Draw, Find, Answer and Decrypt

A Participatory Design approach to gift-giving experiences for couples visiting museums

Qilun Chen

Subject: Human-Computer Interaction
Corresponds to: 30 hp

Presented: VT 2019
Supervisor: Lina Eklund, Paulina Rajkowska
Examiner: Henrik Åhman

Department of Informatics and Media
Sammanfattning


Nyckelord: Museum besök, Erfarenhet, Betydelse, Deltagande design, Presentgivande

Abstract

Museums are popular among people to relax and obtain knowledge. Prior studies showed great efforts on increasing meaningfulness of the museum tour with the support of technology. This research introduces a design created through participatory design practice. The interaction presents its potential of enhancing the museum visiting experience for visitors in intimate relationships through digital gift-giving behavior. Participants visit the museum as couples, with one party acting as the gift giver and the other as the gift receiver. During the visit, participants draw sketches, find objects, answer questions related to the objects and collect the clues to decrypt the given gift. This research explains how gift-giving behavior enhances the social experience between the intimate couple and how social interaction between intimate couple enhances the museum visiting experience. This research suggests the opportunity for research on the effect of the close relationship on meaningful experiences.

Key Words: Museum Visit, Experience, Meaningfulness, Participatory Design, Gift-giving
# Index

Sammanfattning ............................................................................................................. 2
Abstract .......................................................................................................................... 2
Index ............................................................................................................................... 3
1. Introduction .................................................................................................................. 4
2. Research Question ...................................................................................................... 5
3. Background .................................................................................................................. 5
   3.1. Related Work .......................................................................................................... 5
   3.2. Sociality of Museums .......................................................................................... 8
   3.3. Gift-giving Behavior .......................................................................................... 9
4. Methodology ............................................................................................................... 11
5. Method ....................................................................................................................... 12
   5.1. Participatory Design ............................................................................................ 12
   5.2. Limitations and Ethics ....................................................................................... 16
6. Result and Analysis ...................................................................................................... 18
   6.1. Opinions towards gifting experience ................................................................. 18
   6.2. Opinions towards a good museum visiting experience ...................................... 19
   6.3. Design .................................................................................................................. 20
   6.4. Evaluation ............................................................................................................ 27
7. Discussion .................................................................................................................... 29
8. Conclusions .................................................................................................................. 31
9. References ................................................................................................................... 32
10. Appendices I .............................................................................................................. 38
11. Appendices II ............................................................................................................. 39
12. Appendices III ............................................................................................................ 40
13. Appendices IV ............................................................................................................ 41
1. Introduction

The museum is a place responsible for the collection and preservation of precious cultural and historical artifacts (Taxén, 2004), acting as an agent for visitors to interact with objects that they have never seen or known before (Falk & Dierking, 2016; Finlay, 1977; Hein, 2002). It is also viewed as a popular destination for people to acquire knowledge and spend their leisure time in modern society (Cosley et al., 2008; Falk & Dierking, 2016; Finlay, 1977; Taxén, 2004). As the audience to the museum gradually expands, museum organizations have greater needs to make the museum visiting experience more meaningful with the help of technology. In the third wave of HCI, researchers focus more on the interaction that relates to topics such as culture, emotion, and meaning (Bødker, 2006). As one of the goals in the third wave of HCI research is increasing meaningfulness in experiences, the increasing demand for enhancing the visiting experience in the museum context draws the attention of researchers in HCI.

Besides looking at the interfaces such as audio guides (Wakkary & Hatala, 2007), digital displays and touchable screens that turn the knowledge into other forms of materiality, HCI researchers had spent efforts to extend the museum visiting experience in varied directions. Researchers introduced and implemented new technologies such as Virtual Reality and Augmented Reality with the intention to improve the interactivity of the exhibits (Bellucci, Diaz, & Aedo, 2015; Carrozzino & Bergamasco, 2010; Keil et al., 2013; Liarokapis et al., 2004). Personalization has been used as a method to optimize the visit with higher relevance to the visitors’ interest (Antoniou et al., 2016; Kuflik et al., 2011; Pujol et al., 2012). It was suggested by the researchers that new approaches to present knowledge, such as storytelling and gamification improve the presentation of the information (Champion, 2008; Ioannidis et al., 2013; D. Petrelli, Lechner, & Building, 2014; Vayanou et al., 2015). Researchers greatly discussed the combination of the physical affordance (Dourish, 2004) provided by the museum itself and the technology, namely “hybridity” (Ciolfi & Bannon, 2007; Fosh, Benford, Reeves, Koleva, & Brundell, 2013; Kortbek & Grønbæk, 2008; Daniela Petrelli, Dulake, Marshall, Kockelkorn, & Pisetti, 2016; Spence, 2019). Moreover, multiple research projects applied a variety of means to increase visitors’ engagement in a museum (Ali, Koleva, Bedwell, & Benford, 2018; Stock et al., 2007; Taylor et al., 2015; Wakkary & Hatala, 2007).

The attempt to enhance the museum visiting experience was suggested to be advantageous in an individual visitor’s perspective. However, the social interaction among visitors did not gain as much attention as the interaction between museum visitors and the technology or the museum. Among studies that dealt with social interaction, most of the discussions on the involvement of social interaction halted at the interaction among visitors as strangers (Ali et al., 2018; Bellucci et al., 2015), and very few studies applied the context within friendship and family (Kuflik et al., 2011; Rennick-egglesstone et al., 2016). The unawareness of social interaction among visitors shows a contrast to the argument that visiting a museum is a social activity (Fosh, Benford, & Koleva, 2016). General belief suggests that people often visit museums within a group with different interpersonal relationships (Fosh et al., 2016; Rennick-egglesstone et al., 2016) rather than visiting alone, as visiting museums is viewed as a leisure time activity that is supposed to be experienced with others (Falk & Dierking, 2016). This observation indicates a strong research potential in relating social interaction during a museum visiting experience with the context of close relationships, such as family, close friends, and intimate couples. Among all other relationships with similar closeness, the intimate relationship between couples involves more frequent interpersonal interaction due to couples’ unselfish willingness to care about the other and to make a sacrifice for the other (Reis & Rusbult, 2004). With this regard, it is promising to see how the museum
visiting experiences would be improved through engaging social interaction between people in an intimate relationship.

With the intention of putting social interaction on stage, the GIFT project (Spence et al., 2019) introduced gift-giving behaviors in their research as an exploration on how the museum visiting experience would be enhanced with the involvement of gifting rituals among visitors. The GIFT App, designed by professionals through the research, suggested its ability to enhance visitors’ museum visiting experience through providing new perspectives of understanding an exhibited object (Spence et al., 2019). Though this was a significant phase in the exploration, the interaction did not put much emphasis on visitors’ demand. In this sense, it could be designed in a different manner, for example, through a participatory design process. Furthermore, the research focused generally on all types of relationships and thus, the context of the research could be more specified with a narrower definition of the interpersonal relationship among visitors, as the gift-giving behavior brings diverse effects to different social relationships. Thus, it would be interesting to see how a design, that is generated through another design process, could improve the museum visiting experience through gift-giving behavior with a specified target audience to the museum.

2. Research Question

With the growing demand for improving the museum visiting experience and the remarkable significance of social interaction taking place in a museum context, the research topic is related to the social interaction taking place during a museum visit that potentially enhances the visiting experience. Furthermore, the research topic involves gift-giving behavior through the inspiration of the GIFT project with a specified group of target audience: visitors in an intimate relationship.

Combining all the aspects mentioned above, the research question is:

How can we create a design that enhances the museum visiting experience for visitors in an intimate relationship through gift-giving behavior?

The answer to the research question involves following discussions on:

1) How does gift-giving behavior enhance the social interaction between intimate couples?

2) How does social interaction between visitors in an intimate relationship enhance the museum visiting experience?

3. Background

3.1. Related Work

Prior research practices laid great emphasis on bringing the museum visiting experience more meaningfulness in several aspects, involving changing the delivery of museum content through technology, focusing on the personal preferences of visitors, and improving the visitors’ engagement in the museum visit.

3.1.1. Museum content delivery

Great efforts were spent on changing the delivery of museum content with different emphases. With the focus on novelty, new technologies such as VR and AR were introduced to the museum tour.
Researchers also made attempts to improve the presentation of museum contents through storytelling and gamification, providing a better knowledge acquiring experience. Also, the hybridity of the physical environment and technology provided a new perspective for researchers to look at.

**Virtual Reality and Augmented Reality**

The emergence of new technologies such as Virtual Reality (VR) and Augmented Reality (AR) provided new solutions for researchers to present the museum content (Carrozzino & Bergamasco, 2010; Keil et al., 2013; Liarokapis et al., 2004). The involvement of VR and AR was indicated to form a more interactive museum visiting experience for visitors. Apart from the interactivity, VR technology created a more immersive experience, which also delivered novelty and surprise to the visitors (Carrozzino & Bergamasco, 2010). The novel technology created a better museum visiting experience as it helped visitors have better exposure to knowledge from a new perspective, and the information was better perceived by the visitors due to the more direct interaction through the technology (Carrozzino & Bergamasco, 2010). Also, visitors were less distracted by the museum environment during the interaction, leading to the definite enhancement of the visiting experience.

However, the application of new technology such as VR and AR sacrificed the social interaction among the visitors as they had to be isolated when they interacted with the technology. VR forced users to cut off their connection to the world outside the VR Gear (Carrozzino & Bergamasco, 2010), and moreover, users were constrained to a limited range of area as the VR Gear required cables to stayed charged and transfer data. Though the experience was more immersive with VR technology, the VR Gear was poor at providing a comfortable and social visiting experience.

Not as constraining as VR, AR limited the users’ focus to some extent. AR technology relied greatly on the digital terminals, which required users to pay attention to the screen throughout the museum visit, which resulted in a tiring museum tour (Keil et al., 2013). However, AR technology could be social in some way. A see-through museum showcase applied technology similar to Augmented Reality while it involved slight social interaction among visitors when they were interacting with the showcase at the same time (Bellucci et al., 2015). Though the visitors were not interacting with the interface isolatedly, the social interaction among the visitors was barely seen.

**Storytelling and Gamification**

Prior research focused on storytelling and gamification to produce a better presentation of museum content (Champion, 2008; Ioannidis et al., 2013; D. Petrelli et al., 2014; Vyanou et al., 2015). Researchers suggested that storytelling provided better narratives in the description of exhibited objects, which helped visitors have better engagement with the knowledge. Adding storytelling to the museum visit was a successful approach to enhance the museum visiting experience because the storytelling was an efficient way for visitors to form an immediate connection when listening to stories since their childhood (Schiffrin, De Fina, & Nylund, 2010). Comparing with reading texts or listening to recordings, involving narratives when delivering the cultural content made it easier for visitors to understand and presumably, receive entertainment through the plotted stories.

Gamification (Champion, 2008; Deterding, Sicart, Nacke, O’Hara, & Dixon, 2011) was another way to present a bigger volume of information in a novel manner. The game-based interaction won more attention from the visitors and was appreciated due to its recreational property (Champion, 2008). The greater efficiency in information delivery and the entertaining effect formed an enhanced museum visiting experience for the visitors.
However, studies introducing storytelling and gamification still limited the audience to individual visitors. The social interaction among visitors was seldom seen throughout the interaction due to the limitation of these interactions, which require users to stay focused in an isolated state. Moreover, visitors received information from the museum passively from the stories and games provided by the museum. Visitors’ connection to the museum is seldom seen (Ioannidis et al., 2013).

**Hybridity**

Researchers combined the physical environment with technology, creating a hybrid experience for visitors at the museums (Ciolfi & Bannon, 2007; Fosh et al., 2013; Kortbek & Grønbech, 2008; Muntean et al., 2017; Daniela Petrelli et al., 2016). It was suggested by the researches that a museum visit was an embodied experience where visitors were provided with the physical affordance (Dourish, 2004) provided by the museum environment and all the objects that were exhibited, and thus researchers sought to create embodied interaction in a museum context with the intent to make the experience more meaningful.

The hybridity helped visitors form an experience that was more engaging (Ciolfi & Bannon, 2007). Through the combination of the technology and the physical affordance, visitors had deeper communication with the environment and the information that was related to the objects. The engagement and the greater volume of information brought visitors a more enhanced museum visiting experience. However, the attempt to relate hybridity to a museum still lacked a social context, limited social interaction was documented through the research.

**3.1.2. Personalization**

Besides focusing on the delivery of the cultural content, researchers also laid emphasis on the quality of the visits by introducing personalization to the museum visit (Antoniou et al., 2016; Kuflik et al., 2011; Pujol et al., 2012). In most common cases, visitors are tourists so it is difficult for them to spare an adequate amount of time for visiting a museum (J. K. Smith & Smith, 2001). The situation receives more tension when the visit takes place in a huge museum, resulting in the issue that visitors spend less time focusing on individual objects (J. K. Smith & Smith, 2001; L. F. Smith, Smith, & Tinio, 2017). Moreover, the inevitable willingness to avoid missing any single piece of art makes visitors exhausted easily (J. K. Smith & Smith, 2001; L. F. Smith et al., 2017), which lowers the museum visiting experience.

Facing this problematic situation, researchers designed systems that provide personalized museum visiting plan for the visitors based on their preference and their answer to the related questions. The systems were able to analyze visitors’ preference through their social network profile and their answers to the questionnaire-like quiz (Antoniou et al., 2016). Based on the analysis, the system provided specific museum content to the visitors thus helping them decide which objects to visit. The CHESS Project combined personalization and storytelling with the purpose to create a museum tour with better quality and more information (Pujol et al., 2012), which successfully formed a more structured museum visiting experience that met the visitors’ preference and needs. With the assistance of personalization, the museum visiting experience was demonstrably endowed with higher quality. However, the personalization was limited to an individual, which inevitably disregarded the social interaction among the visitors.
3.1.3. Engagement

Several projects focused on increasing the visitors’ engagement during a museum visit in varied ways (Stock et al., 2007), for instance, introducing playfulness (Taylor et al., 2015), inviting visitors’ to make contributions (Ali et al., 2018), and designing new interfaces (Wakkary & Hatala, 2007). The researchers suggested that the increased engagement strongly enhanced the museum visiting experience as it provided more interaction between the visitors and the cultural content (Stock et al., 2007). With the deeper engagement, visitors received more than bare knowledge. The entertainment during the museum visiting experience emerges as visitors engaged more deeply. By involving playfulness, visitors were able to “play with the museum” during the tour, rather than barely “visit the museum”, which indicated greater meaningfulness than a regular visiting experience.

The act of inviting visitors to engage more deeply with the museum environment and the cultural content brought visitors new viewpoints during the visit, which enhances the visiting experience. From most of the cases mentioned above, social interaction was rarely discussed as the engagement connected the museum to the visitors as individuals, rather than the relationship among visitors.

3.2. Sociality of Museums

Museums are public places often visited by big audiences. The involvement of people in the same place demonstrates the social characteristic of visiting museums as an activity. Additionally, the museum visiting experience is usually enjoyed with the company of family, friends, and partners (Fosh et al., 2016; Rennick-eggleson et al., 2016). Such observations provide a concrete indication that social interaction is unreplaceable in the museum context.

Prior research also made explorations in the social aspect of the museum by focusing on visitors as families (Rennick-eggleson et al., 2016). It was suggested that family groups are the key element of visitors to many museums and based on that fact, observations were carried out to find out how families interacted with the technology and formed their visiting experience through a bespoke tablet (Rennick-egglesone et al., 2016). During the visit, the family members frequently interacted with each other. The bespoke tablet, acting as an agent of technology, provided channels for visitors to communicate and interact together. Though social interaction was not the main focus of the research, the sociality emerged during the museum visit was a researchable target.

Apart from the social interaction among family members, researchers shifted their focus on visitors as strangers. The Artcode project provided an interaction to share the understanding of the object through hybrid artifacts (Ali et al., 2018). The visitors were encouraged to create Artcode markers with paper and pen, following with an audio recording that expressed something personal about themselves or relating to the museum environment. Other visitors could scan the Artcodes to listen to an interpretation or a story from a stranger’s perspective, which brought them new insights.

For visitors who scanned the Artcodes, they received more information than visiting alone, which added more meaningfulness to their visit. For creators of the Artcodes, they made contributions through the visit, turning their work into a part of the exhibition, which made their experience unique and more meaningful. The research indicated that the social interaction among the visitors was the key element bringing enhancement to the museum visiting experience, and was irreplaceable in this context, which provided great potential for research in social interaction during the museum visits.
3.3. **Gift-giving Behavior**

Gift-giving is a well-appreciated method of interpersonal interaction as a part of human culture (Malinowski, 1920). It is commonly seen that during special events in a year such as Christmas in Western society and Chinese new year in the East, people spend time and money selecting, wrapping and giving their gifts to their loved ones (Aknin & Human, Lauren J., 2015). A gift is given with the purpose of enhancing the social relationship between the giver and receiver (Belk, 1977; Davies, Whelan, Foley, & Walsh, 2010; Kizilcec, Bakshy, Eckles, & Burke, 2018). Different from sharing, gifting requires the gift giver to make some effort voluntarily to provide another person or group with physical things or service (Belk, 1976, 1977; Belk & Coon, 1993), showing more personal connection. Gifting is a key method to communicate, socialize and exchange (Davies et al., 2010) and is done with the expectation that the person who receives the gift would provide something “in return to” the gift given (Davies et al., 2010).

Whether a gift-giving behavior is meaningful relates closely to the characteristic of the given gift. A good gift is required to have key qualities such as “surprise”, “suspense”, and “sacrifice” (Clarke, 2007). The surprise feeling can be related to the emotions when a gift is received and seen by the gift receiver, while the sense of suspense takes place before the surprise feeling is received. The willingness to make sacrifice indicates that gift-giving behavior is supposed to be unselfish (Belk & Coon, 1993). The perfect gift never binds the gift giver and receiver while it focuses more on the emotional rather than the monetary value (Belk & Coon, 1993), which provided a solid conclusion that the devoted sacrifice made by the gift giver is calculated by how much effort is involved in the gift.

The definition of a meaningful gift still applies when the gifts are no longer limited to physical forms as the technology develops. Digital gifts emerge as people gradually interact with each other through the social network. Giving experiences as gifts becomes a trend as a result of the development of services of hospitality, tourism, and entertainment (Clarke, 2007). It is believed that no matter what form of materiality does a gift has, it is necessary to have the key qualities in order to form a meaningful gift-giving experience. Moreover, the change of materiality indicates a closer approach to lower the monetary value of the given gift, which adds more significance to a gift on its meaningfulness (Belk & Coon, 1993).

Generally, the less close relationship leads to more rational gifting behavior, which can be explained according to the Economic Exchange Model. However, when people are closer to each other in a relationship, the willingness to “sacrifice” gets higher (Belk & Coon, 1993; Clarke, 2007), and people rarely look forward to getting something as return when gifting in a closer relationship. Gift-giving is also studied in HCI with different intentions from the Economic Perspective. Instead of focusing on the rational aspects of giving gifts as a manner of transaction and exchange (Belk, 1977; Belk & Coon, 1993), in the field of HCI, there is much interest in looking at how gift-giving would affect the social interaction among people with the involvement of technology.

3.3.1. **Intimate gift-giving behavior**

Among all types of interpersonal relationship, the gift-giving behavior between people with an intimate relationship tends to be more frequent as they have more interaction with their partners (Aknin & Human, Lauren J., 2015; Kelly, Gooch, Patil, & Watts, 2017) than other types of relationships that are less close. An intimate relationship is one of the closest social relationship types (Kelly, Gooch, Patil, & Watts, 2017; Thieme et al., 2011) and people in such relationship care about each other, showing warmth, love, and closeness (Grau, 2003; Kelly et al., 2017; Thieme et al., 2011).
People are ideally closer to each other in an intimate relationship, the intention of giving gifts altered from literally “getting something back” to “making the other one happy” (Belk & Coon, 1993; Davies et al., 2010) and the willingness to sacrifice is greater (Belk & Coon, 1993). In some way, the intention to please a partner can also result in receiving something emotional from the partner, but the difference would be that it is an attempt to bring more positive effects and trust to the relationship (Davies et al., 2010; Kaye, 2006). The gifting behavior between people within an intimate relationship provides a good picture of making a sacrifice with the purpose of enhancing the relationship, but it also changes due to the length of the relationship (Belk & Coon, 1993); more stability appears in the relationship as it gets longer and more mature (Belk & Coon, 1993; Thieme et al., 2011). It takes time to make people become willing to make sacrifices in a relationship.

Besides the general qualities of a meaningful gift, uniqueness is what the gift givers in the intimate relationship value most, and gift givers have the willingness to spend anything at a cost to provides as much uniqueness as possible (Belk & Coon, 1993; Spence, 2019). To achieve uniqueness, gift givers are suggested to provide gifts conveying self-verifying information because it would bring more benefits to their relationship (Aknin & Human, Lauren J., 2015; Spence, 2019). Uniqueness can also be interpreted by “Inalienability” (Spence, 2019), in this case, the gift is prepared by the gift giver with effort and sacrifice with the intention of strengthening the relationship (Spence, 2019). For people in an intimate relationship, the uniqueness depends largely on the personal message and emotional expression created with love (Belk & Coon, 1993), rather than the materiality and the monetary value of a gift. The pursuit of immateriality is a significant approach to give the perfect gift in an intimate relationship, as the sentiment is the main purpose of giving a gift, and it goes beyond the material form and monetary value of the gift itself (Belk & Coon, 1993).

With the emergence of new communication methods and the social network, affection and love can be expressed through the internet (Kizilcec et al., 2018), which shows great potential exists in the research on how technology enhances the social interaction between people with an intimate relationship through gift-giving behavior.

### 3.3.2. The GIFT Project

With the understanding of motivation and outcome of gifting, the GIFT Project (Spence et al., 2019) was focusing on enhancing museum visitors’ experience by introducing social interaction among visitors via gift-giving behavior. The GIFT Group carried out an artist-Led research through design practice (Zimmerman, Forlizzi, & Evenson, 2007), and designed the GIFT App (Spence et al., 2019).

During the museum visit, visitors were encouraged to use the app to create a museum-related gift. Visitors were supposed to capture three objects that interested them by taking a photo, and then they were asked to record their feelings towards the objects into audio memos and finally, select a song that can express their feelings. The picture, voice-memo and the song were wrapped into a gift for someone else in the museum. The gift receivers received the gift through the same app, and they experienced the gifts as they visited the museum. When visiting the same objects wrapped in the gift, they listened to the gift givers’ feeling towards the object, which brought them new insights. After visiting the whole museum, gift receivers listened to the song wrapped in the gift, forming a complete museum visiting experience with the enhancement brought by the gift.

The idea was well received by the participants in the study, which provided the gift receivers with new perspectives of understanding and perceiving the exhibition. Through the gifting process, the social interaction among the visitors (between gift givers and receivers) was strengthened, and also, more
information was received through the interaction with the gift, which was a strong indication that the gift-giving concept thrived in the museum visiting context with the purpose to enhance the experience.

The GIFT project provided an implication on how digital gift-giving behavior would enhance the museum visiting experience by involving social interaction from a general perspective. The same gifting idea could be implemented with a more specific type of audience, and with more limitations. During the research, the gift giver and gift receiver were not asked to go through the experience together, and thus the social interaction was indirect during the museum visit. In this sense, it would be interesting to see whether the gift-giving behavior could be introduced when both the gift giver and receiver are physically experiencing together as museums are more frequently visited by visitors in groups or couples rather than alone. Also, due to the fact that the application was designed from the professionals’ perspective, there could be gaps between the researcher/designer and the actual visitors.

The GIFT project provided a good picture of the research topic and research direction. With the visitors to the museums acting as experts in pointing out problems and providing design ideas, the researchers interpret the knowledge into the scientific design language, and the design involving participants’ knowledge and scientific methods comes as the final result of the research. It would be interesting to apply participatory design methods to discover how the museum visiting experience would be enhanced through gift-giving behavior.

4. Methodology

This research was carried out through participatory design, as it took place with a human-centered perspective (Bødker, 2006; Taxén, 2004). The purpose of the research was to explore how technology brings change to people’s behavior in a familiar activity through participatory design method. Rather than finding a solution to an existing problem through observation, the research focus was laid on generating new technologies (Adams, Fitzgerald, & Priestnall, 2013; Benford et al., 2013; Rogers, 2011) and observing how people alter their behavior due to the change brought by the new interaction (Crabtree et al., 2013).

Visitors, as participants, have more closeness to daily activities (Crabtree et al., 2013) such as giving gifts, staying in an intimate relationship and visiting a museum. Thus, the participation of the target audience was crucial to the research practice due to their experiences in gifts, love, and museum visits and also due to their irreplaceable significance in the exploration. It was encouraged by Schön that studies can be carried out in the wild and involve participants and practitioners into the whole exploratory practice with the support from the professional that can apply theories to the context (Donald A. Schön, 2017).

The research was weaved by qualitative research practices both in data gathering and data analysis as the research put great value on how people experience and observe an activity through their arguments (Glesne & Peshkin, 1991; Patton, 1990). Also, the design process required participants’ creativity, which was desirable during a qualitative research practice (Glesne & Peshkin, 1991; Patton, 1990). During the participatory design practice, participants were invited to provide opinions and ideas on given topics through focus group discussions and brainstorming sessions. To analyze the qualitative data, thematic analysis (Boyatzis, 1998) and content analysis (Cavanagh, 1997) methods were applied for data analysis.
5. Method

5.1. Participatory Design

Participatory Design is a mature method originating in Scandinavia (Bødker & Kyng, 2018; Bratteteig & Wagner, 2016; Kensing & Blomberg, 1998; Taxén, 2004), with an intention to relate opinions from common people (Bratteteig & Wagner, 2016). Through Participatory Design, the participants have a greater potential to provide perspectives that are different from HCI researchers’ point of view based on the ethnographic observation (Bratteteig & Wagner, 2016; Muller, 2009), which is one of the most powerful advantages of Participatory Design. Moreover, through Participatory Design, researchers are able to create user-centered information technology with satisfying qualities (Taxén, 2004). Participatory Design is most suitable for research practices with the intention to introduce new technologies to an activity that people are familiar with (Taxén, 2004). In this sense, it is more difficult to get insights from researchers’ observation than acquiring information from the participants’ perspective. Thus, Participatory Design is suitable for the research context presented in this paper, which involves museum visiting experience, gift giving experience and intimate social interaction, that participants are more like experts than mere users.

In a Participatory Design practice, researchers are responsible for interpreting the information gathered from participants into the design, scientific and analytical languages (Benford et al., 2013). Though participants are more experts in bringing valuable perspectives, they are not trained to relate the knowledge to theories and then, provide a solid theoretical background of the design. In this case, researchers equipped with research skills play a critical role in the design aspect of the research practice. With this premise, the participants in the research were required to provide insights on how gift-giving behavior enhanced the social experience, and how social interaction in the museum enhanced the museum visiting experience. The Participatory Design practice in this paper was constructed with data gathering workshop, data analysis, and prototype evaluation.

5.1.1. Data gathering

A four-hour workshop was designed for gathering data, and it was constructed of an introductory session, two focus group discussions, a brainstorming session, and a finalizing session. The introduction session provided all participants with the basic background knowledge of the research and the purpose of the workshop (Appendices I), and the atmosphere was supposed to be warmed up during this session.

The researcher held 3 workshops among 11 participants, including a pilot study. All participants were selected based on their experience in gifting, museum visiting, and intimate relationship. As the goal of the research was to discover how gift-giving behavior would enhance museum visiting experiences for intimate couples, there were no specific requirements on participants’ profession. However, all the participants were supposed to have given gifts to others more than once in the past year, and also, have visited museums more than once in the past year. With these selection criteria, the participants were able to provide insights during the workshop.

The participants aged from 20 to 36 with a majority of university students and were recruited through the researcher’s personal relationship, according to the researcher’s observation on how they shared their experience with their partner in their daily life. Generally, the participants were willing to share their life with their partner through social networks, and it could be indicated from their posts that they gave and received gifts to/from their partners quite often. It could also be indicated from their sharing of experience in the museums that they were interested in visiting museums.
The participants invited to the pilot study were people with experiences of being in an intimate relationship and they were not required to be in a relationship at the time of participation as the aim was to test the structure of the workshop. The pilot study involved 4 participants: two persons in an intimate relationship and two persons single but had been in a relationship. The first workshop involved 3 participants: a couple and a person in an intimate relationship; and the second workshop involved 4 participants: two couples. Participants were encouraged to take part in the study in couples in order to bring more details in the discussion and create more design ideas. However, the partner of the participant taking part in the first workshop alone was not available for the workshop but was able to participate in the evaluation study.

In the pilot study, the flow of the workshop was tested, and the brainstorming ideas were gathered as the generation of the idea was not greatly affected by personal experiences and the ideas were as important as the ones created from the workshops. The structure of the workshop was changed based on the feedback from participants in the pilot study, the two brainstorming sessions were deducted to one. Other activities in the workshop remained. The information gathered from the pilot study had great potential because the participants provided important ideas for designing the interaction.

All focus group discussions and finalizing sessions were audio-recorded with data collection and analysis purpose (Kvale, 2008). All physical materials related to the workshop were collected and preserved for further research purpose.

**Focus group**

The two focus groups were themed with “gifting experience” and “museum visiting experience”, with the intention of gathering a broad volume of insights and encouraging the participants to inspire and empower one another to make discussion about similar or different opinions and to come up with new opinions (Eklund, 2015; Landauer, 1988). The focus group strengthens the exploration of how experiences are enhanced by common activities that people are most familiar with, and besides, the participants turn into the experts that can provide much knowledge based on their experience (Eklund, 2015). The topic for a focus group discussion is not supposed to be related to sensitive and controversial contents, and there is a limitation of the number of participants (Landauer, 1988). It can be difficult to receive results that can be generalized through a focus group discussion and there can be a struggle on filling enough suitable participants in a focus group (Eklund, 2015).

The topics for the two focus group discussions were friendly and had no violation to sensitive personal privacy, and the participants were targeted as people in an intimate relationship and had experience of giving gifts and visiting museums. All participants were invited as couples, and at least one person in the couple could be contacted through personal social relation, lowering the risk that emerges when arranging the schedules.

**Brainstorming**

A brainstorming session followed up the focus group discussions, where the participants were given chances to quickly produce as many ideas as they could (Wilson, 2013). The brainstorming session also made it possible to expose unexpected ideas with simple material resources (Wilson, 2013). There is a possibility that participants get their inspiration restrained due to information provided in the introductory session and cannot jump out of the given context. To cope with this drawback, the participants were invited to take a warm-up activity to stimulate their imagination and a comfortable and familiar place was selected for the activity (Wilson, 2013). In this sense, participants were invited
to the interaction lab in Ekonomikum, Uppsala University and were provided with drinks and snacks during the session. Participants were familiar with the lab environment and were satisfied with the setting, which guaranteed a suitable place for brainstorming. Besides the physical setting, a rule was made to guarantee the productiveness of ideas, that all ideas were encouraged and equal (Wilson, 2013).

Following the brainstorming session, a finalizing session was arranged where participants presented their ideas and shared their positive feedbacks. The finalization helped with forming solid and applicable ideas. When ideas were presented, the ones with similarity were gathered and wrapped into one final idea with details noted. Participants also provided comments on their favorite ideas and specified the reason. All presented ideas (from brainstorming session) were analyzed along with participants’ requirements and expectation (from focus group discussion) through convergent thinking (Landauer, 1988), which formed design with communication that “talks back” to the context (D. A. Schön, 1992; Donald A. Schön, 2017).

5.1.2. Design

The researcher built a paper-prototype based on the analysis and evaluation of the transcribed data and the ideas gathered through a brainstorming session. The interaction involves the ideas of drawing and guessing, item searching and question answering, which met the design objective that combines gift-giving, intimate relationship, and museum visiting experience. To structure the museum tour, the researcher constructed a museum visiting.

The design solved critical problems, such as when the gift giver was supposed to make the puzzle; when the gift receiver was supposed to make the guess and search; when both the gift giver and gift receiver were supposed to answer the question; how many rounds of puzzle solving interaction were supposed to happen; and how the gift was supposed to finally be presented.

5.1.3. Usability evaluation

The researcher carried out evaluation studies with 4 couples. In all, four evaluations were conducted. 8 participants (4 couples) took part in the evaluation including all 7 participants who took part in the workshops except the pilot study. Also, the partner of the participant who went through the first workshop alone attended the evaluation as well.

Each evaluation consisted of an in-situ experience evaluation and a follow-up structured interview for gathering relating information towards the experience and the interaction (Kvale, 2008). The evaluation took place in Biotopia, a local Nordic animal museum in Uppsala, Sweden, with permission from the museum. The participants were informed about the museum and the basic rules of the experience before experiencing the interaction. Consent forms (Appendices II) were signed before the evaluation began.

The evaluation was carried out based on a paper-prototype with the researcher acting as the technology. The evaluation involved an in-situ experience. During the experience, participants were provided with support when there were any problems or questions. After the experience, each couple of participants was invited to take an interview and discuss the interaction. All interviews were audio-recorded, and the participants’ mark on the prototypes were photographed for further study.

Cognitive walkthrough

The cognitive walkthrough (Nielsen, 1994) was selected as the evaluation method as it allocated space for participants to understand the process of the design and to see if participants’ intention could lead
them to the next correct action (Nielsen, 1994). Whether participants could make a correct action decided whether the design concept was valid. A Formative testing process was done with a paper prototype with the assistance of the researcher acting as the technology, which met the main purpose of exploration and evaluating the design concept (Landauer, 1988; Snyder, 2003). The paper prototype was a low-cost interface that could be iterated rapidly and was thus selected due to the time limitation of the study (Landauer, 1988; Snyder, 2003).

**Interview**

Following the evaluation, participants were invited to take a semi-structured in-depth interview in couples to share their opinions and feelings after the experience (Kvale, 2008; Landauer, 1988; Patton, 1990). Each evaluation was carried out with one intimate couple, and thus it was more efficient to hold an interview for the participants to discuss their opinions towards the experience. Several questions towards the experience were designed as the structured part of the interview was supposed to provide critical information towards the experience, which avoided restricting participants thoughts during the interview.

Besides inviting participants to express their thoughts towards the design, they were also welcomed to address the topic that they valued a lot. This corresponds to the principle of participatory design, and the design conversation between the design and the environment (D. A. Schön, 1992; Donald A. Schön, 2017). The interview following the evaluation was an efficient attempt to gather the first-hand information from the participants as they were able to recall what happened during the immediate experience.

**5.1.4. Data analysis**

Qualitative data was collected through data gathering methods, and thus Thematic analysis was selected for analyzing the collected data (Boyatzis, 1998; Gibbs, 2018). The thematic analysis method was one of the most common methods for analyzing qualitative data, and through the thematic analysis, the meaning indicated in the conversation was pointed out. The thematic analysis allowed researchers to get the interpretation of themes supported by the data, providing a large set of themes that could be worked with (Boyatzis, 1998). Due to the fact that the research presented in this paper was qualitative and that participants were invited to express their opinions with a certain topic during the data gathering process. Thus, the thematic analysis was suitable for analyzing the data in this research practice.

The researcher collected 9 audio recording files from all 3 workshops and transcribed them manually into document files for closer analysis purpose (Kvale, 2008; Rapley, 2008). The transcription was done exactly according to the speaker’s words except for modality with no meaning. Before being analyzed, all transcriptions were gone over again with the audio files to ensure reliability and validity (Kvale, 2008; Landauer, 1988). All transcribed content was analyzed based on the meaning and themes of the opinion (Gibbs, 2018; Kvale, 2008; Landauer, 1988) and the meaning was condensed for categorizing purpose (Kvale, 2008). The data was coded based on the focus of discussion and was categorized accordingly. The categories were “Opinions towards gifting experience” and “Opinions towards a good museum visiting experience”. All content that was related to the themes was collected, regardless of its positiveness towards the research goal.

The paper notes and the ideas generated during the brainstorming session were also analyzed according to their practicality and possibility of being executed. A pre-analysis was done during the finalization session in the workshop, where the ideas were categorized and gathered based on their similarity. The
ideas were evaluated based on the comments from the participants and the closeness between the ideas and the opinions given in the focus group discussion.

The researcher applied the same method for analyzing data collected through the evaluation. 4 audio files were collected and transcribed for analysis purpose. The data was coded with three themes, “feeling towards the experience”, “enhancement of the experience”, and “suggestions”.

### 5.2. Limitations and Ethics

#### 5.2.1. Limitations

The participants were encouraged to share their opinions based on other own experience in museum visiting and giving gifts. They were also encouraged to discuss the opinions given to the table. They were provided with the freedom of coming up with the ideas that were thought to be related to the topic. Risk emerges when the research is relying on participants in the wild: People get more easily distracted when they are provided more freedom (Benford et al., 2013; Rogers, 2011); the research practice may result in inefficiency (Crabtree et al., 2013); the tension between the intention of the study and participants’ experience emerges (Benford et al., 2013), and the status of theories in the study get challenged (Benford et al., 2013; Rogers, 2011). Besides, a professionally designed solution, with a rigorous act of conceiving and evaluation, has turned out to be under great challenges because of its production of side effects to the society that would make the situation even worse, making professions easily exposed to suspense and thus, gain less trust in their professional judgment (Donald A. Schöen, 2017). The change of the environment suggests that the technical rationality (Donald A. Schöen, 2017) pale in significance because the study in the wild no longer consists of controlled experiments. Being out of control, people tend to shift their focus frequently and the uncertainty of where the study would go to is surfaced (Benford et al., 2013; Rogers, 2011).

The participants were also encouraged to come up with ideas that were related to the context, regardless of the operability of the ideas. The final design was made based on the ideas valued by the participants and was tested among the participants. How the design would be done was not known at the beginning of the study, either whether the design would meet the desired goal of the study. The blurred picture of the direction and the destination of the study provides positiveness to the practice in some way. The uncertainty is what an exploratory experiment is intended for (Donald A. Schöen, 2017), as the study that looks at a new type of design for a context, that is embodied in the world, is determined to provide no clue where it would lead to, but the possible change it produces is what all effort is paid for (Donald A. Schöen, 2017). The distraction can be taken advantage of as it provides more potential outcomes in the context, providing access to a greater volume of the potential design approach. The exploratory experiment in the wild forms a conversation between the design and researchers (Donald A. Schöen, 2017). The interaction, which is embodied, “talks back” when a change in any sector emerges and also presents unexpected outcomes due to the change, providing insights for researchers. The “talk back” gets more frequent when it is taken place with “wildness”: the environment in the wild brings participants more familiarity and closeness to their usual behaviors (Adams et al., 2013; Benford et al., 2013; Crabtree et al., 2013) and with the assistance of closeness, the quality of the interaction raises (Adams et al., 2013), and the iteration gets more frequent and targeted (Benford et al., 2013), comparing to a laboratory environment. Transferring the control of the study promises more multi-dimensional data with greater variety and from further perspectives (Rogers, 2011), which brings the participants and researchers together in the exploration, rather putting them in opposite roles.
There could be risks in selecting focus group discussion and Brainstorming as data gathering methods because the focus group discussion required an experienced moderator to lead the discussion into a right direction, and participants would easily get distracted when they focused on one topic and kept discussing. Participants would provide similar ideas through brainstorming and also, they could provide a great number of inoperable ideas, which would bring greater difficulties to the finalizing session. When discussing evaluation methods, the formative testing was informal as more communication between evaluation moderator and participants would emerge, which would lower the effectiveness of the evaluation process (Landauer, 1988; Rubin & Chisnell, 2008). It was difficult for participants to provide feedback and criticism towards paper prototype as it was not a completed interface, which would affect the evaluation result (Landauer, 1988; Snyder, 2003). The semi-structured interview following the evaluation could have a limitation as participants could provide inaccurate information towards the topics and the interview could be out of control as participants were given the freedom to discuss unrelated content (Legard, Keegan, & Ward, 2003).

The study was qualitative, which involved the analysis of qualitative data. The analysis could be affected by bias because the participants were involved in both the workshops and the evaluation and knew more about the design concept as the research moved on. Thus, they might tend to provide feedbacks with more positiveness towards the design (Landauer, 1988). Efforts were made to mitigate the bias by focusing on the reasons behind participants’ comments rather barely focusing on the compliments that met the hypothesis of the research. However, the bias was never removed but minimized. Through thematic analysis, it could be difficult to distinguish nuanced data, and due to the flexibility of the data, more difficulty emerged when concentrating on the aspects of the data that was supposed to be in focus (Boyatzis, 1998).

5.2.2. Ethics

All participants were informed about the purpose of the study and the practical basic information of the workshop when they were recruited. The workshops were not related to sensitive topics or controversial contents in order to avoid harm. The consent forms were prepared for each participant with two copies before the workshop, and the consent was gone through with all participants at the beginning of the workshop. The workshop was held under the participants’ agreement on the consent, and all signed consent forms were collected. All research related data was preserved before, during and after the design practice with regard to the protection of privacy (ACM Council, 2018; Landauer, 1988). At the end of the workshop, all participants were informed that a follow-up evaluation study would be conducted with further notice, the agreement was made during the workshop. All participants were informed before the evaluation study was carried out and signed consent forms before the actual study began, the data collected through the evaluation study was also preserved with the same regard to the ethical guidelines provided by ACM Council.

During the focus group discussion, brainstorming session and evaluation interviews, participants were arranged with a safe and comfortable environment to express their opinions. During the evaluation, participants were informed about the potential risks and were provided assistance when they requested. The evaluation environment provided participants safe feeling and freedom to carry out their own actions (Landauer, 1988).
6. Result and Analysis

6.1. Opinions towards gifting experience

Participants discussed different types of gifts apart from physical ones. According to their opinion, digital gifts and experience gifts were analogous to physical gifts when mentioning how they brought enhancement to their intimate relationships. It was agreed by all participants that giving gifts would enhance the social experience between people in an intimate relationship. Participants selected different types of gifts depending on their physical location. When there was a distance between the gift giver and receiver, digital gifts were better at expressing their affection and care. When it was a daily small gift for couples who lived together, physical ones would be more frequently selected.

On the other hand, participants laid great emphasis on experience gifts that could allow them to experience something physically together, for instance, traveling or visiting a place. Participants expressed their eagerness for engaging in an experience physically together, as couples in an intimate relationship tend to be attached to each other, and being physically together belongs to a type of attachment (Castellano, Velotti, & Zavattini, 2014). Participants agreed with the argument that the social experience would be enhanced by enjoying the gift together as they were given the chance to create beautiful memories from the experience, adding more enhancement to the experience itself.

“I used to send her a lot of digital gifts. When I was in Australia, then she was in University, so I used to send her a lot of digital cards, and some of what she said, cartoon characters … For me, I think I prefer to go somewhere physically together, so we can both enjoy the place and so on… I like to travel, so to a nice place or something, when I was, I never went to something like that. I want definitely want her, to take her there, and enjoy that place together… and create memories together” - Participant 9

“For some months, this is okay. But sometimes, it feels like, okay he should be here to see these things with me, sometimes it feels like okay he should be here to watch this movie with me. Digital gifts are not always accepted. But yeah, in some way okay he's sending me these things, that means he is remembering me… Like I'm still there for you” - Participant 8

Through the discussion, participants expressed their opinion that gift-giving behavior enhanced their intimate relationship due to the key elements that were involved in the gifts, for instance, surprise, personal message, novelty, entertainment. The sense of surprise and excitement came as the first element of a good gift, as it corresponds to the four key qualities of a meaningful gift (Clarke, 2007). According to the participants, a surprising and exciting gift would enhance the social experience between intimate couples.

Besides surprise and excitement, the personal message and care were also mentioned by the participants, which corresponded to previous research that gift receivers value more on the personal message and the care brought by the gift givers through a gift in an intimate relationship (Belk & Coon, 1993). As previous research indicated, gifts that recall transactive memories and convey personal messages bring more closeness to the relationship between the gift giver and receiver (Aknin & Human, Lauren J., 2015; Reis & Rusbult, 2004). By recalling the good memories, the relationship between the couples gets more closeness and enhanced the social experience (Aknin & Human, Lauren J., 2015).

Participants were looking forward to novelty and positiveness, including entertainment and avoidance of pain. Besides, the gift givers wanted to show how much they cared about their partner by giving gifts that met their partners’ taste. The gift was meaningful because it brought the couple with good memories
and because it was experienced together, and thus the action of giving gifts provided people in an intimate relationship to express how much they understood each other. Through giving gifts with key elements mentioned above, the social experience between people in an intimate relationship will definitely be enhanced.

“It's the excitement and that sort of surprise... Yeah, that's the best thing. You don't know what game it is or something like there is a surprise over there...Maybe something that is new for the person that something they haven't experienced yet...Something fun...I would like you to know this band, I know you are gonna like it.” - Participant 6

6.2. Opinions towards a good museum visiting experience

As participants expressed their willingness to share the experience with each other physically, they shared their interaction with each other when they were visiting museums as couples. Participants believed that with the social interaction taking place during visiting museum the whole visiting experience would be enhanced.

The importance of communication during a museum visit was pointed out by participants. According to the participants, it was important and they appreciated talking with each other in order to share their feelings and understanding. On the other hand, the lack of communication brought tension to the participants, affecting the visiting experience negatively. Participants had different ways of visiting museums, some would stay with each other throughout the whole experience while others would separate for a while and then some back together. The way of visiting the museum, according to the participants, did not affect their experience, even though one might have to wait for the other to finish the object when they were visiting together.

“...like you said that you get to talk about things you maybe wouldn't have talked about for example, like I said nature science museum if you suddenly discuss dinosaurs and you wouldn't have talked about dinosaurs if you just went to the park, so maybe it can provide topics or... And maybe you don't talk what was there but something that was there that reminded you of something else, so I think that's it's about impressions.” - Participant 7

Different interaction between intimate couples emerged during the museum tour according to participants’ statements, such as sharing information, discussing, and making fun of the objects. According to the participants, it was usual for them to share some knowledge or information with their partner when they were visiting the museum together, as the knowledge comes not only from the exhibition (Falk & Dierking, 2016; Finlay, 1977) but also from the visitors. The information could be the knowledge that was not delivered through the description of the exhibited objects, or on the other hand, participants would discuss some personal feelings towards the objects that might interest the other, which showed a sign of care and understanding.

“He tries to add some stories, histories, so it increases my interest and also knowledge... Because you can share things because XXX reads a lot, whenever he has time, he reads a lot like history, astronomy, and everything, even the maps... Yeah, of course, strengthens the bondings... Yeah, it’s like omg XXX knows so many things...How fool I am...” - Participant 8

Another type of interaction that happened between participants and their partners was making fun of the objects that were exhibited in the museum. As discussed before, one purpose of visiting the museum is
to have entertainment (Falk & Dierking, 2016). Making fun of the objects could bring entertainment to the couples during their visit, which could enhance the visiting experience according to the participants.

“When you say some stuff, I remember in the church, he would kind of make fun of you, that thing is funny. I know something is not true, but he would make fun of it, so I think it's funny.” - Participant 10

The interaction between intimate couples during a museum visit also brought meaningful outcomes that would also enhance the whole experience. When the knowledge was shared by the partner, the sense of admiration emerged, according to the participants, as they were surprised that their partner knew so much and that would also bring an enhancement to their visit because they had a chance to know something that was unknown before. On the other hand, participants mentioned experiences that they enjoyed the visit in the museum that was recommended by their partner, and their partner felt appreciated when the other enjoyed it, which added more enhancement to the visit, as it came with a sense of accomplishment.

“I think mostly we split because we like different things, and when we find something that we want to share to the other, it was like, hey look at this ... I study art, I took some courses about art history, so when I know something about the particular thing, I go over him and tell him” - Participant 5

“I think if you know the person is with you when you are visiting the museums especially with your partner, and you know what she likes or what he likes. You see something, like I know she's gonna be interested in this you know. Or when it's very cheesy or very fun... I was not very excited about it but I knew that she really wanted to do, I was like okay I'm gonna go, and at the end, I was enjoying it quite a lot.” - Participant 6

6.3. Design

6.3.1. Brainstorming ideas

The ideas from the brainstorming sessions in all three studies including the pilot study were introduced in this section. Each idea was marked with the workshop number where they were created.

Draw and guess (Pilot)

During the museum visit, the gift giver selects several objects that can interest the gift receiver or both the giver and receiver, and the gift giver draws the sketch of the objects and then sends the sketch images to the gift receiver. The gift receiver needs to guess which objects are sketched by the gift giver, and search for the sketched objects. When the gift receiver points out the correct objects that were drawn in the gift giver’s sketches, the gift receiver would receive a gift.

Question and answer (W1, W2)

During the museum visit, the gift giver provides questions that are related to the museum object and the gift receiver. The gift receiver needs to answer the questions to get the gift or to get a hint to the gift.

Puzzle (W1)

The gift giver uses the information from the object to create clues. The gift receiver needs to get the clues from the objects through answering questions or other activities. When the gift receiver collects all the clues, the clues can form a gift, or provide the gift receiver with a hint to the gift.
Face swap (W1)
The gift giver provides the gift receiver with a painting that the faces of the main characters are swapped with the face of the gift giver and receiver. The gift receiver needs to find out where the painting is, and a gift will be given when the painting is found.

Painting screen (W1)
The surprise is the gift. A big screen is placed in the museum and the gift giver can post their favorite photo of the gift receiver or both of them on the screen, and when the gift receiver sees the picture, they would be surprised and that is the gift.

6.3.2. Description
The ideas from the brainstorming sessions were evaluated based on the participants’ discussion about gifts and museum visits. Several ideas described in the last section were selected based on the requirement and expectation suggested by the participants. The interaction was created with the combination of the ideas of drawing and guessing, question and answer, and puzzle.

Procedure
The interaction is constructed by the following order:

1) Decide:
The couples decide who is the gift giver and receiver. The gift giver is supposed to prepare a “gift” for the receiver, and the gift can be a short poem, a message, a compliment, the name of a song or a part of the lyrics of a song. The gift is prepared and presented in a written text form.

2) Prepare:
The gift giver prepares the gift on the interface for the receiver and then decides which information is missing and what are the clues. When the gift giver decided what type of gift they would like to give, they write the text down and prepare the clues.

For gifts such as a poem, a message, a compliment or a part of the lyrics, the gift giver selects up to four words in the gift text as the clues to the gift. Accordingly, the four selected words in the gift text are set to blank in the gift receiver’s view, which requires the gift receiver to discover missing words through the museum visit.

For gifts such as the name of a song, the gift giver comes up with up to four keywords that are related to the name of the song as the clues to the gift. Accordingly, the name of the song is not shown to the gift receiver and the gift receiver need to discover by collecting the clues through the visit.

3) Receive:
The gift receiver receives an incomplete gift from the giver and is required to collect clues from the museum tour in order to discover what the gift is. The gift receiver would either receive a gift text with several blanks or a message saying that “you received a song from your partner”, and on the interface, there are areas for them to collect the clues.

4) Visit:
21
Both gift giver and receiver are given an interface before beginning the museum visit and are required to read the rules presented on the interface. The gift giver receives a drawing pad with four areas where they can sketch the object that they think would interest the gift receiver or both the giver and receiver. The gift receiver is given a collecting pad with four areas where they can collect the four clues during the visit. The areas are corresponding to the clues prepared by the gift giver.

During the visit, the gift giver is supposed to draw the objects on their drawing pad. The gift receiver can visit around while the gift giver is drawing the sketches. However, it is recommended that the gift receiver doesn’t see what the gift giver is drawing. When the gift giver completes one sketch, the gift receiver is invited to guess which object is drawn and point it out. When the gift receiver successfully finds out the object, both the gift giver and receiver are required to answer a question about the selected object. When the question is successfully answered, the gift receiver receives the corresponding clue, and the clue is collected on the collecting pad. The drawing-guessing-answering activity is repeated until the gift receiver collects all the clues.

5) Decrypt:

When the gift receiver successfully collects all the clues to the incomplete gift, they are supposed to try to figure out what the real gift is. For gifts such as a poem, a message, a compliment or a part of the lyrics in a song, the gift receiver needs to fill the words in the blank in the gift text. For gifts such as the name of a song, the gift receiver needs to infer the name of the song with the clues. When the decryption is completed, the gift receiver receives the complete gift.

Concept

The gift in the interaction was designed to be a small gift similar to a small love letter or a small personal note. The types of the gifts are a poem, a message, a compliment, the name of a song or the lyric from a song, which can be written into short texts but with a lot of personal meanings as the personal meaning and sense of care were well valued according to the participants. The gifting concept was involved due to the finding that gifting behavior enhances the social experience between intimate couples.

The drawing and guessing activity in the interaction design meets the definition of giving a gift, that is, the gift giver is supposed to make some sacrifice, such as thinking about the gift and drawing sketches of the objects, and answering the question in order to help the gift receiver to get the clues. The gift receiver would feel suspicious when receiving an incomplete gift at first sight, and through the visit, as the clues are collected, the completed gift would provide the gift receiver with surprise. Both gift giver and receiver are given more chances to communicate with each other, and through drawing and guessing, they can share and discuss interesting objects in different ways.

Besides applying the gifting theory, puzzle solving and clue collecting activity was added in order to introduce novelty to the experience and to make the experience more challenging. The clue collecting activity was also designed based on human’s interest in finding things and collecting things. The puzzle promises that the gift giver and receiver to have time that can be spent together. When all clues are collected, the gift giver will stay with the gift receiver when they are discovering the gift, which improves their communication during the experience.

In order to make the experience more connected to the museum and avoid making the actual museum visiting experience overwhelmed by the interaction experience, the question and answer activity was
designed with the intent to help the gift giver and receiver to gain some knowledge from the museum as well as to help them have the experience something new or strange together.

**Prototype**

A paper-prototype is built based on the design concept. The paper-prototype has three sections: The gift preparation component, the gift giver’s drawing pad, and the gift receiver's collecting pad.

![Gift Preparation Component](image)

The gift preparation component presents the gift giver options of types of gifts to give and an area where the gift giver can write down the gift text and the clues.
The gift giver’s drawing pad has two sides, with one side assigned four drawing areas for drawing sketches, and the other side presenting the rules of the interaction and an example of designing a gift.
The gift receiver’s collecting pad has two sides as well, with one side assigned four collecting areas for collecting clues, and the other side presenting the rules of the interaction and the incomplete gift from the gift giver.
6.3.3. Museum visiting model

As the participants suggested, during the museum visits, some couples would prefer to stay with each other all the time, while others would separate sometimes and then come back together. The interaction allowed couples to visit in both manners: for couples who would like to visit together, the gift giver is supposed to draw the sketch in the same area where the gift receiver is located. In this case, the gift giver is encouraged not to let the gift receiver know which object is drawn in order not to decrease the challenge in guessing the objects. On the other hand, when the couples are visiting separately, the gift giver can finish the sketch when visiting alone and ask the gift receiver to come back and guess. The museum visiting model is shown as follows:

![Museum Visiting Model](image)

Figure 6. Museum Visiting Model

As indicated in Figure 6, the museum visiting model corresponds to the five procedures of the interaction based on the timeline of the visit. Visiting couple first decide on the roles in the interaction, and then the gift giver prepares the gift. Following up the preparation, the gift receiver receives the incomplete gift. Both the gift giver and receiver take part in the drawing-searching-answering activity four times during the whole visit, helping the receiver to get the clues. When all clues are collected, the gift receiver decrypts the incomplete gift with the company of the gift giver as the final stage of the interaction.

Throughout the whole interaction, the gift giver and receiver are not forced to stay with each other all the time during a museum visit, instead, they are required to be together when they are supposed to answer the questions and to decrypt the gift puzzle. This meets the expectation of two museum visiting habits described in previous results. The gift giver and receiver are encouraged to have the experience together and sometimes visit separately, as the gift giver has time and space to draw sketches, avoiding affecting the guessing activity. In this sense, the gift giver doesn’t have to be prepared before the visit.

The key concept of the museum visit model is the intent of encouraging visitors who are in an intimate relationship spend their time together and experience the museum together. This is supported by the
discussion in this section that couples value having the experience together and spending time with each other so that more memory is created.

This is notably important for the couples who prefer visiting the museum separately, as it guaranteed the couples to have enough time that is actually spent between the couples. On the other hand, the GIFT App (Spence et al., 2019) was not able to support people in an intimate relationship to actually visit the museum physically together, as the gift giver could be absent when the gift receiver is visiting the museum after receiving the gift.

6.4. Evaluation

Four couples who took part in the two workshops were invited to the evaluation and they expressed their opinions through an interview following the evaluation.

6.4.1. Positive emotional feedbacks

All participants shared their affection for the interaction after the evaluation, and most of them expressed their opinion that the interaction was funny and entertaining. Participants were interested in having the interaction during a museum visit and they would like to have a second experience if it was possible. Participants mentioned novelty as another highlight of the interaction. The interaction was never experienced before the evaluation, and they felt surprised and were curious about how it would work.

The interaction brought participants a sense of surprise when they experienced it during the evaluation, which met their expectation on a good gift that brought enhancement to the experience. The surprise could come from seeing how the gift receiver decrypted the gift and could be the moment when the gift was finally known. Besides surprise and entertainment, the personal message conveyed in the gift was also well perceived by the participants.

Participants acting as both gift givers and receivers showed their excitement during the experience. According to the participants, the excitement was brought by their interaction with their partners. Participants felt excited when trying to make the other suffer a bit when drawing things, or when they received a clue and tried their best to think about the information behind the clue. The excitement also supported the entertainment and fun that emerged from the experience. The positive emotional feedbacks indicated that the design successfully conveyed the previously discussed key elements that could bring enhancement to the experience.

“I really liked it because it was fun... But I had a lot of fun, and you were very good at this...It was very beautiful to see you putting all the words together, but it was very easy for you, I'm surprised, I wanted to make you suffer a little bit, it was so easy...I was excited, and the same time I was like, Ah I really want to make him suffer a little bit, I don't want him to find all the clues so fast, so I was...” - Participant 5

6.4.2. Enhancing the experience

Participants expressed the opinion that the interaction enhanced the museum visiting experience in several ways. Besides strengthening their interaction with the museum content, some participants viewed this museum tour as a love tour where they could express their personal emotion and feelings to their partners, and moreover, they were given chances to know the hidden qualities of their partners, which also brought them a surprise. The interaction like this enhanced the whole museum visiting experience as it provided a new perspective for the intimate couple to enjoy the tour.
Participants also suggested that the whole experience was the gift rather than the gift given at the beginning of the experience. The gift given at the beginning of the experience was indicated by the participants as an entrance to the experience gift. This corresponded to the previously discussed argument that gift-giving behavior enhances the social experience between intimate couples as the whole experience was gifted within the couples.

A stronger connection between the design and the museum was experienced by the participants in the first place, as they were required to answer question-related to the objects exhibited in the museums. Different from passively receiving information from the objects, participants found themselves able to get in touch with the knowledge actively. Also, the experience successfully found a suitable place between the interaction experience and the museum visiting experience, where the actual visit was not completely replaced by the interaction, instead, the visiting experiences were enhanced by the interaction.

Participants were also given more exposure to the interaction between each other during the visit, and on the other hand, they also had more interaction with the museum. Participants mentioned that the interaction was a good tool to help visitors who were bored with the museum, and it would help find something interesting for the bored visitor through the interaction. During the guessing and the question answering activity, participants had more discussion and conversation on the museum objects and the drawn sketch.

Besides the enhanced interaction with the museum as participants interacted with the museum content more actively, more closeness was seen after the experience as a result of giving and receiving the gifts, which was regarded as the enhancement of the museum visiting experience. Participants mentioned that the experience as such provided chances for people in an intimate relationship to create meaningful experience gifts that were with no monetary value but with more meaningfulness. Apart from this, participants saw the creation of closeness during the experience, helping them figure out the love in their relationship, and discover their closeness to their partner, which indicates that more meaningfulness was seen during the experience because of the closeness created by the participants.

“I was thinking about to write or to give you a message that is lovely, but also I wanted to make you laugh... you are encouraged to read the text and to learn about the animals... I'm pretty sure that I'm never going to forget about that fact for example because I thought like oh yeah, they are all the same color, oh no the tip is black! ... it was personal and full of feeling, and also more love” - Participant 5

“Also like because we know each other so well, like oh if I know you really well, I should have understood it just with one clue. I need four clues to figure out. I didn’t think that much, just like...I would prefer the paper ones because this is something really nice to save and adding closeness and it was really nice and pretty...I would view it very positive, especially if you gave it to me” - Participant 12

6.4.3. Suggestions

Participants made suggestions that could potentially further enhance the experience. Some of the participants expressed their confusion at the very beginning of the interaction, as they felt it a little bit difficult to move on to the next step, but the problem was not critical as the moderator provided instructions to continue the activity. Though the interaction had high learnability as participants were able to continue the interaction with no confusion at all when they successfully completed the first
drawing-searching-answering activity, more effort was required in order not to lower the enjoyment of the whole experience.

The experience was not as challenging and long as participants had expected. Thus, a more complicated experience was called for by the participants, as they believed that more difficulty and clues would make the experience more exciting and more meaningful, which would enhance the museum visiting experience to a large extent. On the other hand, participants were also asking for proper hints when a drawing was difficult to recognize and when they had difficulty in finding the correct object. With several failures in finding the correct drawn object, it would be possible for participants to randomly point to all the displayed objects negatively, which would lower the experience as it provided negative emotions continuously.

Participants gave several suggestions on transforming the interaction into an App. During the evaluation, participants were interacting with paper prototypes, which were not as efficient as digital applications. Thus, they would like to add more features such as map navigation that made it clear in which room or area the objects were located, integrated information library and a comprehensive system that could make the drawing-guessing-answering experience more smooth and easier to handle. Also, due to the limitation of the evaluation, participants felt limited when visiting the museum, and they asked for more freedom during the visit, rather than making it a quest solving experience.

When the evaluation came to an end, participants were fond of the paper that documented their trace of visiting. They suggested that a souvenir was supposed to be given at the end of the museum tour so that they could take the memory of the experience with them, which would bring more enhancement to the museum visiting experience. When talking about the materiality of the souvenir, participants suggested paper souvenirs at the first place, while digital links would also work as it could be shared by visitors.

“You kind of confused, but when you start, you kind of understand, and then now you think about it, it’s so easy” - Participant 11

“The only thing I will do is I will make it longer, but that's it...And also I think that’s gonna be a little bit more challenge to it...Yeah, a little bit more complex as well, make it a little bit more challenging/rewarding. Not too much though, just a little bit... you can even print a little map, with circles, or whatever you think it can serve like, hey there is a clue here, there are two clues there... you keep the paper, the person maybe is not next to the receiver but is sending clues through messages, like you have the paper, you are filling out, he sends a picture, and say that hey I did this, what's next.” - Participant 6

7. Discussion

The research got much inspiration from the GIFT Project and was an extended research practice on introducing the gift-giving behavior into museum visiting experiences, with the intention of making the experience more meaningful with more enhancement. With a similar focus on the social interaction frequently seen during a museum tour, the research in this paper applied a different design method, that is the Participatory Design method.

Through Participatory Design method, the design was closer to participants, who were actual visitors to the museums, gift givers, gift receivers, and lovers. The focus on the intimate relationship in this research practice provided a suitable context for applying Participatory Design as the design method. Also,
As discussed in the Introduction section, a meaningful museum visiting experience involves not only visitors’ interaction with the museum content but also the social interaction among visitors. In this research, participants were given chances to seek the knowledge actively, which was an enhancement of their connection to the museum. However, more focus was laid on the interpersonal relationship between visitors in an intimate relationship. A museum visiting experience is embodied, indicating that both physical affordance and social connection are critical for creating meaningfulness (Dourish, 2004). It was suggested from the Result and Analysis section that the relationship between intimate couples enhances the whole museum visit, which provided a solid indication that the design created more meaningfulness in the museum context.

Also, the research was trying to focus more on the “sacrifice” introduced in the ground concepts of gifting behavior. In a gift-giving perspective, the sacrifice is related to the effort made by the gift giver when preparing a gift (Clarke, 2007). In this research, the action that involved participants’ effort was believed to be a gift-giving behavior, as participants unconsciously spend efforts in their interaction with their partners. During the Participatory Design practice, participants were encouraged to look for the “sacrifice” in a common action and to re-define a normal action with a new gifting perspective. With this context, it was believed by the participants that the drawing activity and the gift designing activity involved in the interaction design required gift giver to make a “sacrifice” as the gift giver spent effort on drawing things for the gift receiver.

Though the interaction was well received by the participants taking part in the evaluation and was believed by the participants to be a good answer to the research question, there are several limitations in the research. First of all, as an outcome of a Participatory Design practice, the design limited the target audience to the participants who took part in the whole design process. Participants were becoming experts through the process and thus they were biased to some extent. Though the design was believed to have great potential, further studies have to be done with evaluations of the interaction with another group of audiences who are intimate couples. On the other hand, several participants pointed out after the evaluation that the interaction could be targeting visitors in other types of relationships, such as families and close friends, which involves evaluation with a bigger range of audiences.

Secondly, the research was carried out with the context of a small museum with only five main exhibition area. The evaluation was more easily controlled within a smaller exhibition, while more problems would emerge when the context is changed. In this research, the museum visiting experience with the interaction covered the whole museum tour. However, if the interaction is going to be introduced to a bigger museum, the length of the interaction experience needs to be re-designed to fit the museum tour and also to avoid lowering the museum visiting experience with redundant interaction. More questions will be asked such as whether the interaction experience is supposed to cover the whole museum tour, in which state is the interaction supposed to take place and when it should end. To answer these questions, more studies on the connection of the interaction and the museum, are supposed to be carried out.

Thirdly, the evaluation in this research halted at evaluating design concepts of the interaction, and thus the cognitive walkthrough was selected as the evaluating method. Though the design concepts were believed to be applicable, the form of the interaction still needed to be defined with consideration of the context. Suggestions were made by the participants that the interaction could be presented in a digital
form, and with this regard, more study is supposed to be done on discovering whether a digital form fits the museum context.

Apart from the limitations, the research also provided insights on connecting meaningfulness and social interaction. Firstly, people in close relationships are an important group of research audiences. In this research, the focus was on intimate relationships rather than general social relationships as it was supported by prior researches that in this context, gift-giving behavior could make the social experience more meaningful. This leads to an indication that close relationships could have more influence on creating a meaningful experience through social interactions. As visitors to public facilities are often composed of people in closer relationships such as families and intimate couples, which implies great potential in research on people in close relationships.

Secondly, the gifting concept still has great potential in researches on meaningfulness in other contexts besides museum visits. Social activities are meaningful because of people’s participation, which implies the potential of gift-giving behavior. It can be exciting to see how further studies apply the gifting concept in other fields with the intent to increase meaningfulness.

8. Conclusions

It was discovered through the research that gift-giving behavior enhances the social interaction between people in an intimate relationship. Apart from general emotion, such as surprise, brought by gifts, intimate couples experienced a greater volume of love and care through the personal message conveyed by the gifts from their partners. Moreover, more closeness was seen when they enjoyed the gifting experience together. As indicated in the previous discussion, intimate couples had a strong willingness to share the experience physically together, which provided more chances for them to show love and care.

Also, it was indicated from the study that the social interaction taking place during a museum tour brought great enhancement to the whole museum visiting experience for people in an intimate relationship. When intimate couples visited the museum together, they interacted with each other quite frequently. The discussion and communication brought them chances to know each other better and discover the partner’s hidden qualities. Through sharing knowledge to the other, intimate couples had chances to learn about the exhibition more comprehensively. The museum tour could be more entertaining when couples have fun related to the objects.

The two discoveries answered the sub-questions of the research question and thus, they provided design concepts on how to create an interaction that enhances the museum visiting experience for visitors in an intimate relationship through gifting behavior.

The design practice was carried out in a participatory design method that the participants involved in the study were responsible for providing ideas and requirements, and the researcher took the responsibility for interpreting the knowledge into the theoretical design language. As an outcome of the design practice, interaction with the ideas of drawing and guessing, item searching, and question answering was designed through the interpretation of participants opinions towards gifting behavior and social interaction taking place in a museum tour.

The interaction was evaluated in a cognitive walkthrough manner with the same participants. The design concept was well received by the participants, and the result of the evaluation provided an answer to the research question, that the gift-giving behavior enhanced the museum visiting experience for visitors in
an intimate relationship as it improved both the social experience between the intimate couple and the visiting experience in the museum.

The interaction provided participants with a greater volume of positive emotions, such as entertainment and excitement, and additionally, the novelty of the interaction brought participants much surprise. With the support of the gifting concept, intimate couples saw more love and care through the personal messages conveyed in the gift, which was rarely observed in a common museum tour. The drawing and finding concept helped participants experience more closeness through the museum tour as they were given more chances to communicate and express their opinions, which helped them know about their partner better through the tour. The question answering concept strengthened the connection between the experience and the museum was also strengthened as participants could interact with the knowledge actively rather than passively receiving information.

Though several suggestions were pointed out by the participants as the interaction could have more potential in enhancing the museum visiting experience, it was generally agreed by the participants that the interaction made their museum tour more meaningful through the gift-giving behavior.

9. References


Snyder, C. (2003). *Paper prototyping: The fast and easy way to design and refine user interfaces*. Morgan Kaufmann.


10. Appendices I

Consent form for Workshop

Consent for Participation in Research

I volunteer to participate in the workshop, which is conducted by Qilun Chen, master student in Human-Computer Interaction at Uppsala University.

1. My participation in the study is voluntary. I understand that I will not be paid for my participation. I can withdraw from the study at any time without giving a reason. If I decline to participate or withdraw from the study, no one will be told.

2. I understand that if I feel uncomfortable in any way during the study, I can skip any question or task, or withdraw from the study.

3. The study will last approximately 4 hours. I understand that my participation involves the discussion in focus groups, carrying out brainstorming and sharing the result of the activities.

4. I give permission for myself to be audio-recorded and photographed during the study. I understand that the recorded data will be coded and stored confidentially and securely.

5. I understand that I will not be identifiable in any reports and that my confidentiality as a participant in this study will remain secure.

6. I understand that any information which I give will be used solely for the purposes of research, which may include written publications.

7. I have read and understood the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

8. I have been given a copy of this consent form.

____________________  ____________________  ____________________
Name (printed)       Signature                  Date
11. Appendices II

Consent form for Evaluation

Consent for Participation in Research

I volunteer to participate in the workshop which is conducted by Qilun Chen, master student in Human-Computer Interaction at Uppsala University.

1. My participation in the study is voluntary. I understand that I will not be paid for my participation. I can withdraw from the study at any time without giving a reason. If I decline to participate or withdraw from the study, no one will be told.

2. I understand that if I feel uncomfortable in any way during the study, I can skip any question or task, or withdraw from the study.

3. The study will last approximately 1 hour. I understand that my participation involves the testing of the paper prototype and being interviewed.

4. I give permission for myself to be audio-recorded and photographed during the study. I understand that the recorded data will be coded and stored confidentially and securely.

5. I understand that I will not be identifiable in any reports and that my confidentiality as a participant in this study will remain secure.

6. I understand that any information which I give will be used solely for the purposes of research, which may include written publications.

7. I have read and understood the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

8. I have been given a copy of this consent form.

____________________  ____________________  ____________________
Name (printed)       Signature                  Date
12. Appendices III

Interview Questions

1. How was your experience?
2. How did you experience it when you/your partner received the gift?
3. What was your feeling during the whole process? (giftee answers)
4. How was the experience connected with the museum visit?
5. Is it a disturbance or an enhancement? If it disturbs somehow, what is the potential solution?
6. Could it be better connected?
7. Was the gift meaningful?
8. Is there any critical failure in the whole experience?
9. Is there anything that can be improved?
10. In what case would you think this experience would be more meaningful/entertaining?
13. Appendices IV

Evaluation pictures
Participant 5 & 6
Participant 7&12

Here are the RULES

1. You received a gift from your loved one, but it's not complete.
2. You need to visit the museum with your partner, and find out the objects that they drew on their pad.
3. When you find it, congratulations! This is the first step! A question about that object will appear.
4. Your partner will answer the question with you in order to get all the clues for the gift.
5. When you answer the question correctly together, a clue will appear.
6. When all clues are collected, it's time to unwrap the gift!

A Gift from your beloved

“Dear [Name],

The gift is a Song :)

“
Sketch some interesting objects here!

Collect your clues here!

1. Katalin
2. På Spåret
3. Nils
4. Bierhaus
Here are the RULES

1. You received a gift from your loved one, but it’s not complete.
2. You need to visit the museum with your partner, and find out the objects that they drew on their pad.
3. When you find it, congratulations! This is the first stop! A question about that object will appear.
4. Your partner will answer the question with you in order to get all the clues for the gift.
5. When you answer the question correctly together, a clue will appear.
6. When all clues are collected, it’s time to unwrap the gift!

A Gift from your beloved

Dear

You look very when you are ____, I love to look on the _____ and ____ that how you are, you look ____ then.

Sketch some interesting Objects Here!

Object1

Object2

Object3

Object4
Participant 10&11

Here are the RULES

1. You received a gift from your loved one, but it’s not complete.
2. You need to visit the museum with your partner, and find out the objects that they drew on their pad.
3. When you find it, congratulations! This is the first step! A question about that object will appear.
4. Your partner will answer the question with you in order to get all the clues for the gift.
5. When you answer the question correctly together, a clue will appear.
6. When all clues are collected, it’s time to unwrap the gift!

A Gift from your beloved

"Dear [Name],

Don't worry, you will pass the exam tomorrow.

Love,
"