Contact through making

A research on the contacts and activities in the makerspace Bouwkeet, Rotterdam and their influence on a sense of community and its social effects

Master Thesis
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Preface

A makerspace is a place where people go to for making things. People make things on their own because they are familiar with making, other people can learn from others about making. It is a place where people with different backgrounds share ideas and get in contact.

This research is done during my Master Human Geography with the specialisation Urban and Cultural Geography at the Radboud Universiteit. Personally I have a lot of interest in the contacts that occur between people who live in diverse cities. For me, Rotterdam represents this diversity. Because of this interest I contacted the Veldacademie, a research institute specializing in urban issues, and I started my research internship over there. With the help of the Veldacademie I got in contact with Bouwkeet, a makerspace located in Bospolder-Tussendijken, which became the topic of this research.

This master-thesis gives an insight in the contacts and activities that occur in a makerspace in Rotterdam and their effects on a sense of community. Plus, the possible wider social effects of this sense of community in a makerspace will be discussed.

Writing this thesis was sometimes very struggling, but mostly it was interesting to dive in a local place and making-culture which were both totally new for me. I have tried to understand the social processes in Bouwkeet as good as possible and even developed my own making and teaching skills.

For the whole process I would like to thank Roos Pijpers, my supervisor of the Radboud University, for her feedback, input and refreshing conversations about the thesis. I would also like to thank Ruth Höppner, Wenda Doff and the students of the research group of the Veldacademie for the brainstorm and feedback sessions. Special thanks to Daniel White and all the ‘Bouwketers’ for giving me the opportunity to dive into Bouwkeet and become a member of the ‘Bouwketers’ as well.

Enjoy reading this thesis!
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1. Introduction

The last decades cities within Europe have become more diverse. Cities are wondering how to live with difference (European Foundation, 2010). The municipality of Rotterdam wants to become a city in which everyone feels that they belong to it, a so-called “we-society”. Within this “we-society” there should be room for everyone, people with different ideas, cultural backgrounds and identities. Residents of Rotterdam should feel connected to the city. According to Aboutaleb, the mayor of Rotterdam, it is important that people meet each other and get in contact with each other. This to overcome feelings of fear and to be able to work on a peaceful society we all want to live in (NieuwWij, 2015).

The importance of getting into contact with others arises questions as: What places could stimulate contact between the residents of Rotterdam? What spaces and activities could contribute to creating a sense of community among the residents of Rotterdam? And what could be the additional social effects of this sense of community?

Research has pointed to the importance of everyday local places at the neighbourhood level in which social, cultural and religious differences should be negotiated (Philips et al, 2014). Places of contact could be of all types: it could be chance encounters on the streets or more structured encounters in for example sport clubs (Philips et al, 2014). Some researchers argue that public spaces like parks could be places of social interaction between people with different backgrounds (Neil et al, 2015; Young, 1990). But according to others urban public spaces are places in which people stick to people they already know and barely get in contact with other groups (Spierings, van Melik & van Aalst, 2016; Amin & Thrift, 2002).

For Amin (2002) the ‘micropublics’, which are the micro politics of everyday social contact and encounter, like schools, the workplace, universities, youth centres and other spaces of association, are places in which interaction leads to contact between people from different backgrounds. Micropublics seem to have similar characteristics as the so-called ‘third places’. According to Oldenburg (1989) the so-called third places, those are places outside the home and work places, could contribute to creating a sense of community among its users. Those third places are places that uniquely provide a common meeting ground for people with diverse backgrounds and experiences (Oldenburg & Brissett, 1982). Examples of third places are bars, beauty-salons, recreation centres and public spaces were people meet, congregate and communicate (Olderburg, 1989). Those places strengthen community ties through social interaction (Jeffres et al, 2009).

Another example of a third place is a makerspace. Makerspaces are a part of the maker movement: “The maker movement refers broadly to the growing number of people who are engaged in the creative production of artefacts in their daily lives and who find physical and digital forums to share their processes and products with others (Halverson & Sheridan, p.496, 2014).” Sennett (2008) describes the importance of making and craftsmanship in his book ‘The Craftsman’ and mentions that the satisfaction of physical making is a necessary part of human being. Besides, nearly everyone can become a good craftsman and this enables people to govern themselves in life.

A makerspace is a space in which people make things for daily purposes and make use of the machines and knowledge that are available. Those places are seen as learning environments. But, wider social effects can be derived of making use of those makerspaces. One of the effects could be creating a sense of community among the users (Taylor et al, 2016). Sarason (1974) formulated a
Makerspaces are a worldwide phenomenon and are located in all the five continents (Blikstein & Krannich, 2013; Bar-El & Zuckerman, 2016). The phenomenon of making in organised places is not only limited to makerspaces. Other examples of places where people go to for making are fablabs (Blikstein & Krannich, 2013) or hackerspaces (Lewis, 2015) which are both focused on computer programming and technology. Men’s sheds are another example of a place where people go to for making things. Men’s sheds are community-based sheds in Australia only for men. Health and social benefits are derived from the activities done by men in those sheds (Milligan et al, 2013). According to Tayler et al (2016) men’s sheds are a type of makerspace: “The sheds provide social contact and a sense of purpose without foregrounding the mental health issues that men may be unwilling to confront explicitly (Ibid, p.1418).”

Rotterdam knows several makerspaces, one of those places is Bouwkeet, located in Bospolder-Tussendijken. Bouwkeet is a makerspace in which people, who live in Bospolder-Tussendijken, make things, such as a table, a bicycle or clothes, together by following workshops or by working on their own projects. Bouwkeet has formulated three goals which are hoped to be realized in the makerspace: empowerment, the development of 21st century skills and the expansion of horizons. Empowerment entails the feeling of independency, self-confidence, sense of ownership and control and the ability to solve problems (Bouwkeet, 2016). Soft skills are also called ‘21st century skills’, those are skills that are considered to be essential to function in the knowledge society with sophisticated information and communication technologies. The soft skills are: working together, creativity, working according to a plan, self-reflection, self-direction and being able to analyse (Bouwkeet, 2016). Last, it is expected that the users of the makerspace will learn how to use machines and how to make things that they first were unfamiliar with. The introduction of new technologies will expand the view of the users of the makerspace. The users of the makerspace will also learn technical skills which can be applied to their daily lives (Bouwkeet, 2016).

Bouwkeet focusses on children from 10 to 15. Most of the programs are developed for this age group (Bouwkeet, 2016). Stichting Verre Bergen, the foundation which has initiated and funded Bouwkeet had done research on the effects of makerspaces. The goals of Bouwkeet are derived from this research.

The question is if the activities will lead directly to those three goals or if there is more needed in a makerspace for realizing empowerment, 21st century skills and the expansion of horizons. It could be that the activities in the Bouwkeet create an environment in which the users are able to develop their social skills and expand their possibilities in life. Eventually Bouwkeet needs to fulfil a social role within the neighbourhood: “Residents of the neighbourhood can meet each other in the “barn of the neighbourhood”, which might result in a better living environment in Bospolder-Tussendijken (NRC, 2016).”

This research will give an insight into how the activities and contact that occurs in Bouwkeet could lead to creating a sense of community among the users. This sense of community, which includes the feeling of belonging and the will to participate in Bouwkeet, might be a precondition for the goals formulated by Bouwkeet to occur. By researching the effects on creating a sense of community, a wider understanding of what goals from making use of a makerspace could be realised.
1.1 Research objective and research questions

The aim of this research is to get an insight into the activities and type of contacts that occur in the makerspace Bouwkeet. It will be researched if those contacts and activities contribute to creating a sense of community among its users. Besides it will be researched if this sense of community could be a precondition for the realisation of the goals formulated by Bouwkeet: empowerment, expanding horizons and the development of soft skills (Bouwkeet, 2016).

The research question and sub-questions are:

To what extent do the activities and contacts in the makerspace Bouwkeet Bospolder-Tussendijken contribute to creating a sense of community among the users and what could be the social effects of this sense of community?

1. What is a sense of community and what are the social effects of a sense of community?

2. What are the motives of people to come to the Bouwkeet?

3. What type of activities and contacts occur in the Bouwkeet?

4. To what extent do the activities and contacts create a sense of community among the users of the Bouwkeet?

5. To what extent could a sense of community be a precondition for empowerment, soft skills and the expansion of horizons (ibid)?

The diversity of the people who make use of the makerspaces will be taken into account. Although makerspaces are mostly open for all people, most of the people who make use of those places are people who are already familiar with technology and who already had affiliation with making before they went to the makerspace (Bean & Rosner, 2014). It is expected that while making together, people with creative backgrounds could feel bonded to less creative people more easily. This could have an influence on the feeling of belonging to each other and could have a positive influence on the we-society.

Within this research a post-structuralist conception of place will be used: “Place not simply as fixed and objective but also as subjective and practiced – as created and re-created by its users and their interactions (Philips & Robinson, 2015).” In this approach place and the creation of a sense of community can be constructed and experienced through different lenses.

1.2 Scientific relevance and societal relevance

1.2.1 Scientific relevance

Research has given an insight into how places of encounters with difference could create more positive attitudes towards another cultural group and what types of contacts and activities are needed in order to create those more positive attitudes. Having intense and regular contact and working together on a shared project could contribute to those more positive attitudes (Amin, 2002; Matejskova & Leitner, 2011). Less research has pointed to places of encounter with difference and their ability to create a sense of community. According to Amin (2002) there is a limit to community building, rooted in shared values and a shared sense of place, within diverse neighbourhoods. Bridger & Alter (2006) argue that the formation of communities is under threat because of the forces
of urbanisation, modernisation, capital mobility, advantages in communication and transportation and the transformation of work which is why people do not remain in one place for long. But it might be that even within the modern society a sense of community could be created. According to Taylor et al (2016) makerspaces could be places in which a sense of community can be created. This research gives an insight in which type of contacts and activities in a makerspace occur and which of them could contribute to creating a sense of community in a world which is argued not to be a good environment for communities to occur.

Public spaces can be seen as places for social interaction (Varna & Tiesdell, 2010). Oldenburg (1989) mentions examples of third places that could be places in which a sense of community can be created through social interaction. Amin (2002) discusses the micropublics as places for social interaction and negotiation. This research tries to argue where a relatively new place for social interaction, a makerspace, fits within this continuum of places for social interaction.

Research on makerspaces is mostly focused on their role as learning environments in which people could develop their skills (Whitmer, 2016) or as places in which people with disabilities could work on projects with people without disabilities (Alper, 2013). According to Taylor et al (2016) the wider effects of makerspaces in public life, for example makerspaces as social places, in supporting well-being, by serving the needs of the communities they are located in and by reaching out to excluded groups have not been studied extensively. This research will be complementary on the existing knowledge about makerspaces because the broader social effect of creating a sense of community will be researched. Besides, it will be discussed of this sense of community could be a precondition for empowerment, the development of 21st century skills and the expansion of horizons (Bouwkeet, 2016). By doing this it could be argued if the activities and the act of making will lead directly to empowerment, the development of 21st century skills and the expansion of horizons or if another aspect of the makerspace could support those individual effects.

1.2 Societal relevance
The last decades European cities have become more and more diverse. Cities have become more diverse in ethnic, cultural and religious terms. Governments are struggling how to establish and maintain peaceful and productive relations between people with different backgrounds (European Foundation, 2010). One of the strategies cities could use in order to overcome problems with difference is to create a shared vision and inclusive identity. Amin (2002) points to the importance of creating civic agreement and shared values to reconcile intercultural differences. People could feel a citizen of Rotterdam and a Jew or Muslim at the same time. Creating a shared vision could lead to a “we-feeling” (European Foundation, 2010). This research will give an insight into how the makerspace Bouwkeet in Rotterdam Bospolder-Tussendijken contributes to creating a sense of community, a sense of belonging. City developers could take the outcomes of this research into account by developing places that foster a sense of community among the residents of a city or a neighbourhood.

Besides, this research gives an insight in the effects of a makerspace besides the effects of being a learning environment for its users. The wider effect of creating a sense of community will be discussed and the possibilities for empowerment, the development of 21st century skills and the expansion of horizons will be discussed. Those wider social effects could be taken into account by the municipality of Rotterdam by creating places of encounter in the city that lead to a sense of community. According to Nascimento (2014) policy makers must not only focus on the potential for job development within makerspaces, but direct their focus to the possibilities of empowerment for
citizens and groups through the social benefits of makerspaces. If the existence of a sense of community could be a precondition for empowerment, the development of 21st century skills and the expansion of horizons, it could be thoughtful to create more places like this within the city. Within this research the experiences of the place will be discussed. Research that incorporates place experiences and meanings can provide an important model for a “grounded” approach to community-based planning (Manzo & Perkins, 2006). Within community development and planning the focus is more often on economic, political or social dynamics. But, research that incorporates place experiences and meanings can help to understand how particular preferences, perceptions and emotional connections relate to community social cohesion, organised participation and community development.

1.3 Justification of Bouwkeet
Rotterdam knows several makerspaces. In order to make a decision on which makerspace in Rotterdam could be used for this master thesis, information about several makerspaces in Rotterdam was considered: RDM Makerspace, HET LAB Rotterdam and Bouwkeet.

RDM Makerspace is a makerspace in Rotterdam which focuses on professionals and hobbyists who are interested in making and designing. The makerspace offers possibilities for making use of machines and facilities for a low price. This makerspace is not only meant for residents who live in the neighbourhood, but for all people who are interested in making. RDM Makerspace is located on RDM Rotterdam. RDM Rotterdam is a location for education and companies related to technology (RDM Makerspace, 2016). The RDM makerspace is located in an inspiring and creative environment and is not only focused on residents of the neighbourhood.

HET LAB Rotterdam is a makerspace located in the centre of Rotterdam. Since January 2015 people could go to this place to make things and make use of the machines. The makerspace is well-linked to the neighbourhood: younger people who live in the neighbourhood or go to school in the neighbourhood are familiar with the makerspace and make use of it. But the place is not focused on residents of the neighbourhood only (HET LAB Rotterdam, 2015) and the makerspace is not focused on the development of people who live in the neighbourhood.

Bouwkeet is located in a neighbourhood in Rotterdam which is less developed than the centre of Rotterdam and which is not located in a particularly creative and inspiring environment. Besides, Bouwkeet is focused on residents of the neighbourhood only. Younger people who live in Bospolder-Tussendijken have less opportunities in life and do have little options for activities in their neighbourhood (NRC, 2016). The focus on the neighbourhood level and the focus on creating changes for younger people makes this place unique as a makerspace in Rotterdam and interesting for this research. This research will give an insight in the conditions that are needed for creating those changes for people in Bospolder-Tussendijken.
1.5 Structure

The structure of this research is as follows. Chapter 2 entails the context of Bouwkeet and the neighbourhood in which Bouwkeet is located; Bospolder-Tussendijken. This chapter provides information about the initiator of the makerspace, the reasons why the makerspace is established in the neighbourhood and the goals of the makerspace. Chapter 3 consists of the theories and concepts on contact in the city, a sense of community and its effects, the maker movement, empowerment, the expansion of horizons and soft skills that are used for this research. Chapter 4 describes the methods that are used for this research and the operationalisation of the theoretical concepts. Chapter 5 entails the results of the desk research, observations and the interviews. Chapter 6 consists of the conclusion, the discussion and reflection and recommendations for further research.
2. Case Study: Bouwkeet, Makerspace Bospolder-Tussendijken

The case study of this research is the makerspace Bouwkeet which is located in the neighbourhood Bospolder-Tussendijken. This chapter gives an insight in the concept of a makerspace and the case study used for this research. Before realising the makerspace, research had been done by Stichting de Verre Bergen and the Veldacademie. This chapter entails an overview of the research done by the above mentioned institutions, the arguments for realizing a makerspace within Bospolder-Tussendijken, the audience of Bouwkeet and the goals of Bouwkeet. These goals will also be further discussed in chapter 3.

2.1 Makerspaces

Makerspaces are places where people go to for making things themselves by making use of the machines and knowledge available in these places (Taylor et al, 2016; Whitmer, 2016): “They provide communal facilities in an openly accessible space, giving access to resources including digital fabrication and open electronics, which have been collectively hailed as enabling a revolution in personal manufacturing (Taylor et al, p. 1415, 2016).” Makerspaces initially emerged from universities and are nowadays located everywhere from industrial estates to high streets, schools, museums and libraries (Taylor et al, 2016).

There are several types of makerspaces. As mentioned, some are located in schools, museums and libraries (Taylor et al, 2016). Other makerspaces are community supported makerspaces (Whitmer, 2016). And other makerspaces are there to serve the communities they are located in, these makerspaces are social spaces (Taylor et al, 2016).

2.1 Stichting de Verre Bergen

Stichting de Verre Bergen initiated the idea of realising a makerspace in Bospolder-Tussendijken. Stichting de Verre Bergen is a Venture Philanthropy Fund, a party which invests in programs with a social purpose (Interview Bas Woudstra, July 2017). Stichting de Verre Bergen invests in programs in Rotterdam which are focused on the development of Rotterdam. Those programs could be of all types: art-culture education, sport or care. Stichting de Verre Bergen works with a problem-solving manner (Interview Bas Woudstra, July 2017) and is not funded by the municipality of Rotterdam.

2.1.1 Makerspace as an intervention

Bouwkeet is one of the projects of Stichting de Verre Bergen. Before the realisation of the makerspace, research had been done on the makerspace concept. First desk research had been done, in which it became clear that there is not much literature on makerspaces available in 2012, 2013 and 2014 (Interview Bas Woudstra, July 2017).

Stichting de Verre Bergen went to the United States to visit makerspaces to see how these places work and to find out about the effects of those places (Interview Bas Woudstra, July 2017). During this visit Stichting de Verre Bergen developed a preference for the ‘social makerspace’. Stichting de Verre Bergen describes a social makerspace as follows: ‘A public facility that provides the needs of residents of a particular neighbourhood by providing them with a physical workshop where they can use a variety of machines’ (Stichting de Verre Bergen, 2014, p.3). This is in line with the makerspace that serves the community in which it is located mentioned by Taylor et al (2016). The social character of the makerspaces will be expressed by the fact that the makerspace will be located in a neighbourhood with social issues, the function of the makerspace for individual users and people...
who live in the neighbourhood and the type of audience (Stichting de Verre Bergen, 2014, p.3). These characteristics will be discussed in the next sections of this chapter.

2.2 Bospolder-Tussendijken

The makerspace Bouwkeet is located in Bospolder-Tussendijken. Bospolder and Tussendijken are officially two separated neighbourhoods in Rotterdam, but they are seen as one neighbourhood by the residents of Rotterdam. Figure 2.1 shows the location of Bospolder-Tussendijken in Rotterdam.

The makerspace Bouwkeet is located at the Schiedamseweg, this street separates the two neighbourhoods. Figure 2.2 shows the location of Bouwkeet in Bospolder-Tussendijken. The Schiedamseweg knows several shops with multicultural influences (Gemeente Rotterdam, 2016).

Tussendijken is a neighbourhood with 7000 residents. 65 percent of the neighbourhood entails social housing. Both young and elder people are well represented within Tussendijken (Gemeente Rotterdam, 2016a).

Bospolder is a relatively young neighbourhood; 20 percent of the 7250 residents are younger than 15 years. The residents of Bospolder feel that they belong to Rotterdam, and they embrace the multicultural character of the city (Gemeente Rotterdam, 2016).
Table 2.1 and table 2.2 show the number of residents, the number of households, the number of employed person and age and ethnicity in Bospolder and Tussendijken.

**Table 2.1: The number of residents, the number of households and the number of employed persons in Bospolder and Tussendijken.**

<table>
<thead>
<tr>
<th></th>
<th>Bospolder</th>
<th>Tussendijken</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of residents</strong></td>
<td>2016</td>
<td>7151</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>7255</td>
</tr>
<tr>
<td><strong>Number of households</strong></td>
<td>2016</td>
<td>3344</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>3389</td>
</tr>
<tr>
<td><strong>Number of employees</strong></td>
<td>2016</td>
<td>822</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>876</td>
</tr>
</tbody>
</table>

*Source: Gemeente Rotterdam (2016), Gemeente Rotterdam (2016a).*

**Table 2.2: Age and ethnicity of the residents of Bospolder and Tussendijken.**

<table>
<thead>
<tr>
<th></th>
<th>Bospolder</th>
<th>Tussendijken</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Persons up to 15 years old</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>% Persons of 15 to 65 years old</td>
<td>72</td>
<td>71</td>
</tr>
<tr>
<td>% Persons over 65 years old</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Native</td>
<td>19</td>
<td>21</td>
</tr>
<tr>
<td>% Migration background</td>
<td>81</td>
<td>79</td>
</tr>
</tbody>
</table>

*Source: Gemeente Rotterdam (2016), Gemeente Rotterdam (2016a).*

### 2.2.1 Why realizing a makerspace in Bospolder-Tussendijken?

According to Bas Woudstra (July, 2017) Stichting de Verre Bergen decided to establish a social makerspace in Rotterdam and then searched for a suitable neighbourhood in Rotterdam to realise such a place. At first, Stichting de Verre Bergen selected five neighbourhoods from the ‘Sociale Index 2012’ of De Gemeente Rotterdam with potential for realising a social makerspace: Carnisse, Tarwewijk, Afrikaanderwijk, Zuidwijk and Bospolder-Tussendijken (Stichting de Verre Bergen, 2014a, p.4).

Three indicators gave the conclusion that the social makerspace has to be realised in Bospolder-Tussendijken (Stichting de Verre Bergen, 2014a, p.5):

1. According to the ‘Vogelaaraanpak’ in 2007, Bospolder-Tussendijken was selected as a ‘aandachtswijk’. This is a program in the Netherlands in which several neighbourhoods are selected by the government as neighbourhoods that have more social and economic problems than other neighbourhoods in the Netherlands and therefor need extra help from the government (VROM, 2007).
2. According to ‘Kinderen in Tel’ Bospolder is the eleventh worst neighbourhood for children to grow up in 2012 in the Netherlands. Tussendijken is the thirty-sixth worst neighbourhood for children to grow up in 2012 in the Netherlands.

3. The residents of Bospolder-Tussendijken have a low income compared to other neighbourhoods in Rotterdam.

These indicators have made clear that Bospolder-Tussendijken is a neighbourhood with low developmental opportunities and a high level of social issues (Stichting de Verre Bergen, 2014a). After selecting Bospolder-Tussendijken, more in-depth research had been done on the needs of the residents of Bospolder-Tussendijken. Stichting de Verre Bergen asked the Veldacademie for a district inventory on those needs (Bas Woudstra, July 2017).

2.2.2 District inventory ‘Veldacademie’

In June 2014 the Veldacademie held 5 focus-groups with the residents of Bospolder-Tussendijken. The respondents were divided into four groups: children (10 – 12 years), young people (13-15 years), fathers and mothers. The central questions for the children and young people were: What activities do you do after school-time? Can you choose yourself what you do after school-time? What comes up in your mind when you think of ‘make-it-yourself’? The central questions for the parents were: What do your kids do after school-time? Which activities do you think are important to do for your kids? What changes and opportunities do you see for your kids? Are your children allowed to choose by themselves what to do in their free-time? Do you sometimes make things yourself? The parents mentioned that Bospolder-Tussendijken is a poor neighbourhood. Besides they mentioned that the respondents of the focus-groups are mostly wealthy, so the voices of the families which might have other needs will not be heard (Höppner & Snoep, 2014).

Parents in Bospolder-Tussendijken do stimulate their kids to play outside after school time and they buy a music instrument for them if their kid wants to learn how to play it. But, a lot of children in Bospolder-Tussendijken are not stimulated well enough at home to develop themselves. A lot of children spend their leisure time at home by watching TV (Höppner & Snoep, 2014).

According to the parents the kids would like to do activities that make them discover new things, work together and kids want to learn new skills. When kids learn something they will feel proud. The living world of children of Bospolder-Tussendijken is limited. They move around in the neighbourhood and go to some hotspots in Rotterdam during the weekends. The kids go to other parts of Rotterdam only with their families and not by themselves. At home children are not learning many soft skills (Höppner & Snoep, 2014).

The children of Bospolder-Tussendijken think that their development opportunities are limited because of the amount of time they spend at home, not because of the possibilities for activities in the neighbourhood (Höppner & Snoep, 2014).

Children do repair things with their parents and make useful things with them. The children themselves play with the computer sometimes. Girls sometimes use a sewing machine at home. The kids mention that they are creative with used materials, a milk can is used to make something by a kid. Kids relate technology to computers, fixing things with tools and fixing a car or a bicycle. Kids are familiar with wood and get it contact with machines at school. The kinds mention that they would like more freedom at school on deciding what things to make. Boys would like to distinguish themselves by making. They would like to develop an app or design a building. Girls would like to have new experiences by making and they would like to create things: they would like to design cloths or do pottery (Höppner & Snoep, 2014).
This analyses shows that both the parents as the kids of Bospolder-Tussendijken see the importance of making things. Parents would like their kids to be creative and develop themselves. Kids would like to make things and be more free in choosing what to make. This indicates that there was support from the residents of Bospolder-Tussendijken to establish and make use of a makerspace in the neighbourhood.

2.3 The Makerspace Bouwkeet
This paragraph gives an insight in the users of Bouwkeet and the goals of Bouwkeet. Besides, it will be discussed how these goals are aimed to be realized.

2.3.1 Audience of Bouwkeet
Stichting de Verre Bergen has chosen to focus on the audience of children from 10-15 years old who live in Bospolder-Tussendijken. There are several reasons for choosing this main audience. First, children with this age are open for new impressions, are flexible and can easily become enthusiastic for technology. Second, this audience can be easily reached through the already existing structures of schools in which introduction lessons, in for example 3D-printing, can be held. Third, the participation of new users of the makerspace will organically grow if the focus is on children of 10-15 years. These children can introduce their brothers and sisters, their parents and others who are interested in the makerspace (Stichting de Verre Bergen, 2014a, p.7).

The third argument relates to one of the final goals of Bouwkeet. In the end Bouwkeet should be a place in which a divers public is welcome and a wide range of goals are being achieved. To come to this final goal organic growth is necessary (Stichting de Verre Bergen, 2014a, p.3).

According to Bas Woudstra the audience has to be from the neighbourhood so the social makerspace will fulfil its neighbourhoods function and to make sure that the makerspace is there for the development of people from Bospolder-Tussendijken and not for the development of for example tech-professionals (Interview Bas Woudstra, July 2017).

2.3.2 Goals of Bouwkeet
The goal of Bouwkeet is to realize effects on the individual level. The individual effects consist of three parts:

1. **Empowerment of the individual**
2. **The development of soft skills**
3. **The expansion of horizons and the development of technical skills**

*Empowerment of the individual*
Through a number of processes that are central in the makerspace (independently working to create or produce an object, searching for information and failing and being able to try again) the hypothesis is that the feeling of independency, self-confidence, sense of ownership and control and the ability to solve problems will increase. It is expected that the confidence of the users of the makerspace will grow because of the activities in the makerspace and it is expected that because of this confidence the control over other aspects of the life of the individual will increase as well (Bouwkeet, 2016).

*The development of soft skills*
Because of the possibilities for experimenting with manufacturing, building and making it is expected that the users of the makerspace will develop their soft skills. Soft skills are also called ‘21st century...
skills’, those are skills that are considered to be essential to function in the knowledge society with sophisticated information and communication technologies. The soft skills are: working together, creativity, working according to a plan, self-reflection, self-direction and being able to analyse (Bouwkeet, 2016).

*The expansion of horizons and the development of technical skills*

It is expected that the users of the makerspace will learn how to use machines and how to make things that they first were unfamiliar with. The introduction of new technologies will expand the view of the users of the makerspace. The users of the makerspace will also learn technical skills which can be applied to their daily lives (Bouwkeet, 2016).

These three goals of Bouwkeet are further discussed and substantiated with theory in chapter 3.

### 2.3.3 Preconditions for achieving the goals

Stichting de Verre Bergen formulated several preconditions for achieving the goals of Bouwkeet. These preconditions are related to how the audience will be approached, the mutual rules of conduct and the rules and ways of learning in Bouwkeet (Stichting de Verre Bergen, 2014a, p.9).

1. Sharing positive results is of high importance. By sharing positive results it is expected that the users will learn from each other. Besides, it is hoped that the people who give workshops will become role models for the children, and that the children become role models for new users of the makerspace.
2. It is important that the people who give the workshops present their knowledge professionally and put in their own life experience in the workshops.
3. The number of rules has to be limited in order to prevent conflicts. Children already have to deal with a lot of rules in their daily lives, so in the makerspace they have to be limited. Bouwkeet should not feel like a “second classroom” for the children. Rules which concern safety are highly important in Bouwkeet. Picture 2.1 shows the rules of Bouwkeet.
4. Fourth, the makerspace has to be a place in which a community can be formed. All the users and assisting people are part of this community.
5. Fifth, transparency is of high importance. Assisting people should be able to be express that they are learning skills in the makerspace as well. This in order to show the children that learning is essential in the makerspace.
Next to these preconditions, Stichting de Verre Bergen has formulated another five preconditions which are expected to foster the achievement of the goals of Bouwkeet: the makerspace offers opportunities for development, the makerspace is easy accessible but not without obligations, the makerspace functions as a meeting place, the makerspace is an inviting environment and the makerspace represents a mentality; the maker mentality (Stichting de Verre Bergen, 2014).
3. Sense of community and its social effects in a maker age

This chapter gives an overview of the theories that are of relevance for this research. Paragraph 1 discusses the forms of social interactions between city dwellers. Paragraph 2 consists of theories about (meaningful) contacts that do or don’t occur in different places in the city. Paragraph 3 discusses the maker movement and a relatively new place in the city for social interaction: a makerspace. Paragraph 4 describes the concept ‘a sense of community’ and how this sense of community could be realized in the modern world. Paragraph 5 describes the further social effects which could be derived from a sense of community in makerspaces. Last, paragraph 6 visualizes and explains the conceptual framework which is derived from the theories of this theoretical framework and used for this research.

3.1 Social interaction in the city

There is a debate in human geography, on social interaction in the city and if the city is a good place for social interaction to occur. Do people get in contact with other city dwellers in the cities of nowadays and do people want to get in contact with each other? According to Blokland & Rae (2016) cities have changed in their capacities to generate ‘effective personal encounters’, which might lead to the breakdown of urban social cohesion. If we want to recover these urban encounters we have the to see the city as it is and not try to romanticize it. According to Young (1990) people who live in the city and belong to different social groups could live together in the city without forming one community. According to Wirth (1938) the city can be characterized by an enormous number of residents, who live in anonymity, and who have little intimate and personal contact with each other.

Not all people who live in the city do prefer social interaction with their fellow city dwellers. Duyvendak & Wekker (2015) categorize the residents of cities into four categories. The first category entails a group of city dwellers that prefers physical proximity and social distance. This category of city dwellers is in line with Wirth’s (1938) idea of city dwellers. Those people like to be in public spaces and among ‘strangers’ and do not need the company of people like them and do not want to be socially controlled by others. The second category entails a group of city dwellers that prefers physical and social proximity. This group of people wants to feel at home in the public space with ‘familiar strangers’ in a homogenous setting or community. Besides, this group of people wants to become friends with their neighbours and wants to create bonds. The third category entails a groups of city dwellers that prefers physical distance and social proximity. This category is more concerned with the place of a home than with a public place. This group of people creates bonds, mostly virtual bonds, with a symbolic community or any other non-local network. The fourth category entails a group of city dwellers that prefers physical and social distance. This group of people withdraw themselves from the public sphere and do not maintain social contacts in for example the home sphere. Because of the isolation of this group it is hard to reach people who belong to this group and to get an insight into why those people prefer physical and social distance (Duyvendak & Wekker, 2015).

According to Blokland-Potters (2006) people do not look for a common feeling of home in order to feel part of a community, people are looking for ‘public familiarity’. This means that people are familiar with the people in their neighbourhood because they pass them by on the streets, in the supermarket or at the bus stop. By this people become ‘familiar strangers’ (Duyvendak & Wekker, 2015).
3.2 Places for meaningful encounters

Within the debate of encounters the opinions vary on which encounters in cities do occur and which of those encounters can be labelled as meaningful. Some scholars argue that chance encounters on for example the streets could create meaningful encounters, others argue that the more structured encounters will create more meaningful encounters (Philips et al, 2014). Valentine (2008, p.325) defines meaningful contact as: “contact that actually changes values and translates beyond the specifics of the individual moment into a more general positive respect for – rather than merely tolerance of – others”. This paragraph discusses public places, third places and micro-publics as places for social interaction and meaningful encounters.

3.2.1 Public spaces

There exist various understandings of what makes a place a public space. According to Carmona (2010) the relative publicness of space depends on three qualities:

1) “Ownership: whether the space is publicly or privately owned, and whether – and in what sense – it constitutes ‘neutral ground’.
2) Access: whether the public has access to the place.
3) Use: whether the space is actively used and shared by different individuals and groups (Carmona, p.137, 2010).”

The quality of access is questionable in labelling a place as a public space or not. It can be argued if a place which asks for a fee can’t be labelled as public (Carmona, 2010).

According to Neal et al (2015) parks, an example of a public place, could be places in which people with different backgrounds interact which each other. So, people will get in contact with people with other backgrounds. But interactions within parks do not occur between all people who make use of a park. The interactions that do exist in the parks are mostly around shared interests, like walking a dog or being with kids in the park. Those are all opportunities for shared stories and spontaneous interactions between different groups. Different groups which still have something in common.

Watson (2006) describes the public spaces of cities as sites of multiple connections and inter-connections of people who differ from one another in their cultural practices, in their imaginaries, in their embodiment, in their desires, in their capacities, in their social, economic and cultural capital, in their religious beliefs and in many more ways. These differences need to be negotiated in the public spaces of the city. According to Young (1990) public spaces are places in which people with different backgrounds could get in contact with each other. Publicly accessible spaces are discussed in their ability to serve social ends by allowing diverse populations to meet and interact (Miller, 2007).

Varna & Tiesdell (2010) list some characteristics of public places which are a precondition for contact between its users to occur. Those places must not have restrictions on access, as for example membership. This to ensure that different social groups are able to enter the place. The civility of the public space is also a necessity: the place need to be clean and well cared for, and the appearance of the space needs to be positive. The public space needs to be accessible in terms that it has to be located at a noticeable location and accessible by for example the public transport. The space also needs to be publically owned. Last, the public space has to offer animation. There need to be sufficient activities which make it possible that contact between the users of the public space occur (Varna & Tiesdell, 2010). Varna & Tiesdell (2010) created a star model to visualize the characteristics of a public place, which is shown in figure 3.1.
Figure 3.1: Characteristic attributes of ‘more public’ places.

**Animation**: Many supports for a wide range of potential users and activities

**Civility**: Cared-for, well-kept; managed in the public/community interest with management balancing the needs of different social groups

**Physical configuration**: Well-connected and located within the movement system; strong visual connection to external public realm beyond space; without obvious entrances and thresholds

**Control**: Free use

**Ownership**: Publicly owned space with public function and public use

*Source: Varna & Tiesdell (2010).*

But, other scholars argue that public spaces are not the most favourable places of intercultural contact to occur. Parks could be places in which people with different cultural backgrounds barely get in contact with each other and mostly stick to their own group (Spierings, van Melik & van Aalst, 2016; Amin & Thrift, 2002). Parks and other public places are therefore not seen as places in which meaningful encounters with difference occur. Valentine (2008) doubts the opportunities for cultural exchange in the micro publics of Amin (2002). According to Valentine (2008) the everyday encounters can be seen as encounters with a culture of tolerance which leaves the issue of our multiple and intersecting identities. Intercultural understanding on a higher level will not be reached by those encounters.

### 3.2.2 Third places

According to Banerjee (2001) the public life is not only centred in public spaces of the city but also in other places. One example are the so-called *‘third places’*. Oldenburg & Brissett (1982) mention the *third place*, a place outside the home and the workplace, as a place in which people meet each other and get in contact with each other. Examples of those *third places* are: bars and coffee shops, the beauty salons and barbershops, bowling alleys and recreation centres. The encounters in those third places can be labelled as meaningful encounters. Through social interaction community ties could be strengthened in those *third places* (Jeffres et al, 2009). According to Oldenburg (1989) third places
are the “great, good places” that foster community and communication among people outside home and work, the first and second places of daily life. Third places are places were people meet, congregate and communicate.

According to Oldenburg (2001) third places, as places where people meet and interact with each other, must meet eight criteria. At first, people who enter a third place are on neutral ground, people enter and leave because they want to. People who make use of a third place are ‘levellers’, there exists no formal criteria for membership and your economic class is not of importance for entering a third place. Within third places conversations are the main activities. Those conversations can develop from other activities, for example playing a game with other visitors of the third place. Besides, third places are accessible and accommodating. This is an important characteristic of a third place because people need to have the possibility to visit a third place when they are free from their other responsibilities, as for example work. Third places are also characterized by a group of people who regularly visit the third place, this gives character to a third place and distinguish a certain third place from another third place. Another characteristic is that third places have a low-profile, they are plain looking and not attractive for thieves. Seventh, third places are playful places. They are not characterized by heavy moods or by alienation but rather by joy and acceptance; people become regulars at the third place precisely because of this feeling and the desire to repeat it. Least, a third place is a home away from home. People experience a certain warmth in there because they get familiar with the other regulars who regularly visit the third place. When some people are not in the third place they are missed by the other regulars (Oldenburg, 2001).

3.2.3 ‘Micro publics’
Other places for social interaction are the ‘micro publics’ mentioned by Amin (2002). The ‘micro publics’ of daily urban life are public spaces at micro level, argued to be places in which difference could be negotiated. Those places entail the workplace, schools, universities, youth centres, sport clubs and other spaces of association. The spaces of association that Amin (2002) calls the micro publics are places in which organised group activities are held. The micro publics do have similarities with the so-called third places. People do have conversations. A difference between the two places is that the activities in the spaces of association could be during school or work time and not only in people’s free time. The sites offer opportunities for meaningful exchange and cultural transgression (Ibid). Another example of those ‘micro publics’ in which encounters with difference could occur are community centres. By working on shared projects people with different backgrounds could get in contact with each other and people could develop more positive thoughts about individuals from different cultural groups (Matejskova & Leitner, 2011).

According to Amin (2002) the so-called micro publics need not to be segregated at the start to foster contact between people with different backgrounds. In order to create a place where different people get in contact with each other, the people who visit the place need to be different from the start: “The effectiveness of creating meaningful contact lies in placing people from different backgrounds in new setting where engagement with strangers in common activity disrupts easy labelling of the stranger as enemy and initiates new attachments (Amin, p.970, 2002).”
3.3 The maker movement and makerspaces
A relatively new place where people could meet each other is a makerspace. Makerspaces are part of the maker movement: “The maker movement refers broadly to the growing number of people who are engaged in the creative production of artefacts in their daily lives and who find physical and digital forums to share their processes and products with others” (Halverson & Sheridan, p.496, 2014). According to the National Research Council (2009) the maker movement is on the rise because of an increasing visibility of making activities in the public sphere and by a shift in educational research toward informal and interest driven learning environments. Makerspaces are also related to new methods at schools because of the shift from a ‘sit back and be told’ culture to a ‘making and doing’ culture (Gauntlett, 2010). According to Claxton (2008) teachers are starting to reject this sit back and be told culture and offer their students challenges which are more about making and doing.

There is no clear definition of what a makerspace is, but the common theme used in literature on makerspaces to describe a makerspace is that makerspaces provide all users with learning opportunities to “fulfil the human desire to make things” (Gustafson, 2013). According to Taylor et al (2016) makerspaces are not only spaces in which people come together to make something and to learn. A makerspace can be seen as a social place in which people come to work together, learn from each other, or simply socialize. Makerspaces could strengthen community ties by sharing the facilities and being connected with fellow makers.

Taylor et al (2016) researched several makerspaces and found a high diversity in their activities and goals: “Makerspaces very much served the communities in which they were located, responding to local needs and issues and tailoring provision accordingly” (Taylor et al, p.5, 2016). Makerspaces could organize workshops to attract people from the neighbourhood (Taylor et al, 2016). According to Wang et al (2015) makerspaces are both a community space as a space for communities. Viewing makerspaces as third places could be a starting point for understanding the role that they play in neighbourhoods and communities (Taylor et al, 2016). A study on a makerspace as a third place has shown that participating in this place created a sense of social responsibility by introducing new members and welcoming them into the community (Bar-El & Zuckerman, 2016).

Next to makerspaces that serve the needs of communities, makerspaces can also be located in libraries and in schools (Whitmer, 2016). The location of the makerspace seems to be related to the type of makerspace. Makerspaces within schools could be seen as public places. Makerspaces that serve communities could be seen as semi-public places because these makerspace are accessible for a certain community (Varna & Tiesdell, 2010). Makerspaces located within libraries can be labelled as third places, a place you can visit when you are not at home or at work (Oldenburg, 1989).

3.4 Sense of community
Within this research a sense of community is seen as an outcome of meaningful contact between people. New attachments between people with different backgrounds could create bonds. Creating bonds could be related to creating a sense of community. The term sense of community was first introduced by Sarason (1974) who defined it as: “The perception of similarity with others, a recognized interdependence, a willingness to maintain such interdependence offering or making for others what is expected from us, the feeling to belong to a totally stable and reliable structure” (p.174). Individuals can have a psychological sense of community in a variety of contexts. A sense of community could be linked to a place or to an interest. Researches refer to a community of place or
to a *community of interest* (Nasar & Julian, 1995).

Within the literature there are various explanations about what aspects constitute understandings of community and feelings of being part of a community. Most definitions of a sense of community contain four elements: a locality, a local society, collective actions, and mutual identity (Bridger & Alter, 2006). Gardner (1991) mentions eight characteristics of feelings of being part of a community: a wholeness that incorporates diversity, a shared culture, good internal communication, caring, trust and team work, group maintenance and government, participation and a sharing of leadership tasks, the development of young people and links with the world outside of the community. According to McMullen & Chavis (1986) a sense of community contains four elements. The first element is membership: the feeling of belonging or of sharing a sense of personal relatedness. The second element is influence: a sense of mattering, the feeling that you as a person make a difference to a group and of the group mattering to its members. The third element is reinforcement: the feeling that members’ needs will be met by the resources received through their membership in the group. The fourth element is a shared emotional connection: the commitment and belief that members have shared and will share history, common places, time together and similar experiences.

This shared emotional connection is related to a shared identity. According to Puddifoot (2003) there are several elements that influence the existence of a shared *sense of community identity*: locus, the perception by community members of the boundaries of the community, distinctiveness, the perceived relative distinctiveness of one’s community, identification, a sense of affiliation, belongingness and emotional connectedness, orientation, the individual’s degree of personal investment in the community, attraction to the community, perceived future in it, sense of emotional safety, personal involvement or sense of alienation from the community, evaluation of the quality of community life, and evaluation of community functioning.

Within the literature there exists an overlap on the terms that are used to describe a sense of community. For this research a distinction between two themes of a sense of community will be used. First a practical part of a sense of community. This practical part contains elements as: collective actions, participation, internal communication and personal involvement. Secondly, an emotional part of a sense of community. This emotional part contains the elements: a shared culture, shared emotional connection, a sense of mattering and identification. Table 3.1 visualizes the criteria of a sense of community which will be used in this research.
Table 3.1: Criteria of a sense of community.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Explanation of criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Practical sense of community</strong></td>
<td></td>
</tr>
<tr>
<td>Collective actions</td>
<td>Actions that are done collectively.</td>
</tr>
<tr>
<td>Participation</td>
<td>The level of participation.</td>
</tr>
<tr>
<td>Personal involvement</td>
<td>The level of personal investment in the community.</td>
</tr>
<tr>
<td>Internal communication</td>
<td>The level of internal communication.</td>
</tr>
<tr>
<td><strong>Emotional sense of community</strong></td>
<td></td>
</tr>
<tr>
<td>Identification</td>
<td>A sense of affiliation, belongingness and emotional connectedness.</td>
</tr>
<tr>
<td>Shared culture</td>
<td>The feeling that you have something in common with the other members of the group, that you share a culture.</td>
</tr>
<tr>
<td>Shared emotional connection</td>
<td>The commitment and belief that members have shared and will share history, common places, time together and similar experiences.</td>
</tr>
<tr>
<td>Reinforcement</td>
<td>The feeling that members’ needs will be met by the resources received through their membership in the group.</td>
</tr>
<tr>
<td>Sense of mattering</td>
<td>The feeling that you as a person make a difference to a group and that the groups matters to its members.</td>
</tr>
</tbody>
</table>

3.4.1 Creating a sense of community

Various understanding have been formulated on how a sense of community could be formed. Understandings of community could be constructed through close and weak ties, social interaction, place attachment and feelings of identity and belonging (Philips & Robinson, 2015). According to Putnam (2000) community revitalization depends on rebuilding our stocks of social capital. This paragraph lists the various concepts that influence a sense of community.

A sense of community is related to social capital. Social capital is according to Putnam: “…a dense network of reciprocal social relations” (Putnam, p.18, 2000). Putnam (2007) distinguishes two types of social capital: bonding and bridging social capital. Bonding social capital reflects to the bonds between people who already have something in common, between people who already belong to the same group. Through bonding social capital the already existing bonds between people can be remained and strengthened. Bridging social capital reflects the contact between people who do not have something in common yet. New bonds can be created through bridging social capital. This will lead to more diversity within peoples social network and an expansion of the social network. Putnam (2000) mentions that the formation of social capital is under threat because of for factors: generational change, television, suburbanization, commuting, and sprawl and everyday pressures.

Despite the argued decline of social capital, social capital is of importance for our society: “Social capital research has provided clear evidence that having friendly social connections and communication, and working together with people on shared projects, is not merely pleasant-butoptional ‘icing on the cake’ of individual lives, but is absolutely essential for both personal well-being and for a healthy, secure, trust-worthy society (Gauntlett, p.161, 2011).” According to Coleman (1993) social capital could help to create bonds that hold communities together. Social capital could enable us to rebuild the communities that have been undermined by the forces of modernization. Communities depend on interaction and social capital stress the importance of creating linkages across interest lines (Bridger & Alter, 2006).
Social capital can be defined in four distinct components: trust in one’s neighbours, trust in the efficacy of organized collective action (empowerment), informal neighbouring behaviour and formal participation in community organizations. According to Perkins & Long (2002) those four distinct dimensions lead to four concrete dimensions of social capital: sense of community, neighbouring, collective efficacy and citizen participation. A sense of community is one of the components of social capital. Table 3.2 gives an overview of the four dimensions of social capital.

Table 3.2: Four dimensions of social capital.

<table>
<thead>
<tr>
<th>Cognition/trust</th>
<th>Social behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informal</td>
<td>Sense of community</td>
</tr>
<tr>
<td>Formally organized</td>
<td>Collective efficacy</td>
</tr>
</tbody>
</table>


A sense of community can be positively influenced by the level of place attachment (Philips & Robinson, 2015). Place attachment entails the connections one has with a place. A distinction can be made between personal place attachment and a group level of place attachment. At the individual level, it entails the personal connections one has to a place (Scannell & Gifford, 2010). At the group level, place attachment entails the symbolic meanings of a place that are shared among the members of a group (Low, 1992). According to Pretty, Chipuer and Bramson (2003) people’s attachments to place are often intertwined with their sense of community.

3.4.2 A sense of community in a diverse world

There is a debate on diversity within cities and the possibilities for creating a sense of community among people with different backgrounds. Simmel (2002 [1903]) argues that cities are places in which feelings of belonging and identification with the place are under threat. According to Putnam (2007) people who live in diverse neighbourhoods are less involved with the whole of the community. They are more involved with people from their own group than with others. But in order to reconcile intercultural differences, civic agreement and shared values are needed (Amin, 2002).

According to Alba & Nee (2005) feelings of common identity, closeness and shared experiences could be established when the social distance between different groups is small. This opposite to a great social distance in which people categorize other groups as belonging to another category. The multiple identities of people do not have to result in not feeling bonded to a local community. According to Ehrkamp & Leitner (2006) multiple identities do not weaken attachments to local places. Hudson et al (2007) argue that even if there are tensions between groups in a diverse neighbourhood, people who belong to different groups could have the same concerns for their neighbourhood.

According to Bridger & Alter (2006) there is a potential for a sense of community to emerge in almost any setting. But, the sharing of a common neighbourhood space by diverse groups does not always have to lead to a sense of community, in order to create places in which a sense of community is possible to occur, it is essential to understand the diverse meanings that a neighbourhood holds for its residents (Loukaitou-Sideris, 1995). Furthermore, people who have characteristics in common are expected to form bonds more easily and create a sense of community more easily because they will be emotionally attracted to one another because of their shared interests or simply because they have more topics to talk about (Völker, Flap & Lindenberg, 2006).
3.4.3 Sense of community and age
A sense of community tend to decrease from middle to late adolescence and young adulthood (Chipuer & Pretty, 1999; Albanesi et al, 2007) due to the growing complexity of developmental needs of adolescents.

According to Evans (2007) adolescents perceive community and a sense of community in different ways than adults. Young people, or adolescents, feel a stronger sense of community under circumstances in which they feel responsible and in which they want and need to play a role. According to a research done by Pooley et al (2002) on a sense of community for children understandings of community for children focus on the relationships shared with significant others central to their experience of childhood, namely family friends, and neighbours. In their research the concepts of a sense of community of McMillen & Chavis (1986) were used. Besides, the relationship between young adults and peers influences the level of a sense of community perceived by young adults (Ostermann, 2000).

3.5 A sense of community and further social effects
A sense of community could be a precondition for further social effects. Once a sense of community is created, communities can be developed. Through community development communities are helped to change and develop in ways they themselves desire. The goal of community development entails improving the quality of life of all members of the community and involving all members of the community in the process (Nikkah & Redzuan, 2009). A sense of community is argued to be an indicator of quality of community life and a catalyst for both behavioural dimensions of social capital: informal neighbouring and organized citizen participation (Wandersman & Giamartino, 1980; Chavis & Wandersman, 1990).

There are different approaches in community development. A distinction can be made between bottom-up and top-down community development. According to Finger (1994) the bottom-up approach of community development underline community participation, grassroots movements and local decision-making. When members of a community lack the capacity to make and take acting in developing their community, support from the government is needed in order make community development possible. But, bottom-up community building seems more effective for the community than top-down community development (Nikkah & Redzuan, 2009).

According to Taylor et al (2016) viewing makerspaces as third places could be a starting point for researching what role makerspaces play for communities. This paragraph shows the relationship between a sense of community and three social effects which are in a way linked to social capital: empowerment, soft skills and the expansion of horizons.

3.5.1 Empowerment
One of the effects of a sense of community could be empowerment. According to Nikkhah & Redzuan (2009) the final goal of community development is empowering the communities and improving the lives of people who are part of the community. Community development could lead to the process of empowerment (Chavis, 1983). In order to create empowerment participation and involvement of people who belong to the community in shared projects is needed (Nikkah & Redzuan, 2009). Empowerment requires that power must be able to change within a community. If power is not able to change, empowerment is not possible (Staples, 1990).

“Empowerment is a process of change by which individuals or groups with little or no power gain the power and ability to make choices that effect their lives (Nikkah & Redzuan, p.173, 2009).” Zimmerman & Rappaport (1988) researched psychology students and found out that students who
participated in community organisations reported a greater sense of empowerment than their less involved counterparts. According to McMillan et al (1995) empowerment could be predicted by both participation in a community coalition and a sense of community. This suggests that a sense of community could be a precondition for empowerment to occur.

Makerspaces do have a high potential for empowerment through technology and democratization of technology for broader social groups (Nascimento, 2014). According to Nascimento & Polvora (2013) empowerment may arise from a greater variety of options and choices to be made regarding the purposes, impacts and uses of the artefacts available in the makerspace. According to Taylor et al (2016) empowerment may not only arise because of the result of the things that are made but because of the act of making itself. It is about the joy of making something. Within this research disabled people were making things in a makerspace: “The benefit was in being in a space that empowered them to be creative” (Taylor et al, 2016).” Research done by Agency by Design have shown that: “The most salient benefits of maker-centered learning for young people have to do with developing a sense of self and a sense of community that empower them to engage with and shape the designed dimension of their world (Agency by Design, p.7, 2015).”

3.5.2 Soft skills
A form of a community which could experience a sense of community are communities of practice (Wenger, 2002). Communities of practice are social learning systems in which people are together and exchange knowledge. Participating in these ‘communities of practice’ is essential for our learning (Wenger, 2002). Communities of practice grow out of a convergent interplay of competence and experience that involves mutual engagement. According to Wenger communities of practice remain important social units of learning in the context of much larger systems: “They offer an opportunity to negotiate competence through an experience of direct participation (Wenger, 2002, p. 229).”

According to Brahms & Crowley (2016) makerspaces can be seen as communities of practice because these places contain people who are part of the maker community. A makerspace is mostly an environment in which people could learn and improve their skills. A makerspace community can offer help by improving background knowledge and confidence as well as providing continual support to active members whatever their educational goals are (Whitmer, 2016).

One of the skills that could be developed by participating in makerspaces are soft skills. Soft skills are personal skills rather than personal knowledge. Soft skills are seen as important to have for getting a job in the 21st century. Soft skills include: communication, organisational skills, being good in working together, having a positive attitude and being able to interact respectfully (Robles, 2012). Other soft skills contain: critical thinking and problem solving, entrepreneurial skills and moral and professional ethics (Karim et al, 2012). By making together in makerspaces people can learn how to work together and people become more creative (Pandey & Srivastava, 2016). According to Steier & Young (2016) students normally have a very closed mind-set and find it hard to come up with solutions, but through working in a makerspace their mind-set can be broadened.

3.5.3 Expansion of horizons
As mentioned, a sense of community is one of the components of social capital (Perkins & Long, 2002). Social capital contains of networks which could support people with little opportunities to gain new opportunities. A distinction can be made between strong and weak connections between people, a distinction between strong and weak ties. According to Granovetter: “the strength of a tie is a combination of the amount of time, the emotional intensity, the intimacy (mutual confiding) and the reciprocal services which characterize the tie (Granovetter, p.1361, 1973).” The stronger the
connection between person A and B the more similar person A and B are. Weak ties exist between people that differ more from each other.

Granovetter (1973) mentions the strength of weak ties. Small-scale interactions, that create weak ties, within a community could have its larger social effects for people who are part of this community. According to Granovetter (1973) weak ties are more likely to link members of different small groups than strong ties. Weak ties are in this research seen as instruments for getting into contact with new people from groups you did not knew before. Those new contacts could open up new opportunities for life and will expand your horizons. Weak ties can be seen as bridging social capital, which is mentioned in chapter 3.4.1.

*Bridging social capital* as a catalyst for a sense of community could also create more opportunities for people within a community. This because *bridging social capital* creates bonds between people who do not have something in common yet (Putnam, 2007). Those bonds create channels through which ideas, influences, or information socially distant from peoples close ties, for example peoples friends and family, may reach them (Granovetter, 1973). The importance of weak ties within the modern society are also mentioned by Florida (2003, p.6): “Places with dense ties and high levels of traditional social capital provide advantages to insiders and thus promote stability, while places with looser networks and weaker ties are more open to newcomers and thus promote novel combinations of recourses and ideas.”

Another aspect which can be derived from participating in a makerspace could be the expansion of peoples horizons. The view on the world of the users of a makerspace can be broadened through participating in a makerspace. Sheridan et al (2014) found out that children who spent time in a makerspace became more active, felt that they had more opportunities, gained more knowledge and came more often into action to solve problems: “Skills and knowledge are treated as tools that allow participants to create new things and access new communities and learning opportunities (Sheridan et al, 2014).” This expansion of horizons is also mentioned by Gauntlett (2011) in his book ‘Making is Connecting. According to Gauntlett making is connecting in three ways: “First, making is connecting because you have to connect things together to make something new. Second, making is connecting because acts of creativity usually involve, at some point, a social dimension and connect us with other people. Third, making is connecting because through making things and sharing them in the world, we increase our engagement and connection with our social and physical environment (Gauntlett, p.2, 2011).” Within this research weak ties are seen as bonds people that could expand the horizons of people, by getting access to new resources and ideas.
3.6 Conceptual framework

Figure 3.2 visualize the expected relations between the main concepts of the theories discussed in this chapter. First it is expected that the characteristics of the makerspace influence the type of contact that is possible to occur. Those characteristics are derived of the micro-publics of Amin (2002), the third places of Oldenburg (2001) and the more public places of Varna & Tiesdell (2010). Second, the type of contacts and activities in the makerspace are expected to have an influence on the sense of community that could be created in the makerspace.

The various activities held in a locality (Bridger & Alter, 2006) and the contacts in this locality might result in the feeling of a sense of mattering, reinforcement (McMillen & Chavis, 1986), identification with the place or the interest (Nasar & Julian, 1995), a shared culture, a shared emotional connection, good internal communication, a high level of participation (Gardner, 1991), the organisation of collective actions (Bridger & Alter, 2006) and a high level of personal involvement (Puddifoot, 2003). These concepts could lead to a sense of community among the users of Bouwkeet.

Last, this sense of community might be a precondition for empowerment, the expansion of horizons and the development of soft skills. According to McMillan et al (1995) empowerment could be predicted by a sense of community. According to Taylor et al (2016) makerspaces could be place to empower people to be creative. This creativity is linked to soft skills which might be developed in a makerspace. According to Whitmer (2016) a makerspace community can offer help by improving background knowledge and confidence as well as providing continual support to active members whatever their educational goals are. It is also expected that through contacts within the community of Bouwkeet bonds will be created through which ideas, influences, or information socially distant from peoples close ties, for example peoples friends and family, may reach them (Granovetter, 1973). Those new ideas could expand the horizons of the users of Bouwkeet. So, makerspaces can be places that foster the development of soft skills, empowerment and the expansion of horizons. Sheridan et al (2014) found out that children who spent time in a makerspace became more active, felt that they had more opportunities, gained more knowledge and came more often into action to solve problems: “Skills and knowledge are treated as tools that allow participants to create new things and access new communities and learning opportunities (Sheridan et al, 2014).”
Figure 3.2: Conceptual framework

**Characteristics of the makerspace**
- Accessibility
- Conversations
- Animation
- Serving needs
- Physical attractiveness
- Home away from home

**Activities in the makerspace**
- Workshops
- School programs
- Individual projects

**Type of contact in the makerspace**
- Social interaction
- Working together
- Learning from each other

**Sense of community**

**Practical aspects**
- Collective actions
- Participation
- Personal involvement
- Internal communication

**Emotional aspects**
- Identification
- Shared culture
- Shared emotional connection
- Reinforcement
- Sense of mattering

**Goals of the Bouwkeet**

**Empowerment**
feeling of independency, self-confidence, sense of ownership and control and the ability to solve problems

**Expanding horizons**
Using machines, technical skills and getting familiar with the unfamiliar

**Soft skills**
Working together, creativity, working according to a plan, self-reflection, self-direction and being able to analyse
4. Methodology
Within this chapter the methodological approach for this research is described and explained. Paragraph 1 gives an overview of the used methods. Paragraph 2 describes the research group. Paragraph 3 entails the operationalisation of the concepts of this research which lead to interviews questions and criteria for the observations. Paragraph 4 describes the location and time of the research. Last, paragraph 5 describes the methods used for analysing the data.

4.1 Methodological approach
Within this research the behaviours and outcomes of interactions between people and the experiences of a place will be discussed and observed. An appropriate research method for this research is a qualitative research method, because qualitative research methods are suited for research which entails the behaviours, experiences and perceptions of people (Boeije et al, 2009). Another option could have been to use quantitative research which involves the use of physical (science) concepts and reasoning, mathematical modelling and statistical techniques to understand geographical phenomena (Clifford et al, p.5, 2016). But, the literature has shown that the wider effects of makerspaces have not been researched extensively (Taylor et al, 2016). Qualitative research methods are appropriate for this research because qualitative research methods are preferable to use for research on processes which have not been extensively researched (Bryman, 2004).

Case study is used as a research method for this research: “Case study method enables a researcher to closely examine the data within a specific context. In most cases, a case study method selects a small geographical area or a very limited number of individuals as the subjects of study. Case studies, in their true essence, explore and investigate contemporary real-life phenomenon through detailed contextual analysis of a limited number of events or conditions, and their relationships (Zainal, p.2, 2017).” According to Clifford et al (2016) case study is suitable for small-scale, in-depth studies. The aim is not to conduct a large scale research or to come to formulate general conclusions by using a case study. This is a third argument why qualitative research methods are more suitable than quantitative research methods (Boeije et al, 2009). For this research desk research is done, interviews are held and observations are made, these methods are suitable for doing a case study (Clifford et al, 2016) and are further explained in this chapter.

4.1.1 Literature study
To answer the first sub-question a literature study is done, this in order to create a model which accurately explains what is meant by a sense of community and what the further social effects of a sense of community are. A literature study is needed because their exist a wide variety of understandings of what factors constitute a sense of community and what the further social effects could be. Different thoughts on the concept will be discussed. A comparison will lead to definitions of the concepts which will be used in this research.

4.1.2 Desk research
Desk research is done to get an insight in the programs that are offered by Bouwkeet and the goals of Bouwkeet. The website of Bouwkeet and documentations of Bouwkeet is used for this desk research.

Desk research is also used to get an insight in the publicness of Bouwkeet. Two aspects of the publicness of the Bouwkeet will be researched by desk research. First the animation aspect is researched: is there many support for a wide range of potential users and activities? Secondly the
civility aspect: is the Bouwkeet managed in the public/community interest with management balancing the needs of different social groups?

4.1.3 Observations
To get an insight in the characteristics of the makerspace Bouwkeet, observations are used. This in order to get an insight in aspects of the publicness of the makerspace: civility, physical configuration, control and ownership. Besides observations on the publicness of the makerspace, participant-observations within the makerspace are used as a research method. By participant-observation direct observation is possible because the researcher participates in the social life of the research group. Intensive and varied contacts with them provides insight into how they form their community (Boeije et al, 2009). According to Clifford et al (2016) participant-observation has strengths in describing the local processes, practices, norms, values, reasoning and technologies that constitute social and cultural lifeworlds. Participant-observation is appropriate to use for this research because social processes will be researched. The participant observations are also used to create trust between the research group and the researcher. This is especially needed for the interviews with children: “As with individual interview, multiple contacts are likely to enhance trust and hence communication (Hill, p.176, 1997).”

It is expected that through participative observations an insight will be given in the contacts that occur in the Bouwkeet. During the observations the focus is on the contact between the users of Bouwkeet at a specific location. Those observation will form a basis for sub-question number 3: What type of activities and contacts occur in the makerspace? Appendix 9 shows the observation scheme that is used.

4.1.4 Interviews
There exist three types of interviews within research. The first one are structured interviews which are used in quantitative research. Structured interviews consist of predetermined answer options (Mortelmans, 2007). These predetermined options give structure on the interview. Another form of interviewing is an open interview. This type of interviewing lends itself for a conversation. Only the topics that should be discussed are prepared beforehand (Mortelmans, 2007). In the middle of these interview methods are the semi-structured interviews. These interviews are held with a topic list and give some structure to the interview by questions which are determined beforehand, but the interview also lend itself for open conversations about the topics (Mortelmans, 2007).

For this research semi-structured in-depth interviews are used as a data collection technique. According to Clifford et al (2016) semi-structured interviews make a significant contribution to geographic research, especially now that discussions about meaning, identity, subjectivity, emotion, affect, politics, knowledge, power, performativity and representation are high on geographers agenda’s. Semi-structured interviews are informal in tone and allow for an open response in the participants’ own words rather than a ‘yes’ or ‘no’ type of answer. The participants are expected to be able to give a detailed answer on the questions while using semi-structured interviews. Semi-structured interviews are preferred over unstructured and structured interviews. Semi-structured interviews make it possible to assure some structure and use concepts about contact and a sense of community. The interviews are used to answer sub-question 2, 3, 4 and 5: What are the motives of people to come to the makerspace? What type of activities and contacts occur in the makerspace? To what extent do the activities and contacts create a sense of community among the users of the Bouwkeet? To what extent could a sense of community be a precondition for empowerment, soft skills and the expansion of horizons?
The interview questions for adults differ from the interview questions for children. This because it is expected that interviewing children will be more difficult than interviewing adults. According to Hill (1997) children have difficulties with expressing their feelings and ideas to adults because they live in a world which is dominated by the thoughts of adults.

4.2 Research group
The respondents of this research are the users of the makerspace Bouwkeet: children who go to the workshops that are offered in the makerspace and adults who make use of the makerspace. Besides, the people who work as a volunteer or employee are a part of the research group. It should be noted that people who volunteer or work at Bouwkeet do make things at Bouwkeet for themselves as well.

Seven people who work at Bouwkeet are interviewed, nine adults who volunteer at Bouwkeet by giving workshops and work on their own projects are interviewed and 18 children who make use of Bouwkeet are interviewed. The characteristics of the interviewees are described in appendix 7.

In order to gain additional information on the realisation of Bouwkeet two specialist interviews are held. One with Daniel White, the manager of Bouwkeet and the other one with Bas Woudstra, associate at Stichting de Verre Bergen. The questions used for the expert interviews can befound in appendix 4 and 5.

The observations are held at various locations at Bouwkeet and at various times. This in order to get a broad overview of the type of contacts that occur at Bouwkeet.

4.3 Operationalisation
This paragraph operationalizes the main concepts and sub questions of this research which will be used for the schemes for the desk research, observation criteria and interview questions. This paragraph is divided by the sub-questions 2,3,4 and 5.

4.3.1 What are the motives of people to come to the makerspace?
To get an insight in the motives of people to come to the makerspace interviews are with the users of the makerspace. The respondents are asked what their motives are to visit the Bouwkeet. It is expected that the users of the makerspace could have several motives for visiting the place. Visitors could go there because they simply want to make something, because they want to learn how to make something, because they want to teach people how to make something or because they want to meet (new) people.

4.3.2 What type of activities and contacts occur in the makerspace?
To get an insight in the activities and contacts that occur in the makerspace desk research is done and observations and interviews are conducted. First, the characteristics of Bouwkeet and the activities offered by the Bouwkeet are researched to get an insight in the possibilities for social interaction to occur, appendix 6 shows the criteria that are used. According to Varna & Tiesdell (2010) characteristics of the publicness of a place determine if a place is a suited place for social interaction to occur. Olderburg (2001) has listed characteristics of third places as places in which people interact with each other. The characteristics of the publicness of a place and the characteristics of a third place are combined in the theoretical framework of this research. Table 4.1 shows the operationalization of the criteria of places for social interaction.
Table 4.1: Criteria for places for social interaction.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility</td>
<td>The place is accessible for people to make use of. Visitors don’t have to belong to a certain economical class to enter the place. And people don’t have to be a member to be able to visit the place (Varna &amp; Tiesdell, 2010). Besides, as a third place the place needs to be accessible in times when people don’t have to be at work/school/home (Oldenburg, 2001).</td>
</tr>
<tr>
<td>Conversations</td>
<td>Conversations are one of the main activities in the place (Amin, 2002; Oldenburg, 2001). Those conversations can be derived from other activities.</td>
</tr>
<tr>
<td>Animation</td>
<td>The place offers support for a wide range of potential users and activities (Varna &amp; Tiesdell, 2010).</td>
</tr>
<tr>
<td>Serving needs</td>
<td>The place is managed in the public interest and the needs of different social groups are taken into account (Varna &amp; Tiesdell, 2010).</td>
</tr>
<tr>
<td>Physical attractiveness</td>
<td>The place is clean, looks attractive and has no obvious entrances and thresholds (Varna &amp; Tiesdell, 2010).</td>
</tr>
<tr>
<td>Home away from home</td>
<td>The place feels like a home away from home and visitors want to repeat their visits of the place (Oldenburg, 2001).</td>
</tr>
</tbody>
</table>

By conducting interviews and observing, it is researched which types of contact occur in the Bouwkeet. Types of contacts that are expected to occur are: social interaction (conversations), learning from each other, giving feedback, talking about ideas for making and working together. The appendix consists of the questions for the contact and the observation criteria to observe the contact that occurs during the activities.

4.3.3 To what extent do the activities and contacts create a sense of community among the users of the Bouwkeet?

By conducting interviews an insight will be given into the extent to which the activities and contacts create a sense of community among the users of the Bouwkeet. Table 4.2 shows the operationalization of the concept a sense of community for adults. Appendix 1 shows the interview questions on a sense of community, the motives and the contact.
Table 4.2: Criteria of a sense of community.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Explanation of criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Practical sense of community</strong></td>
<td></td>
</tr>
<tr>
<td>Collective actions</td>
<td>Actions that are done collectively (Bridger &amp; Alter, 2006).</td>
</tr>
<tr>
<td>Participation</td>
<td>The level of participation (Gardner, 1991).</td>
</tr>
<tr>
<td>Personal involvement</td>
<td>The level of personal investment in the community (Puddifoot, 2003).</td>
</tr>
<tr>
<td>Internal communication</td>
<td>The level of internal communication (Gardner, 1991).</td>
</tr>
<tr>
<td><strong>Emotional sense of community</strong></td>
<td></td>
</tr>
<tr>
<td>Identification</td>
<td>A sense of affiliation, belongingness and emotional connectedness (Puddifoot, 2003).</td>
</tr>
<tr>
<td>Shared culture</td>
<td>The feeling that you have something in common with the other members of the group, that you share a culture (Gardner, 1991).</td>
</tr>
<tr>
<td>Shared emotional connection</td>
<td>The commitment and belief that members have shared and will share history, common places, time together and similar experiences (Gardner, 1991).</td>
</tr>
<tr>
<td>Reinforcement</td>
<td>The feeling that members’ needs will be met by the resources received through their membership in the group (McMillen &amp; Chavis, 1986).</td>
</tr>
<tr>
<td>Sense of mattering</td>
<td>The feeling that you as a person make a difference to a group and that the groups matters to its members (McMillen &amp; Chavis, 1986).</td>
</tr>
</tbody>
</table>

According to a research done by Pooley et al (2002) on a sense of community for children understandings of community for children focus on the relationships shared with significant others central to their experience of childhood, namely family, friends, and neighbours. In their research the concepts of a sense of community of McMillen & Chavis (1986) was used.

For this research the relationships of the children who make use of Bouwkeet with the teachers and other kids who make use of Bouwkeet are taken into account, next to the concepts of a sense of community described in table 4.2.

According to Evans (2007) adolescents perceive community and a sense of community in different ways than adults. Young people, or adolescents, feel a stronger sense of community under circumstances in which they feel responsible and in which they want and need to play a role. Appendix 3 shows the simplified questions for children on a sense of community and how they experience Bouwkeet.

4.3.4 To what extent could a sense of community be a precondition for empowerment, soft skills and the expansion of horizons?

To answer the fifth sub-question the concepts empowerment, soft skills and the expansion of horizons need to be operationalized. The concepts empowerment, soft skills and the expansion of horizons are derived from a research of Stichting de Verre Bergen. Bouwkeet has formulated their goals with the help of this research. Table 4.3 shows the operationalisation of the three concepts.
Table 4.3: Criteria of empowerment, soft skills and the expansion of horizons.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Explanation of criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Empowerment</strong></td>
<td></td>
</tr>
<tr>
<td>Feeling of independency</td>
<td>Children are expected to feel independent because of their involvement in Bouwkeet.</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>Children are expected to feel more self-confident because of their involvement in Bouwkeet.</td>
</tr>
<tr>
<td>Sense of ownership</td>
<td>Children are expected to develop a sense of ownership because of their involvement in Bouwkeet.</td>
</tr>
<tr>
<td>Sense of control</td>
<td>Children are expected to develop a sense of control because of their involvement in Bouwkeet.</td>
</tr>
<tr>
<td>Ability to solve problems</td>
<td>Children are expected to develop a stronger ability to solve problems because of their involvement in Bouwkeet.</td>
</tr>
<tr>
<td>Working together</td>
<td>Children are expected to develop their skills to work together.</td>
</tr>
<tr>
<td><strong>Soft skills</strong></td>
<td></td>
</tr>
<tr>
<td>Creativity</td>
<td>Children are expected to know how to use and to use their creativity because of their involvement in Bouwkeet.</td>
</tr>
<tr>
<td>Working according to a plan</td>
<td>Children are expected to learn how to work to a plan because of their involvement in Bouwkeet.</td>
</tr>
<tr>
<td>Self-reflection</td>
<td>Children are expected to learn how to reflect on their own work because of their involvement in Bouwkeet.</td>
</tr>
<tr>
<td>Self-direction</td>
<td>Children are expected to learn how to direct themselves because of their involvement in Bouwkeet.</td>
</tr>
<tr>
<td>Analyse</td>
<td>Children are expected to learn how to analyse the work they have done because of their involvement in Bouwkeet.</td>
</tr>
<tr>
<td><strong>Expansion of horizons</strong></td>
<td></td>
</tr>
<tr>
<td>Use machines</td>
<td>Children are expected to learn how to use machines because of their involvement in Bouwkeet.</td>
</tr>
<tr>
<td>Make new things</td>
<td>Children are expected to learn how to make things that they were first unfamiliar with because of their involvement in Bouwkeet.</td>
</tr>
<tr>
<td>Technical skills</td>
<td>Children are expected to learn technical skills which can be applied to their daily lives because of their involvement in Bouwkeet.</td>
</tr>
</tbody>
</table>

Source: Bouwkeet, 2016.

Appendix 2 shows the questions that are used for researching the goals of Bouwkeet.

4.4 Time and location

Several activities are researched to get an insight in the contacts that occur in the makerspace. To make the research more valid the activities will be observed for several times, with this it is expected to find patterns in the contacts that occur during activities (Boeije et al, 2009). It is expected that each activity/workshop has to be visited for 3 times to get a good overview of the contacts in the activities. Table 4.4 gives an overview of the activities and the number of observations. Besides the observations of the activities and workshops it is expected that one observation for the characteristics of the makerspace will be sufficient. Appendix 10 shows the list with observations.
Table 4.4: Activities and the number of observations.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Number of observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics of Bouwkeet</td>
<td>1</td>
</tr>
<tr>
<td>Workshops for children 10-15 years in free time</td>
<td>6</td>
</tr>
<tr>
<td>Workshops for children during school time</td>
<td>6</td>
</tr>
<tr>
<td>Eten en Keten</td>
<td>2</td>
</tr>
<tr>
<td>Contact in the hall</td>
<td>6</td>
</tr>
<tr>
<td>Open werkplaats keramiek</td>
<td>1</td>
</tr>
<tr>
<td>Meeting</td>
<td>1</td>
</tr>
<tr>
<td>Zomerworkshop</td>
<td>1</td>
</tr>
<tr>
<td>Werk aan de werkplaats</td>
<td>1</td>
</tr>
</tbody>
</table>

The interviews are mostly held in Bouwkeet. 12 interviews with children are held at their school. This because it was expected that the quality of the interviews could be better when they are held at school. According to Christensen & James (2008) the context in which children are interviewed influences the data quality. Holding interviews in a place which is familiar to them and in which they feel comfortable could have a positive effect on the quality of the data.

4.5 Data analysis

The semi-structured interviews produced data in the form of texts and detailed thoughts about the topics that are discussed. The participant-observations resulted in data in the form of notes and texts as well.

Both data sets are coded in order to get an insight in the main patterns about the contact and activities that occur in the makerspace Bouwkeet and which of them could lead to creating a sense of community. Atlas.ti is used to analyse and code the data of the interviews and observations. Appendix 8 shows the coding scheme which is used for analysing the interviews and observations.
5. Results
This chapter gives an overview of the results of this research. The chapter is structured by the sub-questions. Paragraph 1 will give an answer on sub-question 2: What are the motives of people to come to Bouwkeet? Paragraph 2 will give an answer to sub-question 3: What type of activities and contact occur in Bouwkeet? Paragraph 3 will give an answer to sub-question 4: To what extent do the activities and contacts create a sense of community among the users of Bouwkeet? Paragraph 4 will give an answer to sub-question 5: To what extent could a sense of community be a precondition for empowerment, soft skills and the expansion of horizons?

5.1 Motives
This paragraph presents the motives of people to come to Bouwkeet. These motives are derived from the interviews with visitors of Bouwkeet (children and adults), people who work at Bouwkeet and people who are a volunteer at Bouwkeet. The motives of people who come to Bouwkeet can be divided into six main groups of motives. Those main groups can be labelled as: ‘interested in the makerspace concept’, ‘interested in workshops’, ‘social purpose’, ‘making itself’, ‘work’ and ‘school’. Each main motive will be discussed from now.

Interested in the makerspace concept
Another reason for people to go to Bouwkeet is because they were interested in the makerspace concept. People are interested for two reasons: first, they are interested because they do not know the place yet and are curious about the activities in Bouwkeet. Second, people are interested in the place because they feel that they have a connection with it and want to become a part of the project.

Three of the interviewees were interested because they were wondering what happens at Bouwkeet. One of the interviewees mentioned: “And at some point there were old sewing machines in the textile workshop, or what the textile workshop was going to be. Then I walked in like: "What are you doing?" ”What is this place? (Interviewee 5, May 2017).” This person was attracted by the sewing machines and walked in. After she had visited Bouwkeet for the first time she became a volunteer and later on she became an employee at Bouwkeet. Nowadays she gives textile and ceramic workshops to children and adults who visit Bouwkeet (Interview 5, May 2017).

Three of the interviewees who went to Bouwkeet because they were interested in the place had positive thoughts about the activities in Bouwkeet or the goals of Bouwkeet. One person is interested in Bouwkeet because Bouwkeet is not like other makerspaces: “What I like about Bouwkeet is that it is another type of makerspace. Mostly, makerspaces are places in which people who already know what they are doing can make things. Those people do not have access to machines but they do have the skills. Bouwkeet is different (Interviewee 32, July 2017).” Another interviewee liked the principle of ‘reciprocity’ in which you get something back for what you contribute to Bouwkeet: “It sounded like a very interesting project, also because there are so many machineries that are offered to me because of the work I would do. That, when I was volunteering, I could make use of all the machines as well (Interviewee 14, May 2017).”

An interesting note to make is that the people who come to Bouwkeet and who were interested in the place because of the makerspace concept, all had affiliation with making before they came to Bouwkeet.
Interested in workshops

Another reason why people go to Bouwkeet is because they are interested in following workshops at Bouwkeet. There are several motives why people want to do a workshop at Bouwkeet or why people like to do a workshop at Bouwkeet. People want to do a workshop because it is for free (two persons), because they want to do an activity after school (one person), because they want to do an activity with a family member (one person), because they are interested in the usage of machines (one person) or because someone wants to make things (one person). Three persons did not give a specific reason why they were interested in the workshops of Bouwkeet.

One girl is going to Bouwkeet because of her mother’s wishes: “I come to Bouwkeet because my mom told me to do so. I stayed to much at home and did not went outside. I am happy that I go to Bouwkeet now (Interviewee 19, June 2017).” This girl goes to Bouwkeet to have an activity after school which makes it possible for her to do an activity outside of her home. Another woman who participated in Eten & Keten mentioned that she wanted to go to Bouwkeet to have some quality time with her son (Interviewee 7, May 2017). A boy who did the workshop ‘top voor bijna nop’ and ‘verdien een pc’ mentioned that he was interested in the computers at Bouwkeet: “After school Kamini came to us and asked if we were interested in workshops. I said: “Yes!” She said: “Okay, at Bouwkeet you can do a lot of things.” Yeah, I was very interested in the computers, I am very good with computers. So I asked my mom and dad if I could do a workshop and they said: “Yes! (Interviewee 9, June 2017).”

Bouwkeet as a school activity

14 of the 18 children that are interviewed were going to Bouwkeet because they went there during school time. These workshops are a part of the curriculum of the kids who go to school. The other four children were going to Bouwkeet only after school. From the 14 children who went to Bouwkeet during school time, eight of them went also to Bouwkeet after school. Six of them went only to Bouwkeet because they had to during school time.

Social purpose

Another motive of people to go to Bouwkeet is that people are interested in the social goals of Bouwkeet. One girl mentioned that she was just interested in the project. Another person mentioned that he is interested because it is a project “with and for people (Interviewee 4, May 2017)”.

Three people mentioned that they are interested in Bouwkeet because the project makes it possible to give people opportunities in life. For example one person who works at Bouwkeet mentioned: “The idea I had with Bouwkeet is that I hoped that I could make a difference for someone who did not had the same opportunities as I had (Interviewee 1, May 2017).”

One other person mentioned that he likes that Bouwkeet could make it possible to help other people and help the world by contributing to sustainability: “I think it all relates to each other: helping other people and making sure that the world doesn’t get ruined (Interviewee 15, July 2017).”

The act of ‘making’ itself

Bouwkeet is a place people could visit to make things, another motive for visiting the place. The process of making relates for most of them to other aspects of the making process. Five persons mentioned that they need the space or the machines for making and therefor went to Bouwkeet.
One person was asked what attracted him to Bouwkeet and he answered: “Especially all the machines that are here. Maybe they did not all work that well, but the place just opened so it did not matter. So, the CNC-mill, the 3D-printer. Also many machines for processing wood, things I like to do. A very well-equipped workshop, with special possibilities (Interviewee 15, July 2015).” Another person mentioned that he needed a space to work on his own projects: “I don’t have the money to have a place like this for myself so I go to Bouwkeet to work on my own projects (Interviewee 6, May 2017).”

Another person mentioned that she went to Bouwkeet to make things and to learn from other persons who are making as well: “I was looking for a place where I could work with my hands and at the same time was able to develop my skills, without following a course, but that I was still able to learn from other people (Interviewee 35, June 2017).” So, she also wanted to develop herself. Another girl mentioned that her main motive to go to Bouwkeet was to be able to make things. But secondly, she wanted to find out at Bouwkeet if she was able to work with kids (Interviewee 3, May 2017).

Work

Another motive to go to Bouwkeet is because people were looking for a job. One girl mentioned that she wanted to work at Bouwkeet to develop her skills while working there: “For me it was super interesting, that I could develop my educational skills and be able to work with machines at the same time (Interviewee 14, May 2017).”

Three persons were interested in working at Bouwkeet because they were looking for a different job with different tasks or in a different environment than which they were used to. Two woman who are working at the counter of Bouwkeet mentioned that they liked the combination of work at the counter and the workshops (Interviewee 2, May 2017, Interviewee 34, July 2017). One of them mentioned: “It seemed to me to be a very fun and challenging job, with everything that would come about: workshop and things you can learn. Whatever you can do for the kids: you can see them flourish and grow. So, yes. And also my administrative background that comes into being, I really did something different. More really administrative, I was sitting at the office myself. But this is a nice combination of administrative work and workshops, and I found that to be exciting (Interviewee 34, July 2017).”

5.2 Activities and contact in Bouwkeet

This paragraph presents the activities and the contacts that occur in Bouwkeet. To present the activities a table is made with an explanation of the activities, plus the contacts that occur during the activities are presented. Photos are added as a visualisation of the activities/contacts.

5.2.1 Activities in Bouwkeet

Bouwkeet offers several activities for the residents of Bospolder-Tussendijken. Those activities vary from workshops designed by the Bouwkeet to open workshops in which the residents can make use of the workplaces themselves and work on their own projects. There are workshops for metal, wood, textile, ceramic and there is a paint shop and a Fablab.

Box 5.1: Structure of workshops for children

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.00</td>
<td>Welcome</td>
</tr>
<tr>
<td>13.05</td>
<td>Question and plan for today</td>
</tr>
<tr>
<td>13.15</td>
<td>Making</td>
</tr>
<tr>
<td>14.40</td>
<td>Clean up</td>
</tr>
<tr>
<td>14.50</td>
<td>Reflection: what did I make? What are you going to make next week?</td>
</tr>
<tr>
<td>15.00</td>
<td>End</td>
</tr>
</tbody>
</table>
Besides, the Bouwkeet organizes projects for classes of the schools that are located in Bospolder-Tussendijken. Table 5.1, 5.2, 5.3 show some examples of the activities within Bouwkeet, the activities that are offered are flexible over time. Box 5.1 shows the general structure of the lessons for the kids. During a workshop a five to ten minutes break in which the kids drink lemonade at the table in the central hall is also included. Appendix 11 shows an example of a complete workshop program.

Table 5.1: Bouwkeet workshops.

<table>
<thead>
<tr>
<th>Workshop</th>
<th>What is it</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eten &amp; Keten</td>
<td>This is a workshop in which parents and their children are welcome to eat and make in the Bouwkeet. With the programs Scratch and Makey Makey the families learn how to program a computer and how to make their own computer game.</td>
<td>Two hours, for five weeks</td>
</tr>
<tr>
<td>Spelen met stroom</td>
<td>In the Fablab children of 10-15 years learn to discover and use different types of power.</td>
<td>Two hours, for ten weeks</td>
</tr>
<tr>
<td>Top voor (bijna) nop</td>
<td>During this textile workshop children of 10-15 years learn how to make their own cloths, pillows and bags. Children also learn how to make use of a sewing machine.</td>
<td>Two hours, for ten weeks</td>
</tr>
<tr>
<td>Mode maken</td>
<td>During this workshop children of 10-15 years learn more textile skills. This workshop is one step beyond the workshop ‘Top voor (bijna) nop’.</td>
<td></td>
</tr>
<tr>
<td>Verdien een PC</td>
<td>During this workshop children of 10-15 years learn to rebuilt an old computer. The children will also learn how to use software. After the workshops the children can take the computer to their homes.</td>
<td>Two hours, for ten weeks</td>
</tr>
<tr>
<td>Als je van hout houdt</td>
<td>During this workshop children of 10-15 years learn how to make products with wood. Examples of products that are made are benches and trays.</td>
<td>Two hours, for ten weeks</td>
</tr>
<tr>
<td>Kom keramieken!</td>
<td>During this workshop children of 10-15 years learn how to make things with ceramic. Children learn how to make plates and cups which they can use at home.</td>
<td>Two hours, for ten weeks</td>
</tr>
<tr>
<td>Verdien een fiets</td>
<td>During this workshop children of 10-15 years learn how to rebuilt a bike. After the workshop sessions the children get the bike they rebuild so they are able to make use of it in their daily lives.</td>
<td>Two hours, for ten weeks</td>
</tr>
</tbody>
</table>

### Table 5.2 School programs.

<table>
<thead>
<tr>
<th>Workshop</th>
<th>What is it</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keramiek Fabriek</td>
<td>Children from group eight of the Logemannschool, which is located in the neighbourhood, get a first acquaintance with ceramics and learn how to make cups and plates.</td>
<td>Two hours, for eight weeks</td>
</tr>
<tr>
<td>Als je van hout houdt</td>
<td>Children from group eight of the Logemannschool, which is located in the neighbourhood, get a first acquaintance with wood and learn how to make benches and birdhouses.</td>
<td>Two hours, for eight weeks</td>
</tr>
<tr>
<td>Vliegtuigjes maken</td>
<td>During this workshop children from group six of the Valentijnschool learn how to make a glider in three lessons of one hour. In the end the children can decorate their glider and they have a match with the other children for the fastest glider.</td>
<td>One hour, for three weeks</td>
</tr>
<tr>
<td>Making cars</td>
<td>During this workshop children from group eight of the Valentijnschool learn how to make their own car from wood and electronics. At the end of the workshops the children do have a car which is able to drive.</td>
<td>One hour, for three weeks</td>
</tr>
<tr>
<td>Bouwkeet store</td>
<td>During this lessons students from the GKH school in Rotterdam are developing a plan for the Bouwkeet store. Within this store products made in Bouwkeet will be sold in the future.</td>
<td>Three hours, for 5 weeks</td>
</tr>
<tr>
<td>Musical</td>
<td>During this workshop children from the Nicolaasschool, which is located in Bospolder-Tussendijken, are working on the decoration for their musical. They are doing this in shifts and work with different groups on the same project.</td>
<td>1 hour, for 4 weeks</td>
</tr>
</tbody>
</table>

*Source: Bouwkeet, 2017.*

### Table 5.3 Other programs

<table>
<thead>
<tr>
<th>Workshop</th>
<th>What is it</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open workshops (textile, metal, fablab and wood)</td>
<td>Children who already obtained basic skills of machines can go to the open workshops to work on their own projects.</td>
<td>2 hours, ones a week for each workplace</td>
</tr>
<tr>
<td>Summer programs</td>
<td>During the months of July and August 2017 children and adults can sign up for various workshops. Those workshops are short and products will be made in three hours. Examples are: making a kite or making jewellery.</td>
<td>Differs per workshop</td>
</tr>
<tr>
<td>'Werk aan de werkplaats'</td>
<td>Every Wednesday morning, people from the neighbourhood can go to Bouwkeet to help organise the workplaces.</td>
<td>2 hours, every Wednesday</td>
</tr>
</tbody>
</table>

*Source: Bouwkeet, 2017.*

Next to the activities in Bouwkeet which are related to making there are also activities which are more focused on social interaction. In the centre of the hall of Bouwkeet is a table. People sit around this table to drink a coffee or eat their lunch. While doing this people have conversations with other users of Bouwkeet. Another activity which evolves at this table are the meetings with people who work or volunteer at Bouwkeet in which they discuss points for improvement and keep everyone informed about Bouwkeet.
5.2.2 Preconditions for contact at Bouwkeet
Chapter 3 discussed the criteria that influence the possibilities for social interaction to occur in a place. By desk research and observations it is researched whether these preconditions apply to Bouwkeet. This paragraph discusses if those criteria apply to Bouwkeet.

One of the criteria is accessibility (Oldenburg, 2001; Varna & Tiesdell, 2010). There are some limits to the accessibility of Bouwkeet. Although visitors do not have to belong to a certain economical class to enter the place, visitors do have to live in a specific neighbourhood in order to be able to participate in workshops (Bouwkeet, 2017). Besides, in order to participate at Bouwkeet people have to register at Bouwkeet (Bouwkeet, 2017). According to Daniel White (July 2017) the fact that people have to register shows that people who did really have the motivation to become a part of Bouwkeet.

The times in which Bouwkeet is accessible are limited as well. The times for workshops vary between 09.30 and 18.15 (Bouwkeet, 2017). There is a reason for those set times: there have to be workshop supervisors for safety reasons (Interview Daniel White, July 2017).

Another criteria are conversations, and more specific, conversations as one of the main activities (Oldenburg, 2001). Within Bouwkeet it can be stated that conversations are one of the main activities. These conversations take place at for example the table which is located in the central hall (Picture 5.1). This table in the central hall is according to Daniel White (July 2017) an important meeting place for the users of Bouwkeet: “We decided that there should be a desked where people get welcomed, but also a place where you can catch up or where you can draw back or where you can socialize (Daniel White, July 2017).”

Picture 5.1: Coffee table in central hall of Bouwkeet.

Source: Own picture, 2017.
Two criteria which foster contact between people who do not know each other yet and who belong to different groups is the level in which the needs of the public interest are met within a place and the support for a wide range of potential users and activities (Varna & Tiesdell, 2010). The main focus of Bouwkeet is the group of children from Bospolder-Tussendijken of 10-15 years. For this group several activities are offered at different workshops. Next to these workshops there are also possibilities for adults who live in Bospolder-Tussendijken to volunteer at Bouwkeet and to make things themselves (Bouwkeet, 2017). Besides, Bouwkeet collaborates with several schools in the neighbourhood and therefore allows children to develop in a way which is not possible at school.

Another criteria is whether a place is physically attractive (Varna & Tiesdell, 2010). In general Bouwkeet looks clean. People do the dishes and clean up the things they used for the workshops when they are finished making. Picture 5.2 shows a picture of the hall which leads to the workshops and picture 5.3 shows the textile workshop.

Bouwkeet has an entrance, but the place is easily to enter. During opening hours the door is open and people could enter the place when they want to. After entering the place people have to report at the desk.

The last criteria that fosters social interaction to occur is whether people who visit a place feel at home in that place (Oldenburg, 2001). The interviews showed that both adults and children feel at home at Bouwkeet. In general the persons that are interviewed speak positively about being at Bouwkeet and mention that they enjoy the social atmosphere at Bouwkeet. One woman mentions: “As a person I feel very good in this place, I feel like I am a part of the whole. I really feel at home in here (Interviewee 11, July 2017).” In this there are some exceptions of people who do not feel completely at home: “I am starting to feel at home, not from the beginning I felt like that, Fablab feels like my comfort zone right now. Step by step, I think (Interviewee 9, June 2017).”
5.2.3 Contact at Bouwkeet

The previous paragraph have shown that Bouwkeet could be a place for contact to occur. This paragraph shows the forms of contacts that occur during the activities at Bouwkeet.

Central hall

In the central hall, around the lockers and the table and near the draughts board, the contact between the users of Bouwkeet is mostly social. When children who are going to do a workshop at Bouwkeet enter the building and report themselves at the counter, the woman who has to register the children does know the names of most of the children (Observation 6, May 2017). Once children have registered and received their pass they walk to the table and start chatting with each other or with the teachers of Bouwkeet. The teachers ask them how the children are doing and have a conversation with them. One employee of Bouwkeet mentions that the contact they have with the children who come to Bouwkeet is very positive: “When they enter we have contact immediately: “How are you?” “What have you been doing today?” And when they have been on a school trip: “How was it?” Or I ask how it is at home. The contacts are good with the children, very good. Also when I meet them on the streets, they give me a box (Interview 1, May 2017).”

Not only the contact with the children is socially in the central hall. The contact between employees and volunteers in the central hall has a social character as well. Volunteers, people who work at Bouwkeet and interns discuss topics of their daily lives with each other when they have lunch (Observation 19, September 2017). But, it is also noticeable that the adults do not always socially interact with each other around this table. Sometimes the employees of Bouwkeet do not interact with newcomers at Bouwkeet (Observation 16, August 2017).

Another activity which evolves in the central hall are the weekly meetings with employees and volunteers of Bouwkeet. During those meetings actualities are discussed and people can tell what they are dealing with and whether they need the help or advice from their colleagues. After those meetings people start working on and discussing about the workshops they are developing (Observation 7, May 2016). So next to the social conversations between adults, people do also discuss about work-related and make-related topics in the central hall.

Workshops

The contact in the workshops is also socially. But, other types of contact are also visible in the workshops. As shown in box 5.1 the workshops for children start with a welcome. In the beginning of the workshop teachers do ask the children how they are and if they have something to share with the group (Observation 8, May 2017).

Noticeable is that children mention in the interviews that they do help other children during the workshops. But, while observing the workshops it can be noticed that children mostly ask the teachers for help when they do not know what to do (Observation 18, September 2017). When they help other children it are mostly children they already know (Observation 20, September 2017). During the workshops the teachers explain the children what they have to do and learn them how the machines and tools can be safely used (Observation 8, May 2017). During the workshops the teachers try to give the children advice, sometimes the teachers help the children by doing things for them. While making the children have conversations with each other and with the teachers.

At the end of the workshops for children the children have to clean up the workshop. This sometimes causes problems. The children are not always willing to clean up the workshop. The
teachers do correct their behaviour and tell them to clean up (Observation 8, May 2017; Observation 12; June 2017).

During the open workshops in the ceramic workshops the adults are socially interacting with each other, share knowledge about ceramic with each other, discuss the organisation of Bouwkeet and give each other advice (Observation 22, September 2017). Picture 5.4 shows the ceramic workshop during an open workshop at the ceramic workshop.

During ‘werk aan de werkplaats’ volunteers are working together and try to clean up Bouwkeet and make it ready for the upcoming workshops. While working together social interaction is a main activity (Observation 1, March 2017).

**Experience of contact**

People who work or volunteer at Bouwkeet do experience the contact they have with children mostly as positive. One volunteer mentions that she is being recognised as a teacher of Bouwkeet when she is outside Bouwkeet (Interview 10, June 2017). Another volunteer mentions that she really likes to work with children: “Sometimes the children give me a hug, that feels so good” (Interview 9, June 2017).” Next to the positive contact experienced by the volunteers and employees of Bouwkeet with children, they also have more negative experiences with children. One employee mentions that the contact with children is sometimes hard: “... the contact with the children. For ninety percentage the contact is good, but you always have some challenges. Those challenges make it fun, but also hard” (Interview 5, May 2017).” She means that for ninety percent of the time the contact is good, but sometimes the contact with the kids is challenging because they can be mean or less motivated to work on their project (Interview 5, May 2017).

Volunteers do mention that they sometimes feel a social distance between them and the people who work at Bouwkeet (Interview 6, July 2017; Interview 9, June 2017; Interview 10, June 2017). But, volunteers and people who work at Bouwkeet do also mention that the contact they have with each other is positive. People are personally involved and interested in the personal situations of other employees or volunteers: “It is not always about Bouwkeet, the talks we have, you get to know each other through personal stories” (Interview 7, May 2017).” Besides, people who work at Bouwkeet learn from each other while being at Bouwkeet. One volunteer mentions: “Before I came here I never gave a workshop. I have never been in front of a group of children, I had a training here. But I have never done something like this. Everything I am able to do now, I all learned it here from the others” (Interview 4, May 2017).

Volunteers and employees mention that there is few contact with the parents of children who go to workshops at Bouwkeet (Interview 3, June 2017; Interview 6, July 2017; Interview 10, June 2017).
One employee mentioned that she has a small chat with parents when they visit Bouwkeet for a final presentation of the things made by children but that is it (Interview 3, June 2017). One employee mentions that he has positive contact with adults who live in Bospolder-Tussendijken because they know him from Bouwkeet (Interview 2, May 2017).

Children are overall positive about the contact they have with the teachers of Bouwkeet. One child mentioned that he likes to go to Bouwkeet. The teachers are the reasons why he likes Bouwkeet: “The teachers help me, if you find something difficult, they just come to help you” (Interview 26, June 2017). Children also mention that they have made friends at Bouwkeet that they sometimes see those children outside Bouwkeet as well. Other children mention that they have not made friends at Bouwkeet.

5.3 A sense of community in Bouwkeet

This paragraph presents if a sense of community is being formed in the makerspace Bouwkeet. It will be discussed if this possible sense of community relates to the activities and contacts that are discussed in paragraph 5.3. The sense of community will be discussed by the criteria used in the operationalisation. Quotes of the interviews and observations are used as argumentation.

Collective actions

One of the criteria that could determine the existence of a sense of community is the organisation of actions that are done collectively. Among the people who work at Bouwkeet several activities are organised collectively. Those activities are mostly related to the development of workshops for Bouwkeet or making a prototype with other people who work at Bouwkeet. One employee mentioned: “At the moment I am developing jewelry with someone for the summer workshops. And in the past I developed things with others” (Interview 5, May 2017).

There are less activities organised collectively with a social character. When Bouwkeet just started the people who work at Bouwkeet ate with each other at Bouwkeet once a week (Interview 7, May 2017). One person cooked the meals when they had these collective meetings (Interview 1, May 2017).

Several children mention that they meet each other in Bospolder-Tussendijken. But there are no clues for actions that are organised collectively among the children who make use of Bouwkeet.

When Bouwkeet celebrated their birthday this September volunteers, employees, children and residents of Bospolder-Tussendijken organised a day full with workshops and activities in which children could show the things they had made at Bouwkeet (Observation 23, September 2017). This is an example of an activity in which everyone who belongs to Bouwkeet was involved.

Participation

The level of participation of the users of Bouwkeet varies for different groups who make use of Bouwkeet. People who work at Bouwkeet do spent more time at Bouwkeet than people who volunteer at Bouwkeet. Most of them spent 2-4 days at Bouwkeet. People who work at Bouwkeet do spend more time at Bouwkeet than the hours they agreed to work at Bouwkeet. Employees who spend less time at Bouwkeet than they used to do mention that they are content with their new level of participation. One employee mentioned that he had to be careful and strict to himself in order to protect himself from being too busy with Bouwkeet (Interview 1, 2017).

Most of the kids go to Bouwkeet once a week. A couple of them follow more than one workshop a day at Bouwkeet.
Volunteers mention that they are not able to spend more time at Bouwkeet due to their daily activities like work or study.

**Personal involvement**

The level of personal involvement seem to be high among the employees and volunteers of Bouwkeet. Several employees and volunteers mention that they are willing to invest their free time in Bouwkeet. They feel bonded with Bouwkeet because of the social project and the opportunities for making and learning. One volunteer mentions: “During my free time I follow Pinterest for new ideas for the lego workshops (Interview 9, June 2017).”

Another example of personal investment in the community is the organisation of a workshop for employees and volunteers organised by a volunteer of Bouwkeet. She invested her time in developing a workshop for people who are part of the community. During this workshop educational skills were discussed. Picture 5.5 shows the workshop for employees and volunteers. This person mentioned that: “I feel personally involved in making explicit for employees what we do and how we could do it. I see myself as someone who could contribute to realising our goals by finding out what we need to realize those goals (Interview 11, July 2017).”

An example of children who personally invest in Bouwkeet are the children who participate at the fashion or make show during the anniversary of Bouwkeet. Children told other children who participated at Bouwkeet that they showed some of the products they made at Bouwkeet during a show on Saturday (Observation 23, September 2017).

**Internal communication**

In general the users of Bouwkeet are positive about the internal communication. During the weekly meetings the people who work at Bouwkeet or volunteer at Bouwkeet discuss the week and everything that is accurate at that moment. One employee mentions that you will be kept updated if you miss one of those meetings: “If I am not there I hear from someone else what is discussed during the meeting (Interview 1, May 2017).”

Not everyone agrees with this. According to Interviewee 5 (May, 2017) people who are not able to be at the weekly meetings miss a lot information. Another person shares this opinion: “You come to know things because you hear people talk about it by accident, it is possible to come here once or twice a week without knowing what is really going on (Interview 11, June 2017).”

Volunteers are less positive about the internal communication within Bouwkeet. Two volunteers mentioned that they were not sure about how the workshops at Bouwkeet should be given when they first started volunteering (Interview 6, July 2017; Interview 10, June 2017).
were in front of the class without knowing how to give a workshop according to the wishes of Bouwkeet. Another example of being less positive about the internal communication is the fact that one volunteer started to develop a program for kids with a person who works at Bouwkeet (Interview 10, June 2017). Later she found out that she had been replaced by another person and was not allowed to give the workshop she had tried to develop.

Although there exist an open sphere and people try to update each other as good as possible, some structure in the communication is missing. This is also related to the division of tasks. According to one employee the task division are not clear: “For me it is sometimes too open-ended. Everything will be done, that is not it. But, at the end of a meeting I would like to make a list together with a clear task division (Interview 2, May 2017).”

Children are able to tell what type of workshops they would like to do in the future. This suggests that children are well-informed on the activities that can be done at Bouwkeet. One child mentioned that he was not well informed about the activities of the workshop. The boy thought he was able to think about things to make he wanted to make himself. He did not expect that he would be told what to make (Interview 22, June 2017).

**Identification**

The bond people feel with Bouwkeet is strong among the people who work at Bouwkeet. Several of them mention that they feel that they belong to Bouwkeet as a person. They feel connected to Bouwkeet and the people who belong to it. One person mentions: “They are good people, it is a nice team. There is a very open vibe at Bouwkeet. People are willing to help you. It is very special here. I really like that (Interview 4, May 2017).” People who work at Bouwkeet do also feel connected to the project. One employee mentions: “I feel at home at Bouwkeet. I think that we, with the core, the people with whom we started, that we are, I won’t call it a family. But we look after each other. We do it with each other. It is very special to be a part of Bouwkeet from the beginning (Interview 5, May 2017).”

Volunteers who came to Bouwkeet because they could make things themselves at Bouwkeet feel less bonded with Bouwkeet because of the opportunities for making. Volunteers seem to have difficulties with feeling a strong connection with Bouwkeet and the people who work at Bouwkeet. Some of them experience a distance between them and the people who work at Bouwkeet (Interview 6, July 2017; Interview 9, June 2017; Interview 10, June 2017). One volunteer mentioned: “I do not feel so bonded with Bouwkeet. I feel a connection with only a few people (Interview 10, June 2017).”

Children who visit Bouwkeet and participate in the workshop are in general positive about Bouwkeet. Children like Bouwkeet because of the opportunities for making. Especially: making for free. “I really like it here because it is for free. When you go to the market and you buy fabric it will cost you ten euros. Here you can use it for free and you can bring it to your home, like it came out of the shop, but than for free, I think that is very cool (Interview 20, June 2017).” Another girl likes Bouwkeet because of the opportunities Bouwkeet has to offer: “I would tell people that Bouwkeet is very cosy and that you can learn a lot overthere. And you can learn about what direction you would like to do at high school through the things you do at Bouwkeet (Interview 32, June 2017).”
Shared culture

Among the people who volunteer and make things at Bouwkeet and the people who work at Bouwkeet there is a strong belief that they all share the love and skills for making. People who do not have a background in making would like to learn about making (Interview 7, May 2017; Interview 8, June 2017). Volunteers and employees mention that everyone has its own specialties in making. But this shared culture of making does not lead to an automatic commonness between volunteers and workers of Bouwkeet: “Of course we all had something to do with making. Some of us make clothes, others make their own garden set, we have that in common. But besides the making, we are so different (Interview 3, June 2017).”

Another culture which is shared among the volunteers and employees is that they share the love for learning people new skills and being involved in a social project: “Everyone is dedicated to giving young people opportunities for a better future. Egocentric people are not going to work here. A certain idealism of the people who work here, but also the technical pleasure of making things. That is a thing that binds us (Interview 11, July 2017).”

The children who make use of Bouwkeet live in the same neighbourhood, some of them go to the same schools and some of them see each other at their sport clubs. These are the things they share in their lives. This opposite to other children who do not knew each other before the went to Bouwkeet. It is not noticeable that they share a background in making. Besides that children do have sometimes used a sewing machine at home or tried to use a hammer.

Shared emotional connection

Two volunteers are not sure about their future at Bouwkeet. There are several reasons for this uncertainty. One volunteer felt that she was less welcome when she stopped her volunteer activities at Bouwkeet (Interview 10, June 2017). Other reasons are related to the time they have available and their career opportunities. One girl mentions that it depends on the job she will get whether she will stay active at Bouwkeet (Interview 9, June 2017). Employees who are not certain about their personal future at Bouwkeet feel less appreciated and less support from the group. Besides, their desires on making are not being fulfilled.

In general people who make and volunteer at Bouwkeet and the employees of Bouwkeet would like to see themselves as a part of Bouwkeet in the future. They also hope to share the future with the people who are part of Bouwkeet at this moment. But, people are aware of the fact that other people might go: “People will come and go, but there will definitely be a group that will stay here. In any case, for the next five years that we are getting finance (Interview 5, May 2017).”

Kids do mention that they would like to visit Bouwkeet again and would like to participate in more workshops in the future. Some children who go to high school next year mention that they are not sure about going to Bouwkeet again because they have to do their homework. Other kids who go to high school mention that they would like to Bouwkeet again. Those kids are the kids that went to Bouwkeet during their free time and not only during schooltime.

Reinforcement

People who work at Bouwkeet like the opportunities for making at Bouwkeet but sometimes they would like to have more time for making and developing new products. Their desires are fulfilled when it comes to the social project they are a part of and the fulfilment they get from teaching. Besides, they are positive about the personal development they are going through by working at
Bouwkeet. One volunteer mentions that she has less time for making because of her volunteer activities at Bouwkeet. She would like to have more balance between making and volunteering (Interview 10, June 2017).

Children mention that they like to make things they think of themselves during the workshops and that they have the opportunity to do so. One girl mentioned that she made a holder for her cell-phone during the ceramic workshop (Interview 32, June 2017).

**Sense of mattering**

People who work at Bouwkeet feel that Bouwkeet is a team effort: “You don’t have the feeling that one person is more important than the other, everyone works on the same project (Interview 4, May 2017).” Everyone in the group is important. This feeling is less explicit for the volunteers. Volunteers do not mention that they feel appreciated in a strong sense. One volunteer mentions: “Daniel is always so interested. When he just came to ask if everything went well. He is always happy to hear when it went well. So I think he appreciates me, but I am not totally sure (Interview 12, May 2017).”

Volunteers and employees like the fact that people ask for their opinion. Volunteers get invited for brainstorm sessions as well. One example is a brainstorm session for the summer workshops in which everyone could present their ideas for workshops. Picture 5.6 shows a picture of some of the ideas formulated that evening. One volunteer mentioned: “I really like it when they, when they ask us during a volunteer evening what we want for the summer program. They do ask you for input (Interview 14, July 2017).”

Noticeable is that people feel that the people who are involved in Bouwkeet do complement each other. Everyone is important for the well-being of Bouwkeet: “Bouwkeet is really a team effort. I am officially the workshop coordinator for wood and textile. During the division of tasks the textile workshop remained unmanned. So I said that I could work with a sewing machine. So that was good, and that is how it grew. We naturally assist with everything, and we also try to learn from each other (Interview 2, May 2017).”

Employees of Bouwkeet do also feel appreciated by children and parents. One employee mentioned: “Last week we got a pie from a mother. Very spontaneous, just because she is happy with us. But also on a personal level I feel appreciated. I fulfil a special role at Bouwkeet, residents and mothers see me as someone they could trust and tell personal stories (Interview 7, May 2017).”

Kids mention that they appreciate the help they get from the teachers and that they feel that the teachers are proud of them. Bouwkeet is also important for some children. Whenever something is broken they still need support from someone of Bouwkeet to fix it: “When my bike is broken I need guidance from someone of Bouwkeet to help me fix it (Interview 34, June 2017).”

### 5.4 Effects of a sense of community at Bouwkeet

This paragraph presents the possible effects of a sense of community on the empowerment, the development of soft skills and the expansion of horizons of the children who make use of Bouwkeet. Quotes from the interviews and observations will be used as argumentations. Although it can be stated that there is no clear evidence of a strong sense of community among the children who make
use of Bouwkeet, it can be stated that the children love to be at Bouwkeet, would like to come there more often if they have the opportunity and feel bonded with the teachers, and became friends with people through their activities in Bouwkeet. These results might be an indication for a sense of community that is being developed by the children who make use of Bouwkeet.

5.4.1 Empowerment
There are several indications which might point to the development of empowerment among the children who make use of Bouwkeet.

During the workshops children do ask if they are able to finish their products at the end of that workshop (Interview 2, May 2017). This suggests that children would like to finish their products. Another thing which might suggest that being part of Bouwkeet makes children proud is that children do show the things they have made to other people who work at Bouwkeet before they leave the place. They share what they have made with other people of Bouwkeet (Interview 8, June 2017). Picture 5.7 shows some pottery made by children who participate at Bouwkeet.

An example of children who seem to develop the ability to solve problems themselves are children who decided to work on project their own when they are at home. One boy told that he was going to finish his birdhouse by painting it at home (Interview 25, June 2017).

Children do also mention that they think that they are able to use a sewing machine at home after what they have learnt at Bouwkeet. This suggest a feeling of independency among the children. Besides, during a presentation of the work they have done during the textile workshops the kids were able to tell exactly what they did during the workshops (Observation 14, July 2017). This suggests that children are able to use the machines they have worked with in the future again.

5.4.2 Soft skills
Another goal of Bouwkeet is the development of soft skills. People who work at Bouwkeet mention that they try to create an environment which stimulates the development of children. For example learning children that it is okay to fail: “We try to learn them that it is okay to fail. ‘Why can’t you do that?’ ‘Have you ever done that before?’ ‘No?’ ‘Okay, so let’s go do it!’ And that is the same with finding children’s creativity (Interview 2, May 2017).”

During the workshops it can be noticed that a lot of children copy the things they make from the teacher or from other children. This is confirmed by people who give the workshops. Creativity is sometimes hard to develop for children: “When children come here for the open workshops they want to print something what they know from TV or Youtube. All interest of this moment. It is not that children come here and start experimenting or try something crazy with for example plastic (Interview 3, June 2017).”

In order to stimulate children to think about making and solutions themselves one employee tried to create an environment in which children ask as few questions as possible: “Because of some frustration we decided to tell the kids: ‘These are the ten steps you have to follow, if you have any
questions you can ask them now and we have a few rules now. I will explain it now, and afterwards you can ask others of the group before you ask me a question. You are allowed to ask me two questions. And further you have to solve it yourself.’ So, we did it. At the end of the workshop children told me: ‘By making myself I learnt a lot more.’ (Interview 5, May 2017).”

Kids do mention that they work together with other kids when they have finished their own work and try to help other kids. This is also something which is tried to be stimulated by employees of Bouwkeet: “I learn the children that whenever they are done and have to wait for me, they could help others. Now I do not have to say: ‘Go help him.’ They do that by themselves (Interview 1, May 2017).”

There are also signs that children are learning how to reflect on their works because of their participation at Bouwkeet. At the end of the workshops most of the teachers ask the children if they enjoyed the workshop and what they have learned today (Observation 9, May 2017).

5.4.3 Expansion of horizons

Another goal of Bouwkeet is the expansion of horizons of the users of Bouwkeet. There are several indications for the expansion of horizons of children because of their involvement in Bouwkeet and the contacts they have with the people who belong to Bouwkeet.

First, it seems that the ideas about structures in society seem to change because of their participation in Bouwkeet. The roles of women and men in society turn out to be different than children are used to think of. One example is a group of children who went to Bouwkeet during school time: “The first time we went to school to pick up the children. We asked: ‘Who is going with us?’ All the girls walked with a woman who was going to give the workshops because they were going to textile and all the boys went after me because we would build robots. When we arrived here at Bouwkeet I said: ‘Ladies, come with me.’ ‘No, we are going to textile’, they said. ‘Yeah, that is true’, I said. So there I was with ten girls from 10 to 12 to make summer dresses. So nice! And now the kids think it is normal as well (Interview 2, May 2017).”

Besides, it seems that the teachers of Bouwkeet become role models for children who participate at Bouwkeet. According to employees children chose certain workshops because of the teacher who gives the workshop (Interview 5, May 2017) or children do listen only to the teacher they are familiar with (Observation 10, June 2017).

Another aspect which might lead to the
expansion of children horizons is the availability of different types of machines which are not present at children’s daily lives. In the workshops at Bouwkeet several machines are present which will not be used on a daily bases. Children get in contact by those machines and teachers tell them what the machines are used for. Box 5.2 and box 5.3 show two examples of those machines.

Another aspect which seems to expand the horizons of children is that they come to know things about products they use in their daily lives which they did not know fore. One boy mentioned: “I did not know about cups, I did not get it first, the template was full and I thought: ‘How will it become a cup?’ But then we started to get the rest out of the template (Interview 34, June 2017).”
6 Conclusion

According to Putnam (2000) the formation of social capital is under threat and Bridger & Alter (2006) mention that the current society is not a good environment for communities to occur. This research is on a makerspace, which is a place people go to for making, and discussed whether this is a place for a sense of community to occur. According to Taylor et al (2016) makerspaces could strengthen community ties by working together and being connected with fellow makers. Makerspaces are part of the maker movement: “The maker movement refers broadly to the growing number of people who are engaged in the creative production of artefacts in their daily lives and who find physical and digital forums to share their processes and products with others (Halverson & Sheridan, p.496, 2014).” Makerspaces are also related to new methods at schools because of the shift from a ‘sit back and be told’ culture to a ‘making and doing’ culture (Gauntlett, 2010). According to Claxton (2008) teachers are starting to reject this sit back and be told culture and offer their students challenges which are more about making and doing. This research discussed whether the contacts and activities at Bouwkeet, a makerspace in Rotterdam, create a sense of community among its users. Besides the possible social effects of this sense of community in a makerspace are discussed.

The users of Bouwkeet have several reasons for visiting the place. People go to Bouwkeet because they are interested in the makerspace concept, interested in the workshops offered by Bouwkeet, interested in the social project of Bouwkeet, interested in the making opportunities, would like to work at Bouwkeet or because they go there during school time. Bouwkeet can be seen as a combination of a public space, a micro-public and a third place since it has characteristics of these three places. The place is public in terms that the public has access to the place and the space is used and shared by different individuals and groups (Carmona, 2010; Varna & Tiesdell, 2010), but has its limitations because it is only accessible for people who live in the neighbourhood. The place can be seen as a micro-public because it is a place in which organised group activity takes places and in which people get in contact with people who belong to other groups (Amin, 2002). Last, the place can partly be seen as a third place because conversations are, next to making, one of the main activities at Bouwkeet, people feel at home in this place and would like to repeat their visits. But, although Bouwkeet is open after kids go to school, Bouwkeet is not accessible during the evening and weekend (Oldenburg, 2001). So, this research has shown that Bouwkeet, as a social makerspace with a neighbourhood function, can be seen as a type of place with characteristics of both public places, third places and micro-publics.

The activities in Bouwkeet vary from activities for kids during school time, activities for kids in their free time, open workshops for residents of Bospolder-Tussendijken, and socializing activities. During these activities the users of Bouwkeet have different types of contact with each other. In the workshops the contacts are mostly related to making. People learn skills from each other, give each other advice and try to help each other. Social interaction is a form of contact which derives from the making activities. Through making people get to know each other a bit more and start social conversations. Outside of the workshops social interaction is the main activity. Users of Bouwkeet discuss their daily lives around the coffee table in the central hall and employees of Bouwkeet ask children how there day was.
Within this research a sense of community contains of nine criteria, namely: the organisation of collective actions, the level of participation, the level of personal involvement, internal communication, identification, a shared culture, a shared emotional connectedness, reinforcement and a sense of mattering (McMillen & Chavis, 1986; Gardner, 1991; Puddifoot, 2003). Several criteria apply to Bouwkeet. Because of the activities and contacts at Bouwkeet the users of Bouwkeet seem to feel that they have something in common with others, that they depend on one another because of everyone’s specialities and most of the people who work, volunteer or take part in the workshops of Bouwkeet are willing to be a part of Bouwkeet in the future. Ideally they see this future with the people who are a part of Bouwkeet at this moment as well.

The level of personal investment of the users of Bouwkeet differs between the different groups who make use of Bouwkeet. Employees do invest more of their time and knowledge in Bouwkeet than volunteers do. This might be related to the negative sounds of employees on the internal communication and the fact that volunteers do not always feel appreciated for the work they do at Bouwkeet. Besides, volunteers identify more with the possibilities for making at Bouwkeet than with Bouwkeet itself. This opposite to employees who feel connected with the project and the possibilities they could offer the kids who participate at Bouwkeet. The wishes of volunteers and employees are partly fulfilled. They would like to have more opportunities for making things themselves.

Children mention that they enjoy going to Bouwkeet. They like the place because they are able to make things for free and they could learn a lot while being at Bouwkeet. Most of the kids mention that they would like to continue going to Bouwkeet. When they talk to other people about Bouwkeet they tell them that they should visit Bouwkeet as well. Kids are feeling a bond with the teachers of Bouwkeet. They make jokes with them and tell them personal things during the workshops. They are also interested in the lives of the teachers.

As mentioned some researchers argue that social capital and the formation of communities is under threat. This research has shown that the contacts and activities in a makerspace could contribute to stimulating this sense of community. By having conversations with other makers, by helping each other and by working together people are forming a sense of community in Bouwkeet. This is in line with the idea of Taylor et al (2016) that makerspaces are a good place for communities to occur.

Three possible social effects discussed in this research of feeling a sense of community are: empowerment (McMillan et al, 1995; Taylor et al, 2016), the development of soft skills (Sheridan et al, 2014) and the expansion of horizons (Granovetter, 1973). These effects do fit in the shift from a ‘sit back and be told’ culture to a ‘making and doing’ culture (Gauntlett, 2010). For Bouwkeet there are several indications for the empowerment of children, the development of their soft skills and the expansion of their horizons because they participate at Bouwkeet. Children do feel proud of what they make at Bouwkeet and some children are able to solve problems themselves. Besides, teachers try to develop an atmosphere in which it is okay to make mistakes. In this environment children learn how to work together, reflect on what they have made and learn how to deal with feedback. Last, children get new ideas about structures in society, get new role models and learn how to make things to use in their daily lives by participating at Bouwkeet. All these developments children go through could help them to prepare for getting a job in the future (Robles, 2012), it empowers them to develop a sense of self and a sense of community (Agency by Design, 2015) and children will feel that they have more opportunities in life because of their participation in a makerspace (Sheridan et al, 2014).
Concluding, to give an answer to the main question, the activities and contacts in the makerspace Bouwkeet Bospolder-Tussendijken do partly contribute to creating a sense of community among the users. The level of this sense of community differs between the different groups of users. Employees seem to be stronger connected to Bouwkeet than volunteers and children mention to feel connected but are less personally involved in the community. Where volunteers are asked for their opinion and employees feel connected because of the opportunities they could offer the kids, children come to the workshops and enjoy it but contribute little to the community themselves. The social effects of this sense of community could be empowerment, the development of soft skills and the expansion of horizons and there are several indications for these social effects at Bouwkeet.

This research has contributed to the debate on urban encounters by showing that the social interactions like working together, helping each other and socializing that occur in a makerspace could contribute to creating a sense of community. Besides, this research has shown that the wider social effects of this sense of community could help children to develop themselves in a period in which there is a shift from a ‘sit back and be told’ culture to a ‘making and doing’ culture.

6.1 Discussion and reflection
This research has shown that the users of Bouwkeet do feel connected with Bouwkeet but not all of them score the same on the different aspects of a sense of community. For this research the concepts of a sense of community of McMillen & Chavis, (1986), Gardner (1991), Puddifoot (2003) and Bridger & Alter (2006) are used. It could be that not all the criteria of a sense of community can be applied to makerspaces.

Besides, not everyone seem to have the same idea of who belongs to Bouwkeet and who does not. This might relates with the fact that individuals could experience a sense of community in a variety of contexts. A sense of community could be linked to a place or to an interest: a community of place or a community of interest (Nasar & Julian, 1995). It might be that people who do not feel connected to some people who are a part of Bouwkeet feel more connected to the interest, the fact that you could make things at Bouwkeet, than to the people who are a part of Bouwkeet and the project. This could be an explanation of the difference in the experience of a sense of community between people who make use of Bouwkeet.

The original idea was to interview parents of children who participate at Bouwkeet as a completion on the experiences of children who participate at Bouwkeet. Unfortunately, because of a lack mastering the Dutch language, parents are not interviewed for this research. Further research could try to get an insight on the experiences and thoughts of parents who have children who go to makerspaces. This could contribute to getting an insight in the wider social effects for children who participate in makerspaces and what these social effects mean for the development of these children in their daily lives and the future of these children.

The interviews with children where sometimes difficult. Children tend to be short in their answers and had difficulties with explaining why they like going to Bouwkeet and what they would like to do in the future at Bouwkeet. This is in line with Hill (1997) who mentions that children have difficulties with expressing their thoughts to adults. To strengthen the quality of the research data obtained from interviews with children it is sought to create a certain bond with the children who participate at Bouwkeet by taking part in workshops as a volunteer and not only as a researcher and by doing participative observations. This in order to create trust and hence communication (Hill,
1997). With some children it helped to obtain valuable interviews, but other children still had difficulties with expressing their ideas and thoughts about Bouwkeet.

6.2 Recommendations

According to Evans (2007) adolescents perceive community and a sense of community in different ways than adults. Young people, or adolescents, feel a stronger sense of community under circumstances in which they feel responsible and in which they want and need to play a role. One recommendation for Bouwkeet could be to give children who participate in Bouwkeet more influence on the activities that are offered at Bouwkeet. Once their voices are heard it is expected that those children will feel more connected to Bouwkeet. This will also contribute to the level in which Bouwkeet is organised with the public interest (Varna & Tiesdell, 2010) which will foster social interaction at Bouwkeet. Besides giving children a voice in Bouwkeet in the future, it could be realised that children become teachers at Bouwkeet as well. This to strengthen their personal investment in the community.

One of the criteria that determines a sense of community is the level of a sense of mattering (McMillen & Chavis, 1986). Although several employees and volunteers mentioned that Bouwkeet is a place in which they feel appreciated, others do not have this feeling. One point of improvement could be that the appreciation of volunteers can be made more clear. Plus, the ideas and thoughts about workshops of volunteers could be taken more into account. This might also result in the fact that volunteers start to feel more connected with the project of Bouwkeet and not only feel connected to Bouwkeet because of their personal making opportunities.

Both volunteers and employees mentioned that there is confusion on the Bouwkeet method and how the workshops for kids should be given. In the future more clarity could be given about the Bouwkeet method. This in order to make volunteers more comfortable about what they are doing in front of the class. This might result in the fact that the goals of Bouwkeet could be more easily achieved.

One character of third places is that those places are open during times that people do not have to be at school or at work (Oldenburg, 2001). This to make it possible to visit those places in your free time. Several kids mentioned that they are not able to come to Bouwkeet anymore once they are at high school. Another recommendation could be to extend the opening hours of Bouwkeet. This might lead to more visitors of Bouwkeet. When Bouwkeet offers workshops during the weekends and evening, children who do not have time during the week and parents who work the rest of the week do have the opportunities to become a part of the community as well.

A recommendation for municipalities is to develop more makerspaces in disadvantaged neighbourhoods. This research has shown that a makerspace could be a place in which a sense of community can be formed. Because of this sense of community people start to feel bonds with people they did not feel any bonds with before they started participating in the makerspace. Besides, further social effects can be derived from being a part of a makerspace community: empowerment, the expansion of horizons and the development of soft skills.

Further research could focus on the more wider effects of makerspaces in a disadvantaged neighbourhood on the long-term. It could be researched whether the participation of residents in a makerspace community has its influence of the life outcomes of people who participate in those communities.
References


Appendices

Appendix 1: Interview questions sense of community adults.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Questions</th>
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</thead>
<tbody>
<tr>
<td><strong>Motives</strong></td>
<td>- Waarom kom je naar Bouwkeet?&lt;br&gt;- Kom je alleen naar Bouwkeet om dingen te maken?&lt;br&gt;- Zijn er ook andere dingen die je doet/contacten die je hebt in Bouwkeet?</td>
</tr>
<tr>
<td><strong>Home away from home</strong></td>
<td>- Hoe voel je je bij Bouwkeet?&lt;br&gt;- In hoeverre voel je je thuis bij Bouwkeet?&lt;br&gt;- In hoeverre voel je je op je gemak bij Bouwkeet?&lt;br&gt;- Kom je hier graag naar toe? En waarom?</td>
</tr>
<tr>
<td><strong>Contact</strong></td>
<td>- Welke vormen van contact heb je in de Bouwkeet?&lt;br&gt;- Waarover hebben jullie het dan?</td>
</tr>
<tr>
<td><strong>Collective actions</strong></td>
<td>- Organiseer je activiteiten met andere deelnemers van Bouwkeet?&lt;br&gt;- Wat organiseer je samen met andere deelnemers van Bouwkeet?</td>
</tr>
<tr>
<td><strong>Participation</strong></td>
<td>- Hoe vaak ben je in Bouwkeet?&lt;br&gt;- Wil je meer tijd doorbrengen in Bouwkeet?&lt;br&gt;- Wat maakt dat je wel of niet meer of minder tijd wilt doorbrengen in Bouwkeet?</td>
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<tr>
<td><strong>Personal involvement</strong></td>
<td>- Voel je je persoonlijk betrokken bij Bouwkeet?&lt;br&gt;- Wat wil je bijdragen aan Bouwkeet?&lt;br&gt;- Waarom wil je tijd steken in Bouwkeet?</td>
</tr>
<tr>
<td><strong>Internal communication</strong></td>
<td>- Wat vind je van de onderlinge communicatie bij Bouwkeet?&lt;br&gt;- Waar praat je over met andere deelnemers?&lt;br&gt;- Ben je goed op de hoogte van het programma/organisatie van Bouwkeet?</td>
</tr>
<tr>
<td><strong>Identification</strong></td>
<td>- In hoeverre voel je je verbonden met Bouwkeet?&lt;br&gt;- In hoeverre voel je je emotioneel verbonden met de plek?&lt;br&gt;- Wat maakt dat je je verbonden voelt met Bouwkeet?</td>
</tr>
<tr>
<td><strong>Shared culture</strong></td>
<td>- Heb je het gevoel dat je iets gemeen hebt met de andere deelnemers met hen?&lt;br&gt;- Wat heb je gemeen met hen?</td>
</tr>
<tr>
<td><strong>Shared emotional connection</strong></td>
<td>- Heb je het gevoel dat je in de toekomst de zelfde ervaringen zult hebben als de andere deelnemers?&lt;br&gt;- Denk je dat je in de toekomst dingen zult blijven ondernemen met andere deelnemers van Bouwkeet?&lt;br&gt;- Wat zullen deze ervaringen zijn?</td>
</tr>
<tr>
<td><strong>Reinforcement</strong></td>
<td>- Heb je het gevoel dat je wensen worden vervuld door de Bouwkeet?&lt;br&gt;- Wat maakt dat deze worden vervuld of niet?</td>
</tr>
<tr>
<td><strong>Sense of mattering</strong></td>
<td>- Heb je het gevoel dat wat je doet in Bouwkeet gewaardeerd wordt door andere gebruikers van Bouwkeet?&lt;br&gt;- Wat maakt het dat je je gewaardeerd voelt?</td>
</tr>
<tr>
<td><strong>Succes</strong></td>
<td>- Hoe succesvol vind je Bouwkeet?</td>
</tr>
</tbody>
</table>
### Appendix 2: Interview questions empowerment, expanding horizons and soft skills, adults.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Vragen voor volwassenen</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Empowerment</strong></td>
<td>- Zie je aanwijzingen voor het ontstaan van een gevoel van trots bij de kinderen die gebruik maken van Bouwkeet?</td>
</tr>
<tr>
<td></td>
<td>- Zie je aanwijzingen voor het ontstaan van een gevoel van zelfverzekerdheid bij de kinderen die gebruik maken van Bouwkeet?</td>
</tr>
<tr>
<td></td>
<td>- Denkt u dat de kinderen een gevoel voor ondernemerschap ontwikkelen door het contact en de activiteiten bij Bouwkeet?</td>
</tr>
<tr>
<td></td>
<td>- Denkt u dat de kinderen een gevoel voor controle ontwikkelen door het contact en de activiteiten bij Bouwkeet?</td>
</tr>
<tr>
<td></td>
<td>- Denkt u dat de kinderen meer in staat raken om problemen op te lossen door het contact en de activiteiten bij Bouwkeet?</td>
</tr>
<tr>
<td></td>
<td>- Denkt u dat de kinderen zich onafhankelijker voelen door de activiteiten en het contact in de Bouwkeet?</td>
</tr>
<tr>
<td></td>
<td>- Welke activiteiten?</td>
</tr>
<tr>
<td></td>
<td>- Hoe komt dit?</td>
</tr>
<tr>
<td><strong>Expansion horizons</strong></td>
<td>- Denkt u dat het zijn in de Bouwkeet en het deelnemen aan activiteiten leidt tot het verbreden van de leefwereld van kinderen?</td>
</tr>
<tr>
<td></td>
<td>- Denkt u dat de kinderen de begeleiders zien als rolmodellen en zich aan hen op trekken?</td>
</tr>
<tr>
<td></td>
<td>- Denkt u dat kinderen hier leren om met machines om te gaan?</td>
</tr>
<tr>
<td></td>
<td>- Denkt u dat kinderen leren om dingen te maken waar ze eerst onbekend mee waren?</td>
</tr>
<tr>
<td></td>
<td>- Denkt u dat kinderen dingen maken bij Bouwkeet die zij kunnen gebruiken in het dagelijks leven?</td>
</tr>
<tr>
<td><strong>Soft skills</strong></td>
<td>- Denkt u dat de kinderen leren samen werken door de activiteiten en het contact in Bouwkeet? Hoe? Waardoor? Waarom ziet u dit? Voorbeelden?</td>
</tr>
<tr>
<td></td>
<td>- Denkt u dat de kinderen leren om met feedback om te gaan door de activiteiten en het contact in Bouwkeet?</td>
</tr>
<tr>
<td></td>
<td>- Gaan de kinderen meer creatief nadenken bij Bouwkeet?</td>
</tr>
<tr>
<td></td>
<td>- Leren de kinderen volgens een plan te werken?</td>
</tr>
<tr>
<td></td>
<td>- Worden de kinderen meer zelfstandig tijdens het maken/gedurende de workshops?</td>
</tr>
<tr>
<td></td>
<td>- Denk je dat de kinderen begrijpen wat ze aan het doen zijn?</td>
</tr>
<tr>
<td></td>
<td>- Denkt u dat de kinderen leren te reflecteren op wat zij maken bij Bouwkeet?</td>
</tr>
<tr>
<td></td>
<td>- Denkt u dat kinderen leren om zelf te sturen wat zij maken bij Bouwkeet?</td>
</tr>
</tbody>
</table>
**Appendix 3 : Topic list for the children who make use of Bouwkeet.**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motief</td>
<td>Waarom kom je bij Bouwkeet?</td>
</tr>
<tr>
<td>Duur Bouwkeet</td>
<td>Hoe lang kom je al bij Bouwkeet?</td>
</tr>
<tr>
<td>Wat bij Bouwkeet</td>
<td>Wat heb je gedaan bij Bouwkeet?</td>
</tr>
<tr>
<td></td>
<td>Wat doe je bij Bouwkeet ?</td>
</tr>
<tr>
<td>Mening Bouwkeet</td>
<td>Wat vind je van Bouwkeet?</td>
</tr>
<tr>
<td>Workshops</td>
<td>Wat vind je van de workshops?</td>
</tr>
<tr>
<td></td>
<td>Wat heb je gemaakt bij de workshops?</td>
</tr>
<tr>
<td></td>
<td>Wat heb je geleerd bij Bouwkeet?</td>
</tr>
<tr>
<td></td>
<td>Wat doe je bij de workshops ?</td>
</tr>
<tr>
<td>Meesters en juffen</td>
<td>Wat vind je van de meesters en juffen?</td>
</tr>
<tr>
<td>Vrienden</td>
<td>Heb je vrienden gemaakt bij Bouwkeet?</td>
</tr>
<tr>
<td>Vertellen over Bouwkeet</td>
<td>Hoe vertel je over Bouwkeet aan anderen?</td>
</tr>
<tr>
<td>Participatie</td>
<td>Hoe vaak ga je naar Bouwkeet?</td>
</tr>
<tr>
<td></td>
<td>Wil je weer naar Bouwkeet?</td>
</tr>
<tr>
<td></td>
<td>Wat zou je nog bij Bouwkeet willen doen?</td>
</tr>
</tbody>
</table>

**Appendix 4 : Interview questions Bas Woudstra**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Vragen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stichting Verre Bergen</td>
<td>1. Kunt u mij vertellen wat Stichting Verre Bergen inhoudt?</td>
</tr>
<tr>
<td></td>
<td>2. Wat is het doel van Stichting Verre Bergen?</td>
</tr>
<tr>
<td></td>
<td>3. Wat voor projecten heeft Stichting Verre Bergen gerealiseerd?</td>
</tr>
<tr>
<td></td>
<td>4. Met welk doel worden de projecten gerealiseerd?</td>
</tr>
<tr>
<td>Makerspaces</td>
<td>5. Wat hield het vooronderzoek naar makerspaces in?</td>
</tr>
<tr>
<td></td>
<td>6. Wat kwam er uit het vooronderzoek naar makerspaces?</td>
</tr>
<tr>
<td></td>
<td>- Wat is een makerspace?</td>
</tr>
<tr>
<td></td>
<td>- Wat voor soorten makerspaces zijn er?</td>
</tr>
<tr>
<td></td>
<td>- Wat zijn de doelstellingen van makerspaces?</td>
</tr>
<tr>
<td></td>
<td>- Wat zijn de resultaten voor gebruikers van makerspaces?</td>
</tr>
<tr>
<td>Bouwkeet</td>
<td>1. Waarom is er gekozen voor de wijk Bospolder-Tussendijken voor het realiseren van een makerspace?</td>
</tr>
<tr>
<td></td>
<td>2. Waarom is er gekozen voor een makerspace in de wijk Bospolder-Tussendijken (en bijvoorbeeld niet een ander maatschappelijk project)?</td>
</tr>
<tr>
<td></td>
<td>3. Waarom is er gekozen voor een makerspace met een buurtfunctie?</td>
</tr>
<tr>
<td></td>
<td>4. Waarom is er gekozen voor een tegenprestatie als voorwaarde voor het gebruik van de makerspace?</td>
</tr>
</tbody>
</table>
### Appendix 5: Interview questions Daniel White

<table>
<thead>
<tr>
<th>Topic</th>
<th>Vragen</th>
</tr>
</thead>
</table>
| **Algemeen** | 1. Zou je jezelf eerst kunnen voorstellen?  
2. Waarom wilde je onderdeel worden van Bouwkeet?  
3. Hoe zou jij Bouwkeet omschrijven? |
| **Inrichting/toegankelijkheid Bouwkeet** | 4. Waarom is er gekozen voor de inrichting van Bouwkeet zoals deze nu is?  
- Ruime hal bij binnenkomst, open keuken en eettafel  
- Aparte presentatie ruimte (met deuren die open kunnen)  
- Centrale hal die uitkomt op werkplaatsen  
- Toegangsmogelijkheid door middel van pasjes  
5. In hoeverre zie jij Bouwkeet als een openbare plek?  
6. Waarom is er voor gekozen dat mensen zich moeten aanmelden om deel te nemen aan workshops? (persoonsgegevens etc.) |
| **Doelgroep Bouwkeet** | 7. Wat is volgens jou de doelgroep van Bouwkeet? |
| **Activiteiten Bouwkeet** | 8. Waarom is er gekozen voor het huidige aanbod aan activiteiten?  
- Workshops voor kinderen na schooltijd  
- Open werkplaatsen  
- Schoolprogramma’s  
- Zomerprogramma  
9. In hoeverre is er bij het aanbod van workshops rekening gehouden met de doelgroep?  
10. Waarom zijn de workshops van het zomerprogramma toegankelijk voor volwassenen en het reguliere programma niet? |
| **Doelstellingen Bouwkeet** | 11. Zou je in het kort kunnen toelichten wat de doelstellingen van Bouwkeet zijn?  
12. Hoe proberen jullie de doelstellingen te bereiken?  
13. Zijn er aanpassingen gemaakt in hoe de doelstellingen bereikt kunnen worden? Welke?  
14. Zien jullie aanwijzingen van empowerment, het verbreden van de leefwereld en de ontwikkeling van 21st century skills? |
| **Succes Bouwkeet** | 15. Hoe succesvol vind je Bouwkeet? |
| **Toekomst Bouwkeet** | 16. Hoe zie je de toekomst van Bouwkeet voor je?  
17. Wat zijn de toekomst plannen voor Bouwkeet? |
Appendix 6: Questions for the desk research, observations and interviews of the criteria of the makerspace which foster social interaction.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Method</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activities/Animation</strong></td>
<td>Desk research</td>
<td>- What activities are offered by the makerspace?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Who are the potential participants for those activities?</td>
</tr>
<tr>
<td><strong>Accessibility</strong></td>
<td>Desk research</td>
<td>- Do the visitors have to meet criteria? What criteria?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Do visitors have to be a member to enter the place?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- What are the opening hours of the Bouwkeet?</td>
</tr>
<tr>
<td><strong>Serving needs</strong></td>
<td>Interviews</td>
<td>- To what extent is the place managed in the public interest?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Are the needs of different social groups taken into account in the makerspace?</td>
</tr>
<tr>
<td><strong>Conversations</strong></td>
<td>Observations</td>
<td>- To what extent do people have conversations with each other during the activities?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- When and where do people have conversations in the Bouwkeet?</td>
</tr>
<tr>
<td><strong>Physical attractiveness</strong></td>
<td>Observations</td>
<td>- Can the place be described as clean?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- How attractive is the place?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Does the place have obvious entrances and thresholds?</td>
</tr>
<tr>
<td><strong>Home away from home</strong></td>
<td>Interviews</td>
<td>- Does this place feel like a home away from home?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Do people feel at home in this place?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Do people feel comfortable in this place?</td>
</tr>
</tbody>
</table>
Appendix 7: List with interviewees

1. Interviewee 1: Man (48), works at Bouwkeet, lives in Bospolder-Tussendijken, May 2017.
2. Interviewee 2: Man (60), works at Bouwkeet, lives not in Bospolder-Tussendijken, May 2017.
8. Interviewee 8: Woman (42), works at Bouwkeet, lives not in Bospolder-Tussendijken, June 2017.
10. Interviewee 10: Girl (26) volunteered and makes at Bouwkeet, lives not in Bospolder-Tussendijken, June 2017.
27. Interviewee 27: Boy (12) participates at Bouwkeet during and after school-time, lives in Bospolder-Tussendijken, June 2017.
31. Interviewee 31: Boy (11) participates at Bouwkeet during and after school-time, lives in Bospolder-Tussendijken, June 2017.
32. Interviewee 32: Girl (12) participates at Bouwkeet during school-time, lives not in Bospolder-Tussendijken, June 2017.
34. Interviewee 34: Boy (11) participates at Bouwkeet during and after school-time, lives in Bospolder-Tussendijken, June 2017.
35. Interviewee 35: Boy (11) participates at Bouwkeet during and after school-time, lives in Bospolder-Tussendijken, June 2017.
## Appendix 8: Coding scheme interviews

<table>
<thead>
<tr>
<th>Topic</th>
<th>Code</th>
<th>Sub-code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A: General information</strong></td>
<td>Leeftijd</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Woonlocatie</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tijd</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Functie bij Bouwkeet</td>
<td></td>
</tr>
<tr>
<td><strong>B: Activiteit</strong></td>
<td>Workshop</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Schoolactiviteit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eigen project</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sociale interactie</td>
<td></td>
</tr>
<tr>
<td><strong>C: Motieven</strong></td>
<td>Interesse workshops</td>
<td>Wat gebeurt er?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interesse in wat er gebeurt</td>
</tr>
<tr>
<td></td>
<td>Interesse makerspace</td>
<td>Gratis maken</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Buitenschoolse activiteit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gezinsactiviteit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Geïnteresseerd in machines</td>
</tr>
<tr>
<td></td>
<td>Maatschappelijk project</td>
<td>Kansen bieden</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Andere helpen</td>
</tr>
<tr>
<td></td>
<td>Maken</td>
<td>Leren over maken</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beschikbare ruimte</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Machines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Persoonlijke ontwikkeling</td>
</tr>
<tr>
<td></td>
<td>Werk</td>
<td>Kinderen en educatie</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zocht werk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zocht ander werk</td>
</tr>
<tr>
<td></td>
<td>School</td>
<td>Kind komt alleen met school</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kind komt met school en buiten school</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kind komt niet met school</td>
</tr>
<tr>
<td><strong>D: Home away from home</strong></td>
<td>Thuis voelen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Op gemak voelen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Komt graag</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wennen aan Bouwkeet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minder welkom gevoel</td>
<td></td>
</tr>
<tr>
<td><strong>E: Contact</strong></td>
<td>Sociale interactie</td>
<td>Weinig diepgaand</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Begripvol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact verschilt per persoon</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Persoonlijk betrokken</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Onderling vertrouwen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mist tijd voor sociale interactie</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Terughoudend in contact</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact over Bouwkeet</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Afstotend gedrag</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positief contact met kinderen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positief contact in de wijk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positief contact met collega’s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Positief contact met gebruikers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heeft contact met ouders</td>
</tr>
</tbody>
</table>
| Kontakt met ouders | Weinig contact met ouders  
Negatief contact met ouders |
|--------------------|----------------------------|
| Contact met kinderen is moeilijk  
Kinderen stimuleren  
Kind heeft weinig contact met andere kinderen  
Kinderen corrigeren in gedrag |
| Samenwerken | Samen iets oplossen  
Werken aan prototype  
Workshops bedenken  
Advies geven  
Advies vragen |
| Leren | Leren gericht op maken  
Leren gericht op lesgeven  
Andere kinderen helpen |
| Helpen | Collega’s om hulp vragen  
Hulp aanbieden  
Hulp krijgen |
| Overig | Contact met meesters en juffen  
Band opgebouwd  
Vrienden gemaakt bij Bouwkeet |
| Practical sense of community | Collective actions | Personeelsactiviteiten  
Activiteiten gericht op workshops  
Activiteiten gericht op Bouwkeet  
Contact buiten Bouwkeet |
| Participatie | Weinig georganiseerd met elkaar  
Organiseert niks buiten Bouwkeet om |
<p>| Personal involvement | Bereid te investeren |</p>
<table>
<thead>
<tr>
<th><strong>Workshops voorbereiden in eigen tijd</strong></th>
<th>Workshops voorbereiden in eigen tijd Thuis bezig met Bouwkeet Project is belangrijk Breed betrokken bij Bouwkeet Verantwoordelijk gevoel Tevreden met betrokkenheid Betrokken met kinderen</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal communication</strong></td>
<td>Kan verbeterd worden Structuur mist Communicatie is verwarrend Betere communicatie naar vrijwilligers Onduidelijkheid Bouwkeet methodiek Positief over communicatie Goede terugkoppeling Communicatie wordt aangepakt Minder controle zou fijn zijn Niet iedereen op de hoogte Op de hoogte van programma</td>
</tr>
<tr>
<td><strong>Practical sense of community</strong></td>
<td>Practical sense of community Identification Bouwketer Tevreden met Bouwkeet Trots op Bouwkeet Komt graag naar Bouwkeet Verbonden vanwege project Verbonden vanwege maakmogelijkheden Verbonden vanwege kinderen Verbonden vanwege educatieve ontwikkelkansen Verbonden met iedereen bij Bouwkeet Verbonden met paar personen Niet verbonden met Bouwkeet Twijfelt over verbondenheid Kind positief over Bouwkeet Kind vertelt anderen over Bouwkeet</td>
</tr>
<tr>
<td><strong>Shared culture</strong></td>
<td>Shared culture Maken overeen, verschillende specialisaties Rotterdammer Achtergrond in maken Achtergrond in lesegenen Sociale achtergrond Kennis overdragen</td>
</tr>
<tr>
<td>Onzekerheden worden gedeeld</td>
<td>Doel van Bouwkeet is gemeenschappelijk</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Geen maakachtergrond</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shared emotional connection</th>
<th>Bouwkeet als persoonlijke toekomst</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hoop op toekomst Bouwkeet met iedereen</td>
</tr>
<tr>
<td></td>
<td>Niet zeker over toekomst Bouwkeet met iedereen</td>
</tr>
<tr>
<td></td>
<td>Niet zeker over persoonlijke toekomst Bouwkeet</td>
</tr>
<tr>
<td></td>
<td>Geen makers-verleden</td>
</tr>
<tr>
<td></td>
<td>Het project is gemeenschappelijk</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>M: Reinforcement</th>
<th>Wensen vervuld</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wensen vervuld: project</td>
</tr>
<tr>
<td></td>
<td>Wensen vervuld: maken</td>
</tr>
<tr>
<td></td>
<td>Wensen vervuld: persoonlijke ontwikkeling</td>
</tr>
<tr>
<td></td>
<td>Wensen vervuld: werken met kinderen</td>
</tr>
<tr>
<td></td>
<td>Wensen vervuld: leren</td>
</tr>
<tr>
<td></td>
<td>Wensen vervuld: lesgeven</td>
</tr>
<tr>
<td></td>
<td>Wensen niet geheel vervuld</td>
</tr>
<tr>
<td></td>
<td>Structuur mist</td>
</tr>
<tr>
<td></td>
<td>Wensen niet vervuld op gebied van maken</td>
</tr>
<tr>
<td></td>
<td>Wensen van een kind</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N: Sense of mattering</th>
<th>Mensen uit de groep zijn belangrijk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Iedereen is belangrijk</td>
</tr>
<tr>
<td></td>
<td>Bouwkeet is een team</td>
</tr>
<tr>
<td></td>
<td>Groep vult elkaar aan</td>
</tr>
<tr>
<td></td>
<td>Belangrijk voor de groep</td>
</tr>
<tr>
<td></td>
<td>Waardering door juffen</td>
</tr>
<tr>
<td></td>
<td>Waardering door kinderen</td>
</tr>
<tr>
<td></td>
<td>Waardering door collega’s</td>
</tr>
<tr>
<td></td>
<td>Waardering door ouders</td>
</tr>
<tr>
<td></td>
<td>Waardering vanuit de wijk</td>
</tr>
<tr>
<td></td>
<td>Mening wordt gevraagd</td>
</tr>
<tr>
<td></td>
<td>Complimenten vanuit de groep</td>
</tr>
<tr>
<td></td>
<td>Vrijheid in werken</td>
</tr>
<tr>
<td></td>
<td>Meedenken</td>
</tr>
<tr>
<td></td>
<td>Ideeën worden meegenomen</td>
</tr>
</tbody>
</table>
| **O: Succes** | Succesvol  
Deels succesvol  
Deels succesvol: doelstellingen |
|---|---|
| **P: Community** | Bouwkeet is iedereen  
Bouwkeet is voor de kinderen  
Bouwkeet zijn de medewerkers en vrijwilligers  
Kinderen en ouders maken alleen gebruik van Bouwkeet  
De medewerkers zijn Bouwkeet |
| **Goals** | Empowerment  
Trots  
Zelfverzekerdheid  
Ondernemerschap  
Controle  
Problemen oplossen  
Onafhankelijkheid  
Niet zelf problemen oplossen  
Niet altijd trots  
Geen gevoel voor controle  
Weinig ondernemend  
Deelt niet alles met ouders |
| **Expansion of horizons** | Rolmodellen  
Machines  
Dagelijks gebruik  
Onbekende dingen maken  
Niks nieuws geleerd |
| **S: Soft skills** | Samenwerken  
Feedback  
Creatief  
Werken volgens een plan  
Zelfstandigheid  
Begrijpen  
Reflecteren  
Zelf Sturen  
Niet begrijpen wat je doet  
Niet begrijpen wat je hebt gemaakt  
Niet samenwerken  
Werken aan eigen project  
Moeite met creatief nadenken  
Namaken  
Weinig feedback  
Weinig aan elkaar vragen |
### Appendix 9: Observation scheme contact

<table>
<thead>
<tr>
<th>Observatie doel</th>
<th>Achterhalen wat voor soort contact er plaatsvindt bij een activiteit bij Bouwkeet.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observatie vraag</td>
<td>Wat voor soort contact vindt er plaats tijdens de activiteit?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activiteit</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Deelnemers</td>
<td></td>
</tr>
<tr>
<td>Tijd</td>
<td></td>
</tr>
<tr>
<td>Vorm van contact</td>
<td><strong>Beschrijving van wat er gebeurd</strong></td>
</tr>
<tr>
<td>Samenwerken</td>
<td>Bijvoorbeeld: Kinderen werken samen aan een opdracht.</td>
</tr>
<tr>
<td>Kletsen</td>
<td></td>
</tr>
<tr>
<td>Feedback</td>
<td></td>
</tr>
<tr>
<td>Ideeën bespreken</td>
<td></td>
</tr>
<tr>
<td>Helpen</td>
<td></td>
</tr>
<tr>
<td>Anders</td>
<td></td>
</tr>
</tbody>
</table>

### Appendix 10: List with observations

Appendix 11: Les opbouw

Programma: TOP VOOR (BIJNA) NOP

School/groep/type: Eigen programma

Aantal deelnemers (+ leeftijd): 10 (10-15 jaar)

Periode: Woensdag 11 januari t/m woensdag 19 april

Tijd: Woensdag 13.00 - 15.00 en 16.15 – 18.15

Afsluiting: Modeshow en certificaat

Kosten: Het organiseren van een showmoment (als tegenprestatie)

Begeleiders: Twee Bouwkeet workshopleiders

Wil jij leren met stof en een naaimachine de mooiste dingen te maken? In 15 keer leer je de naaimachine kennen en met eenvoudige patronen te werken. Ook leer je een sjaal breien, een huisbroek naaien en een kussen maken van oude broeken. Om het programma af te sluiten ga je met de hele groep een spetterende show organiseren, om te laten zien wat je gemaakt hebt aan je familie en vrienden.

Benodigdheden door deelnemers zelf mee te nemen: T-shirts om te bedrukken

<table>
<thead>
<tr>
<th>PLANNING</th>
<th>WEEK 1</th>
<th>WEEK 2</th>
<th>WEEK 3</th>
<th>WEEK 4</th>
<th>WEEK 5</th>
<th>WEEK 6</th>
<th>WEEK 7</th>
<th>WEEK 8</th>
<th>WEEK 9</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Etui – naaien en bedrukken</td>
<td>Tas met touwtjes – patroon overtekenen – 8 oefening</td>
<td>Tas met touwtjes – start naaien</td>
<td>Tas afmaken, naaien en naam erop zetten met vinyl transfer</td>
<td>Shirt bedrukken met vinyl transfer</td>
<td>Handwerken – armband maken</td>
<td>Handwerken – armband maken</td>
<td>Afwerking werkstukken – bespreken showmoment</td>
<td>Showmoment</td>
</tr>
</tbody>
</table>

LES-INDELING

| 13.00 en 16.15 | Aanvang     |
| 13.05 en 16.20 | Vraag en plan voor vandaag |
| 13.15 en 16.30 | Maken       |
| 14.40 en 17.55 | Opruimen    |
Waarom biedt Bouwkeet dit programma aan?

BouwKeet biedt dit programma aan, om zo deelnemers hun eigen kunnen te laten ontdekken en hun wereld te verbreden. Plezier in het zelf kunnen maken staat centraal in dit programma.

Het programma is zo ingedeeld dat deelnemers na de eerste les al een volledig af product hebben waardoor ze direct een succes ervaring hebben. Ze maken met een paar simpele stappen een etui die direct gebruikt kan worden. De workshops daarna zijn opbouwend moeilijker en maken gebruik van diverse technieken en materialen. De resultaten worden getoond in een (mode)show voor familie en vrienden uit de buurt.
Summary

This research is on a makerspace, which is a place people go to for making. Makerspaces are part of the maker movement: “The maker movement refers broadly to the growing number of people who are engaged in the creative production of artefacts in their daily lives and who find physical and digital forums to share their processes and products with others (Halverson & Sheridan, p.496, 2014).” According to Putnam (2000) the formation of social capital is under threat and Bridger & Alter (2006) mention that the current society is not a good environment for communities to occur. But, makerspaces might by a place in which community ties can be strengthened (Taylor et al, 2016).

The case study for this research is Bouwkeet, a makerspace located in Bospolder-Tussendijken, Rotterdam. Bospolder-Tussendijken is a disadvantaged neighbourhood in Rotterdam. Stichting de Verre Bergen, a Venture Philanthropy Fund, realised the makerspace Bouwkeet in this neighbourhood to offer children who grow up in this neighbourhood more opportunities in life for developing themselves. The target audience of Bouwkeet are children from 10-15 years who live in Bospolder-Tussendijken. The three goals of Bouwkeet are: the empowerment of the children, the expansion of horizons of the children and the development of soft skills among the children.

This research tried to reveal which types of contact and activities occur at Bouwkeet and whether these contacts and activities lead to a sense of community among the users. Besides, it is researched if there are indications that a sense of community contributes to realising the goals of Bouwkeet: empowerment, expansion of horizons and soft skills.

First it is expected that the characteristics of the makerspace influence the type of contact that is possible to occur. Those characteristics are derived from the micro-publics of Amin (2002), the third places of Oldenburg (2001) and the more public places of Varna & Tiesdell (2010). Second, the type of contacts and activities in the makerspace are expected to have an influence on the sense of community that could be created in the makerspace. The various activities held in a locality (Bridger & Alter, 2006) and the contacts in this locality might result in the feeling of a sense of mattering, reinforcement (McMillen & Chavis, 1986), identification with the place or the interest (Nasar & Julian, 1995), a shared culture, a shared emotional connection, good internal communication, a high level of participation (Gardner, 1991), the organisation of collective actions (Bridger & Alter, 2006) and a high level of personal involvement (Puddifoot, 2003). These concepts could lead to a sense of community among the users of Bouwkeet.

This sense of community might be a precondition for empowerment, the expansion of horizons and the development of soft skills. Sheridan et al (2014) found out that children who spent time in a makerspace became more active, felt that they had more opportunities, gained more knowledge and came more often into action to solve problems: “Skills and knowledge are treated as tools that allow participants to create new things and access new communities and learning opportunities (Sheridan et al, 2014).”

Qualitative research methods are used to gain data. This in order to get an insight in how people who visit the place experience Bouwkeet. Desk research is done in order to get an insight in the preconditions for social interaction to occur and how they apply to Bouwkeet. Interviews are held with adults who make things at Bouwkeet, adults who volunteer at Bouwkeet, adults who work at Bouwkeet and children who participate at Bouwkeet. Observations are done at different locations within Bouwkeet and during various activities at Bouwkeet in order to get a broad insight into the activities and contacts that occur at Bouwkeet. Indications for the goals of Bouwkeet are also
observed. Last, two expert interviews are held. One with Daniel White, the director of Bouwkeet. The other with Bas Woudstra, associate at Stichting de Verre Bergen.

The desk research made clear that Bouwkeet has some of the preconditions for social contact to occur. The observations and interviews made clear that conversations are one of the main activities and people mention that they feel at home at Bouwkeet. These preconditions are reflected in the actual forms of contact in Bouwkeet. One of the main forms of contact that occurs at Bouwkeet is social interaction. The act of making results in other forms of contact: learning from each other, helping each other and working together. These forms of contacts occur during workshops for children during school, workshops for children in their free time, open workshops and socializing activities in the central hall.

These activities and contacts that occur at Bouwkeet lead to a certain sense of community among the users of Bouwkeet. The criteria of a sense of community which apply to the users of Bouwkeet are different for each person. Overall, people who work at Bouwkeet do have a stronger sense of community than people who volunteer and make things themselves at Bouwkeet. People who work at Bouwkeet have the feeling that they belong to Bouwkeet, have influence on the processes at Bouwkeet, are personally investing in the community and hope that they will have a future with the other users of Bouwkeet at Bouwkeet. Volunteers are more connected to the opportunities for making in Bouwkeet than to the project of Bouwkeet itself. This might be a reason why volunteers are not sure about their personal future at Bouwkeet. Whenever they get other career opportunities their bond with Bouwkeet is not strong enough to continue going there. Children mention that they like Bouwkeet because of the make opportunities, the opportunities for learning and the willingness of the teachers to help them during the workshops. Children mention that they would like to spend more time at Bouwkeet in the future and do tell enthusiastic stories about Bouwkeet to people in their inner circle.

Within Bouwkeet there are several indications that suggest that being part of the Bouwkeet community contribute to creating empowerment, the development of soft skills and the expansion of horizons. Employees and volunteers try to create an environment in which it is okay to make mistakes and try new things. This leads to children who are proud of the things they have made at Bouwkeet. Children are also learning how to work together, how to solve problems and how to reflect on what they have done and learned. Besides, children get in contact with new people and develop role models and new ideas about structures in society. Plus, children get to know how to make things they did not knew before and are getting knowledge about machines that are new for them.

So, this research contributes to the debate on urban encounters by showing that a makerspace could be a place in which the contacts and activities lead to creating a sense of community. Besides, indications for the wider social effects of participating in a makerspace are discussed. These wider effects of empowerment, the development of soft skills and the expansion of horizons do fit in a time in which the act of making becomes more important in society.