing myself to new tasks. Tasks are fun!

(33) P6: The competition element should not be too dominating. It is more important to focus on cooperation.

Map View of Quest Location

All the groups specified that the location of the quests should be displayed on a map. P3 argued that the game's focus should be towards the real world instead of the screen, which is the case in *Pokemon Go* (34). On that note, the players should only need to look at the map to locate the quest without interacting

further before opening the task.

- (34) P3: I'm not a person that frequently joins global apps like Pokemon GO. I can play it for five minutes, and then it's boring. It may be because there is too much happening on screen. But it doesn't have to happen so much on screen, the focus can be more towards experiences outside of the app.

Scoring System

All the groups suggested implementing a scoring system, where the players receive points for solving a quest. They argue that scores can contribute to increasing their motivation for playing, especially if they are put into context (35). In that case, three of the groups suggested incorporating a leaderboard in which the participants could receive recognition for being good players (Section 6.2.2: Leaderboard). Also, Groups 2 and 3 mentioned using the points to receive external rewards in the physical world, such as a baguette or coffee in the cafeteria on campus (35-37).

- (35) P8: Say you have the app where you get those points, it might motivate people to take the initiative to go to the quests instead of just passing by. For anyone to bother joining, a suggestion is to provide an opportunity for the students to utilize the points for something, that the points in a way activate more students. We are quite a few students who drink coffee, for example, so to convert the points, say 2000, into coffee could be beneficial. My point is that there should be a benefit related to the points, which will further motivate the students to participate.
- (36) P7: Exploring the possibility of transferring scores to free coffee at Narvesen. In most games, however, you play because of the entertainment factor. You receive nothing beyond that.
- (37) P5: I would definitely swipe by a Pokestop and get to know other players better to get a cheaper baguette in the SIT cafeteria.

Reset Scores

Three of the groups suggested resetting the scores after a time period. Group 2 did not mention a reset of scores, but the participants recommended displaying the best player of the month in a leaderboard. Both the recommendations allow new players to seek recognition on an equal footing as more integrated players (38-40).

- (38) P5: If I don't attend this in the spring, but then I want to join in the fall, I have new opportunities.
- (39) P8: Yes, that you are not 2000 points behind because you didn't participate one semester. It should be open to everyone every semester. That it is just as low a threshold to begin later on.
- (40) P7: The scoreboard can show for example the best of the month so you can assert yourself even if you are new.

Leaderboard

Three of the groups suggested showing their performance in a leaderboard. Group 2 argued that incorporating gamification in the form of a scoreboard provides an entertaining factor that will increase the students' motivation for playing, and help keep the user base (41, 42).

- (41) P6: Including gamification, such as a scoreboard and streaks, provides an entertainment aspect.
- (42) P7: Scoreboards can help preserve the user base, as they can increase the players' motivations for playing.

Time Limitation

All the groups were in favor of incorporating a time-limit. However, the participants were divided as to how big the time-frame should be. P6 stated that there is no place to hang out during a study break, which makes the game ideal during those times (43). Group 1 agreed with this statement and argued that the game

should have a short time-limit (44). However, P6 and P7 explained that the amount of time students have varies on a large scale (45). Thus, they recognized a need to provide longer games in addition to short ones. To provide the best user experience, they proposed allowing the players to decide for themselves how long to play (45, 46).

- (43) P6: Often I sit at my desk with assignments, and it would be very fun to use 15 minutes to walk, which I often do, but I have nowhere to be.
- (44) P3: I think more in the direction of 5 minutes, and sometimes additional 5 minutes a day. It is much better than an hour in a row. I'm at school, not to play, but to do things.
- (45) P7: When you are at school, it varies how much time you have. It can range from 10 minutes to 2 hours, so the game should be something that can be completed in both a short and a long time frame. Like Instagram: You can check the social platform for 2 minutes or indulge in it for one hour. I suggest providing flexibility in participation and allow players to jump in and out of the game. The players should not be forced to participate in a specific amount of time.
- (46) P6: Pokemon Go for example is a game you can play for 10-15 minutes. And you can walk for hours if you want.

Composition of Teams

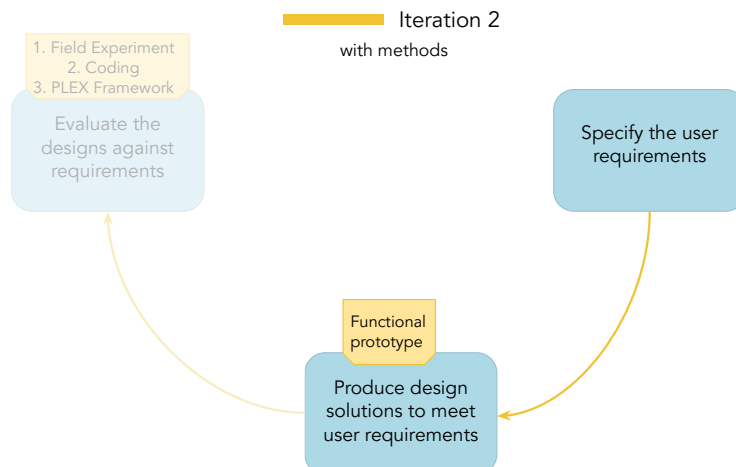
The composition of teams should happen at the beginning of each game session based on the recommendations of the majority of groups. The participants argued that the game should be an entrance to reach new students, and if they want to get to know each other better, they could meet in a different setting (47). Group 1 was the only group that preferred predefined teams to develop stronger relationships, as all the team members would collaborate and play together for a longer period (48). A concern that emerged with this idea was that students would play with their existing friends (49) and possibly exclude new students from their teams. A response to this was provided by P9, who argued that walking

with friends is still regarded as social (50).

- (47) P7: In this way, you can meet new students in a social arena, which functions as an entrance to take the initiative to become better friends outside the game.
- (48) P3: If you are attending big events where you meet hundreds of people, you will not get to know anyone. Then it's much better to have small groups of people that grow their social connection and become good friends.
- (49) P5: If I downloaded the app, I believe I would only walk around with people I already know.
- (50) P9: Walking with friends is still a social activity.

Chapter 7

Designing the Prototype - Towards a Functional Prototype



7.1 Specify the User Requirements

We wanted to provide a simple game whose primary function was to socialize the students. Therefore, we decided to keep it simple by focusing our effort towards building a solid conceptual foundation. Extra, additional functionality, such as different levels of the quests (Group 2), extra tasks such as dot-to-dot (Group 1), and chat functionality (Group 4) that surfaced during the workshop may be worth looking into after the foundation of the concept is set and validated by the users. We specified the essential requirements in the context of social play by analyzing the ideas that emerged (Table 7.1).

Table 7.1: Requirements From the Co-Design Activity

ID	Requirements, in which the game must	G1	G2	G3	G4
R1	Contain a series of collaborative quests	Green	Green	Green	Green
R2	Include a map view of the quests' location	Green	Green	Green	Green
R3	Include a scoring system	Green	Green	Green	Green
R4	Provide a time limitation	Green	Green	Green	Green
R5	Include digital quests with solution words	Green	Green	Red	Green
R6	Let teams form at the beginning of each session	Red	Green	Green	Green
R7	Reset the scores after a time period	Green	Red	Green	Green
R8	Include a leaderboard	Green	Green	Red	Green
R9	Include quests outside of the digital world	Red	Red	Green	Green

7.2 Developing the Functional Prototype

The most critical requirements that surfaced were R1-R4, as these were declared by all groups independently. The game concept relied mainly on these considerations. R1 specifies having a series of quests, while R5 and R9 comprise of the

quests' activity, in which the former suggests digital puzzles, and the latter expresses the need for tasks outside of the digital world. As most of the groups were in favor of the digital quests, we incorporated different types of digital puzzles. Yet, it could be advantageous to investigate a potential need for supplementing digital tasks with activities outside the digital world for future work.

7.2.1 Digital Puzzles

The groups suggested various sorts of digital puzzles, including rebuses (Groups 1 and 4) and common denominator tasks (Group 2). Experimenting with a higher number of unequal quests would allow for further exploration of what works in the context of increasing social interaction between players. Therefore, we added crosswords, general quiz questions, and IQ tasks, to the mix of quest activities.

7.2.2 Time-Limit

To finish a game session, the players must solve all the quests within a given time-frame (R4). The groups did not agree on a specific amount of time, as some preferred only playing for a short while during a study break, and others wanted the opportunity to play for a more extended period. Regardless, one group highlighted the importance of allowing the students to decide for themselves how long they want to play (e.g., Quote 45: "When you are at school, it varies how much time you have. It can range from 10 minutes to 2 hours, so the game should be something that can be completed in both a short and a long time frame. I suggest providing flexibility in participation and allow players to jump in and out of the game. The players should not be forced to participate in a specific amount of time.").

7.2.3 Scoring System

There was a consensus that the game must incorporate a scoring system (R3). However, different suggestions arose, in which some preferred using the points in the real world. In contrast, others wanted to put them in a leaderboard to receive recognition for their performance. Based on the conclusions of Ferrara (2012) that is described in Section 3.3.3, we decided to disregard external rewards outside of the digital world. The author states that they are destructive to the

user experience as the players' focus would arguably shift away from intrinsic pleasures. It is of great importance that their motivation is toward the purpose of the game, which is interacting with fellow students to increase their social network.

Although point systems and leaderboards are considered external rewards, Ferrara (2012) underlines that they are not referred to as problematic because they contribute to the overall gameplay experience (Section 3.3.3). The groups hypothesized that a scoring system and a leaderboard would trigger a more fun and competitive experience, which could provide further motivation to play the game (e.g., Quote 35: "Say you have the app where you get those points, it might motivate people to take the initiative to go to the quests instead of just passing by."). These features could increase the game's overall playfulness according to Kuts (2009), thus evoking happy and playful feelings among the players. In light of these discoveries, we incorporated visible recognitions related to the completion of the quests (see Section 7.3.4). No additional score considerations were investigated further (R7 and R8), as the focus was to map the aspect of scores independently of how and when they are put into use.

7.2.4 Composition of Teams

As clearly described in the previous chapter, the majority of groups suggested the formation of teams at the beginning of each game to continuously meet new students (e.g., Quote 47: "In this way, you can meet new students in a social arena, which functions as an entrance to take the initiative to become better friends outside the game."). Group 1's opinion of having predefined teams was rejected in favor of providing the students with an entrance to get in touch with loads of students.

7.3 The Prototype

As explained in the previous section, we focused on building a strong conceptual foundation. Therefore, we removed the bottom three requirements (Table 7.2). The following sections show the design of the game, and contains descriptions as to how the game functions.

Table 7.2: Requirements for the Functional Prototype

ID	Requirements, in which the game must	G1	G2	G3	G4
R1	Contain a series of collaborative quests				
R2	Include a map view of the quests' location				
R3	Include a scoring system				
R4	Provide a time limitation				
R5	Include digital quests with solution words				
R6	Let teams form at the beginning of each session				
R7	Reset the scores after a time period				
R8	Include a leaderboard				
R9	Include quests outside of the digital world				

7.3.1 Instructional View

To make it easy for the players to understand how to play, we included an instructional view that appears before the game begins (Figure 7.1). The first instruction explains that the players must locate the active quest on the map, and walk within the radius to open it. Next, information about the quests' collective nature is provided. The final view reveals that they must answer correctly to receive points. Otherwise, they lose points.

7.3.2 Map View

The series of digital quests are distributed across campus, where their location is displayed on a map (R2). Drawing inspiration from Group 4, only one quest is visible on the map simultaneously. Further, as proposed by Group 2, the players must walk to a certain radius of the quest to unlock it and start the activity. Finally, after completing the task, a new location appears (Group 4). Figure 7.2 shows how the map functions.

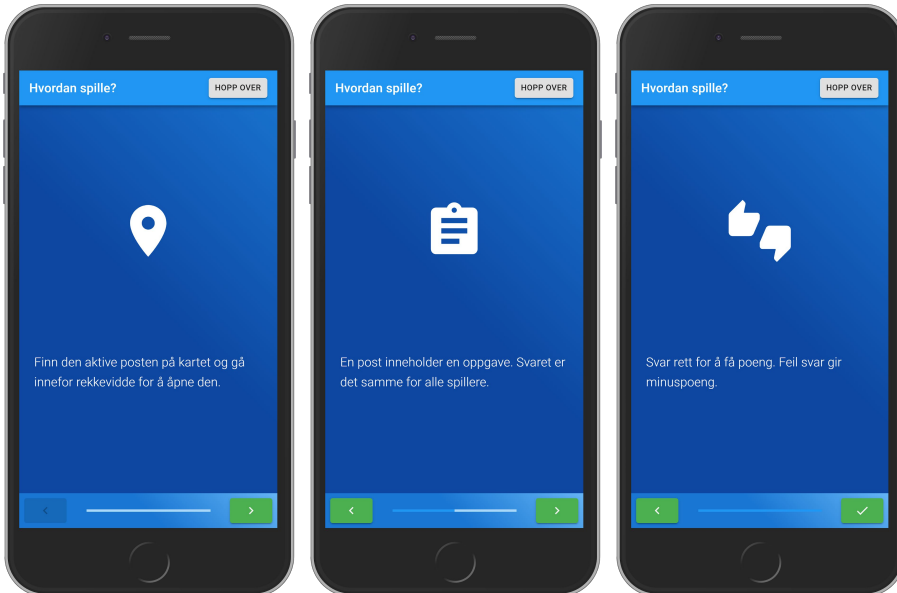


Figure 7.1: Instructions View

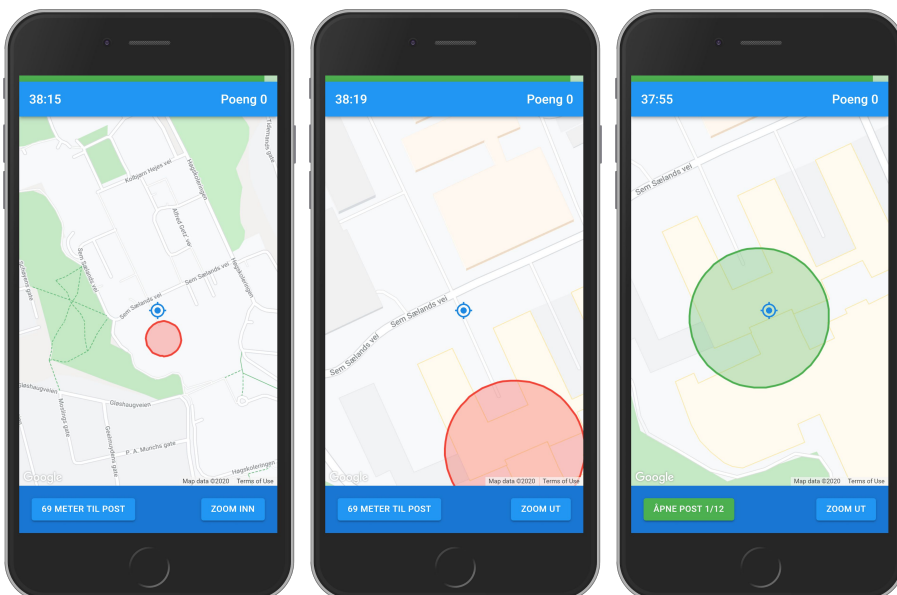


Figure 7.2: Map View

7.3.3 The Activities

For the rebuses and crosswords, the groups receive tasks adapted explicitly to their group size. To demonstrate the scenario of another student joining the group, we provided another screen at the crossword quest presented in Figure 7.6. As for the other activities, the players receive unique pieces of a puzzle equal to their number of team members. The larger the group, the more likely they are to solve the quests. We demonstrated this scenario by having an additional screen with another image ready if the players explicitly expressed a need for help. The following sections display a selection of representative screenshots related to the activities, where their solution word is included in the caption.

Rebus

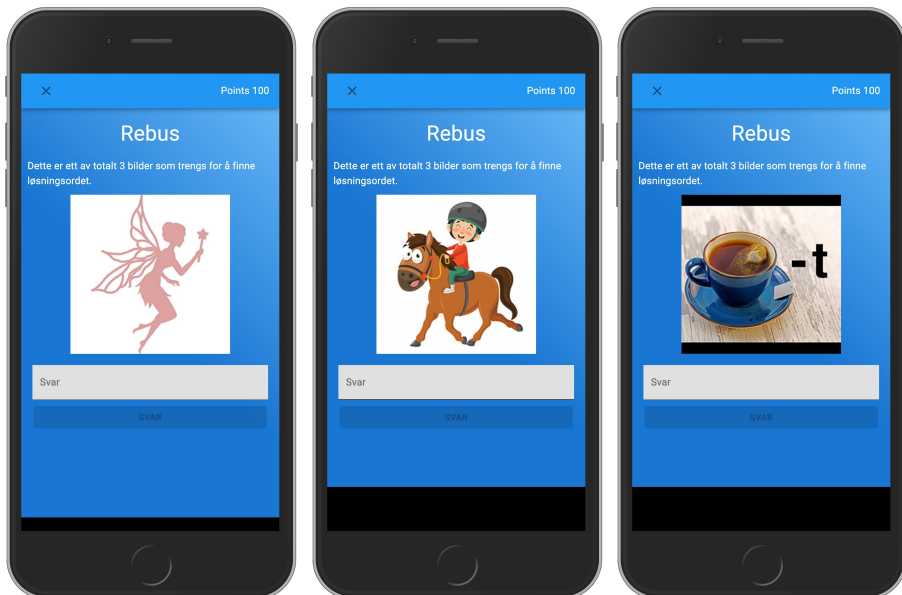
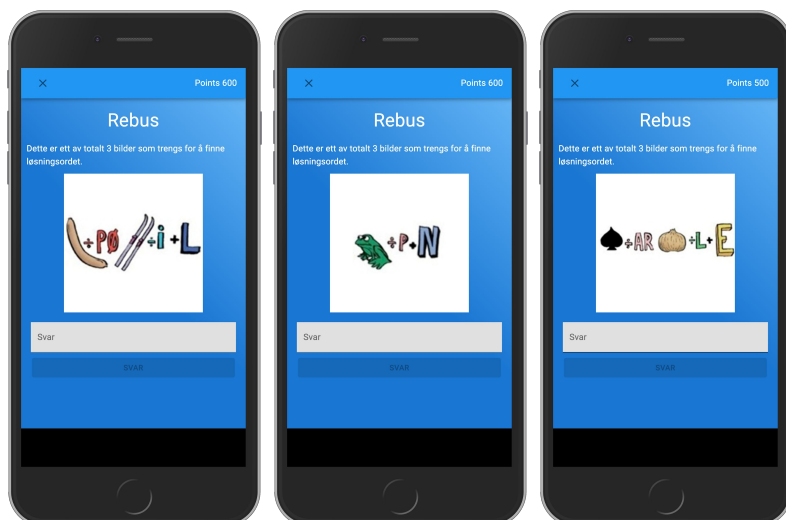
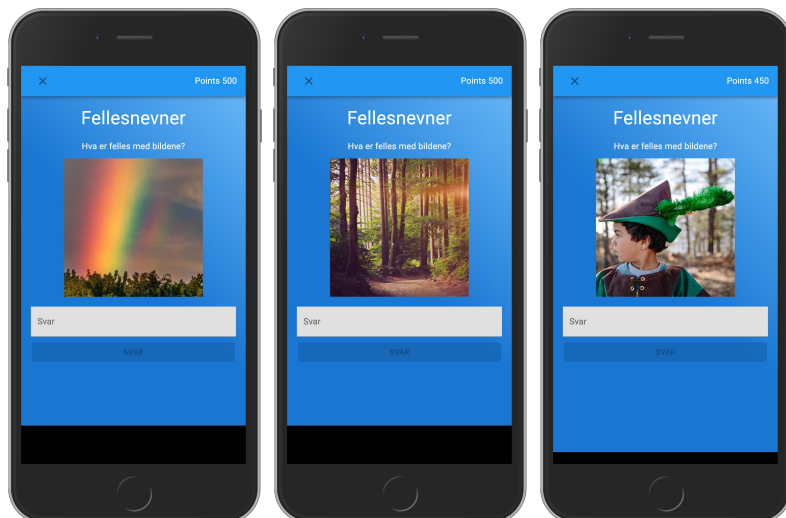


Figure 7.3: Rebus 1: *Ferie* (i.e., Vacation)

Figure 7.4: Rebus 2: *Spøkelseskladden* (i.e., Phantom Blot)

Common Denominator

Figure 7.5: Common Denominator: *Grønn* (i.e., Green)

Crossword

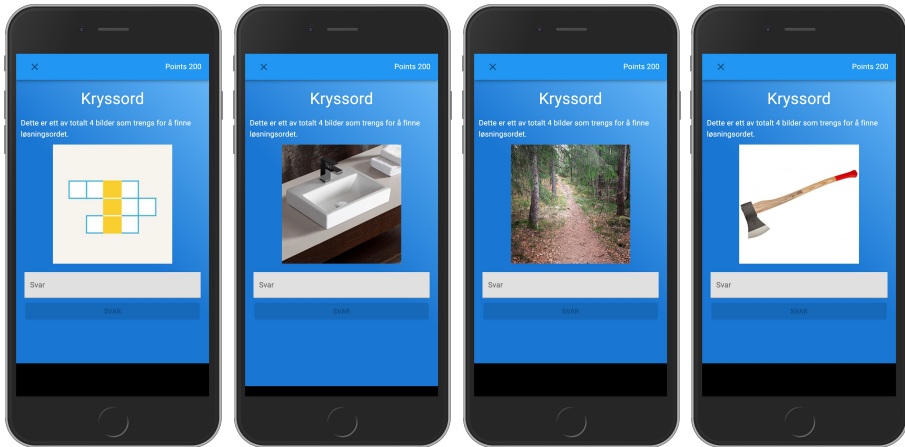


Figure 7.6: Crossword: *Søt* (i.e., Cute)

Quiz

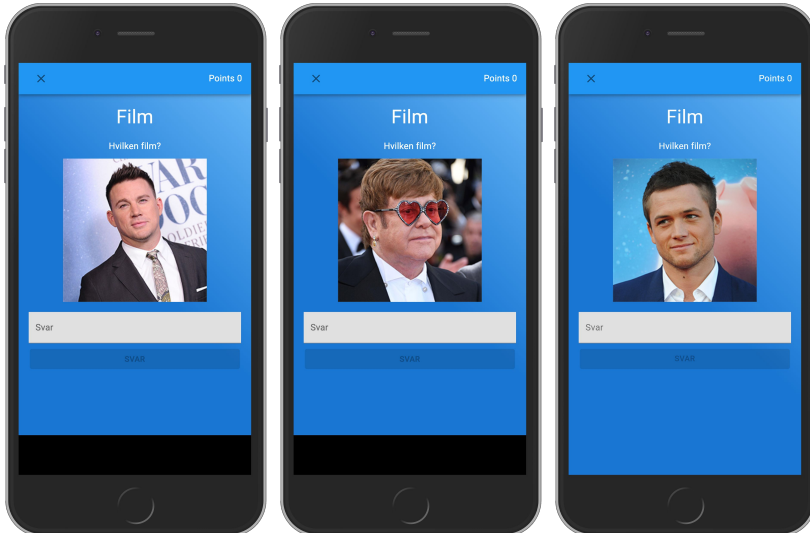
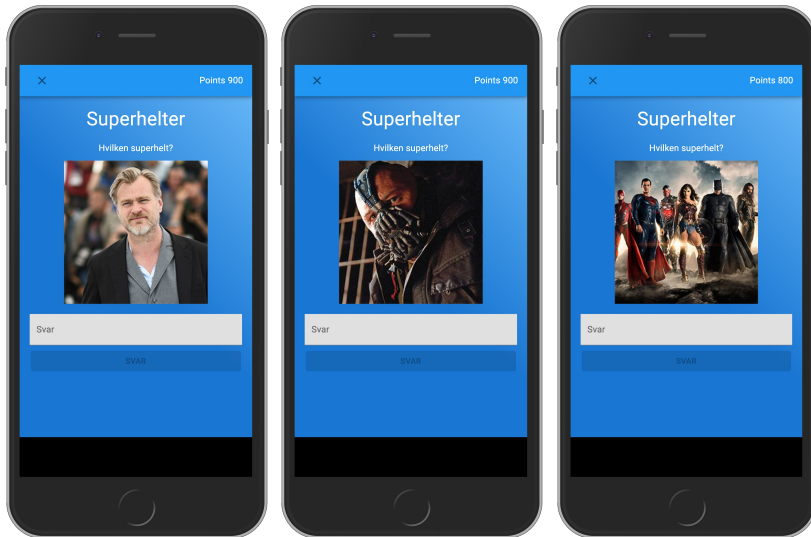
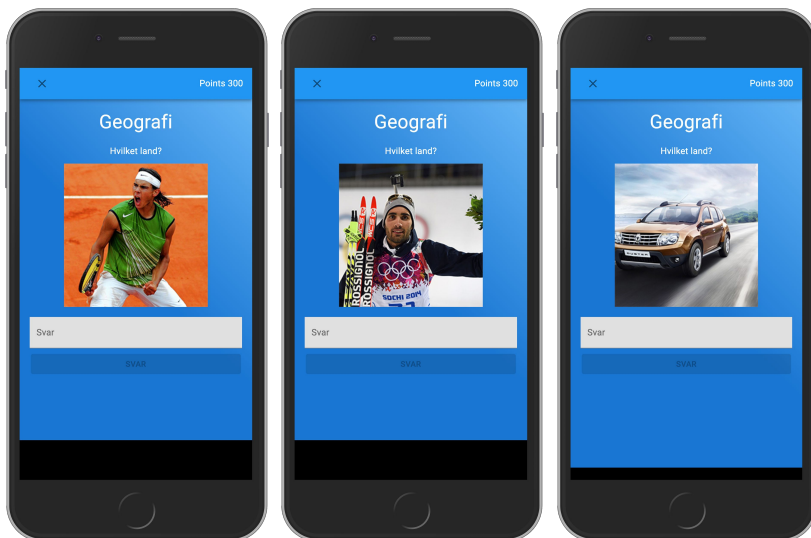


Figure 7.7: Movie Quiz: *Kingsman*

Figure 7.8: Superhero Quiz: *Batman*Figure 7.9: Geography Quiz: *Frankrike* (i.e., France)

IQ

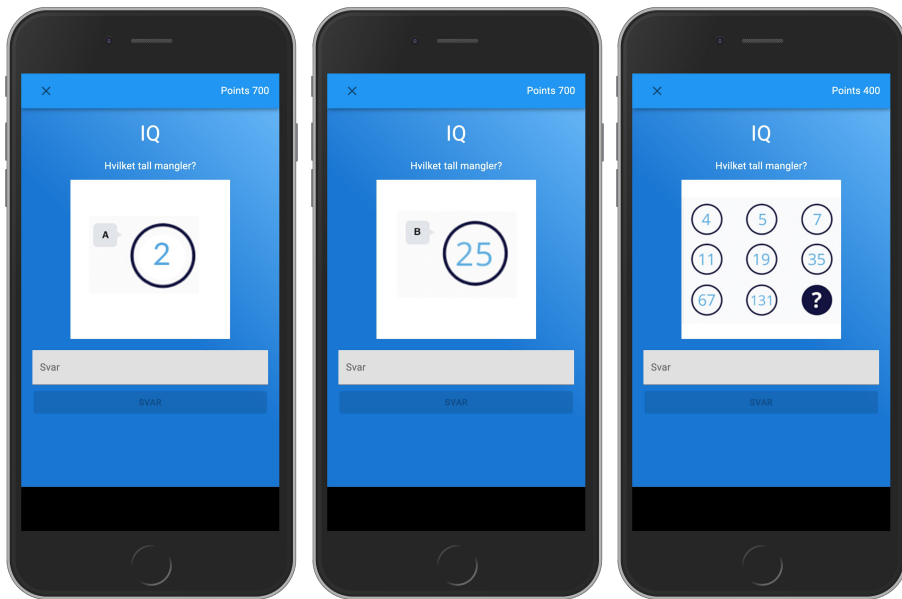


Figure 7.10: IQ: 2

7.3.4 Score-Keeping Feature

As Group 2 suggested, players should not feel obligated to participate from start to finish. On that note, we incorporated a score-keeping feature independent of the team performance. The players receive individual scores for solving a quest. Yet, they need to work together to find the correct answer. Figure 7.11 shows the scenarios of typing the wrong and the right answer, and it includes the final view that displays after finishing the session.

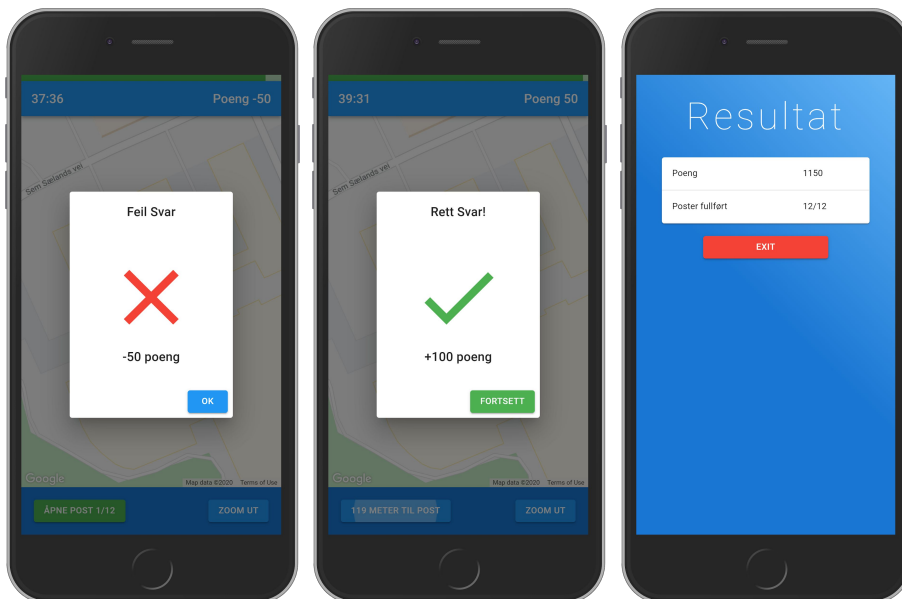
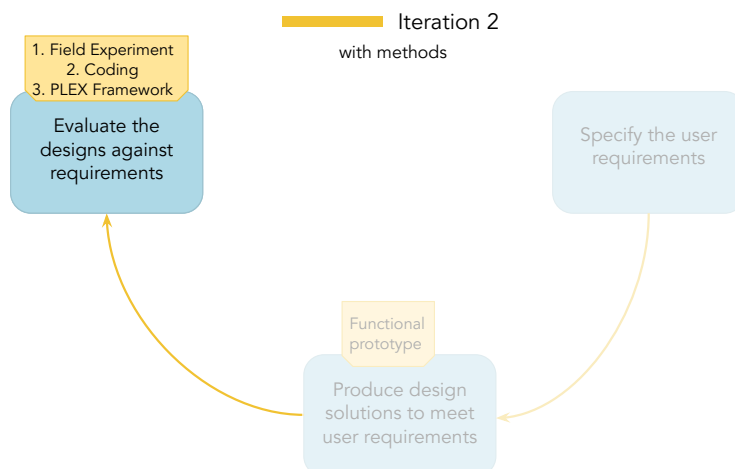


Figure 7.11: Score System

Chapter 8

Evaluating the Prototype - Methods for Data Gathering and Analysis



Three field experiments, followed by group interviews, were conducted to evaluate the design and discover important aspects of the game concerning social interaction and experience. This chapter presents the methods for data gathering and analysis, whereas the results are presented in the next chapter.

8.1 Field Experiment

Gross (2017) explains that field experiments are conducted in a natural environment, as opposed to a laboratory setting, to produce more realistic outcomes. Natural environments allow the participants to perform free of the researcher's influence and avoid tailoring their communication or behavior to meet the researcher's approval. Further, the author reveals that findings occurring in field experiments are more ecologically valid because the settings for the experiments are the participants' actual environments. Also, the researchers have openings to examine behaviors they otherwise would not become aware of in a laboratory setting. In light of these findings, we performed field experiments with the students in their school environment, aiming to examine how they interact with each other and the game in their natural setting.

8.1.1 Participants

Apart from P4, all the other participants from the workshop participated in a field experiment (Table 8.1). We conducted three experiments and thus divided the participants into three groups. The first group consisted of two students, while the others consisted of three. When appointing the students in groups, we focused on putting together individuals who had minimal contact with each other earlier in the design process, to investigate the game's function to promote social interaction between unfamiliar people.

Table 8.1: Field Experiment Participants

Participant ID with study year and potential role			
P3	5th year, event committee leader	P8	2nd year
P5	5th year	P9	2nd year
P6	5th year	P10	First year
P7	5th year	P11	First year

8.1.2 Field Experiment Structure

The field experiment sessions consisted of three parts: (1) introduction; (2) field experiment; and (3) joint discussion with a semi-structured interview.

Introduction

To start of the field experiment, we conducted a short introduction to the game and how we intended to execute the operation. We did not provide comprehensive information regarding the game beforehand. Instead, we let the players figure out the game along the way.

Field Experiment

We functioned as observers throughout the field experiment and did not disturb the students while playing. However, we did ask them to think out loud during play for analyzing purposes. The goal was to observe their way of interacting with each other and the game.

Joint Discussion

We conducted semi-structured interviews to encourage a joint discussion concerning the game's way of facilitating social interaction, and to uncover playful and fun design elements. Also, we were interested in feedback regarding their experience and motivations for playing, as well as possible improvements. The predetermined set of questions is included below, although we did deviate from these to support the topic under discussion.

- Q1 What are your thoughts concerning the game?
- Q2 What types of quests did you enjoy the most?
- Q3 What did you feel about the aspect of time?
- Q4 When would you play the game? Or when do you think the game is most appropriate to use?
- Q5 What did you feel about the concept of walking together to different locations?
- Q6 How long would you play the game?
- Q7 What motivates you to play the game?
- Q8 Do you have any suggestions as to what can enhance the game experience?

8.1.3 Data Collection and Transcription

Similar to the workshops, we used video cameras to collect data, which proved to be useful in observing their social connection in the aftermath of the field experiments. Also, we utilized tape recorders when the participants were playing to ensure the usability of the recorded audio. For that purpose, one participant in each group held the device throughout the experiment. After collecting the data, we transcribed the materials.

8.2 Coding

To discover critical social and playful aspects of the game concept, we utilized NVivo in our investigation. NVivo is a qualitative data analysis software program that uses coding to organize materials conveniently within Nodes, which allowed us to look for emerging patterns and ideas. Thus, the program simplified the task of structuring data and proved to be especially helpful in finding vital design considerations that emerged during the field experiments.

8.3 PLEX Framework

Similar to the evaluation of the mobile games in Chapter 3, the PLEX framework was utilized to assess the playfulness of our solution.

Chapter 9

Evaluating the Prototype - Results

Through observing the participants while playing, followed by interview sessions, different social and playful aspects of the game experience surfaced. The following sections address these aspects in light of the aims below and provide a solid foundation for answering the research question.

- A1 Establish the game's potential to facilitate social interaction
- A2 Identify game aspects that influenced their social interaction and experience
- A3 Identify which types of quest lead to the most engagement and social participation
- A4 Recognize the students' motivation towards playing the game
- A5 Evaluate the game's playfulness

A6 | Discover improvements to enhance the experience

9.1 A1: Facilitating Social Interaction

The participants found the game to be fun mostly because of its social promotion, and their feedback suggests that students would participate in such gameplay (51-54). They recognized the game's potential of facilitating social interaction and providing the players with opportunities to get to know others regardless of fields of study and study year (53, 54).

- (51) P3: How the game is now, it's really cool! Slightly different from what you have played before. It was very entertaining! I personally think I could have used it.
- (52) P5: I found it very nice to walk and talk, I enjoyed it very much!
- (53) P8: The game as is, I think it's a lot of fun! I enjoyed myself when I was walking around with you guys, I had a lot of fun! I think it's a good solution to force people together in a new way, even though you don't actually pressure them. They choose for themselves if they want to participate, and then they may develop friends along the way. I believe it's a great entrance to meet new people past their own classroom. Say you don't quite fit with your classmates, maybe you find your perfect fit through such a game; a meeting arena for all.
- (54) P11: I can see myself using the app. I would like to get to know others across study fields and age groups. I think the game was very fun. It's a bit of a thinking game, where we also have to be with other people.

9.1.1 Freshers' Week

To expand their friendship networks, they suggested incorporating the game as part of the Freshers' Week. They argued that the week only facilitates interaction with a small group of peer classmates, and thus recognized a need for using the game as an approach for meeting additional students (55-56). Also, P6 argued

that many students avoid alcohol, and he identified the game as a fun and natural, alcohol-free approach (57).

- (55) P10: Such an app could be an idea for the Freshers' Week, to be able to get to know someone across the arranged groups.
- (56) P11: In the Freshers' Week, you mostly get to know students in your class or student organization. You don't really get to know people in other studies. This game opens up for getting to know others of different ages and study fields.
- (57) P6: Most people have the tactic that if they want to get to know unfamiliar people, there must be alcohol in the picture. On Fysmat (Physics and Mathematics), many don't drink alcohol, and I believe that in the first days of meeting people, this game could be very fun. Because it felt so natural to walk around with two people I haven't talked to before.

When playing the game in an event-based manner, the majority preferred the length of play to be 40 minutes (58-59). Some, however, argued that 40 minutes are at the upper tier, especially when it is cold outside (60, 61). As a preventative approach, they suggested placing the quests inside and using vibration to navigate (Section 9.6.4).

- (58) P9: It may be cool to be able to create an event in, for example, the Freshers' Week, where you set aside 40 minutes ish with team building.
- (59) P9: I felt like the time went by really fast. It didn't feel like 40 minutes!
- (60) P7: It could get a little cold to walk, especially a 40-minute route, in the winter.
- (61) P3: I agree, 40 minutes was a bit long.

9.1.2 Study Breaks and Exam Periods

P8 argued that introducing the game at the Freshers' Week is an excellent way of ensuring that the students know about the game's existence. Further, the participant stated that the game would be appreciated after the week if they still lack a social support network (62). In that case, the participants suggested incorporating a study-break mode (63). They also recognized a significant need for socializing during the exam periods (64-67), in which the game would be highly effective.

- (62) P8: If people don't know that the game exists, they won't use it. But by integrating it into the Freshers' Week, everyone will know about it. So say that after a couple of weeks you realize you don't have enough friends, you can try the game.
- (63) P9: You could have a much shorter version that fits the study break with one or two quests.
- (64) P7: During the exam period!
- (65) P8: Yes, then it will be heavily used I think!
- (66) P3: Maybe a little here and there, and then very much during the exam period.
- (67) P8: During the exam period everyone needs air, so then it's ideal to play!

As for playing as part of a study break, they all agree that the game must be shortened, ranging from 10 to 25 minutes (68-71).

- (68) P7: I believe that if I was busy with exam preparations, I would prefer to participate in a shorter time. Maybe 20 minutes.
- (69) P5: If I was tired of working at Gløshaugen that day, I wouldn't bother to spend 40 minutes answering rebuses.

- (70) P6: 20-25 minutes distributed on 5-6 quests.
- (71) P5: I would have liked it better if there were many short ones, like 10 minutes to complete 3-4 quests.

9.1.3 Flexible Participation

Regardless of the game length, the players preferred having the opportunity to leave a game when it suits them (72). They argued that they sometimes only have time to drop by a quest for a quick game session (73).

- (72) P5: I enjoy flexibility, that you can solve one quest when you like, and then another if you please. I feel that it is a bit nice, that you can pop into the game and take a quick session, and then take one more, and maybe even another one. I would solve one quest, and then try another one in another day with other people. I wouldn't want to intensively solve multiple quests.
- (73) P8: Sometimes you only have time for just one quick session.

9.2 A2: Game Aspects

Designing for enjoyable experiences is not possible. However, design elements can facilitate for the experience to be enjoyable (Wright et al. 2003). This section investigates how the participants interacted with the gameplay, and addresses the aspects of the game experience, through a social interaction perspective.

9.2.1 Ticket-to-talk

Providing tickets-to-talk in the form of the quests' solution word proved to be very effective in terms of ensuring positive social interaction among the students. As observed, they found it helpful in initiating conversations with their fellow players (74, 75), which they highly enjoyed (76, 77). The aspect contributed to elicit playful experiences, which is further elaborated in Section 9.5.1.

- (74) *Observation:* P5: The answer is probably Frozen. P9: I have seen the second movie at the premiere. It was me, my sister, and many five-year-old princesses. P5: Oh, how was it? P9: Fine! If you like Frozen 1, then you will probably like Frozen 2. P5: I see. I haven't seen Frozen 1, but I've heard a little mixed feedback. P9: If you like Disney princess movies, then frozen is perfect. And if you enjoy musicals.
- (75) *Observation:* P3: Oh, vacation ahh. P8: That one was great, I liked it! (high-fived the players) P3: Vacation! P8: That's what we should have had now!
- (76) P6: The funniest aspect of the game was maybe the fact that we spoke about the quests. It felt very natural to walk and talk about things because it popped up in my head due to the quests we solved.
- (77) P9: The quests provided conversation topics. So if you don't know people, then it can start a conversation.

9.2.2 Walking in a Group

The participants enjoyed walking in a group (78-81). After solving a quest and receive a potential topic of conversation, the aspect of walking together proved to be highly appropriate, as they needed time to converse before entering a new task with a new ticket. The students mentioned that the walks put positive pressure on the players to participate in dialogue (79), make the conversation flow more easily (80), and encourage them to look at their fellow players (81). Hence, this aspect was arguably the most important in getting acquainted on a more profound level, which positively affected their fellowship (Section 9.5.1). Furthermore, the majority of participants underlined its significance in terms of providing additional motivation for participating in the game (Section 9.4). Also, walking contributed to a captivating experience that elicited playfulness, as elaborated in Section 9.5.6.

- (78) P5: I think it was very nice to walk and talk, I really enjoyed myself! I liked the aspect of walking.

- (79) P8: I enjoyed walking around with the others. In-between the quests, you are somehow forced into a kind of small-talk and become better acquainted: "What are you studying?" "How old are you?" "What are you doing?" etc.
- (80) P6: I think it's important to walk, and it felt surprisingly natural to walk around with strangers. It's nice to have an opportunity to walk around. If we were to sit here and solve quests, it would have been a little too simple activity, making it harder to get the conversations going.
- (81) P3: It was nice to get out and move around for a bit. If we were to just sit here on the couch and play, then we could have chatted a little and looked at the screen. But it would have been very much just looking at the phone. But when you also walk, you have to look up and see where you are going, and then also look at each other a little more.

9.2.3 Reward System

The participants enjoyed receiving or losing points based on their performance on the quests. P8 argued that losing points contributed to a greater cooperative spirit, as they had to work together to succeed instead of just guessing the solution word (82), consequently eliciting playfulness (Section 9.5.1). P10 stated that a scoring system could contribute to a higher competitive spirit (83), also recognized as an element of playfulness (Section 9.5.5). Further, P5 identified the scoring system as a motivational contributor (84). All the participants would, however, like to put the scores into use, which is further explained in Section 9.6.3.

- (82) P8: I liked that you get minus points if you answer wrong, that it would be stupid to write 500 wrong answers. This provides us with a little more motivation to get it right.
- (83) P10: I think it's the most fun with points, because then you get some competition over it.

- (84) P5: If anonymous had been like: "Hey, P5, I've found this game. I've got some points for it, would you like to take a round?" Then I would probably be excited.

9.2.4 Individual Scores

The game utilized individual scores to ensure flexible participation, in which the players could leave the game session without affecting their individual or group performance. Individual scores led to submissive behaviors, known to elicit playful experiences, which is further explained in Section 9.5.4. When the players sacrificed themselves for the good of others, they experienced greater team bonding, as observed (85-87), and validated through P3's statement (88). However, as described in Section 9.5.5, one group experienced an increased competitive state that affected their fellowship.

- (85) *Observation:* P3: How many points do you have? I only have 50 because I answered wrong. P7: I have -50. P3: Okay, but will you sacrifice yourself next time, P8? P8: Yes! My turn.
- (86) *Observation:* P3: Does Channing Tatum act in Rocketman? If you don't have any better answer then we can try it. P8: Okay, let's try! P3: It was wrong, don't try it now!
- (87) *Observation:* P3: Green is similar too. P8: Or heaven? P7: What about forests? Should I sacrifice myself?
- (88) P3: I consider it positive that it's my turn to risk answering wrong because then there's a lot of group bonding. You show that you are kind to each other, and take one for the team. Together in hardship, something like that.

9.2.5 Aspect of Time

Based on observing the players and getting their feedback, it is apparent that they enjoyed having a time limit to adhere to. They reasoned that the aspect of time

provided an additional challenging environment and increased their competitive state (89-92). However, as explained in Section 9.5.2, some participants expressed social concerns with having countdown-timers.

- (89) P10: I think it's good. At least if there is going to be some kind of competitive spirit, you can't use all the time in the world.
- (90) P11: Having a time to adhere to was good. I found it very nice. If you fail to complete the game within the time frame, maybe people will get motivation to get it right the next time.
- (91) P9: I liked it. But as I said before, I really enjoy Escape Room as well, which is about doing something within a specific time limit. The time aspect arouses my competition instinct a little more.
- (92) P5: Time can work if I know people and want a challenge. Then I would speedrun 12 quests and enjoy the aspect of time.

9.2.6 Screen Usage

Screen usage concerning the quests was highly enjoyed, and P9 found it advantageous only utilizing the screen to play the game (93). Having a map view was considered a fun element, but could, according to P3, interfere with their social interaction and relaxation (94). A suggestion to the issue surfaced by the same participant; to orient through the phone's vibration (95). However, one participant expressed the importance of providing the map as a way for students to pull away from the conversation if they feel uncomfortable and lower the threshold for participation as a result (96).

- (93) P9: In my opinion, there is no need for any physical elements. I think it's nice that I just need my mobile phone to play.
- (94) P3: One thing that I noticed was that I looked down on the screen a lot during the orientation. Looking at the map stole some of the focus away from the social aspect, or what could have been social, and contributed to a lack of disconnection.

- (95) P3: If you knew you were going outside Stripa, you still had to constantly check if you were within the radius of the quest. Receiving notice in another way, like through vibration, could possibly have been a little better. Or at least provided a little more room for the social interaction. And also to relax more while walking.
- (96) P8: I totally agree that if you put away your mobile phone, you might look around a bit more. But then there are some that feel a little insecure or uncomfortable in social settings. Maybe they need the screen to hide away a little, and still get to know their fellow players. If they are a little shy, providing such opportunities could be beneficial.

9.2.7 Varying Activities

The players enjoyed the diversity of the quests. The majority would like to participate in varying quests at each game session, to utilize the players' different knowledge and set of skills (97, 98), and to keep up the excitement of not knowing what is coming next to avoid getting tired of the game (98, 99). Also, P8 expressed a potential social concern regarding removing this aspect in favor of providing category-based sessions, a suggestion described in Section 9.6.7, where having specific categories could deprive students of playing (100).

- (97) P9: Then you get to exploit the differences of people. Someone has valuable insights into some things, while others have bearing on other stuff. So maybe if someone is good at math, and some are good at celebrities, everyone has something to contribute with.
- (98) P8: I also enjoyed that there was a lot of variety in the tasks, that it wasn't just the same type on all quests. I enjoyed the fact that I didn't know what was coming next. Otherwise, I think I would be bored quickly. If you are going to meet other people, then not everyone is logical of nature. If I had been walking around alone, I probably would find someone who is different from me, and may possess different knowledge than I do, and then we would complement each other on the quests.

- (99) P5: Yeah, I think it was really good that it was varied. Because if all quests were of similar type, I would have been a little more bored. Since there were different things, I was like okay, what's next? It got a little exciting.
- (100) P8: A category-based approach may not fit all, and there would be many who are like okay, this isn't me, so they won't play.

9.3 A3: Quest Activities

The participants emphasized the importance of the quests, as they are crucial to the game's success in attracting students and ensuring a fun experience (101, 102). P3 used a pizza metaphor to underline its importance (102), and compared the quests with pizza topping; you can have a great foundation, but without the right topping, people will not eat it. Similarly, with the game, it will not appeal to the students unless the quests are fun. P3 further emphasized the importance of avoiding incorporating quests that require activities outside the digital world (103).

- (101) P8: I feel that the tasks will determine whether the game will be used or not. And people are very different in their liking. It becomes the key to how the game will work.
- (102) P3: I agree. And if you have made the pizza base, then the questions are its topping. If that's a good metaphor. Because then you can make all kinds of pizzas.
- (103) P3: But there are some tasks you need to avoid. You don't eat pizza with every combination on top. Tasks I believe would not have been any fun, are creative tasks. I like to be creative, but tasks like "paint the best picture" or "capture the coolest team picture," ahhh. I hate such tasks.

Even though finding the right types of quests are essential, they stated that quest

preferences have a very subjective nature (101), where an answer to which type of quest is most enjoyable to all does not exist. Yet, some of the tasks excelled in terms of enjoyment and social involvement. Assessing the quests gives a better understanding of which activities work in the context of social play.

9.3.1 Rebuses and Crosswords

The participants expressed an apparent fondness toward the activities that challenged their deductive reasoning skills; the rebuses and the crosswords (104-109). These quests facilitated the most cooperation, as the players were dependent on each other's screen to find the correct solution. Some functioned as conversation starters (e.g., Observation 75: "P3: Oh, vacation ahh. P8: That one was great, I liked it! (high-fived the players) P3: Vacation! P8: That's what we should have had now!"), while others were too vague to lead to further social interaction (110).

- (104) P7: Solving crosswords and rebuses are possible through reasoning. I often find it more fun to solve tasks that require thinking.
- (105) P3: I enjoyed better the logical ones that challenged my reasoning.
- (106) P11: I think it's fun with tasks where you have to put pieces together, like with the rebus
- (107) P6: I think the one that had a crossword format, where the fourth player joined in, was interesting.
- (108) P5: Crosswords were perhaps the ones I liked best. Or one of the best. Because for those tasks, I felt like we needed everyone.
- (109) P10: The crossword quest was pretty nice. It required you to think and gather the pieces. The rebus was also enjoyable. Both the crosswords and rebuses were fun.
- (110) *Observation:* P6: Soy, no, cute! P9: What? P5: But where should the axe and path be? P9: We have to try it out! So, cute? P6: Yeah, the crossword is cute.

9.3.2 Quiz

P3 highlighted the importance of providing quiz activities as supplements to the rebuses and crosswords (111). The players' response regarding the quizzes suggests that the activity added to their experience, mainly because the players could exploit their differences and contribute within their area of knowledge or interest (112, 113). Also, these excelled in terms of providing tickets for conversation (e.g., Observation 74: "P5: The answer is probably Frozen. P9: I have seen the second movie at the premiere. It was me, my sister, and many five-year-old princesses. P5: Oh, how was it? P9: Fine! If you like Frozen 1, then you will probably like Frozen 2. P5: I see. I haven't seen Frozen 1, but I've heard a little mixed feedback. P9: If you like Disney princess movies, then frozen is perfect. And if you enjoy musicals."). However, the players stated that with quizzes, the players either know the solution right away or not at all (114). In the sense of not knowing, they needed to resort to Google, which seemed like a factor that diminished their gaming experience (115).

- (111) P3: Change is delightful. One cannot just have logical ones with reasoning. So, it's fun to have some quizzes with "which movie star is this?" But if it's just movie quizzes, then I'm going to stop playing eventually.
- (112) P9: I also really believe that movie quests can work well, as long as not every task is movie-related. Then you get to exploit that everyone is different.
- (113) *Observation:* P6: What if you've never seen a single movie with Channing Tatum? P9: That is why it is beneficial to be several players, because then there is a greater chance that someone has seen at least one of them.
- (114) P7: I think at least those with 3 actors and one movie for example, you either know the answer right away, or you simply don't know. So then you have to google it if you are stuck. It doesn't help to start a discussion.

- (115) *Observation:* P3: Can we ask for any hints? Or use Google? P3: Using Google is cheating! (long silence) P3: Okay, we're utilizing Google. Kingsman 2 comes up as a result.

9.3.3 Common Denominator

The players did not express much enjoyment toward these activities (116-120). They found the quests to be too vague in terms of having multiple possible answers, in which no one stood out (117-119). P6 suggested providing images where they can clearly exclude options, and only find one common denominator, but is uncertain it would increase the enjoyment (120).

- (116) P10: I think the rebuses are a little more fun than just receiving images and having to find the context. But it was okay.
- (117) P5: It was one task where you needed to find out what was common among the images, and the answer was green. I felt like there were only three random pictures, and the answer could have been anything.
- (118) *Observation:* P5: You can try trees. P6: It was wrong. P9: I'm trying forest, it was also wrong. P6: Green? P5: Nature? Ahh, it could be anything! P9: Yes, it was a bit vague. P6: Oh, it's green. P5: Green? P9: Green?
- (119) *Observation:* P3: Also green is common. P8: Or heaven? P7: What about forest? P7: Should I sacrifice myself? P3: It is not something that is very distinct, but the forest is here. P7: No, it was wrong. P3: Hmm, not forest, what about green then? I'll try green. That was correct!
- (120) P6: You could provide a little more separate images, so that it would be easier to exclude things from them. That might be a good idea, but I am not sure it would be particularly fun.

9.3.4 IQ

IQ did not provide any social outcomes, nor added to their gaming experience. P5 expressed dissatisfaction with solving IQ tasks (121). The players showed non-cooperative behaviors at these quests, in which some answered a task alone (122), while others did not want to participate (123). Also, as the solution words were numbers, they did not function as conversation starters.

- (121) *Observation:* P5: IQ? That's a bit disputed.
- (122) *Observation:* P6: Now I've been insidious and already solved the task. It was doable alone.
- (123) *Observation:* P9: I chose a degree in Informatics to avoid math, so I'll let someone else solve this task.

9.4 A4: Motivations for Playing

Although social interaction was identified as the primary motivating force for playing the game, other motivating factors emerged. The players responded well to the concept of walking and argued that it provided significant motivation in the same way as the game's social contribution (124). Overall, they appreciated getting a break from sitting inside studying and have an opportunity to conduct physical movement outside (125-128). They also suggested incorporating a leaderboard to enhance motivation for playing, as explained in Section 9.6.3.

- (124) P9: In my opinion, the walking aspect motivates me to play just as much as the social pleasures.
- (125) P7: Then there's also the factor of getting a break from what you usually do, which is to sit inside a building looking down. So, it is very beneficial in that way too.
- (126) P3: It's delightful to get out and move around a bit.
- (127) P6: It's nice to get an opportunity to walk around.

- (128) P9: Adding steps to the watch, getting fresh air, and a break from school are also valuable profits.

9.5 A5: Evaluating the Playfulness

9.5.1 Fellowship

Cooperation

Cooperation proved to be an essential contributor to fellowship experiences, which adds to the formation of relationships (Section 3.3.1). After observing the players, it is apparent that collaborating to solve a problem positively impacted their social bonding (129 and Figure 9.1). They provided validation during the interview session, where it emerged that being pressured into working with others opens up to potentially becoming friends (130, 131). Hence, designing collaboration through the quest activities fostered a sense of togetherness associated with playfulness.

- (129) *Observation:* P8: I have an axe. P3: I have a sink, and you have? P7: Forest, or tree. P8: That's probably a tree. P3: Can it be three words? P7: Sink, then you have S. South?
- (130) P11: I think the game functions as an entrance to get to know others, by having to work collaboratively to solve tasks.
- (131) P8: Such as "what do these images have in common?" We have to talk to each other about what they actually have in common.



Figure 9.1: Cooperating to Solve a Quest

Ice-Breakers

As explained in Section 3.3.1, providing ice-breaking activities is considered critical in situations where new people gather to collaborate. Some of the quests functioned as ice-breakers, as they offered tickets-to-talk, which stimulated social participation among the players (74-77). Sharing information with co-players in such a playful manner can help establish relationships, and these quests' solution word is thereby identified as an essential contributor to fellowship.

Walking in a Group

Feelings of togetherness surfaced when the players indulged in conversations in-between the quests. Walking in a group is recognized as a prominent contributor to social interactions, in which their responses (79-81) confirm provide experiences of fellowship crucial to the development of social connections. Figure 9.2 demonstrates social interactions occurring on the move, where the participants expressed feelings of joy.



Figure 9.2: Connecting with Co-Players on the Move

9.5.2 Challenge

Problem Solving

The players experienced challenges in the form of problem-solving, which is identified as one of fourteen types of fun Garneau (2001). Some quests challenged their intellectual level, while others demanded knowledge within a specific domain. The players attempted to address these challenges by discussing with each other (132), resorting to deductive reasoning (133) or guessing (134), and to assign the responsibility to other team players that have a smaller gap between challenge level and skill (e.g., Observation 123: "P9: I chose a degree in Informatics to avoid math, so I'll let someone else solve this task.").

- (132) *Observation:* P10: Do you have any idea what this can be? P11: No, I don't watch sports at all. P10: I don't watch any tennis. But which country typically has tennis players? P10: Ehhh, I have no clue. Do they play a lot of tennis in Brazil?
- (133) *Observation:* P7: A rider. P8: Yeah, isn't it? P3: A fairy. P7: A horse. P8: If it is a horse, shouldn't the image just contain a horse? P8: You have fairy, and the letter E. P7: Fairy ride. P3: Oh, Vacation!

- (134) *Observation:* P7: Which number is missing? P3: I would guess 259.
P3: Yes, that's right.

If the level of challenge failed to correspond to their skill level, they experienced feelings of frustration and boredom (Figure 9.3). Frustration arose when a player completed a quest alone without collaborating with the others (135), and when the task was too vague in terms of having multiple potential answers (118, 119). Boredom was observed when the players resorted to Google as a result of lacking knowledge on the subject (e.g., Observation 115: "P3: Can we ask for any hints? Or use Google? P3: Using Google is cheating! (long silence) P3: Okay, we're utilizing Google. Kingsman 2 comes up as a result.").

- (135) *Observation:* P9: Have you already solved it? P6: Yes. P5: What, you did? P6: Yes, I managed it alone. P9: No?! P6: Yeah, but maybe it was a little unsocial of me to not include you. The answer is 2.



Figure 9.3: Expressing Feelings of Frustration

Countdown-Timer

As explained in Section 3.3.2, providing a countdown-timer can add to the experience through a challenging environment. The timer contributed to increasing the players' competitive state, as the observations suggested an increase in the players' walking pace (136), and P9 specifically identified it as a competitive enhancer (Quote 91: "The time aspect arouses my competition instinct a little more."). Quote 89, 90, and 92 further suggests the importance of the countdown-timer on ensuring a fun and challenging experience.

(136) *Observation:* P8: We have 23 minutes left, so we need to increase our pace. We're not even halfway yet.

However, P6 underlined the importance of carefully considering whether to increase the challenge by decreasing the time-limit. The participant further explained that having to run around campus could increase their stress level and decrease enjoyment (137). Also, some of the players expressed concerns with short time-limits regarding the fellowship. They argued it could interfere with the social pleasures of walking in-between quest locations (138, 139).

(137) P6: The amount of time provided was nice, but I don't think I would be comfortable with running around campus. So there is a thin line whether to turn up the difficulty by reducing the time limit. When you start running towards the quests, it may feel a little more stressful than fun.

(138) P5: One thing that could potentially harm the social interaction is the amount of time. If you are introduced to new people, and you enjoy walking and having conversations with them, then suddenly someone bursts out: "Oh shit, we don't have much time left!", and they start running towards the quests, the social atmosphere could be negatively affected.

- (139) P9: Good point that if you have to hurry because of the limited time, the social atmosphere could take a hit. Besides, maybe one person walks here (in the front), while the others walk here (in the back) because of different reasons for participation. Then you lose the conversation part promoted through the game.

9.5.3 Completion

The countdown-timer also elicited playfulness by providing the players with the satisfaction of completing a game within the given time frame (140, 141). Yet, some of the players reported a lack of visible recognition after completing a game (142). Feelings of completion also manifested through the score-keeping feature, in which receiving scores for finishing a task triggered happy feelings (143 and Figure 9.4).

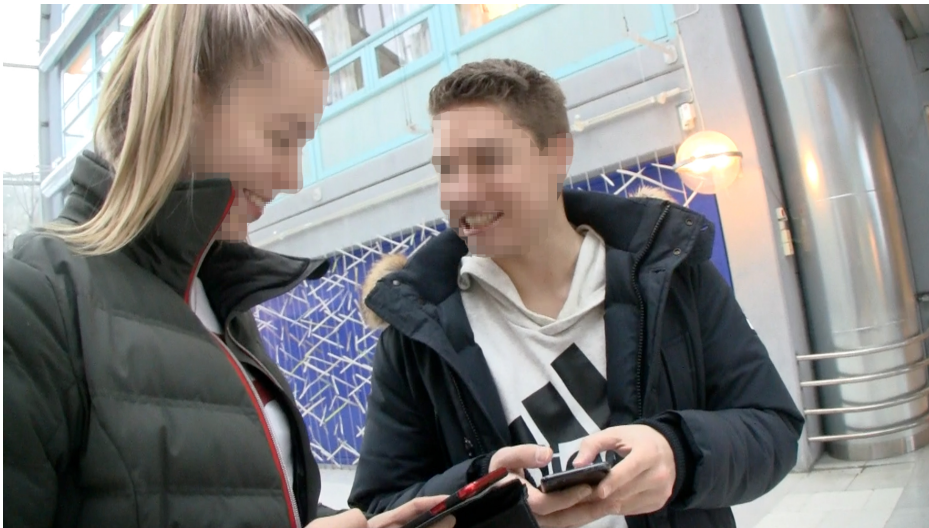


Figure 9.4: Expressing Joy over the Completion of a Quest

- (140) *Observation:* P3: Good run, well played!
- (141) *Observation:* P5: Wuhuuu, we did it! (gave high-five to the other players)

- (142) *Observation:* P9: When finishing the game, we should get a display showing "hurray, you're good, you've reached the finish line."
- (143) *Observation:* P8: I got it right, wuhuu! P3: Did you enter the entire Kingsman Golden Circle? P8: Yes, and I received lots of points!

9.5.4 Submission

Submission is an experience that arises when the players feel they are a part of a broader community (Arrasvuori et al. 2010). Submissive experiences were observed during the gameplay, as the players submitted to the game's set of rules, and committed themselves to the team. As mentioned in Section 9.2.4, submissive behaviors occurred through sacrifice, as a result of receiving individual scores. Sacrificing oneself for the good of others was observed when group 3 played. They alternated on which player to sacrifice during the quest and risk minus points by answering incorrectly (Observation 85: "P3: Okay, but will you sacrifice yourself next time, P8? P8: Yes! My turn"), and they felt it contributed to increasing their fellowship (Quote 88: "P3: I consider it positive that it's my turn to risk answering wrong because then there's a lot of group bonding. You show that you are kind to each other, and take one for the team. Together in hardship, something like that.").

9.5.5 Competition

The countdown-timer was recognized as a competitive enhancer, which contributed to a playful experience (Section 9.5.2). Still, as identified in Section 3.3.4, providing elements of competition as an approach for eliciting playfulness must be considered with care regarding social play. Like the timer, score-keeping features facilitate competitive spirits, which can cloud cooperative and social behaviors essential in social play. One group experienced competitive behaviors toward their co-players due to the individual scores, leading to a lack of collaboration and social interaction (144, 145). P9 suggested the removal of competitive behaviors inside the team to develop friendships (146).

- (144) *Observation:* P6: The solution is Cute. P5: Yes, okay, I'm with you. P9: We trust you. P6: It would have been a little fun to say something else, that the answer is for example Super. P9: Then you receive points and we lose them. P6: Yeah, it's kind of competitive actually.
- (145) *Observation:* P9: It's actually a bit inconvenient, because I was waiting for you to answer to see if you got it right, to make sure I receive points. I notice that sometimes I'm uncertain whether I want to help you or not.
- (146) P9: Maybe what I disliked the most was the feeling of working together, but at the same time competing against the others. It would have been easier to build friendships if teams competed with teams and not having competitive behaviors inside the group.

9.5.6 Captivation

Evidence of captivation was found from the game, where players implied they had lost the sense of time while playing (Quote 59: "P9: I felt like the time went by really fast. It didn't feel like 40 minutes!", 147, 148), and walking was identified as a contributor to a captivating experience (148).

- (147) P8: The last quests went by really fast! Too fast, too furious.
- (148) P5: One thing I noticed; we just walked and talked and enjoyed ourselves, and then suddenly, we were within the radius of a quest.

9.6 A6: Improving the Experience

Several suggestions for improvements surfaced, and the following sections address the most important ones in the context of social interaction and user experience.

9.6.1 Difficulty Levels

Even though the participants enjoyed the quests, they mentioned the possibility of participating in different difficulty levels to ensure a more challenging environment (149, 150).

- (149) P3: I don't know if it is possible to register a user profile to get more difficult questions. Or that you can walk a few rounds and then bump up to a new level of difficulty. But then it might be harder to find people and groups that match. Not only do you have to find someone to co-play the game, but the players must also play in the same level as you. It may be too difficult.
- (150) P7: You can have different game sessions so that the games could be either easy, medium, or difficult. You can receive a notification concerning the games' start time and its level of difficulty.

9.6.2 Streaks

The participants wanted achievements that reflected their performance (151-153), and for that purpose, the concept of *streaks* was mentioned. They argue that utilizing a streak system would function as a preventative approach toward guessing behaviors (153).

- (151) P5: Receiving achievements - that's another possibility. Then I'm sold 100%.
- (152) P9: If there are achievements, for example, if you manage to solve a number of quests in one day, you unlock something. Or if you get a 2-day streak, and the next day a 3-day streak, etc.
- (153) P3: If you managed to solve 3 tasks in a row without making mistakes, you could get a streak. Receiving such streaks would perhaps limit guessing behaviors.

9.6.3 Leaderboard

The desire to see their performance in relation to other players in a leaderboard was identified as a prominent motivating factor for playing (154-158). In that case, they highlighted the importance of resetting the scores after some time for other students to participate on equal grounds (159).

- (154) P5: Factors that motivate me to play games are achievements and upgrades. Or leaderboards. Then I instantly think: ohh, I must start playing this game!
- (155) P7: I think highscore is a fun concept. If the score board could show the best weekly and monthly players, it becomes an incentive to play more often.
- (156) P3: Then you can become the player of the year or month. A little extra motivation boost.
- (157) P11: For example, I believe it would be fun to receive a total score that shows how much one has participated. It could provide additional motivation for continuing.
- (158) P10: It would have been nice to have a scoreboard for the entire school.
- (159) P9: In that case, I think it is important that the leaderboard is cleared at the beginning of every semester so that people can join easily.

9.6.4 Vibration

Using vibration as a tool for navigation, instead of displaying a map, was a suggestion made by P3 concerning the social issues of screen usage (Quote 95: "If you knew you were going outside Stripa, you still had to constantly check if you were within the radius of the quest. Receiving notice in another way, like through vibration, could possibly have been a little better. Or at least provided a little more room for the social interaction."). P3 further suggested how to orient with vibration (160). Also, one participant pointed out a weather-related concern

with looking at the map, and thus recognized a need for vibration (161).

- (160) P3: What could have been a replacement for the map is similar to *Hot and Cold* (children's game), in which you get stronger or more frequent vibrations when you get closer to the quests. Maybe your mobile phone vibrates twice every 5 seconds. And then the speed increases further.
- (161) P8: You can also get a vibration when you are inside the radius of the quests, to be notified that you can begin the task. Imagine if it was raining, it would not have been fun with a map view. You don't walk around with your mobile screen open when it rains.

9.6.5 Location of the Quests

P7 and P8 enjoyed walking outside but suggested placing all quests inside the campus facilities to avoid weather-related issues (162, 163).

- (162) P7: In the winter, I would prefer solving the quests inside in different buildings. So you still have to walk outside, but the quests are located inside the facilities of campus.
- (163) P8: Yes, place the quests inside a door or something, because when you stand still you get cold quickly, as opposed to when you walk in-between buildings.

9.6.6 Rewarding a Player

In light of the struggles associated with receiving individual scores, specifically competition among the team players, the participants recommended incorporating a reward system that compensates the most contributing player (164-166).

- (164) P3: After the game is over, you could show the team's biggest player, where everyone votes for the biggest contributor. The player would then receive a little extra boost for their efforts.

- (165) P8: Yes, then you have some motivation to sacrifice yourself.
- (166) P7: Or else, the most contributing player could receive extra points, a bonus.

9.6.7 Dividing Quests into Categories

Some expressed the opinion of dividing the quests into different categories to meet the players' interests (167, 168). Also, a participant recognized categorization as an approach for separating the students across different game sessions, if a large number of individuals want to participate simultaneously (169). P3 even suggested that student organizations could create their own set of quests that applied specifically to their students (170).

- (167) P8: Say you offer a very varied game session in the Freshers' Week, to show you provide tasks that fit everyone to some degree. During the initiation of the semester, you could introduce category-based sessions. It would be advantageous to meet students with common interests. On a category-basis, there may be some who think that okay, this is my thing, and play to meet like-minded others.
- (168) P6: If there existed such a quiz-game that was slightly more interesting, and maybe thematized in terms of interests, then I could play one session every three days.
- (169) P7: In the beginning, it's nice to provide lots of different tasks. If the game is used a lot, and there are many people who use it, then you might consider implementing categories.
- (170) P3: It would have been fun if one could apply for being a super-user. Then they could be allowed to create their own quizzes, so that, for example, a student organization could arrange their own sessions during the Freshers' Week.

Chapter 10

Discussion

Through following a qualitative and explorative user-centered design approach, a suggestion for a concrete game concept for enabling and fostering social interaction among students surfaced. The game functioned as a tool for answering the research question; How can we design mobile apps that help foster social inclusion among students through playful interactions? Through an analysis of the recorded material from the user tests, different social and playful aspects emerged. On the basis of these aspects, a list of design considerations can be provided to inform designers of future applications for social interaction.

The primary function of the game should be to enable social and playful encounters. Based on our findings, the following design recommendations are offered: (1) facilitate walking in groups; (2) reduce screen-based interaction while on the move; (3) provide topics for conversation (tickets-to-talk); (4) mind temporal aspects; (5) offer collaboration through activities; (6) provide challenging activities; (7) provide repetitive patterns with varying contents; (8) design for flexible participation; and (9) show the players' performances.

10.1 DC1: Facilitate Walking in Groups

The application offers physical movement through walking in a group, as an essential approach to increase self-esteem, life satisfaction, and obtain a sense of belonging, all of which are identified as determining factors in reducing feelings of loneliness (Chapter 2). This aspect contributed to evoke a playful experience in terms of both fellowship (Section 9.5.1) and captivation (Section 9.5.6).

The participants found it pleasantly surprising talking to unfamiliar peers while walking (e.g., Quote 80: "It felt surprisingly natural to walk around with strangers."). Walking in a group was further identified as an approach for putting positive pressure on the players to participate in a conversation (e.g., Quote 79: "In-between the quests, you are somehow forced into a kind of small-talk and become better acquainted."), ensure pleasant communication (e.g., Quote 80: "If we were to sit here and solve quests, it would have been a little too simple activity, making it harder to get the conversations going."), and encourage them to look at their co-players (e.g., Quote 81: "When you also walk, you have to look up and see where you are going, and then also look at each other a little more."). Hence, communicating with fellow players while walking can encourage social connections to take form.

Evidence of captivation was also observed during the field experiment, in which players implied they lost sense of time while walking (e.g., Quote 148: "One thing I noticed; we just walked and talked and enjoyed ourselves, and then suddenly, we were within the radius of a quest."). Further, the captivating experience triggered by walking implies they enjoyed the activity. Thus, we conclude that the aspect of walking affects the players' social contribution positively, provides a playful environment, and is undoubtedly one of the most significant elements in facilitating pleasurable social communication.

10.2 DC2: Reduce Screen-Based Interaction while on the Move

Our findings suggest that having a map view of the quests' location is considered a fun way to conduct orientation, but could interfere with the pleasures of walking in a group and their social connection (e.g., Quote 94: "I looked down on the screen a lot during the orientation. Looking at the map stole some of the focus away from the social aspect, or what could have been social, and contributed to a lack of disconnection."). These findings correspond to the evaluation of LocoSnake (Section 3.2.3), which found that map-related screen utilization on the move could deprive the players of stress relief, a critical aspect for reducing feelings of loneliness, associated with the activity.

The map's design clearly showed the quests' position in relation to the buildings located on campus as a preventative approach to reducing screen interaction while walking. Despite our efforts to design a gameplay experience that was somewhat independent of screen usage while walking, a participant suggested using vibration to map the players' position concerning the upcoming quest (Quote 95: "Receiving notice in another way, like through vibration, could possibly have been a little better. Or at least provided a little more room for the social interaction."). However, another participant looked at the map as an approach to lower the threshold for social participation among shy students, as they can hide behind the screen if they feel uncomfortable (Quote 96: "Maybe they need the screen to hide away a little, and still get to know their fellow players. If they are a little shy, providing such opportunities could be beneficial."). This issue requires further investigation.

10.3 DC3: Provide Topics for Conversation (Tickets-to-talk)

The design elements aimed to facilitate face-to-face communication by providing tickets of conversation in the form of the quests' solution word, which was arguably the most crucial aspect of ensuring pleasant communication among the

players. As witnessed during the field experiment, giving possible topics of conversation helped the players initiate a conversation (e.g., Observation 74: "P5: The answer is probably Frozen. P9: I have seen the second movie at the premiere. It was me, my sister, and many five-year-old princesses. P5: Oh, how was it?"). This aspect was well-received by the participants, and especially one student found the game to be fun precisely because of this purpose (Quote 76: "The funniest aspect of the game was maybe the fact that we spoke about the quests. It felt very natural to walk and talk about things because it popped up in my head due to the quests we solved."). These findings confirm the importance of providing tickets-to-talk in situations where new people gather to collaborate, to enhance their fellowship, as identified in Section 3.3.1 through the evaluation of Who's Next.

To utilize the quests' solution word as conversation topics, we analyzed the various activities' potential for providing tickets. Most of the tasks showed great promise for evoking conversation topics, except for the IQ quests, which only offered numbers (Figure 7.10: 2), and the common denominator tasks that provided adjectives (Figure 7.5: *Grønn*). Yet, we could refactor the latter to give tickets. Observing the players, we found that the quizzes contributed the most, followed by the rebuses and crosswords. We recognized the latter as the most vital sort to modify to promote tickets, as they could offer solution words that do not require a particular set of knowledge to understand (e.g., Figure 7.3: *Ferie*, as opposed to Figure 7.7: *Kingsman*). Hence, a recommendation is to provide solution words that are kept on a general level, yet highly more exciting and meaningful than just an adjective.

10.4 DC4: Mind Temporal Aspects

Time-limit is a design element that contributes to a challenging environment that affects player performance and engagement, and the element guarantees experiences of completion related to finishing a game. Both critical in eliciting playfulness (Section 3.3.2).

The game was designed with a broad time-frame, where all players were most likely to complete the game within the given time, which they did. Based on the participants' feedback, they enjoyed adhering to a time-limit, as it increased their engagement and competitive state (e.g., Quote 91: "I liked it. But as I said before, I really enjoy Escape Room as well, which is about doing something within a specific time limit. The time aspect arouses my competition instinct a little more."). As for providing shorter time-frames, they responded negatively, arguing that the gaming experience would decrease and become more stressful than fun (e.g., Quote 137: "When you start running towards the quests, it may feel a little more stressful than fun."). These discoveries are consistent with Lomas et al. (2013)'s findings, which suggest an increase in engagement related to extended time-limits, as opposed to short ones (Section 3.3.2).

Short time-limits could also contribute negatively in light of the game's goal of facilitating social interaction, as identified in *Who's Next* (Section 3.3.2). Having to increase their pace when walking to the locations could deprive the players of getting acquainted (e.g., Quote 139: "Maybe one person walks here (in the front), while the others walk here (in the back) because of different reasons for participation. Then you lose the conversation part promoted through the game"). Nevertheless, time-limits play a significant role in their overall game experience. Therefore, a recommendation is to keep the aspect of time. However, the players must be provided with a considerable amount to ensure it does not interfere with their social bonding.

10.5 DC5: Offer Collaboration through Activities

There are many opportunities related to joint activities. In this particular game concept, the concerted activity investigated is digital quest solving that encourages collaboration. As explained in Section 3.3.1, collaborating to achieve common objectives in gameplay can positively impact the players' relationship, especially if their performance outcomes are satisfactory. One way of producing collaborative behaviors, as identified in *Table Tilt* (Section 3.3.1), is by utilizing all the players' screens, in which the players must communicate with each other to succeed in the activity. The rebuses and the crosswords excelled in terms of

enjoyment, mainly because the players were forced to work together in such a way (e.g., Quote 130: "I think the game functions as an entrance to get to know others, by having to work collaboratively to solve tasks."). Hence, designing collaboration through activities can foster a sense of fellowship, which is associated with playfulness.

10.6 DC6: Provide Challenging Activities

The players indulged in different tasks that either challenged their problem-solving and deductive reasoning abilities or demanded a specific set of knowledge to solve. As described in Section 3.3.2, and observed in the field experiment, succeeding in a challenging task can increase their self-confidence, and elicit playful experiences (e.g., Observation 75: "P3: Oh, vacation ahh. P8: That one was great, I liked it! (high-fived the players)"). On the contrary, failing to succeed can result in feelings of frustration and boredom (e.g., Observation 118: "P5: You can try trees. P6: It was wrong. P9: I'm trying forest, it was also wrong. P6: Green? P5: Nature? Ahh, it could be anything!"). If the quests failed to offer any challenge, the participants showed cases of non-cooperative behavior (e.g., Observation 135: "P9: Have you already solved it? P6: Yes. P5: What, you did? P6: Yes, I managed it alone. P9: No?! P6: Yeah, but maybe it was a little unsocial of me to not include you."). Thus, providing the players with an appropriate level of challenge is critical to ensure a pleasurable experience and allow the players to form relationships.

With the quizzes, the tasks failed to reflect the players' knowledge repeatedly. In these cases, the players resorted to Google (e.g., Observation 115: "P3: Using Google is cheating! (long silence) P3: Okay, we're utilizing Google."). The lack of collaboration related to these quests arguably reduced their experience (e.g., Quote 114: "You either know the answer right away, or you simply don't know. So then you have to google it if you are stuck. It doesn't help to start a discussion."). Therefore, a recommendation is to focus on taking steps to reduce the necessity of Google during gameplay. A suggestion that emerged in light of this issue was categorizing the quests, which are further elaborated in Section 10.7. Another, possibly better step, is to provide quiz-tasks that have a higher probability of

being within the players' knowledge area. For example, the likelihood of having some knowledge about a superhero character in the movie Avengers is higher than in Fantastic Four, as the former is the highest-ranked Marvel movie on IMDB and the highest-grossing superhero movie of all time.

10.7 DC7: Provide Repetitive Patterns with Varying Contents

As mentioned in the previous section, Google usage could deprive the players of a fun experience. A suggestion that emerged in light of this issue was categorizing the quests. This suggestion also showed potential in helping the students find others with similar interests (e.g., Quote 167: "On a category-basis, there may be some who think that okay, this is my thing, and play to meet like-minded others."). However, the majority of players were not convinced they would participate in such a game concept as they enjoyed the variety of tasks in which the game provided (e.g., Quote 99: "If all quests were of similar type, I would have been a little more bored. Since there were different things, I was like okay, what's next? It got a little exciting."). They underlined the importance of variation to utilize each others' strengths (e.g., Quote 98: "I probably would find someone who is different from me, and may possess different knowledge than I do, and then we would complement each other on the quests."). Their responses toward varying contents are consistent with Coyne (2003)'s beliefs on the importance of repetition, variation, and rules on gameplay (Section 3.3.2). Therefore, a suggestion is to incorporate activities, particularly quests in this game concept, as a repetitive pattern, with different tasks for the sake of variety.

10.8 DC8: Design for Flexible Participation

The importance of flexible participation was identified in the workshop (e.g., Quote 45: "When you are at school, it varies how much time you have. It can range from 10 minutes to 2 hours, so the game should be something that can be completed in both a short and a long time frame. I suggest providing flexibility in participation and allow players to jump in and out of the game. The players should not be forced to participate in a specific amount of time.") and by another

participant at the field experiment (e.g., Quote 72: "I enjoy flexibility, that you can solve one quest when you like, and then another if you please. I feel that it is a bit nice, that you can pop into the game and take a quick session"). Hence, the participants shared Huizinga (1949)'s views on play being voluntary and provide possibilities for players to leave the game at any time (Section 2.3). Based on these discoveries, and keeping in mind that the participants were divided as to how long the game should last (e.g., Quote 70: "20-25 minutes," Quote 71: "10 minutes," and Quote 58: "40 minutes"), the game should offer flexibility and not pressure the players into participating for a specific amount of time.

The game attempts to honor these discoveries by having the players answer the tasks individually, in which they earn individual points for each quest they complete within the time-limit. By doing this, they can leave the game at any time without affecting their team members or their own performance. However, the participants expressed mixed thoughts regarding the aspect of individually answering the quests in terms of social interaction. Group 2 felt it contributed negatively to the collaboration between the team members (e.g., Quote 146: "Maybe what I disliked the most was the feeling of working together, but at the same time competing against the others."). Their thoughts correlate to Deutsch (1962)'s views on the importance of striving for a shared goal on collaboration (Section 3.3.1).

Nevertheless, group 3 enjoyed the submissive character of having to sacrifice themselves for the good of others by risking to get minus points and argued that it contributed to greater fellowship (e.g., Quote 88: "I consider it positive that it's my turn to risk answering wrong because then there's a lot of group bonding. You show that you are kind to each other, and take one for the team. Together in hardship"). To avoid the concerns regarding competition within the group (Quote 164-166), they suggested implementing a way of rewarding the player that sacrificed the most.

10.9 DC9: Show the Players' Performances

Providing opportunities to monitor the performances of co-players are considered essential in designing for social play (Section 3.1) and is utilized in the game concept through score-keeping. Receiving immediate feedback in the form of scores contributed to a fun gaming experience (e.g., Observation 143: "P8: I got it right, wuhuu! P3: Did you enter the entire Kingsman Golden Circle? P8: Yes, and I received lots of points!"). This finding correlates with Malone (1981)'s views on providing a score-keeping feature to secure a fun environment and is identified by Arrasvuori et al. (2010) as a prominent playful component that ensures experiences of completion (Section 3.3.3).

The participants underlined the importance of the feature regarding obtaining a competitive state and cooperating with their fellow team members to solve a quest. Similar to *Who's Next*, we utilized the score-feature to reduce guessing behaviors, something P8 affirmed happened (Quote 82: "I liked that you get minus points if you answer wrong, that it would be stupid to write 500 wrong answers. This provides us with a little more motivation to get it right.").

Complementary to this, the participants requested a feature that allows for comparison between players in terms of performance. They mentioned leaderboards as a way of making the game experience notably more fun and motivating (e.g., Quote 155: "P7: I think highscore is a fun concept. If the score board could show the best weekly and monthly players, it becomes an incentive to play more often."), which corresponds with Ferrara (2012)'s theories on playful design, where the author recognizes leaderboards as great motivational contributors.

However, in social play, collaboration and social interaction are considered critical elements (Section 3.1). An important consideration that surfaced during the co-design workshop was to ensure the competition aspect was subtle, as they underlined the importance of collaborative behaviors from a social standpoint (e.g., Quote 33: "The competition element should not be too dominating. It is more important to focus on collaboration."). Since increasing competitive be-

haviors could interfere with their collaboration and social bonding, incorporating a leaderboard may not provide any additional benefits, only decrease the game experience. This issue requires further attention in the context of social play.

Chapter 11

Methodological Considerations

Given that experiences are subjective, and our approach to the issue was phenomenological and design-based, qualitative research methods were arguably best suited to use. As explained by Myers (1997), such research methods produce in-depth, intersubjective, and holistic comprehensions of human experiences. Understanding a phenomenon from the participants' perspective in a social and institutional context is mostly lost when textual data are quantified (Kaplan & Maxwell 2005).

To assess the qualities of the qualitative research, we discuss the validity (Leung 2015) throughout this chapter. We believe in the validity of our study, as we executed the user-centered design process in two iterations with different qualitative methods. The students' positive feedback further confirms that the final design recommendations hold merits and that the proposed game concept can be generalized for students at the university campus. Yet, several potential factors could have threatened our validity.

Internal validity refers to the degree to which the results obtained are reliable and not influenced by the design of the studies. To limit hurting the internal validity, we tried to avoid affecting the participants, which included carefully selecting the questions and provide follow-ups during the interview sessions. Further, we attempted to limit our influence at the workshops by guiding the participants in a way that enabled collective creativity, with the motivation to obtain design solutions that represented their joint vision. Finally, we functioned as silent observers during the field experiments, where we did not disturb their interaction with the game. Despite our efforts, we can not exclude the possibility that we, or other participants, influenced the others during the design process.

During the workshops, the first-year students (P10 and P11) required more involvement of the facilitator, which could have influenced them to some degree, whereas the other groups proved to be more self-sufficient. Further, the first-year students seemed somewhat uncomfortable talking in front of others, as their responses were kept short and often seemed to favor our and the other participants' approval. Their feedback could have been a result of social desirability bias, which refers to the tendency of giving socially desirable answers rather than choosing responses that reflects their true feelings.

Conducting field experiments are known to increase both internal and external validity. The evaluation was performed in the participants' actual environments, which reduces the risk of the findings being affected by simulated surroundings. Also, natural settings allow the participants to perform freer from the researcher's influence and reduce user research bias where they modify behaviors to meet the approval of the researcher (Gross 2017). However, the use of recording equipment could have influenced their natural behaviors and negatively affected the internal validity. Although the majority of the participants seemed unaffected by our observations and camera recordings during the field experiment, P10 and P11 showed shy tendencies throughout the evaluation, with less interaction, lower voice, and reduced body language, compared to the other groups.

External validity is related to generalizing and refers to the extent to which the results are applicable beyond the study itself. One factor that could have weakened our validity was the low number of first-year students that participated throughout the study. Since the social game was recognized as an essential approach for fostering social inclusion among students, especially new students that lack social support networks, having more first-year participants could improve the validity. Also, performing a final evaluation and collecting feedback from students independent of the design process could have been beneficial to reduce the possibility of getting bias responses.

Chapter 12

Summary and Conclusion

To answer the research question: *How can we design mobile interactive games that help foster social inclusion among students through playful interactions?*, we followed a qualitative user-centered design approach that ensured valuable insights from the students' standpoint. By involving representatives from the user group (i.e., students) throughout the design process, we were able to design, build, and evaluate a concrete game concept that encouraged play and secured positive interaction among the students. First, we conducted interviews to identify the need for designing a social concept. Further, to get insights into considerations that helped create the user experience, we orchestrated co-design workshops. Lastly, we organized field experiments with students that participated in the workshops to uncover essential design considerations aiming to inform designers of future mobile games for social interaction.

Loneliness is a current issue among young students, and establishing new friendships is identified as a critical approach to reduce feelings of isolation. A former member and leader of the event committee at Informatics validated the importance of developing social support networks during the first year of study, as

friends are crucial to avoid withdrawal and feelings of solitude, and to show productivity at school. The interview subject further recognized lowering the threshold for participation as the main challenge in involving the students in social activities. Also, he suggested that the social pleasures should occur as positive effects, which corresponds to another student's opinions that the digital application must offer something more than just the facilitation of social communication to get the students to participate.

Based on the insights provided by the interview subjects, we explored the concept of playfulness in mobile games to produce player enjoyment and secure positive interaction among the players. Also, studies suggested that co-located communication is essential to increase mood and social belonging, which are known to buffer feelings of loneliness. Therefore, we explored mobile games in the context of serving as enablers and enhancers for co-located social play. Using the PLEX framework as an evaluation tool for exploring the playfulness of our mobile game, produced insightful data into the participants' experiences. Evaluating the field experiments, we identified experiences of fellowship, challenge, completion, submission, and competition, which arguably contributed to a fun gaming encounter with playful interactions.

We discovered several vital design considerations by using NVivo to code and structure the materials from the field experiments. In light of the research question, we offer the following design recommendations: (1) facilitate walking in groups; (2) reduce screen-based interaction while on the move; (3) provide topics for conversation (tickets-to-talk); (4) mind temporal aspects; and (5) offer collaboration through activities; (6) provide challenging activities; (7) provide repetitive patterns with varying contents; (8) design for flexible participation; and (9) show the players' performances. These recommendations provide a solid foundation for future designers.

To further validate the design discoveries, it would be advantageous to execute a final evaluation of the game with students independent of the design process. Based on the participants' feedback, the game should be incorporated and tested

at the Freshers' Week to analyze the first-year students' responses to the social concept. Furthermore, it would be interesting to investigate the effects of supplementing physical quests, implementing vibration to avoid screen usage while walking, and providing a leaderboard to show the players' performances.

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Appendix A

Appendix

A.1 Quotes and Observations in their Original form (Norwegian)

A.1.1 Chapter 5

- (1) Det er vanskelig å finne noe som alle liker og vil være med på. Det er kanskje enklere å bli med på drikkearrangementer, for da er det bare gøy og morsomt. Mens med drikkefrie arrangementer, så føler jeg at det må skje noe. Og da er det vanskelig å finne noe som passer alle.
- (2) Vi har ikke brukt noen digitale mobilspill til å fremme sosial interaksjon i fadderuken tidligere. Det kunne vært spennende å prøve, da det er et behov for å finne aktiviteter som passer for flere.
- (3) For meg var det veldig, veldig viktig. Først og fremst var det fadderuken som linjeforeningen arrangerte, som var veldig sosialt. Men videre så har vi hatt mange arrangementer. For meg har linjeforeningen bidratt til den sosiale kretsen jeg har i dag.

- (4) Jeg har veldig fokus på at vi skal ha arrangementer som inkluderer alle. At vi har store variasjoner i arrangementene våre.
- (5) Hos oss er det så mye som skjer, så jeg tror kanskje det er nok av tilbud allerede. så jeg tror ikke at folk kjenner på et behov å bruke en app for å gjøre enda mer.
- (6) Vi er en veldig liten linjeforening, så jeg vet at det er større linjeforeninger som kanskje har et større behov enn det vi har. Og da kan det kanskje være behov for en app som sosialiserer studenter.
- (7) Gevinsten ved å bruke appen må være for å være sosial. Men det skal nok mer til for å laste den ned.
- (8) Sosialisering er det absolutt viktigste, det er nesten viktigere enn skole det første året. Hvis du skal klare å gjøre noe produktivt, så krevet det at du klarer å fungere. Og ved å fungere må du ha det generelt bra. Det som er en stor faktor til det, er å ikke ha så veldig mange bekymringer. Og gjerne da støttepersoner. Så venner i starten og generelt gjennom er drit viktig for å få noe gjort i det hele tatt. Ellers er det veldig fort gjort å skeie ut og bli ensom, og slutte å være effektiv og jobbe. Du må ha støttepersoner som du kan prate med. Det er nummer 1 på lista, synes jeg i hvert fall.
- (9) I hvert fall på informatikk er det mange som sliter sosialt, blir redde for sosiale settinger. Så hvis de går på et arrangement hvor de skal sitte å prate med folk bare, som for eksempel på en fest, så må de tvinge seg ut i en sosial setting uten å ha noen venner eller faste holdepunkter, det er vanskelig for veldig mange. Så på fester er det svært vanskelig å få med folk som har høyere terskel for å sette seg i sosiale settinger uten å ha faste holdepunkter, og de er vanskeligst å få med på sånne fester. Så da må man dra i gang andre arrangementer som gjør det lettere for de som har få faste holdepunkter til å bli med allikevel. Men å finne de arrangementene, det er kjempe vanskelig.

- (10) Forskjellige arrangementer tiltrekker seg forskjellige personligheter. Vi prøver å dekke hele spekteret, og få med alle som er på informatikk på i hvertfall mer enn ett arrangement.
- (11) Den største utfordringen til å få folk til å sosialisere seg, er å senke terskelen for å møte andre personer. Hvis man klarer det, så er jo det kjempe bra. Men en ting som funker for noen, hvis du spesial-lager det til de som sitter hjemme, så kommer de som ikke sitter hjemme til å bruke den. Så det må være sånn at alle kan bruke den.
- (12) Folk skal ikke synes synd på deg hvis de ser at du bruker den. "Åja, du er en sånn en ja, som bruker den appen til å få venner ja." Men at heller folk blir interessert når de ser at du bruker appen.
- (13) Hvis du prøver å oppnå lykke og kun har det som et mål så kommer du aldri til å klare det. For lykke er et biprodukt av alle tingene man gjør ved siden av. Det er summen av vennene dine, hvilke ting du driver med, hvor fornøyd du er med det du gjør. Det er graden av lykke. Men hvis du bare er ute etter lykke så ender man opp i et mørkt hull og aldri finner det. Så hvis dere er ute etter å lage en sosial app, ikke lag den for det sosiale. Lag den for at det sosiale er et bi-produkt. Men det er vanskelig.

A.1.2 Chapter 6

- (14) P4: Pokemon Go var jo en kjempe suksess for hele verden. Vi kan finne en greie som alle studentene er enige om at er litt spennende eller litt kult.
- (15) P3: I Pokemon Go så kunne man legge ut beacons for å samle folk. Så hvis man kommer til en lokasjon så dukker det opp en beacon også må man ha f.eks 20 personer og noe som skjer slik at det samler seg folk.

- (16) P7: Hvis man skal være sosial må det være en fordel å gjøre ting sammen. At det er en fordel å være flere.
- (17) P6: Det jeg synes var gøy med Pokemon Go, det var ikke å samle pokemons alene, det var raid bossene. Da er det sånn at du samler en gruppe mennesker og må samarbeide. Ellers er det ikke mulig. Du må være så og så mange for at det skal gå i det hele tatt. Pokemon go er ikke så sosialt, men jeg tror det er veldig effektivt å samle folk i en gruppe. Så hvis istedenfor målet var å bekjempe en boss, kunne målet være å gjøre noe sammen og snakke med hverandre og bli bedre kjent.
- (18) P7: For eksempel at du må innhente noe informasjon, si at man skal møtes i R5 også har man informasjon som man må gi fra seg til andre som er der. Og jo mer informasjon man klarer å hente, jo mer poeng får man. Du må fysisk snakke med dem og skrive inn noe i appen for å få poeng.
- (19) P6: Si det er en gåte og appen bestemmer lokasjon der folk må komme for å løse gåten. Også er det sånn at du må ha nok biter av gåten for å løse den. Men når du løser den får alle en belønning for å ha vært med å løse den. Så folk får tildelt forskjellige biter. Da kan folk gå sammen og spørre hverandre om de har en bit som man trenger.
- (20) P7: Vi vil bruke en app til å gjøre noe annet; å være sosial. Vi vil ende opp med en app som gjør at du ikke er i appen egentlig.
- (21) P6: Med Hold får man flere poeng hvis flere mobiler i nærheten bruker Hold. Du sier til de rundt deg at de skal sette på Hold-appen så får man flere poeng også kan vi snakke sammen i stedet for. Det er overraskende effektivt til å være så simpelt.
- (22) P6: Hvis du har nok poeng så kan du kjøpe deg noe utenfor appen, slik som en banan.

- (23) P6: Av og til kan det være vanskelig å snakke med folk. Hvis man kan få små sosiale utfordringer som må utføres, kan det hjelpe spillerne til å bli mer komfortable i sosiale settinger.
- (24) P8: I Hold får man poeng for å ikke bruke mobilen. Og de poengene kan brukes til å kjøpe noe eksternt i for eksempel kantina.
- (25) P8: Oppstarten er ikke nødvendigvis når fadderukene starter, men etter fadderukene slik at man får mulighet til å bli kjent med studenter utover i semesteret.
- (26) P10: Så hvis spillet er for nye studenter så blir de godt kjent med campus samtidig.
- (27) P10: En oppgave kan være å lage høyest mulig pyramide med seks andre personer, og når det er gjort så tar den ene personen bilde av pyramiden slik at alle som deltok får poeng.
- (28) P11: Du må finne fire personer, så har hver person en bokstav. Så må man samle seg og finne riktig ord med bokstavene. Så skriver man inn løsningsordet og får poeng.
- (29) P10: I fadderukene kan man gi studentene spørsmål som kanskje gir de svar på noe de lurer på om skolen, mens ut i semesteret kan man ha spørsmål som for eksempel hvis du er utenfor Kjemi-bygget, så kan du få kjemiske spørsmål.
- (30) P10: Det sosialet ligger i at flere må løse en oppgave ilag.
- (31) P11: Hvis du ligger ganske langt ned på lista, har vi inkludert en måte å samle ekstra poeng. Du kan trykke på en chat-knapp, slik at du kan ta kontakt med en person som også har trykket på knappen og spørre: "Skal vi møtes om en halvtime? Så går vi sammen".
- (32) P7: Jeg er over middels glad i å sette meg inn i nye oppgaver. Oppgaver det er gøy!

- (33) P6: Konkurransen-elementet burde ikke være for stort. Det er viktigere å fokusere på samarbeid.
- (34) P3: Jeg er ikke en person som blir ofte med på globale apper som Pokemon GO. Det spiller jeg i fem minutter så er det kjedelig. Det er kanskje fordi det skjer veldig mye på skjermen. Men det trenger jo ikke å skje så mye på skjermen, men i virkeligheten.
- (35) P8: Si at du har den appen hvor du får de poengene, det kan kanskje motivere folk til å ta initiativet til å gå bort til posten i stedet for å bare gå rett forbi. For at noen skal gidde å bli med så er det sånn at poengene i appen kan brukes til noe, at de på en måte aktiviserer flere studenter. Vi er ganske mange studenter som drikker kaffe for eksempel, og da kan man gjøre om poeng, si 2000 poeng, til kaffe. At det er en nytte med poengene, at man blir mer motivert av det. Det er hele poenget mitt.
- (36) P7: Mulighet for at score kan bli overført til gratis kaffe på Narvesen. Det kan også bare holde med scoreboard. I de fleste spill er det underholdningen som gjør at man er med. Man får ikke noe mer utover det bare.
- (37) P5: Jeg hadde helt sikkert swipet innom et pokestop og blitt bedre kjent med de for å få en billigere baguette i SIT-kantina.
- (38) P5: Hvis jeg ikke er med på dette på våren, men så har jeg lyst til å være med på høsten så har jeg nye muligheter.
- (39) P8: Ja, at du ikke er 2000 poeng bak fordi du mistet et semester, men at det skal være åpent for alle hvert semester. At det er like lavterskel å begynne.
- (40) P7: Scoreboard kan vise f.eks månedens beste slik at man kan hevde seg selv om man er ny.
- (41) P6: Det blir et underholdningsaspekt ved å inkludere gamification, slik som et scoreboard og streaks.

- (42) P7: Det holder mer på brukere. Scoreboard kan bidra til økt motivasjon til å spille.
- (43) P6: Ofte sitter jeg på pulten min med oppgaver også hadde det vært veldig å gøy å bruke 15 minutter på å gå. Og det gjør jeg ofte. Men jeg har ingen steder å være.
- (44) P3: Jeg tror mer 5 minutter og noen ganger flere 5 minutter om dagen er mye bedre enn en time i strekk. Jeg er på skolen, ikke for å leke, men for å gjøre ting.
- (45) P7: Når man er på skolen så er det veldig variert hvor lang tid man har. Det kan være alt fra 10 min til 2 timer. Så det burde være noe som kan gjøres på både kort og lang tid. Slik som for eksempel Instagram: Du kan sjekke instagram i 2 minutter eller holde på i en time. Jeg tenker at man kan hoppe inn og ut. At man ikke må være bundet til å være med i en spesifikk lengde.
- (46) P6: Pokemon Go for eksempel er et spill du kan spille i 10-15 minutter. Og du kan gå i timesvis hvis du vil.
- (47) P7: På denne måten kan man møte nye studenter innenfor en sosial arena, som åpner for at man kan ta initiativ til å finne på ting og bli bedre kjent utenfor spillet.
- (48) P3: Hvis vi er på store arrangementer hvor du møter hundrevis av mennesker, også møter du nye hundrevis av mennesker så blir du ikke kjent med noen. Da er det mye bedre at du har små grupper som blir gode venner.
- (49) P5: Hvis jeg hadde hatt den appen så tror jeg at jeg bare hadde gått med folk jeg kjenner fra før av.
- (50) P9: Å gå med egne venner er fortsatt sosialt.

A.1.3 Chapter 9

- (51) P3: Hvordan spillet er nå, det er veldig kult! Litt annerledes enn det man har vært borti før. Det var jo veldig underholdende! Jeg tror personlig jeg kunne brukt det.
- (52) P5: Jeg synes det var veldig kjekt å gå og snakke, jeg koste meg!
- (53) P8: Spillet sånn som det er, synes jeg er veldig gøy! Jeg koste meg når jeg gikk rundt med dere, jeg har hatt det morsomt! Jeg synes det er en fin løsning på å tvinge folk sammen på en ny måte da, selv om det ikke er tvang da. Man velger jo selv at nå vil jeg bli med også får jeg kanskje nye venner underveis. Jeg tror det er en fin inngang til å treffe nye folk forbi eget klasserom da. For si du ikke passer helt med de du går sammen med, så kan det være du passer mye bedre med noen som går noe annet og via et sånt spill som dette så har du mulighet til å treffe de litt lettere. En møte-arena for flere.
- (54) P11: Jeg ser for meg å bruke appen. Jeg kunne tenkt meg å bli kjent med andre på tvers av studier og trinn. Jeg synes det var veldig artig. Det er litt sånn tanke-spill samtidig som at du er nødt til å være med andre folk.
- (55) P10: En sånn app hadde vært en ide og til fadder-tiden. Å kunne bli kjent med noen på kryss og tvers av faddergruppene.
- (56) P11: I fadderuken så blir man mest kjent med folk man går i klasse med eller i linjeforeningen da, men så vet du kanskje ikke om så mange på andre studier. Så det her åpner jo opp at du blir kjent med andre på andre studier på andre trinn og.
- (57) P6: De fleste har den taktikken at hvis de skal bli kjent med nye folk så er det alkohol inn i bildet. På fysmat er det en del som ikke drikker, og jeg tror akkurat i de første dagene man møter folk tror jeg dette kan være veldig gøy. For det føltes så naturlig å gå rundt med to folk man ikke har snakket noe særlig med.

A.1. QUOTES AND OBSERVATIONS IN THEIR ORIGINAL FORM (NORWEGIAN)127

- (58) P9: Hadde kanskje vært kult å kunne lage et event i for eksempel fadderuken, hvor man setter av 40 minutter ish med teambuilding.
- (59) P9: Jeg synes tiden gikk skikkelig fort. Jeg synes ikke det føltes ut som 40 minutter.
- (60) P7: Det blir litt kaldt å gå, i hvertfall en 40 minutters rute, på vinteren.
- (61) P3: Jeg er enig, 40 minutter var litt langt.
- (62) P8: Hvis ikke folk vet at spillet eksisterer så kommer de jo ikke til å bruke det. Men hvis det på en måte er en del av fadderuka så blir alle på en måte bort i det og vet om det, at det finnes. Så si at etter et par uker så okay, jeg har ikke funnet meg så veldig mange venner så går det an å prøve seg.
- (63) P9: Man kunne hatt en versjon som er mye kortere som man kan gjøre under studiepausen med en eller to poster.
- (64) P7: I eksamensperioden!
- (65) P8: Ja, da blir den heftig brukt tror jeg!
- (66) P3: Kanskje litte gran her og der, også veldig mye i eksamensperioden.
- (67) P8: I eksamensperioden så trenger alle luft, så da er det bare å kjøre på!
- (68) P7: Jeg tror kanskje at hvis jeg hadde sittet i eksamensperioden, så ville jeg hatt litt kortere. Kanskje 20 minutter.
- (69) P5: Men dette var hvis jeg var sliten etter jobb på Gløshaugen den dagen. Da hadde jeg ikke giddet å brukt 40 minutter på å svare på rebuser.
- (70) P6: 20-25 minutter på 5-6 quests.

- (71) P5: Jeg hadde egentlig likt bedre hvis det heller var mange korte på sånn 10 min på 3-4 poster.
- (72) P5: Jeg liker med sånne ting at det er litt fleksibelt, at man kan ta en post her og ta en post der. Det føler jeg er litt nice, at du kan poppe inn i appen og ta en kjapp en også kan vi bare ta en til og en til. Jeg hadde tatt en post, også hadde jeg tatt en annen post en annen dag med noen andre folk. Jeg hadde ikke hatt lyst til å bare ta intensivt shotgunne postene etter hverandre.
- (73) P8: Av og til har du kun tid til bare en post.
- (74) *Observation:* P5: Svaret er sikkert Frozen. P9: Jeg har sett 2-ern, på førpremiere. Det var jeg, søstera mi og mange fem år gamle prinsesser. P5: Oj, hvordan var den? P9: Fin! Hvis du liker frozen 1, så liker du sikkert frozen 2. P5: Jeg skjønner. Jeg har ikke sett frozen 1, men jeg har hørt litt mikset. P9: Hvis du liker disney prinsessefilmer så er frozen perfekt. Og musikal.
- (75) *Observation:* P3: Åja, ferie ahh. P8: Den var bra, den likte jeg! (high-fived the players) P3: Ferie! P8: Det er det vi skulle hatt nå!
- (76) P6: Det gøyeste var kanskje at vi snakket om det som handlet om rebusene. Det føles veldig naturlig å gå og snakke om ting fordi det popper opp i hodet mitt på grunn av rebusene vi gjorde.
- (77) P9: Postene i hvertfall synes jeg ga samtaleemner. Så hvis man ikke kjenner folk så kan det starte en samtale.
- (78) P5: Jeg synes det var veldig kjekt å gå å snakke, jeg koste meg! Jeg likte gåingen.
- (79) P8: Jeg koste meg når jeg gikk rundt med dere. Mellom postene blir du på en måte tvunget til en slags small-talk, og bli kjent. "Hva er det du går?" "Hvor gammel er du?" "Hva holder du på med?" osv.

- (80) P6: Jeg synes det er viktig å gå. Det var gøy! Det føltes overraskende naturlig å gå med to folk jeg ikke snakker med noen sinne og veldig sjeldent. Det er fint å få en mulighet til å gå rundt. Hadde vi sittet her så hadde det blitt en litt for enkel aktivitet og det hadde blitt vanskeligere å få samtalen til å gå løst synes jeg.
- (81) P3: Det var jo deilig å komme seg ut og bevege seg litt. Hvis vi bare skulle sittet her på sofaen og spilt, så kunne vi småpratet littegrann også sett på mobilen. Men det hadde blitt veldig mye å bare se på mobilen. Men når du også i tillegg går så må du også opp og titte for å se hvor du går og da også titte på hverandre litt mer.
- (82) P8: Jeg likte at man får minus hvis man svarer ordentlig feil, at det vil være dumt å skrive 500 feil svar, da får vi litt mer lyst til å få det til riktig.
- (83) P10: Jeg synes det er kjekkest med poeng, for da får man litt konkurranse over det.
- (84) P5: Hvis anonym hadde vært sånn: "du P5, jeg har funnet dette spillet. Jeg har fått litt poeng for det, har du lyst til å ta en runde?" Da hadde jeg sikkert blitt giret.
- (85) *Observation:* P3: Hvor mye poeng har dere? Jeg har bare 50, fordi jeg svarte feil. P7: Jeg har -50. P3: Okei, men da ofrer du deg neste gang da, P8? P8: Ja! My turn.
- (86) *Observation:* P3: Er Channing Tatum med i Rocketman? Hvis dere ikke har noe bedre svar så kan vi prøve det da. P8: Okei, vi prøver! P3: Det var feil, ikke prøv dere nå da!
- (87) *Observation:* P3: Også grønn er lik. P8: Eller himmel? P7: Hva med skog? Skal jeg ofre meg?
- (88) P3: Jeg ser på det litt som positivt at nå er det min tur til å svare feil litt, for da blir det mye gruppe-bonding. At man er hyggelig mot hverandre, og tar en for laget. Together in hardship, noe sånt.

- (89) P10: Tenker at det er greit. I hvertfall hvis det skal være en konkurranse i det så kan man ikke bruke all verdens med tid.
- (90) P11: Jeg synes det har vært greit å ha en tid å forholde seg til. Det synes jeg har vært ganske kjekt. Hvis du ikke får det til innen tiden, så kanskje folk blir litt mer gira på å prøve å få det til en gang senere innenfor tiden.
- (91) P9: Jeg likte det. Men som sagt tidligere så er jeg veldig glad i Escape Room også, og der handler jo alt om å gjøre noe innen tiden. Tids-aspektet vekker konkurranse-instinkt mitt litt mer.
- (92) P5: Tid kan funke hvis jeg kjenner folk og vil ha en challenge. Da speedrunner vi 12 poster. Da hadde jeg likt tid.
- (93) P9: For min del hadde det ikke trengt å være noe fysisk der, for min del er det fint at man bare trenger mobilen.
- (94) P3: En ting som jeg la merke til var jo at jeg så veldig mye på mobilen når vi var ute og gikk for å se på kartet, og det tok jo en del av fokuset vekk fra det sosiale, eller det som kunne vært det sosiale, og bidro til at jeg ikke fikk koblet av helt.
- (95) P3: Hvis man visste at man skulle gå utenfor Stripa, også måtte du gått innenfor og konstant sjekket om man var innenfor radiusen, men å faktisk få varsel på en annen måte, f.eks vibrasjon, det kunne vært litt bedre. Eller ihvertfall gitt litt mer spillerom for det sosiale da. Og å slappe av mer mens man går.
- (96) P8: Jeg er helt enig i at hvis man legger vekk mobilen så ser man kanskje litt mer rundt. Men så er det jo noen som ikke er så trygge. Som kanskje trenger den der at okey, jeg kan gjemme meg litt bak skjermen og allikevel bli kjent med folk da. At de er litt sjenerte. For å få de litt mer sosialisert, at man gir de en mulighet til å gjemme seg litt men allikevel være med.

- (97) P9: Da får man utnyttet at alle er forskjellige. At noen har peiling på det, og andre har peiling på det, så kanskje hvis noen er god på matte, og noen er god på sånne ting, så er det noen som er god på kjendiser. Så har alle noe å komme med.
- (98) P8: Jeg likte og at det var stor variasjon i oppgaver, at det ikke bare var samme type på alle poster, for da vet jeg liksom ikke helt hva som kommer. Ellers tror jeg at jeg fort hadde gått lei da. Jeg tenker litt sånn at hvis du på en måte skal treffe flere da, så er det ikke alle som er på det logiske. Hvis jeg hadde gått alene rundt så finner jeg som regel noen som ikke er helt like som meg, og da kan det være at de har andre kunnskaper enn det jeg har, og at vi da utfyller hverandre på poster rundt.
- (99) P5: Ja, det synes jeg var bra, at det var variert. For hvis det var samme type oppgave hadde jeg blitt litt mer lei, men siden det var forskjellige ting så var jeg sånn okay, hva kommer nå? Ble litt spennende.
- (100) P8: På en kategori-basert er det også mange som er sånn at okay, dette er ikke meg, så da kommer de ikke til å spille.
- (101) P8: Jeg føler at nå er det på en måte oppgavene som vil avgjøre om det blir brukt eller ikke. Og der er jo folk veldig forskjellige. Det blir på en måte nøkkelen til hvordan spillet vil fungere da.
- (102) P3: Ja, enig. Og har dere laget pizzabunnen, så er spørsmålene toppingen. Hvis det er en god metafor. For da kan man lage alt mulig rart av pizzaer.
- (103) P3: Men det er noen oppgaver dere må holde dere litt unna da. Man spiser ikke pizza med alt mulig rart på toppen. Bare sånn oppgaver som jeg ikke hadde synes hadde vært noe gøy var sånne kreative oppgaver. Jeg liker jo å være kreativ, men sånn "mal det beste bildet" eller "ta det kuleste lagbildet", sånn ahhh. Jeg hater sånne oppgaver.

- (104) P7: Kryssord og rebus er sånn man på en måte kan resonnerer seg frem til ved å tenke litt. Det synes ofte jeg er morsommere å løse.
- (105) P3: Såanne logiske som man måtte resonnerer seg frem til likte jeg bedre.
- (106) P11: Jeg synes det er artig med såanne oppgaver hvor du må sette sammen flere ting, sånn som med rebusen
- (107) P6: Jeg synes den ene der fjerde siste spilleren kom og hadde kryssord-format, den synes jeg var interessant.
- (108) P5: Kryssord var kanskje den jeg likte best. Eller en av de beste. Fordi det var litt sånn at da følte jeg at man trengte alle.
- (109) P10: Kryssord-greia var ganske kjekk da. Da måtte du tenke litt og sette det sammen. Den rebusen var også kjekk. Både kryssord og rebus var gøy.
- (110) *Observation:* P6: Søy, nei, søt! P9: Hæ? P5: Men hvor øks og sti skal være? P9: Vi må prøve det ut! Så søt? P6: Det blir søt.
- (111) P3: Såanne logiske som man måtte resonnerer seg frem til likte jeg bedre, men forandring fryder. Man kan ikke bare ha såanne oppgaver. Så det er jo gøy med litt sånn vanlig quiz med hvilken filmstjerne er dette? Men hvis det bare er sånn film-quiz så kommer jeg til å droppe det etter hvert.
- (112) P9: Men jeg synes også egentlig det med film ogsånn der kan funke bra, ikke hvis alle er det men sånn fordi da får man utnyttet at alle er forskjellige.
- (113) *Observation:* P6: Hva hvis du aldri har sett en eneste film med Channing Tatum? P9: Det er derfor det er bra å være flere fordi at da er det større sjanse for at en eller annet har sett i hvertfall en av dem.

- (114) P7: Jeg synes i hvert fall de med 3 skuespiller og film for eksempel, så er det sånn at enten så vet du svaret eller så vet du det ikke. Så da må man på en måte google hvis man ikke vet det. Det hjelper ikke å diskutere seg fram til noe.
- (115) *Observation:* P3: Kan vi spørre om noe hint? Eller Google? P3: Det er jo juks å bruke Google da. (lang stillhet) P3: Okei, vi tyr til Google. Kingsman 2 kommer opp da.
- (116) P10: Synes rebusen er litt kjekkere enn å bare få opp bilder og finne sammenhengen. Men det var greit det og.
- (117) P5: Det var en der det var hva som var felles, og så var svaret grønn, men det var bare tre tilfeldige bilder og det kunne vært hva som helst.
- (118) *Observation:* P5: Du prøver trær. P6: Det var feil. P9: Jeg prøver skog, det var feil. P6: Grønn? P5: Natur? Assa, det kan være hva som helst. P9: Ja, det var litt vagt. P6: Åh, det er grønn P5: Grønn? P9: Grønn?
- (119) P3: Også grønn er lik. P8: Eller himmel? P7: Hva med skog? P7: Skal jeg ofre meg? P3: Det er ikke noe som er veldig utskillende, men skogen er jo her. P7: Nei det var feil. P3: Hmm ikke skog, hva med grønn da? Jeg tar grønn. Det var rett!
- (120) P6: Den kunne kanskje hatt, hvis bildene var litt annerledes, at man klarer å utelukke ting på bildene. Så det kan være en god ide, men jeg vet ikke om det hadde vært så mye gøyere.
- (121) P5: IQ? Det er litt sånn omstridt.
- (122) *Observation:* P6: Nå har jeg sneket litt og allerede gjort oppgaven. Jeg klarte den alene.
- (123) *Observation:* P9: Jeg tok informatikk for å slippe matte, så jeg lar noen andre gjøre det her.

- (124) P9: For min del er det kanskje gåinga like mye som det sosiale som hadde motivert meg.
- (125) P7: Så er det også det å få pause fra det man eller gjør, som er å bare sitte inne å se ned. Så det er veldig greit sånn sett også.
- (126) P3: Det er jo deilig å komme seg ut og bevege seg litt.
- (127) P6: Det er fint å få en mulighet til å gå rundt.
- (128) P9: Skritt på klokka og luft og pause er også en gevinst.
- (129) *Observation:* P8: Jeg har en øks. P3: Jeg har vask, og du har? P7: Skog eller tre. P8: Det er sikkert tre. P3: Kan det være tre ord? P7: Vask da har du S. Sør?
- (130) P11: Jeg synes spillet åpner for å bli kjent med andre ved at man blir tvunget til å jobbe med andre og løse en oppgave.
- (131) P8: Slik som "hva har disse til felles?" Vi må jo snakke sammen om hva de faktisk har til felles.
- (132) *Observation:* P10: Har du peiling på min? P11: Nei, jeg ser ikke på sport jeg. P10: Jeg ser i hvert fall ikke på tennis. Men hvilket land har typisk tennis-spillere? P10: Ehhh, jeg har ikke peiling. Spiller de mye tennis i Brasil?
- (133) *Observation:* P7: Rytter. P8: Ja, er det ikke det? P3: Fe. P7: Hest. P8: Hadde det ikke da bare vært bilde av en hest? P8: Du har fe og e. P7: Fe ri. P3: Åja, ferie ahh.
- (134) *Observation:* P7: Hvilket tall mangler? P3: Jeg ville tippet 259 P3: Ja, det er riktig det.
- (135) *Observation:* P9: Har du gjort den? P6: Ja. P5: Har du gjort den? P6: Ja, jeg klarte den alene. P9: Nei?! P6: Jo, men det var kanskje lite sosialt av meg å bare trykke det inn. Svaret er 2.

- (136) *Observation:* P8: Vi har 23 minutter på oss, så vi må få opp tempoet. Vi er ikke halvveis enda.
- (137) P6: Nå var det jo grei tid, men jeg tror ikke jeg hadde vært komfortabel med å løpe rundt på campus. Så det er en tynn linje der, om man skrur opp vanskelighetsgraden ved å sette ned tiden. Når man begynner å løpe, å kjappe seg fra oppgave til oppgave, da kan det føles litt mer stress for meg enn gøy.
- (138) P5: En ting som jeg tror potensielt kan være negativt med at det er tid er at hvis du har noen nye folk og du ikke kjenner de så godt og du skal bli bedre kjent med de og du går og koser deg og snakker med de, også er det noen som er sånn «Åh shit, nå har vi dårlig tid!» Også blir det litt dårlig stemning, også må man løpe rundt på poster. Da mister det litt greien føler jeg (det sosiale aspektet).
- (139) P9: Godt poeng at hvis man må kjappe seg fordi man har dårlig tid så, dårlig stemning er en ting, men at kanskje en person går her (foran) mens de andre går her (bak) fordi man må rekke posten. Og da mister man samtalebiten underveis.
- (140) *Observation:* P3: Good run, well played!
- (141) *Observation:* P5: Wuhuuu, vi klarte det! (gave high-five to the other players)
- (142) *Observation:* P9: Det skulle ha kommet opp game finish, hurra, du er flink, dere har kommet i mål.
- (143) *Observation:* P8: Jeg fikk rett, wuhuu! P3: Skrev du inn hele Kingsman Golden Circle? P8: Ja, jeg fikk masse poeng!
- (144) *Observation:* P6: Det blir søt. P5: Ja, okei, I'm with you. P9: We trust you. P6: Det hadde vært litt gøy å si noe annet, at svaret er sup. P9: Så får du poeng og ikke vi. P6: Ja, det er litt sånn competitive.

- (145) *Observation:* P9: Det er jo egentlig litt dumt, for jeg ventet på at du skulle svare for å se om din er rett først så kan jeg sikre at jeg fikk poeng. Jeg merker at jeg er usikker av og til om jeg har lyst til å hjelpe dere eller ikke.
- (146) P9: Det var kanskje det jeg likte minst nå, at det føltes ut som at vi skulle jobbe sammen. Men samtidig så konkurrerte vi mot hverandre. Det hadde vært mest vennsbyggende hvis det er team som konkurrerer med team, og ikke konkurranse innad i laget.
- (147) P8: De siste postene gikk veldig fort! Too fast, too furious.
- (148) P5: En ting jeg merket; vi bare gikk og koste oss og snakket, også plutselig var vi innenfor en post.
- (149) P3: Men jeg vet ikke om det er mulig å signe opp brukerprofilen din jeg, om du har lyst på litt vanskeligere spørsmål. Eller at du kan kjøre et par runder også ta en sånn bump-up vanskelighetsnivå litt. Men da er det kanskje vanskeligere å finne folk og grupper og en match. Ikke bare at du må finne noen til å komme på posten, men også på samme nivå som deg. Det er enda vanskeligere.
- (150) P7: Man kan ha forskjellig sånn at ett spill er lett, da får man varsel også står det at spillet starter klokken og hvilken vanskelighetsgrad den har. Lett, medium eller vanskelig.
- (151) P5: Å få achievements - det er en annen mulighet, da er jeg solgt 100%.
- (152) P9: Hvis det er achievements, for eksempel at hvis man klarer så og så mange poster i løpet av en dag, da unlocker du noe. Eller sånn: Nå har du klart en 2-dagers streak, og da er neste sånn: Du har klart en 3-dagers streak osv osv.
- (153) P3: Hvis du klarte 3 oppgaver på rad uten å gjøre feil. Også får du en sånn streaks på grunn av det. Og da er man litt strengere med seg selv å bare gjette og taste inn feil svar.

- (154) P5: Ting som får meg til å ha lyst til å spille spill er achievements og kjøpe upgrades. Eller leaderboards. Da er jeg med en gang sånn: ohh, dette må jeg begynne med.
- (155) P7: Highscore hadde jeg synes vært gøy. Hvis det hadde vært sånn ukentlig, månedlig. Da blir det sånn insentiv til å drive å gjøre det oftere også.
- (156) P3: Da kan man bli årets eller månedens spiller. En liten ekstra motivasjonsboost.
- (157) P11: Å for eksempel ha en sammenlagt poengsum med hvor mye man har deltatt hadde vært artig å se på. Kan gi motivasjon til å fortsette.
- (158) P10: Det hadde vært kjekt hvis du hadde hatt en poengtavle for hele skolen.
- (159) P9: Men jeg tror at da er det viktig at den leaderboarden cleares (resettes) hvert semester sånn at folk har mulighet til å hoppe inn.
- (160) P3: Det som kanskje kunne vært en erstatting for kartet, var jo sånn varmt og kaldt, at når du kommer nærmere posten så kanskje mobilen vibrerer to ganger hvert 5 sekund. Også går det fortere og fortere.
- (161) P8: Også kan du få en vibrasjon når du er innenfor posten. Å få varsel at nå er man på post. Tenk hvis det hadde regnet og, da hadde det vært dritt med kart. Du går liksom ikke med mobilen oppe når det regner.
- (162) P7: På vinteren er det egentlig litt digg om postene er inne. De kan jo være inne, men i forskjellige bygg. Så du må på en måte gå ut, men du kan stå og løse dem inne på campus.
- (163) P8: Ja, plassere postene innenfor en dør eller noe, for når du står stille så blir du fort mye kaldere enn hvis du beveger deg mellom bygninger.
- (164) P3: Etter spillet er slutt så kan det være gruppas spiller, så stemmer man på en som kan få litt ekstra boost for å gjøre det lille ekstra.

- (165) P8: Ja, da har du litt motivasjon til å ofre deg.
- (166) P7: Eventuelt så kan jo rundens spiller få ekstra poeng bare, en bonus
- (167) P8: Si at du kjører en veldig variert i fadderuken da, for å vise at her finnes poster innenfor alt mulig, men at man da ut i semesteret kanskje kjører en med kategori-basert da. Da møter du kanskje de som har felles interesse. På en kategori-basert så er det kanskje noen som synes at okey, dette er min ting. Så yes, da treffer de andre som også har det som interesse.
- (168) P6: Hvis det hadde fantes en sånn her quiz som var hakke mer interessant, og kanskje tematisert at man har forskjellig tema i forhold til interesse, så kunne jeg fint gjort en hver tredje dag.
- (169) P7: I starten er det greit med masse forskjellig. Hvis det blir veldig mye brukt, og det er veldig mange som bruker det, så kan man kanskje tenke at man kan ha egne kategorier.
- (170) P3: Det hadde jo vært gøy da, hvis man kunne søkt om super-bruker og fått lov til å lage sine egne quizer, slik at for eksempel en linjeforening hadde sin egen runde i fadderperioden.

