

# Master Thesis Organizational Development and Design

(Re)designing the organizational structure of Bildung  
Nijmegen



## Radboud Universiteit

Mike van der Maazen (S4448529), Semester 1  
2019 - 2020

Radboud University Nijmegen  
Master Organizational Development and Design

Under the Guidance of:  
Dr. Ir. L. J. Lekkerkerk

Second Reader:  
Dr. J. M. I. M. Achterbergh

Date:  
06-03-2020

# Preface

Before you lies the Master Thesis in organizational development and design: “(Re)designing the organizational structure of Bildung Nijmegen”. With this thesis is tried to meet the graduation requirements of the master Organizational Development and Design at the Radboud University, Nijmegen. The research and writing of this thesis lasted from May 2019 to February 2020.

This research was conducted at the request of Mr. Stap, former chairman of the Bildung Nijmegen board. In consultation with Mr. Stap and Mr. van Henten (Supervisor Bildung and Chairman of the Board 2019) and my supervisor Dr. Ir. Lekkerkerk, the research was developed. The research was bigger than initially expected, but it has allowed me to answer the research question.

This preface is intended to express my gratitude to the persons that helped me in this process. First of all, I would like to express my gratitude to my two supervisors from the organization: Mr. Stap and Mr. Henten. They offered me an unique research project. Together we developed several ideas to research the current structure of Bildung Nijmegen. In this process both supervisors assisted me and provided me with lots of feedback. Mr. Stap, continued to challenge me after each time I sent him a proposal. He reminded me to keep thinking about the most optimal process. His way of thinking inspired me to create a design that fits to the principles of Bildung Nijmegen. Mr van Henten guided me through each session. Without him, it was impossible to come to this result. His motivation and willingness to help me, functioned as a motivator for me. His share in this research is enormous.

Next, I want to express my gratitude to my supervisors: Dr. Ir. Lekkerkerk and Dr. Achterbergh. They provided me with feedback and guidance during this process. In particular Dr. Ir. Lekkerkerk helped me with discussions about several research methods. His ideas about diagnosing and designing this kind of organizations, provided me with helpful methods. Each conversation gave me new insights in the process and finally led towards this thesis.

Finally, I want to thank my family for their support. During all the years I studied, they were there to support me and accepted the choices I made. Without them, it would have been impossible to finish this research.

I hope you enjoy the reading,

Mike van der Maazen

## Abstract

Bildung Nijmegen is a foundation, that provides a platform for students who want to work together at educational innovation. The organization was founded in 2018 and is rapidly growing. Nowadays, the organization faces problems with finding the right organizational structure for their activities. This research tries to find out what these problems are, by diagnosing the current organizational structure. Based on the diagnosis, a new organizational structure is invented by the organizational members of Bildung Nijmegen. The research questions central in this study are:

- RQ1: *“How to perform a diagnosis of the current organizational structure of Bildung Nijmegen?”*
- RQ2: *“How to design a new organizational structure for Bildung Nijmegen, that reduces the current problematic behaviour and is accepted by the members of Bildung Nijmegen?”*

To answer these questions, a participatory action research is conducted in order to find out what causes the problematic behaviour. The Lowlands SocioTechnical System Design (L-STSD), a business movement focused on improving the functioning of people and organization by adapting the redesign of work processes, functions as the line of thought. De Sitter, founder of the L-STSD, provides specific guidelines by which an organizational structure can be assessed and (re)designed. Achterbergh and Vriens (2019) build on this theory and created a three dimensional model for episodic interventions in organization. This model in combination with the theory of de Sitter and participatory action research created six intensive session. In these sessions, facilitated by the researcher, the members of Bildung Nijmegen assessed the current organizational structure and created a new organizational structure.

Eventually, the results indicated that four parameters of the current organizational structure caused the problematic behaviour. By adjusting these four parameters, a new organizational structure was created and accepted by the organizational members of Bildung Nijmegen. The idea now is, to implement this structure in the organization.

# Table of Contents

<b>H1 Introduction</b> .....	6
<b>H2 Theoretical Framework</b> .....	10
§2.1 Critical evaluation of potentially useful theories.....	10
§2.2 Infrastructural Design .....	12
§2.2.1 Transformation Processes.....	12
§2.3 Lowlands SocioTechnical System Design.....	14
§2.3.1 The result of a sociotechnical (re)design.....	16
§2.4 Seven specific diagnosis and design Parameters - De Sitter .....	17
§2.5 The three-dimensional model.....	21
§2.5.1 The features of a conscious episodic intervention.....	21
§2.5.2 The functional dimension.....	24
§2.5.3 The social dimension .....	27
§2.5.4 The infrastructural dimension .....	28
§2.6 Overview of chosen theory.....	30
<b>H3 Method</b> .....	32
§3.1 Research Strategy.....	32
§3.2 Research Setting .....	34
§3.3 Method.....	36
§3.3.1 The 3D Model.....	36
§3.3.2 The functional dimension.....	36
§3.3.3 The social dimension .....	38
§3.3.4 The infrastructural dimension .....	38
§3.4 Data-collection and analysis .....	43
§3.5 Research Ethics.....	45
<b>H4 Results</b> .....	46
§4.1 Diagnosis of Bildung Nijmegen .....	46
§4.1.1 First diagnosis session .....	46
§4.1.1.1 Infrastructural choices for session 1 .....	46
§4.1.1.2 Results achieved in session 1 (26-11-2019) .....	47
§4.1.1.3 Reflective results of session 1 .....	47
§4.1.2 Second diagnosis session .....	48
§4.1.2.1 Infrastructural choices for session 2 .....	48
§4.1.2.2 Results achieved in session 1 (03-12-2019) .....	49
§4.1.2.3 Reflective results of session 2.....	52

§4.1.3 Third diagnosis session.....	53
§4.1.3.1 Infrastructural choices for session 3 .....	53
§4.1.3.2 Results achieved in session 3 (17-12-2019) .....	53
§4.1.3.3 Reflective results of session 3 .....	54
§4.2 Design of Bildung Nijmegen .....	56
§4.2.1 First design session .....	56
§4.2.1.1 Infrastructural choices for design session 1 .....	56
§4.2.1.2 Results achieved in design session 1 (10-01-2020).....	57
§4.2.1.3 Reflective results of design session 1 .....	58
§4.2.2 Second design session .....	58
§4.2.2.1 Infrastructural choices for design session 2 .....	58
§4.2.2.2 Results achieved in design session 2 (13-01-2020).....	58
§4.2.3.3 Reflective results of design session 2 .....	59
§4.2.3 Third design session .....	59
§4.2.3.1 Intervention structure of design session 3 .....	59
§4.2.3.2 Results achieved in design session 3 (23-01-2020).....	60
§4.2.3.3 Reflective results of design session 3 .....	60
§4.3 The new organizational structure .....	61
§4.4 The new structure compared to its functional requirements. ....	66
§4.5 The new structure from a theoretical perspective.....	68
<b>H5 Conclusion, Discussion and Recommendations .....</b>	<b>70</b>
§5.1 Conclusion.....	70
§5.2 Discussion.....	71
§5.2.1 Limitations .....	72
§5.3 Recommendations .....	73
§5.3.1 Practical recommendations for Bildung.....	73
§5.3.2 Recommendations for further research. ....	74
Literature .....	75

# H1 Introduction

Bildung Nijmegen is a foundation, that provides a platform for students who want to work together at educational innovation. The organization was founded in 2018 and is rapidly growing. The idea of the organization is to provide a platform, that gives a central place to subjectification in the current general education system. Bildung Nijmegen is focused on the tertiary levels of education in Nijmegen: ROC, Han Nijmegen, Radboud University, Art academy etc. Within the platform, students can do their own research about subjects in which current education is insufficient. In this way students are able to research subjects, which are relevant to them. Examples of subjects are their ideas about love or climate change. The students that are active member of Bildung Nijmegen, design their own meetings in which several topics are discussed. Students are invited to come with their own designs and to gather in a group. This group makes a concrete activity. Successful meetings are merged into one “Bildung Curriculum” of a longer period (Bildung Nijmegen, 2019). The organization consists of a board, a marketing department, and several project groups that organize their own subjects. Project groups are supported by the board through finance, resources, locations etc. Each project group has its own project leader.

This type of organization is quite unique. The students work on a project basis. Students form the primary activities of the organization and each activity can be different. This means that the activities as well as the members are changing continuously. How can this kind of organization continue its existence, activities and also stay innovative? How does this organization remain viable? Bildung Nijmegen is struggling with the right organizational structure for this type of organization. The organization is growing and looking for new ways of structuring its projects. The organization not only wants to keep the focus on students, but also wants to become active in all segments of society. This includes also projects for companies. Besides that, the high turnover of volunteers and the organization’s changing activities, make it difficult to get continuity in their activities. The ideas about how Bildung should function are there, but the organization itself does not know how to create a viable organization structure.

To get more insight in the problems of Bildung Nijmegen, a semi-structured interview for orientation with one of the members was held. In this interview, it became clear that there were multiple visions on how Bildung Nijmegen should be organized. Together the organization created a project-based organization, but still the organizational structure and vision are not clear. This is causing problems. The respondent, for example stated, that there are problems in communication between members and that this problem is related to the organizational design of Bildung. In addition, the respondent also indicated that when someone leaves the board, it becomes difficult to fully replace him/her. The unclear structure is also causing problems in the realization of projects. Organizational

members are open to almost every new idea. Most of the ideas are therefore accepted, but the unstructured way of arranging these projects, cause that some projects fail (Interview 1, Appendix 2).

The problems above show that Bildung Nijmegen is struggling with its current organizational design. The orientational interview showed that the problems are not related to the persons in the organization, but related to the way in which work is coordinated. In view of this possibility, this research first wants to diagnose the current structure of Bildung Nijmegen to find structure related problems. Second, this research wants to provide the organization with an optimal design for the new organizational structure. An important finding in the interview was, that conflicting views on how Bildung Nijmegen should be organized, are holding back the creation of a new structure (Interview 1, Appendix 2). Acceptance of the members is therefore crucial in the creation of the new organizational structure. This research exists of two goals. The first goal is to diagnose the current organizational structure, in order to find structure related problems. The second goal of the research is to design a new organizational structure, that is accepted by the members of Bildung Nijmegen, and reduces the current problematic behaviour. To achieve these goals, this research must answer to the following research questions:

RQ1: *“How to perform a diagnosis of the current organizational structure of Bildung Nijmegen?”*

RQ2: *“How to design a new organizational structure for Bildung Nijmegen, that reduces the current problematic behaviour and is accepted by the members of Bildung Nijmegen?”*

To achieve this, a participatory research is conducted. Swanborn (2013) describes participatory research as a way of bringing changes to the social system on which the researcher is focused. Together with Bildung Nijmegen the structure of the organization is diagnosed and designed. In this way, the organizational members are involved in the diagnosis and the creation of a new structure. Due to the involvement, the acceptance of the new structure will be higher (Achterbergh and Vriens, 2019) and the organization will get more insight in the process of designing a structure for the organization. Several sessions are held in which the process is introduced, the diagnosis of the organization is conducted and the design of a new structure is made.

Achterbergh and Vriens (2010) describe that the design of an organizational infrastructure is essential for meaningful survival in its environment. To realize and regulate transformation processes, infrastructural conditions are needed. These infrastructural conditions are divided by the authors into *“Division of work”*, *“HR”* and *“Technology”*. These conditions are needed to realize transformation processes that correspond with the goals of an organization. The authors see organizations from a system’s perspective. Organizations are systems consisting of a set of elements (setting goals, designing infrastructural conditions), that eventually want to realize their transformation processes. The theory of Achterbergh and Vriens (2010) is helpful to get a better vision on the current

infrastructural conditions of Bildung Nijmegen. This theory helps to understand that, when someone designs an infrastructure, these transformation processes will change. Besides the current view of the organization, the infrastructural conditions are also important for the design of the new structure, because changing the division of work will lead to a new way of realizing and regulating transformation processes (Achterbergh and Vriens, 2010).

Besides the infrastructural conditions, a useful approach for the diagnosis and design of the structure is the Lowlands SocioTechnical System Design (L-STSD). The L-STSD is a business design approach that makes a distinction between the 'socio' and 'technical' dimensions of the system. The socio dimension is related to the human resources and culture of the organization. The technical dimension is related to the structure and systems of an organization (Kuipers, van Amelsvoort and Kramer, 2010). These dimensions are always intertwined and do not exist separate from each other. The L-STSD focuses on an integral approach, when designing organizations (Kuipers et al, 2010). De Sitter (1998) is founder of the L-STSD. In his Integral Organizational Renewal Theory (IOR) approach, he specifies how a designer should design distributions of work attenuating disturbances and amplifying regulatory potential to deal with disturbances impinging on relevant organizational variables (Achterbergh & Vriens, 2010). His seven design parameters describe how organizations can create self-organizing teams with low disturbance and high controllability. When these parameters are used in the correct way, one can achieve the organizational essential variables (De Sitter, 1998). Bildung Nijmegen wants to be a flexible and a self-managing organization (Interview 1, Appendix 2). The L-STSD is an approach that works with the integral design approach and aims at creating self-managing teams. The combination of an integral approach with the creation of self-managing teams can offer Bildung Nijmegen a flexible and self-organizing structure. In combination with the IOR approach of De Sitter (1998) this theory can contribute to an organization that, besides flexible and self-organizing, is viable and innovative. The L-STSD will be further deepened in the next chapter.

The IOR approach of De Sitter (1998) can be useful for the diagnosis and design of the new organizational structure. The before mentioned approach, gives several explicit design parameters that can create a viable structure. The design parameters can be used for the diagnosis, to see how the parameters currently affect the essential variables of the organization. On top of that, the design parameters give explicit guidelines for the design of a new organizational structure. In combination with the integral design, it is possible to design the organization in such a way, that it can meet the functional requirements. By using the theory of De Sitter et al. (1997) the organization will be flexible and have a high controllability. Also the quality of work and quality of working relations can be increased by taking the design parameters into account, while creating the organizational structure of Bildung Nijmegen.

The IOR approach of De Sitter et al. (1997) is based on the use of a structured body of knowledge concerning the design of organizations in the context of a participative design process. In other words, L-STSD implies a participative design process. Involving the organization in the process



of the diagnosis and design is therefore essential. To structure this process, the book ‘Organizational development’ of Achterbergh and Vriens (2019) is used in which they describe their three dimensional model (3D). In their 3D model, Achterbergh and Vriens (2019) describe three dimensions aimed at conscious, episodic interventions into the organizational infrastructure: the “*functional dimension*”, the “*social dimension*” and the “*infrastructural dimension*”. These three dimensions capture all the relevant aspects for change in an organization. Based on their theory several meetings are structured in a participative way. The authors argue that there is no blueprint for participation. The functional and social goals of an intervention steer the nature and degree of participation. Based on the 3D model, the process of diagnosing and designing Bildung Nijmegen, is structured.

The relevance of this research is mainly focused on a practical and societal relevance. This research wants to contribute to the creation of a new structure for Bildung Nijmegen. This is done by showing the organization, in a participatory way, how this organization can be diagnosed and designed. The diagnosis will provide the organization with insights to their current problems and which of these problems are related to the current structure. The design phase will provide the organization with a new way of dividing work that can tackle these structure related problems. The participatory approach gives the organization a unique insight in how organizational structures can create problems and how these problems can be tackled. Therefore, it also contributes to the awareness and importance of continually assessing and (re)designing the organizational structure of a company.

The contribution is therefore mainly focused on the organization, but this research also shows a unique way of diagnosing and designing a particular kind of organization. The 3D model is recently published in the book “Organizational development” by Achterbergh and Vriens (2019). Their theory is not tested and practiced on this kind of organizations. Their theory has to be translated to this particular kind of organization. Therefore the insights of this research may add new insights to their 3D model. These insights can be used in the further development of the model. Lastly, these insights can be used for comparable organizations that try to (re)design their organizational structure.

In the next chapter the theoretical framework will be presented. In this chapter the theories will be further explained and compared to other theories. Thereafter, the method of this study will be discussed in chapter three. In this chapter the participatory approach is outlined and the methods for obtaining and analyzing the data. Subsequently, the analysed data will answer the research question in chapter four; the results chapter. Lastly, a conclusion and a discussion about the used methods will be presented in chapter five.

## **H2 Theoretical Framework**

The theoretical framework describes the theory behind the key concepts of this study. In the first section the L-STSD will be compared to other possible design theories (§2.1). In the second paragraph, the infrastructural design theory of Achterbergh and Vriens (2010) will be further deepened (§2.2). The ideas of the L-STSD and the theory of De Sitter (1998) will be explained, respectively, in the third and fourth paragraph (§2.3 and §2.4). The 3D model of Achterbergh and Vriens (2019) will be elaborated to get a better view on the theory behind the design of organizational structures (§2.5). Lastly, an overview of the chosen theory is presented in the last paragraph (§2.6)

### **§2.1 Critical evaluation of potentially useful theories**

One of the possible theories for diagnosing organizations is the configurational theory of Mintzberg (1980). He describes five ideal configurations of organizations and the building blocks for these configurations. First, Mintzberg (1980) argues that an organization consists of several parts (strategic apex, technical structure, support staff). Next, the different ways of coordination in organizations are elaborated. These coordination mechanisms describe the way of how these configurations are broadly coordinated. The author distinguishes for example standardization of knowledge and standardization of work processes. Thereafter, Mintzberg (1980) elaborates the design parameters. Examples are the unit size, training and indoctrination and vertical decentralization. Lastly, the contingency factors are distinguished (i.e. age and environment of the organization). Each configuration has its own ideal combination of these four parts. According to Mintzberg (1980), there should be a consistency between the different elements to create internal fit. To also create external fit, a configuration should flourish in a certain context. To finish the configuration, there should be a fit between the internal and external fit.

The theory of Mintzberg (1980) is focused on the essential variable of effectiveness. This effectiveness should be high and can be achieved through the internal and external fit of the organization, but this essential variable is not further elaborated or specified. This theory is applicable in a broad variety of organizations. Therefore, the theory is useful for the diagnosis of an organization. Unfortunately, the theory does not provide specific guidelines for the design of an organizational structure. The theory can be seen as more descriptive instead of prescriptive (Ansoff, 1991). Mintzberg (1980) describes ideal configurations, but does not provide a prescriptive way of achieving these ideal types. In this research, the creation of an organizational structure requires theory that consists of a prescriptive nature. Therefore, this theory will not be part of this research.

Another possible theory is the theory of disruptive innovation by Christensen et al. (2009). Their theory wants to create a future-proof health care system by disruptively changing the current state of this system. The authors argue that nowadays, due to technological progress, the ability to

relate symptoms (of diseases) to causes and treatments, has become much easier, but hospitals are still based on the old “experimental” medicines. The need for different business models and organizational design is high and therefore the authors pledge for disruptive innovation of this sector. They divide three business models based on the type of medicine: Value Adding Processes (VAP), Solution Shops and Facilitated Networks. The VAP model is focused on known problems and symptoms and offers a precision medicine (simple solution). Solution Shops focus on more complex problems and need experts to find the solutions. The facilitated networks are organizations in which experiences or knowledge about particular kind of diseases is shared. Each business model consists of four elements: the value proposition, the profit formula, the processes and the resources needed (Christensen et al., 2009). Each business model differs on these four elements. The authors argue that when these business models (VAP, Solution Shop and Facilitated Networks) are mixed, this leads to more complexity, more unaffordable products and more overhead costs. These problems occur in the current system, all caused by the inefficient way of dividing the sector in separate business models according to Christensen et al. (2009).

Although, the theory of Christensen et al. (2009) offers a good perspective on how the health care sector can be divided to order type (type of medicine), the theory does not provide a clear description on how this can be achieved. The theory is mainly focused on the macro segmentation of the healthcare sector. Therefore the scope of their theory is broad. It does not describe how the organizations must change the division of labour. Christensen et al. (2009) offer a business model of four elements, but with those four elements, it is not possible to design the complete structure of an organization. Again the lack of guidelines in redesigning an organization is missing. Another lack of this theory, is that it is focused on the healthcare system of the United States. The education system in the Netherlands cannot be compared to the health care system of the United States.

Womack and Jones (2003) created their “lean production approach”. The essential variables of lean are to reduce waste and deliver value to the customer. They offer some (implicit) design parameters. According to the authors, one should: 1: Specify value as defined by the customer or production based on customer expectations. 2 Identify value streams for each offering and identify waste. 3 Design production flows: the right component, at the right time, in the right quantity. 4 Design and provide what the customer wants, only when the customer wants it (pull). 5 Aim for perfection through reflection, maintenance and improvement. (Womack and Jones, 2003). This approach has in contrast to the other two theories, guidelines for creating an organizational structure. These guidelines can be used for the (re)design of an organizational structure, but these guidelines are very implicit and focus on making work more efficient. Besides that, this approach is mainly focused on manufacturing organizations. This is a completely different industry with different goals and therefore not applicable in this organization.

An organizational design approach that offers explicit guidelines is the Lowlands SocioTechnical System Design (L-STSD). De Sitter (1998) is founder of this approach and offers in

his theory specific design parameters, that can be used for the diagnosis of the current structure, as well as the design of the new organizational structure. The essential variables of this theory focus on the quality of the organization, the quality of work and the quality of working relations. L-STSD implies a participative design process. Involving the members of the organization in the process of the diagnosis and design is therefore essential. Achterbergh and Vriens (2019) build on the work of De Sitter and describe how his theory can be used in an episodic intervention. The guidelines are very specific and can be explained to the members. The 3D model of Achterbergh and Vriens (2019) can be used to guide the process and the L-STSD takes the human factor into account. These two theories combined form a strong theoretical base, that can bring this research forward.

## **§2.2 Infrastructural Design**

According to Achterbergh and Vriens (2010), supporters of the L-STSD approach, the design of an organizational infrastructure is essential for meaningful survival in its environment. To survive, organizations have to adapt their goals and realize their selected goals. That is the only way to stand a chance in a constantly changing environment. The achievement of these goals, can be realized by performing transformation processes and regulation of these transformation processes. Achterbergh and Vriens (2010) describe a transformation process as: “a process turning some input into some output” (p.12). These processes and the regulation of these processes are realized by the organization’s infrastructure. First a brief explanation of the transformation processes will be given. Thereafter, the role of organizational structure will be further explained.

### **§2.2.1 Transformation Processes**

As stated before, an organization has to be able to adapt and realize their goals. This is possible through transformation processes. Realizing a transformation process, means that this process produces its output. In an organization, transformation processes are realized on different levels. For example: an organization can see developments in its environment. According to these developments a plan gets produced to respond to these developments: a new strategy is created. The output in this case is the new strategy. To deliver a contribution to the organization, the output for these transformation processes cannot be just coincidence. The output needs to be specified in order to bring organizational contribution. Achterbergh and Vriens (2010) describe this as “strategic regulation”. An organization must be able to formulate and reformulate their goals.

Every transformation has to cope with disturbances. These disturbances hinder an organization in achieving the goal of the process. To deal with these disturbances, “operational regulation” is needed. To give an example, when a department in a manufacturing company runs out of stock, but still has to produce a disturbance will occur. A regulatory measure might be an automatic stock

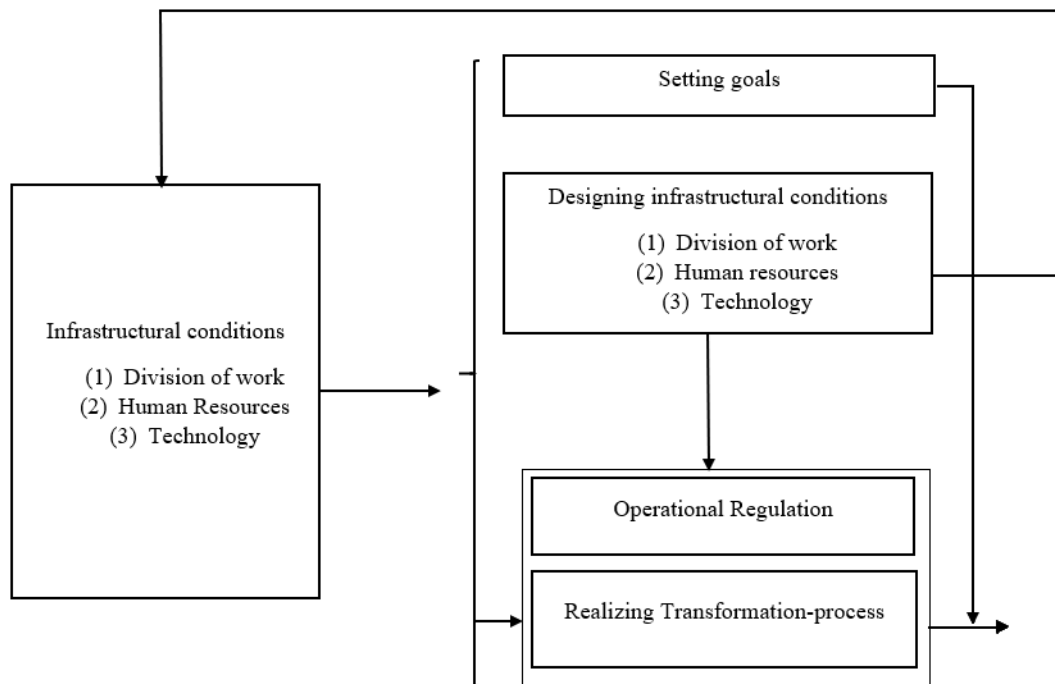
system, that orders enough of each product. Overall, operational regulation deals with disturbances by controlling and changing the transformation processes (Achterbergh and Vriens, 2010).

To realize these transformation processes certain conditions are required. Achterbergh and Vriens (2010) describe these conditions as “infrastructural conditions” (p.13). These conditions are divided in three categories: division of work, human resources and technology.

1. “Division of work consists” of the defined tasks, the coordination of these tasks and the responsibilities needed for the transformation processes.
2. “Human resources” refer to recruitment and development of skillful, knowledgeable and motivated employees. All the systems that have to do with these recruitment and development of employees have to be taken into account. These systems are needed to ensure that the organization has sufficient and qualified personnel and are also capable of improving themselves.
3. “Technology” refers to all the things that are required to realize transformation processes and regulate them. “All the things” in this context means everything in the organization except the people. The selection of technology influences the way in which transformation processes get realized. Examples of technology are machines, buildings and IT systems (Achterbergh and Vriens, 2010, p.13).

Selecting and implementing measures with respect to these conditions in such a way, that these conditions are available for realizing the transformation process and its operational design, is called “regulation by design” (Achterbergh and Vriens, 2010).

Besides the four different activities (Realizing transformation process, regulating transformation processes operationally, setting goals for the transformation processes and designing & implementing infrastructural conditions for transformation processes and their operational regulation), another condition is needed to perform these different activities. To be able to set goals and design infrastructural conditions, infrastructural conditions are needed. Without the three conditions (division of work, human resources and technology), setting goals or designing infrastructure is impossible. The process of designing infrastructural conditions is needed to get a particular infrastructure containing conditions to perform the four activities. Figure 2.1 shows the model for regulating and realizing transformations.



**Figure 2.1** Infrastructure as a condition for regulating and realizing transformations, adapted from Achterbergh and Vriens, (2010, p. 15)

## §2.3 Lowlands SocioTechnical System Design

Since the 1950s, the sociotechnical theory has developed in several regions in different theoretical streams (van Eijnatten, 1993). The Lowlands SocioTechnical System Design (L-STSD) is the contemporary Dutch variant of the classic socio technique. The classic socio technique makes a distinction between the “social system” and the “technical system”. The L-STSD makes in contrast to the classic socio technique, a distinction between the “production structure” and the “control structure”(Kuipers et al., 2010). The production structure is, according to De Sitter (1998), the architecture of the grouping and linking of executive functions relative to the order flows. The control structure is the architecture of the grouping and linking of control activities. The L-STSD supposes that the structure of an organization is creating conditions for being able to meet the requirements of the environment. When an organization is not able to meet these requirements, the structure should be (re)designed integrally. L-STSD offers the principles and concepts to integrally adjust the organizational structure. L-STSD is a business design approach that on the one hand focuses on the distribution of tasks and on the other hand, focuses on the productivity of the organization and the quality of work and working relations of an organization (van Amelsvoort & Scholtes, 1993). By adjusting or redesigning the work processes and organization of technique and services, the functioning of employees and organization can be improved. (Kuiper et al., 2010).

The sociotechnical design strategy is based on several rules. Kuipers et al. (2010) describe the following rules:

1. Selecting the boundaries of the project
2. Formulation of the goals (the mission, strategy and vision) of the organization.
3. The determination of the specifications that one should consider, while designing the new structure.
4. The actual creation of the organizational structure. First the production structure from macro to micro and then the control structure from micro to macro.
5. The last step is about the design of the technical system. First of all the production systems, next the operating systems, then the control systems in the area of personnel, quality, maintenance and finance and lastly the information systems.

The (re)-design starts with setting the scope of the (re) design. This step aims at selecting the borders of the organization. This step is crucial due to the need for an accurate consideration about which part of the organization is changed. It is important to know why an organization is going to change and what part of the organization is going to change. The integral design approach of Kuipers et al. (2010) focuses on the total system. This means that this approach reasons from the total system into parts. In this way, the structural relations between parts or subsystems can be found.

The second step is about the formulations of the goals (mission, strategy and vision) of the organization. Kuipers et al. (2010) argue that there is a need for clarity and consensus about the direction of the organisation. The members need to have a shared vision on the mission, strategy and vision of the organisation. This is done by the formulation of the goals. The mission describes the role of the organization in its environment and future, based on its own norm and values. The vision gives an explanation of the mission, by sketching future developments in the environment and stakeholders of the organization. Lastly, the strategy describes how the goals of the organization can be achieved.

The third step determines the design specification one should consider, while designing the new structure. These specifications can be found in the primary process of the organization. To find these specifications one should look at: the variance in order flows, the complexity of the executive process and the functional requirements of the organization. The specification of the new structure should be determined regardless of the current specifications.

First, the order flows must be determined. This is done by sorting the orders on their common features. What types of order flows are possible in the organization? Are product based order flows logic or order flows based on the type of customers? Based on the definition of the order flow, several parallel order flows can be created as alternatives for the new structure.

Secondly, the complexity of the executive process must be determined. This is done by describing the preparatory, make and support activities of the production process. These activities

should be analysed and redesigned. Which activities are necessary and which can be deleted or automated?

Lastly, the functional requirements should be determined. These are the requirements for the quality of the organization, quality of labour and quality of working relations. The organization must be able to meet these requirements when processing orders (Kuipers et al., 2010). Requirements can be set up by the organisation itself, or demanded by the environment.

The fourth step describes that one should design the product structure top-down. The grouping of executive tasks (the design of the production structure) goes from macro-level to micro-level. First the different product-market combinations are divided as much as possible. After that, product streams within the product-market combinations get divided as much as possible and, if necessary, at last the product streams get split up. In this way, several independent process parts arise. Employees can be coupled to these process parts.

The control structure should be designed bottom-up. In the micro level of the production structure, the production structure and the control structure, cannot be seen apart from each other (Kuipers, Van Amelsvoort & Kramer, 2012). On task group level the production structure and the control structure get established together. According to the fourth step, the control activities should be assigned from micro-level to macro-level. The control activities get as much as possible assigned to task groups. Control tasks that cannot be assigned to the level of task groups, get allocated on the first higher meso level: the operational group. Control activities, which cannot be assigned to both levels, should be assigned to macro business level.

The fifth and last rule says that information- and communication-structures and supporting systems, should be designed at last. They should be designed in such a way that they connect to the design of the production and control structure (De Sitter, 1998). Kuipers et al (2010) define systems as standardized and formalized procedures, that capture preparing, executing, supporting and controlling activities into routines. These systems can provide protocols, or perform activities. Kuipers et al. (2010) argue that one should design these system, in such a way, that they do not hinder the flexibility of the organization.

### **§2.3.1 The result of a sociotechnical (re)design**

The result of a sociotechnical (re)design is an organization that consists of relatively independent units on several levels. Task groups are responsible for the continuity of the primary process. The control activities that are needed for this, are as much as possible assigned to these task groups. Disturbances within the primary process can be solved fast and adequate, because of the possibility to regulate. The dependence between the task groups should be as low as possible, because this can limit the possibility of disturbances. Operational groups are responsible for the tuning between the task groups (when this is not possible for the task groups) and for improvement of the primary process. Activities that cannot



be assigned to the task groups, operational groups and business units, should be assigned to specialist supporting groups. Lastly, integral project groups can be created, who are temporary and exceed the responsible area of one organizational unit. These project groups consist of employees from all different organizational units (Kuipers & van Amelsvoort, 1993).

## §2.4 Seven specific diagnosis and design Parameters - De Sitter

De Sitter is founder of the L-STSD approach, also called the integral organizational renewal approach (IOR). In his book “Synergetisch Producteren” (1998), and the article: “From complex organizations with simple jobs to simple organizations with complex jobs” (De Sitter et al. 1997), De Sitter formulates rules and principles for diagnosing and designing viable distributions of work (Achterbergh & Vriens, 2010). Inspired by cybernetics, De Sitter specifies how a designer should design distributions of work attenuating disturbances and amplifying regulatory potential to deal with disturbances impinging on relevant organizational variables.

De Sitter’s theory is based on Ashby’s regulatory logic in the realm of distributing work (Achterbergh & Vriens, 2010). The contribution of De Sitter in terms of Ashby’s theory is that De Sitter formulates principles for designing the division of work. The principles are based on attenuation and amplification. To understand how an organizational structure can attenuate and amplify, the definition of an organizational structure is needed. Achterbergh and Vriens (2010) describe an organizational structure as: “*An organizational structure is a network of related tasks*” (p.213). For the definition of tasks Achterbergh and Vriens (2010) use Ashby’s concept of transformation: “*a transformation describes a change of values of a set variables from a begin state to an end state*” (p.213). A task can be seen as a specific grouping of sub-transformations. A task can be split up in the operational aspect and the regulatory aspect. The regulatory aspect of a transformation concerns the realization of its desired effect. The regulatory aspect concerns dealing with the disturbances the operational sub-transformation faces in realizing the desired output of the transformation. The network of tasks concerns the operational aspect of the whole organizational transformation: the production structure. The network of regulatory tasks can be seen as the control structure.

The way activities are divided to create tasks for individual workstations, influences the amount of disturbances and the way individual workstations can deal with disturbances. De Sitter describes 7 design parameters to minimize the amount of disturbances and increase (amplify) regulatory capacity at individual workstations (Achterbergh & Vriens, 2010). An example: a chair can be made by several individual workstations. One employee saw chop wood, one employee can build the chair and the last one can paint the chair. It is also possible to divide tasks per output category: some employees make chairs and do all these tasks, others make tables. This example shows that dividing activities over tasks influences the amount of interactions needed to perform a transformation. The more individual work stations, the more interactions. This creates structural complexity. The more

autonomy and the more process oversight the more an employee has regulatory capacity: the way an individual workstation can deal with disturbances.

In this way the structure affects the essential variables. According to Achterbergh and Vriens (2010), De Sitter describes three subsets of essential variables for an organization: Quality of work, Quality of Working relations and Quality of organization. Quality of organization is about the potential of the organization to effectively and efficiently realize and adapt its goals. The quality of work is the meaningfulness of jobs and work related stress. The quality of working relations is about the effectiveness of communication in organizations. De Sitter argues that if organizations do not reach the appropriate level of these internal and external requirements, their availability will be threatened (Achterbergh & Vriens, 2010). In figure 2.2 the essential variables of De Sitter (1998) are divided into the external functional requirements and internal functional requirements.

Quality	External functional requirements	Internal functional requirements
Quality of organization	Order flexibility  Control over order realisation  Potential for innovation	Short production cycle time Sufficient product variations Variable mix of products  Reliable production and production time  Effective control of quality Strategic product development Short innovation time
Quality of work	Low level of absenteeism  Low level of personnel turnover	Controllable stress conditions  Opportunities to (1) be involved (2) learn (3) develop
Quality of working relations	Effective communication	Shared responsibility Participation in communication

**Figure 2.2** Essential variables, external and internal functional requirements according to De Sitter (1998), adapted from Achterbergh and Vriens (2010, p. 242)

These three essential variables are quite general, and function for every organization. In case of specific organizations, with an ordinary societal contribution, one should specify their criteria. The criteria should be specified, so that it fits the societal contribution of the organization. In order to do this, one should translate the generic variables (quality of organization, work and working relations) into criteria operationalizing the specific contribution of the organization (Achterbergh and Vriens, 2019) Bildung is a voluntary organization and therefore requires specific external and internal functional requirements.

Important for the relation between the structure and outcomes is the concept of controllability. The concept of controllability is about the ratio between control options and control demands. In formula:  $\text{controllability} = \text{control options} / \text{control demands}$ . For a controllable organization, options and demands should match. Structural design influences both control demands and control options. Structural complexity increases control demands and low control capacity decreases control options.

De Sitter developed 7 design parameters that capture characteristics of organizational structures. If an organizational designer, designs the organization with a low value on the parameters, the organization will have a high regulatory capacity and low structural complexity. The organization will score high on the outcome variables. The seven design parameters of De Sitter are as follows:

#### **Group 1 parameters describing the production structure of the organization.**

- 1. Level of functional concentration:** The level of functional concentration is about the grouping of operations. A maximum value means that all operational tasks of the same type are concentrated in specialized departments, where they are performed with respect to all orders. A minimum value means that all operational tasks are grouped in a production flow.
- 2. Level of differentiation of operational transformations:** De Sitter distinguishes three types of activities: preparing, making and supporting. Making is about the actual realization of the output of the transformation. Preparation is about creating the necessary conditions for performing the making activities. Supporting concerns all the indirect activities needed for the realization of the transformation. The more these activities are divided, the higher the value of this parameter.
- 3. Level of specialization of operational transformations:** The level of specialization of operational tasks refers to how much tasks are split up into sub-tasks. The more a transformation is specialized the higher the value on these parameter. The more sub-tasks, the more specialization.

## **Group 2 Separation between operational and regulatory transformations**

- 4. Level of separation between operational and regulatory transformations:** This refers to if a task consists of both operational and regulatory sub-transformations. A high value on this parameter means a lot of separation between the control and production structure.

## **Group 3 Parameters of the control structure**

- 5. Level of differentiation of regulatory transformations:** operational regulation, design regulation and strategic regulation. The more these three are divided, the higher the value on this parameter.
- 6. Level of differentiation of regulatory transformations into parts:** Every regulatory activity involves three activities: Monitoring, Assessing and Acting. Monitoring measures the values of variables. Assessing compares these values to the norm. Actions reducing the difference between the values and the norms are related to acting. The more these activities are divided, the higher the parameter value
- 7. Level of specialization of regulatory transformations:** The level of splitting regulatory transformations in smaller sub-transformations.

De Sitter argues that a low value on these parameters has two main effects on realizing tasks in the organizations: it attenuates disturbances and amplifies regulatory potential. The quality of the organization will be better, because flexibility increases. Control over the process is increased, because of the integration of operational and regulatory tasks. This creates better chances for product and process innovation (Achterbergh & Vriens, 2010). The quality of work will be high, because low parameter values create changes for reducing stress, an employee has higher controllability and involvement is both socially and intrinsically secured. The last outcome, quality of working relations is high, because working with complex tasks in task groups enables relevant work-related communication. The employees will have a higher regulatory potential to deal with these disturbances and that creates better communication (Achterbergh & Vriens, 2010).

## §2.5 The three-dimensional model

In their three-dimensional (3D) model Achterbergh and Vriens (2019) describe three dimensions aimed at conscious, episodic interventions into the organizational infrastructure: the functional dimension, the social dimension and the infrastructural dimension. These three dimensions capture all the relevant aspects for change in an organization. First a brief reasoning behind the model is explained according to the nine different features of an episodic intervention that Achterbergh and Vriens (2019) describe. Afterwards, the three dimension will be further deepened.

### §2.5.1 The features of a conscious episodic intervention

Achterbergh and Vriens (2019) describe nine features of episodic interventions. These features help to shape the 3D model. According to them an episodic interventions have/are:

1. A **goal of** the intervention
2. An **object of** the intervention
3. A **functional** dimension
4. A **social** dimension
5. An **infrastructural** dimension
6. a **deliberative** and **intentional** character
7. a kind of **experiments**
8. **agonistic**, involving **power** relations
9. a **moral** aspect

The features are divided into “building blocks” and “functional requirements” of the model. For example, the functional, social and infrastructural dimension are building blocks of the 3D model, but feature 7 (experiments) is a functional requirement for the 3D model. It is important for the logic of use of this model (Achterbergh and Vriens, 2019). Each feature will be further explained to understand the 3D model.

First of all the **goal** of the intervention. Achterbergh and Vriens (2019) divide two goals. The general goal “for” the organization and the specific goal “of” the intervention. The general goal is that the intervention should somehow contribute to the meaningful survival of the organization. The specific goal is the goal of this particular intervention. This goal is selected by the organization and could have been different. Each episodic intervention can have a different goal. This specific goal is not a ‘given’ goal. It can be reformulated during the intervention.

The **Object of** the intervention relates to the organizational object that will be transformed. This can be the organizational structure, but also the organization’s technology, culture, etc. The transformation in this object can require changes in more objects. For example, a change in the

organizational structure may require a change in the technology of the organization. Achterbergh and Vriens (2019) argue that the object has two relevant dimensions: the functional and social dimension.

The **functional** dimension is described by Achterbergh and Vriens (2019) as: *“the point that the object of an intervention should be transformed in such a way that it can actually contribute to the realization of the goal of the intervention”* (p.141). This dimension has to ensure that the object is transformed by the intervention in such a way that it allows the organization to function as it should. In the end of the intervention, the functional dimension has a design for the realization of the goal of the intervention (see figure 2.3).

To increase the probability that the organization will realize the intervention’s goal, the organization has to meet two requirements in the functional dimension. First of all, the functional goals of the intervention need to be realized according to the four intervention activities. These activities correspond with the intervention cycle of Vennix (2011): diagnosis, design, implementation, evaluation (DDIE). The diagnosis phase is about the definition, the causes, the effects and the symptoms of the problem. The design phase describes the phase in which the practitioners design a situation that solves the problem. In the intervention phase, the developed design gets implemented. The last phase, the evaluation phase, is about the evaluation of the change. The effectivity of the design or the change in practice gets evaluated (Vennix, 2011).

Secondly, the intervention activities (DDIE) are supported by theory that explains the relation between parameter values of the object of the intervention and values of variables that are used to specify the goal of the intervention (Achterbergh and Vriens, 2019).

According to Achterbergh and Vriens (2019), *“ the **social** dimension of the object of an episodic intervention refers to the point that, in the case of organizations, this object always has a social character - i.e. it is socially produced by means of interactions that are performed against a background of interaction premises”*(p.143). Organizational members will have new task-related interactions and new premises that guide their production. The change in task related interactions and interaction premises are needed to perform an intervention. Besides the functional dimension, an intervention also has a social dimension (Achterbergh and Vriens, 2019).

The **social** dimension is divided into three social goals: motivation, adoption and integration. organizational members should develop first motivation to change. Next, the members should adopt new interaction patterns and premises. Lastly, these patterns and premises need to be integrated in their repertoires (Achterbergh and Vriens, 2019). These goals need to be realized in order to achieve the goal of the intervention (see figure 2.3).

The **infrastructural** dimension is the last dimension of the 3D model. The infrastructural dimension consists of three parts. These parts correspond with the infrastructural conditions of Achterbergh and Vriens (2010): (intervention) structure, (intervention) human resources and (intervention) technology.

These three aspects are needed for realizing the functional and social goals. It is important to note that these infrastructural conditions apply to the intervention of the organization. An episodic intervention is also an intervention “by” an organization. New infrastructural conditions are needed to create the new interaction premises and pattern. The intervention has its own temporary intervention organization. As mentioned in the first paragraph, these infrastructures consists of structure, technology and HR. Applied to the intervention, the intervention structure is *“the grouping and allocation of operational and regulatory intervention activities into a network of intervention tasks”* (Achterbergh and Vriens, 2019, p.144).

The intervention technology are the techniques and resources needed to perform the activities of the functional dimension. The intervention human resources are the members of the intervention. With use of their knowledge, skills and motivation perform the episodic intervention.

Achterbergh and Vriens (2019) describe that interventions have an **intentional and deliberative** character. Intentional because, the activities together with the goal of the intervention are intended to improve the organization’s functioning. Deliberative, because these activities involve explicit interpretation of situations and weighing of options (Achterbergh and Vriens, 2019)

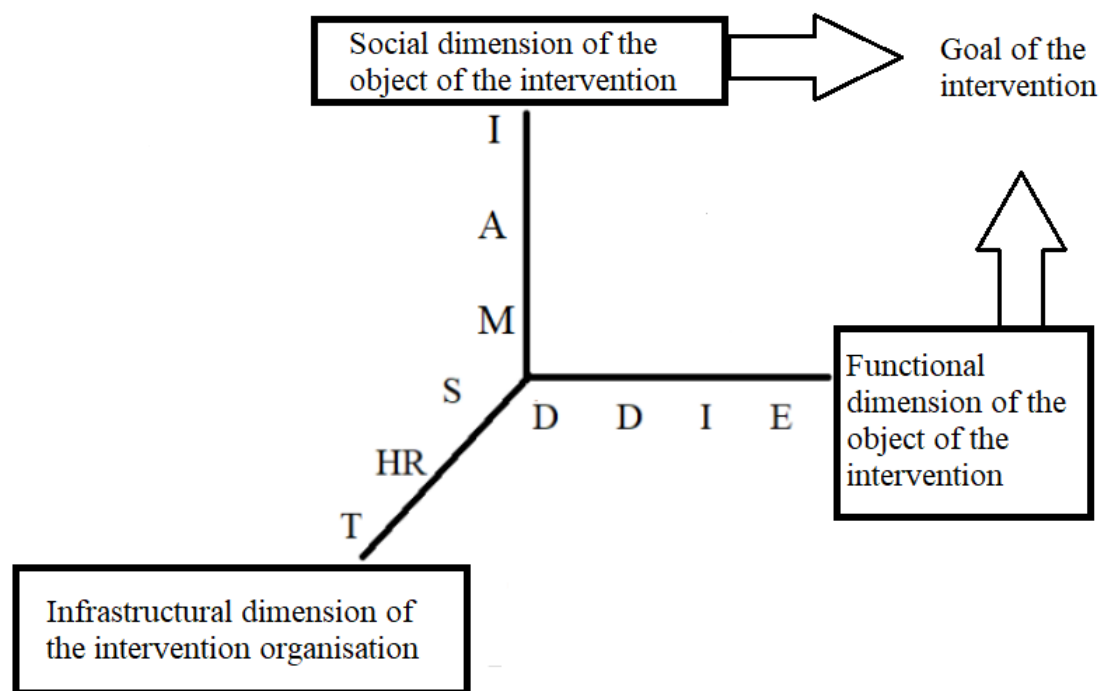
Interventions are also a kind of **experiments**. It is possible that choices of infrastructure, goals etc. will not function in the way it was expected. Besides these choices, there are unforeseen factors that can influence the progress in a positive or negative way. The experimental character of interventions require continuously assessment and adjustment of the intervention. This means that in certain situations, parts of the intervention (goals, operational regulation, infrastructure) should be reset.

To support the continuous assessment and adjustment, Achterbergh and Vriens (2019) describe five activities that should be performed in order to drive the intervention forward. These activities help to deal with the factors that affect the episodic intervention and together form the core of the logic of use of 3D model of Achterbergh and Vriens (2019).

1. Strategic regulation - the determination of the social and functional goals of the intervention
2. Design regulation - the creation of an infrastructure that contributes to the realization of the functional and social goals.
3. Operational regulation - the management of disturbances that occur in the operational intervention activities, without redesigning the intervention.
4. Operational intervention activities - the actual performance of the intervention activities that should realize the functional and social.
5. Part of the regulatory activities - the continuous assessment of the progress of the intervention. This includes comparing the intervention to the functional and social goals and dependent on this assessment, perform one of the first three activities (strategic-, design- of operational regulation).

Adapted from Achterbergh and Vriens (2019, p.147).

Lastly, the importance of **power** and **morality** is noted by Achterbergh and Vriens (2019). Although these two are not part of the lay out or the logic of use of the 3D model, it is important to take these two features into account. Power and morality are features of an episodic intervention. In the assessment and adjustment of the five activities, power and morality issues will occur and should be tackled. Achterbergh and Vriens (2019) state that power and morality should be an integral part of the model.



**Figure 2.3** The three-dimensional model of organizational intervention, adapted from Achterbergh and Vriens (2019, p.140)

### **§2.5.2 The functional dimension**

The first dimension corresponds to the intervention cycle of Vennix (2011) and is the functional dimension. It consists of the same four stages as the intervention cycle: Diagnosis, Design Implementation and Evaluation (DDIE). In their book, Achterbergh and Vriens (2019) treat the functional (and social) dimension as goal dimensions. These four activities are sub-goals of the functional dimension and can be further broken down into sub-goals.

First of all the diagnosis phase. The diagnosis phase is relevant because it reveals which problems are relevant, what causes these problems and it offers a solution space for solving the



problem (Verschuren & Doorewaard, 2007). Achterbergh and Vriens (2019) diagnosis in the 3D model is about the determination of the structure-related causes of current organizational problems, based on the theory of De Sitter (see §2.2). To find these structure-related causes, they describe three important activities (sub-goals) in this phase:

**Sub-goal 1: Find out what the problematic organizational behaviour is. This is done by a gap analysis.**

A gap analysis consists of six steps in which the problematic organizational behaviour gets described. To come to this, Achterbergh and Vriens (2019) describe the six steps of the gap analysis:

1. What are the current functions and functional requirements?
2. Given those functions and functional requirements, what is the relevant environment of the organization and which developments are important?
3. Given these developments, what are the desired functions and functional requirements?
4. How can this be translated into variables and norms?
5. How does the organization score on these variables and these norms?
6. What is the gap between the actual and the desired norms and how can this gap be assessed?

(Achterbergh and Vriens, 2019, p. 154).

First the organization's conception of its "meaningful survival" must be determined. What is important to the organization? Is it profit? Service? What is its contribution to their environment? This will help in selecting the set of variables. The next step is determining variables describing the organizations performance. Next, the norms (NV) for these variables must be selected. Which value is acceptable for the selected variables. Achterbergh and Vriens (2019) describe the norm value as: *"the degree to which they reflect the goals which express the organization's idea of meaningful survival"* (p. 160) If a variable does not have this value, then the organizational behaviour is problematic. This can be either one value, or a set of values. After this step, one determines the actual values (AV). The current values of these variables. The next step in the gap analysis phase is to determine the difference between NV and AV. In the last step, all variables for which problematic difference exists. Together these set of variable form the gap (Achterbergh and Vriens, 2019).

**Sub-goal 2: Determine which structural parameters can cause this problematic behaviour. Which design parameters (De Sitter) cause the gap? Parameters that have a high value, cause structural problems. (De Sitter et al., 1997)**

The structural parameters of De Sitter et al. (1997) can be seen as causes of the problematic variables, when their values are too high. Achterbergh and Vriens (2019) describe three steps that are needed to find these problematic parameters.

Step 1: Select the structural parameters of De Sitter et. al (1997) that can cause the problematic behaviour of the organization.

Step 2: Find out, for all parameters whether this is a problematic parameter.

- Step 2.1: How does the organization currently score on the parameters?
- Step 2.2: Determine for all problems, if the actual value of the parameter causes the problematic behaviour

Step 3: Establish the list of all problematic parameters

**Sub-goal 3: Select the structural parameters that should be change by a change in the structure of the organization.**

Select the parameters that should change. It is possible that not all the parameters, given the organizational context, can be changed. That is why a selection should be made. Thereby, it is possible that a parameter has only effect on a minor problem. It is possible to delete it from the list and select the parameters that can change the problematic behaviour (Achterbergh and Vriens, 2019).

The design phase is the second phase in the functional dimension. The goal of this phase is to invent a new structure to overcome the problematic organizational behaviour. To do this the parameters causing the problematic behaviour are changed, in order to overcome the current behaviour. Based on the socio technical design theory of De Sitter (1998), Achterbergh and Vriens (2019) describe a design heuristic. According to them one should:

1. First identify flows: Macro level of the organization
2. Next, one should identify independent segments within the flows: Meso level of the production structure.
3. Then, one should identify the operational requirements for the task groups: Micro level of the production structure.
4. Next, one should equip the task groups with regulatory potential. In this way the task groups can produce their output: Micro level of the control structure.
5. Thereafter, the regulation between the segments must be determined: Meso level of the control structure.

6. Finally, the regulation between flows has to be determined for the Macro level of the control structure.

(Achterbergh and Vriens, 2019 p. 180)

The last two steps consist of the implementation of the design and the evaluation. In the implementation phase the current organizational structure is transformed into the created design. The goal of the evaluation phase is to make clear if the change of the structure has the desired effect on the organization. This research is focused on the first two phases. Therefore, the last two phases will not be further elaborated.

### **§2.5.3 The social dimension**

The goals of the functional dimension rely on changes in the behaviour of organizational members. When organizational members are not willing to change their behaviour, it is useless to talk about implementation or realization. Organizational members have to accept the functional goals. The social dimension of organizational change is therefore crucial. Eventually, the organizational members have to change their interactions and interaction premise. When this does not happen, there is no intervention and one can speak of “just another plan”. Therefore, the final goal of the social dimension is that the organization members *“have irreversibility integrated new interactions and interaction premises in their repertoires that both (re)produce the organization’s new and improved structure and allow for the realization of the goal of the intervention”* (Achterbergh and Vriens, 2019, p.204).

To achieve this goal, Achterbergh and Vriens (2019) specify the social goals that should be realized in the intervention to reach the goal of the intervention. They base the sub-goals of the social dimension on Schein’s (1987) model of organizational change. According to Schein (1987) planned change consists of three stages. The unfreeze, change and freeze stage. First, an organization needs to unfreeze its current goals. In this way readiness for change gets installed. The second phase is changing goals to find alternate modes of behaviour. The last fast refreezes these goals and makes sure that these goals are incorporated in the daily routines of the organizational members (Schein, 1987).

Achterbergh and Vriens (2019) distinguish three different social sub-goals: Motivation, Adoption and Integration. The motivation goal is the first goal. To come to new interaction patterns and premises, the organizational members must first develop the motivation to change. Either by themselves or facilitated by others. Therefore they should let go of the current organizational interactions and interaction patterns and they need to see an episodic intervention as the way to do this. This is comparable with the unfreeze stage of Schein (1987). The adoption goal means that organization members willingly commit to the new helping interaction premises and interactions. The members believe that these new patterns can produce the new organizational structure that realizes the

goal of the intervention. Adoption means that the members invent and test the new interaction premises and interactions. They try to find and invent new interactions that will help to achieve the goal of the intervention. This adoption goal is comparable with the change phase of Schein (1987). The last goal is the integration goal and earlier mentioned. This goal is achieved when the members have integrated the new interaction premises and interaction in their repertoires. This last goal is comparable to the refreeze stage of Schein (1987).

#### **§2.5.4 The infrastructural dimension**

To realize the goals of the functional and social dimension, a third dimension is needed: the infrastructural dimension. Achterbergh and Vriens (2019) argue that an intervention requires an intervention organization. An as earlier described (§2.1) an organization consists of three infrastructural conditions that facilitate the regulation and realizing of transformations (Achterbergh and Vriens, 2010). In accordance with the aforementioned infrastructural conditions, Achterbergh and Vriens (2010) describe these conditions as parts of the intervention structure. The infrastructural dimension therefore consists of the intervention's structure, the intervention's technology and the intervention's human resources. The intervention's structure is consists of the grouping and allocation of intervention activities into a network of intervention tasks. The intervention's technology consists of the tools and techniques used to support the performance of the intervention activities. The intervention's human resources consists of persons including their knowledge, skills and motivation, that are involved in the intervention tasks (Achterbergh and Vriens, 2019). Together these parts form the intervention's infrastructure. The purpose of this dimension is that it should enable the realization and adaptation of the functional and social goals of the intervention.

Achterbergh and Vriens (2019) state that designing an intervention is a kind of experiment. The experimental character of interventions require continuously assessment and adjustment of the intervention. Therefore, the authors argue that it is impossible to have one particular "blueprint" for the infrastructure of the intervention. The design of the infrastructure should be seen as dynamic. Based on the earlier mentioned goals of the social and functional dimension, redesign of the infrastructure is required. The goals change and unforeseen problems can occur. Therefore the design of this infrastructure will be seen as dynamic. The authors developed, given the experimental and dynamic character of the design of an intervention's infrastructure, a procedure that supports flexible design of intervention infrastructures. This procedure consists of two requirements:

- the procedure should translate the goals of the functional and social dimension into a design of an intervention's infrastructure that can realize and adapt these goals. (goal-driven design)
- the procedure should help adjust the design of the intervention infrastructure to problems and opportunities as they actually occur. (improvement-driven design) (Achterbergh and Vriens, 2019)

To realize these goal and improvement driven design regulation, Achterbergh and Vriens (2019) argue that interventions in organizations are interventions “by” organizations. Interaction is needed in order to realize the goals (functional and social) of the intervention. Therefore they describe that creating and maintaining “change relationships” is a generic social goal. Based on the idea that organizational interventions involve interaction, the translation of the social and functional goals into an infrastructure (goal-driven design) can benefit from the **what**, **how** and **who** questions. According to the authors the “proximate” (next in line) social and functional goals can be realized by asking question about what, how and who. What topics should be interactively addressed to achieve to realize the proximate goals? How should these topics be addressed interactively to realize the proximate goals? Who should be involved in these interactions to realize the proximate goals?

The procedure for goal-given design consists of five steps. Achterbergh and Vriens (2019) argue that the five steps can be divided into two parts. The first part describes the first three steps and helps to establish what should be done to drive the intervention forward:

Step 1: Assess the current status of the intervention. This is done by selecting the functional goals and social goals that have been realized.

Step 2: Select the desired functional and social goals that have to be realized. These new goals have to drive the intervention forward.

Step 3: What is the gap between the current functional and social goals and the desired functional and social goals?

When this is established, the what, how and who questions are needed. These questions give a first indication on what is needed to close the gap of step 3:

Step 4: Answer to the what, how and who questions in order to determine which topics should be discussed, in what way, and by whom. In this way the gap between current and desired functional and social goals of the intervention can be closed.

Step 5: Use the answers of the previous steps to create the infrastructure for the intervention’ organization. Design the infrastructure in a way, that the gap between current and desired functional and social goals, can be closed.

(Achterbergh and Vriens 2019, p.255)

In order to deal with opportunities or problems, Achterbergh and Vriens (2019) provide a procedure for improvement-driven design. When problems occur one can:

Step 1: Determine the difference between the actual and projected progress of the intervention in relation to the current and desired functional and social goals.

Step 2: When the desired functional and social goals are not achieved, analyse the process and search for the causes of not achieving the desired functional and social goals.

Step 3: Based on this analysis, redesign (if necessary) the infrastructure of the intervention. This can be done in two ways. 1. Try to attenuate the causes of the insufficient progress. 2. Try to strengthen the infrastructure capacity so that the effects of these causes are tackled.

In order to exploit opportunities:

Step 1: Determine the difference between the actual and projected progress of the intervention in relation to the current and desired functional and social goals.

Step 2: When there is more achieved than the desired functional and social goals, analyse the process and search for the causes of achieving more than only the desired functional and social goals.

Step 3: Based on this analysis, redefine (if desirable) the goals of the intervention and in order to realise these goals; redesign the infrastructure to exploit the causes of achieving more than only the desired goals.

(Achterbergh and Vriens 2019, p.270).

The procedures for improvement-driven design and goal-driven design can be used as heuristics that support the flexible design of an intervention's infrastructure. In this way the progress of the intervention gets continuously assessed in terms of the 'proximate' social and functional goals.

Besides that the procedure allows the continuous adaptation of proximate goals and/or the infrastructure of the intervention that is needed to realize and adapt the proximate goals

(Achterbergh and Vriens, 2019).

## **§2.6 Overview of chosen theory**

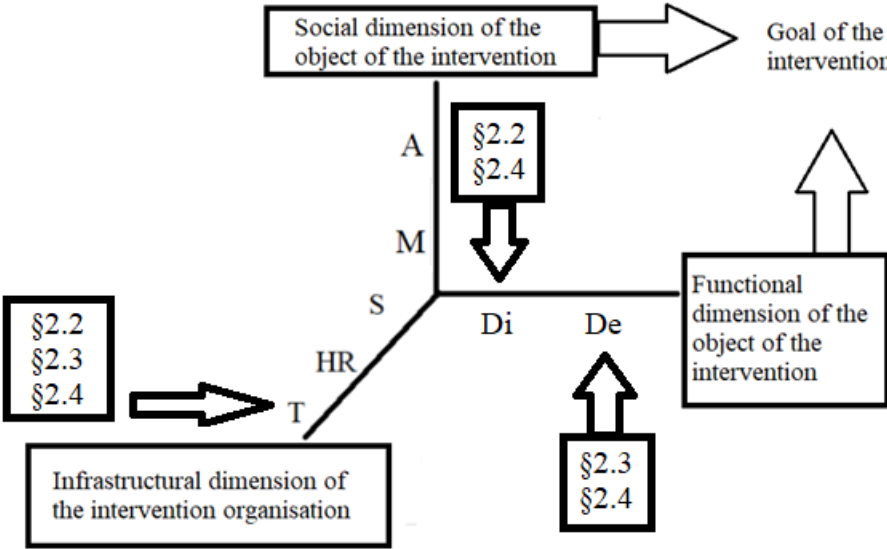
This paragraph gives an overview of the selected theories and how the theories are used in this research. The goals of this research are to:

- diagnose the current organizational structure, in order to find structure related problems.
- design a new organizational structure, that is accepted by the members of Bildung Nijmegen, to overcome the problematic behaviour of the organization.

The 3D model (§2.4) of Achterbergh and Vriens (2019) is used to structure the (re)design. The steps of the first two phases of the functional dimension (diagnosis and design) are followed to achieve

the goals of the research. The first two goals (motivation and adoption) of the social dimension are used to achieve acceptance for the new created structure. The last goal (integration) cannot be achieved without complementing the last two functional phases. The L-STSD implies, as stated before, a participative design of an intervention. This contributes to the achievement of the goals on the social dimension. The infrastructural design theory (§2.2), the L-STSD (§2.3) and the parameters of De Sitter (§2.4) are used as part of the infrastructural dimension. These three theories are technologies (of the infrastructural dimension), that help to achieve the functional and social goals of the intervention.

The infrastructural design theory (§2.2) is used in the diagnosis phase, to make clear how the organizational infrastructure influences the transformation processes and the regulation of these processes. The parameters of De Sitter (§2.4) are used in the diagnosis phase to find the structure related, problematic behaviour. In the design phase these parameters have to be adjusted to overcome the problematic behaviour. The design of the new structure is made, according to the integral design theory (§2.3) of Kuipers et al. (2010). These five steps are followed to create a new organizational structure. Figure 2.4 presents an overview.



**Figure 2.4 The 3D model for this research in combination with theories.**

## H3 Method

The methodological chapter describes the methods used to answer the research question. In the first paragraph (§3.1), the strategy of the research is given. In the second paragraph (§3.2), the research setting and thus a description of the researched organization is described. The third paragraph (§3.3), describes the method of this research. The fourth paragraph explains all the collected data and analysis (§3.4) The last paragraph (§3.5) explains more about the research ethics.

### §3.1 Research Strategy

This research is a practice-oriented research of a qualitative nature. Practice-oriented research aims on contributing to a practical problem (Boeije, 2005) In most organizational change processes, practitioners systemize change using all different kinds of change cycles (Van Strien, 1986; Vennix, 1999; van Aken et al., 2007). Vennix (2011) argues that almost all business scientists make use of the intervention-cycle. This is the “basic form” of several problem solving cycles. These problem solving cycles differ from each other, but what these cycles have in common is that they all consist of four different stages: Diagnosis, Design, Intervention, Evaluation (DDIE). The diagnosis phase is about the definition, the causes, the effects and the symptoms of the problem. The design phase describes the phase, in which the practitioners design a situation that solves the problem. In the intervention phase, the developed design gets implemented. The last phase, the evaluation phase, is about the evaluation of the change. In their functional dimension, Achterbergh and Vriens (2019), distinguish the same four activities of the intervention cycle. The first two phases, the diagnosis and the design phase, are used in this research. The goals of the research are to diagnose the current structure and create a new structure for Bildung Nijmegen. This is the scope of the research. Expanding the scope to the last two phases of the intervention-cycle is not feasible, due to time considerations. Therefore, the implementation and evaluation phase are excluded from this research.

Vennix (2011) describes that intervention methods have their own requirements. In the process of problem formulation, for example, multiple actors are involved. Each of these actors has its own vision on the problem and its own solution for the problem. These actors form their own reality based on what they experience: a mental construct, formed under the influence of social, political, cultural and economic forces (Lieshout, Jacobs & Cardiff, 2017). These actors experience these mental constructs as their “truth”. Sharing and, if necessary, reforming this truth makes their vision wider and gives new meaningful organizational truths (Ertmer & Newby, 2013). A demand for problem formulation is therefore, that it should be participative. Members of the organization should be involved in the process of problem structuring and identifying (Vennix, 2011). A second demand is that problem structuring methods should be integrative. The different visions of the participants must be meaningfully integrated into a comprehensive vision of the problem. The third demand is that the



information processing capacity of the participants is enlarged by the intervention method. A fourth demand is that the thought process of involved managers and policy makers is supported by the intervention method. A fifth demand is that it should consist of feedback processes and lastly the method should be adversarial. This means that the intervention method should support cognitive conflict in a structured way (Vennix, 2011). The requirements of intervention methods can in short be summarized as: Participative, integrative, processing capacity, thought process, feedback processes and adversarial. These requirements for an intervention method, can be seen as criteria for the 3D model of Achterbergh and Vriens (2019). The 3D model can meet the criteria of Vennix (2011) about intervention methods, because this model offers a flexible design in which infrastructure is based on the functional and social goals. The infrastructure can be created in such a way, that it meets the requirements of intervention methods by Vennix (2011).

Bildung is an organization that wants to develop its members. The organization wants students to do their own research about subjects in which current education is insufficient. An appropriate research strategy has to take this into account. The members have to be involved in the process of diagnosing and designing the new organizational structure (Bildung, 2019). Based on the requirements for an intervention and the selected organization, the choice is made for an appropriate research method: action research (AR).

Action research can be seen as a form of intervention methodology (Lange et al., 2011). Action research has a participatory nature. The interest in participatory action research strategies is growing (Bergold & Thomas, 2012). One of the most famous books about action research is the “SAGE Handbook of Action Research” (Bradbury, 2015). This book gives the following definition to action research: “*Action research is a democratic and participative orientation to knowledge creation. It brings together action and reflection, theory and practice, in the pursuit of practical solutions to issues of pressing concern. Action research is a pragmatic co-creation of knowing with, not about, people*” (p.1). As one can see, the definition includes a lot of aspects. AR is mainly focused on exploring processes of improvement. The researcher participates in this process and its reflexivity is a critical part of AR. By systematically analysing and improving the acting, action knowledge is developed. This action knowledge can create successful patterns that can be applied in the current situation, but also in other situations (Coghlan & Branninck, 2014; Lieshout et al, 2017). The methodology of participatory research can be regarded as a methodology that wants to involve research partners in the knowledge production process (Bergold, 2007). Simons & Ruijters (2004) state, that action research offers the opportunity to learn with, and from each other as individuals or as groups. In addition, action research can contribute to organizational change.

Swanborn (2013) describes that action researchers want to change the social system, which they are focused on. They are not satisfied with measuring opinions, attitudes or behaviour of groups. Action researchers want to confront stakeholders with each other led by a facilitator (often the researcher himself). Together with the stakeholders, the researcher tries to get everyone in the same

direction (Swanborn, 2013). In this research, the researcher participates in the dialogue between the stakeholders of Bildung Nijmegen and facilitates the diagnosis and design of the new structure for the company. The task of the researcher is to facilitate several meetings with focus groups. Nyumba et al. (2018) describe the difference between interviews and focus groups: *“In a focus group discussion, researchers adopt the role of a “facilitator” or a “moderator.” Focus groups differ from interviews. In this setting, the researcher facilitates or moderates a group discussion between participants and not between the researcher and the participants. Unlike interviews, the researcher thereby takes a peripheral, rather than a centre-stage role in a focus group discussion”* (p. 21). Focus group discussions can be utilized within a participatory action research, to empower participants and promote social change (Wilkinson, 1999).

The methodical structure of action research supports the change process, encourages ownership and contributes to knowledge development (Lieshout et al., 2017). As stated before, L-STSD implies a participative design process. L-STSD takes into account the human factor when changing organizational structures. Action research supports this participative way of doing research. Thereby, action research supports the vision of Bildung Nijmegen, in which members develop themselves in certain areas by joining and creating projects.

Lastly, action research in combination with the 3D model of Achterbergh and Vriens (2019), supports the requirements of interventions stated by Vennix (2011): participative, integrative, processing capacity, thought process, feedback process and adversarial. The 3D model implies a flexible infrastructure of the intervention. Together with the action research, the infrastructure is participative and integrative. Members will take part in the process of problem formulation by explaining their own visions on the problematic behaviour. By involving the members in this process, their information processing capacity will be enlarged. Action research also supports the vision of the board of Bildung Nijmegen. They want members to develop themselves in certain areas by joining and creating projects. This intervention therefore meets the requirement of the “thought process” of Vennix (2011). The “feedback process” is supported by the 3D model, because after each session the infrastructure of the intervention has to be analysed and re-designed. The last requirement “adversarial” is met by facilitating discussions in a structured way, using the focus groups.

### **§3.2 Research Setting**

The research organization is Bildung Nijmegen. Bildung Nijmegen is a foundation, founded in 2018, that is a platform for educational innovation. The organization has no fixed location, but most meetings are located in StartUp Nijmegen (Interview 1, Appendix 2). Students can do their own research about subjects in which current education is insufficient. In this way students are able to research subjects, which are relevant to them. An example is their ideas about love or climate change. The students that are active member of Bildung Nijmegen, design their own meetings in which several

subjectification topics are discussed. Students are being invited to come with their own designs and to gather in a group. This group makes a concrete activity. The successful meetings are merged into one “Bildung Curriculum” of a longer period (Bildung Nijmegen, 2019).

The current organization consist of (approximately 30) voluntary members. Some of these members are active members (weekly involved with Bildung), others are less involved in the organisation (passive members). Several groups are active in the organization. First of all, the board. The board consists of four members: the chairman, the vice-chairman, the treasurer and the secretary. This group creates the activities, together with the “pioneers” (people of the board, project leaders and other volunteers) and is responsible for the mission, vision and strategy of Bildung. Secondly, there is a group of six people that performs the marketing and communication of Bildung. They take care of all marketing and promotion activities of the projects. Thirdly, the organization has all kinds of different project groups. The project groups consist of one project leader and several project members, who perform one course for students who sign up. The size of these project groups is variable, depending on who wants to participate. Lastly, there is also a group of advisors (old members or passive members). This group helps the active members with ideas or problems (Interview 1, Respondent 1)..

The main activities at the moment are “the expedition”, “the proeftuin” and the “assignments for companies”. The “expedition” consists of successful Bildung Activities brought together in a semester curriculum (Bildung Nijmegen, 2019). The “proeftuin” is a project in which external students can come with new ideas for a project. External students, are students who are not (yet) member of Bildung Nijmegen. Bildung provides guidance for these students to create their own project. The “assignments for companies” consists of companies that ask Bildung to carry out an assignment for them. In these projects, Bildung performs the project and the company guides Bildung in their project. There are also informal activities to create a connection between the members. At this moment, a member can come up with a project, join a project and be in several projects at the same time. All kind of group formations are possible.

This type of organization is quite unique. The students work on a project basis. Students form the primary activities of the organization and each activity can be different. This means that the activities as well as the members are changing continuously. At this moment Bildung Nijmegen is struggling with the right organizational structure for this type of organization. The organization is growing and organization of projects is becoming more and more difficult. The organization not only wants to keep the focus on students, but also wants to become active in all segments of society. Besides that, the high volunteer turnover and the organization’s changing activities, make it difficult to get continuity in their activities.

## §3.3 Method

### §3.3.1 The 3D Model

To structure the intervention the three-dimensional model of Achterbergh and Vriens (2019) is, as stated before, selected as the method for this action research. The overall goals of the intervention are to:

- diagnose the current organizational structure, in order to find structure related problems.
- design a new organizational structure, that is accepted by the members of Bildung Nijmegen, to overcome the problematic behaviour of the organization.

The three dimensions will be used to select relevant functional and social goals and the infrastructural dimension are used to design the infrastructure of the intervention. Because Achterbergh and Vriens (2019) argue that the goals, as well as, the infrastructure are not fixed and dynamic, these are subject to change. For now, the sub-goals of the dimensions are determined. Due to the experimental character of the 3D model these goals will be evaluated and probably change.

### §3.3.2 The functional dimension

Because this process is focused on the diagnosis and design of the organizational structure of Bildung Nijmegen. The sub-goals of the diagnosis phase and design phase are used as functional goals. In an overview these are the different sub-goals (Figure 3.1):

<b>Diagnosis phase</b>	
<b>Overall goal:</b>	The determination of the structure-related causes of current organizational problems, based on the theory of De Sitter.
<b>Sub-goal 1:</b>	Find out what the problematic organizational behaviour is. This is done by a gap analysis.
<b>Sub-goal 2:</b>	Determine the structural parameters that cause this problematic behaviour. Which design parameters (De Sitter) cause the gap? Parameters that have a high value, cause structural problems. (De Sitter et al., 1997)

<b>Sub-goal 3:</b>	Select the structural parameters that should be change by a change in the structure of the organization.
--------------------	--

**Figure 3.1: The sub-goals of the diagnosis phase according to Achterbergh and Vriens (2019)**

For the design phase the design steps of Kuipers et al. (2010) are leading in this research. They take the boundaries of the project into account and specify functional requirements for the design of the organizational structure. In addition, Kuipers et al. (2010) add the creation of the technical systems in their design steps. Technical systems can contribute to the continuity of Bildung Nijmegen, because a part of technical systems is the creation of systems that automate the business processes (Kuipers et al., 2010). The steps of the design phase of Achterbergh and Vriens (2019) are still part of the design phase, but they are summarized in sub-goal four and five (Figure 3.2).

<b>Design phase</b>	
<b>Overall goal:</b>	Invent a new structure to overcome the problematic organizational behaviour.
<b>Sub-goal 1:</b>	Select the boundaries of the project
<b>Sub-goal 2:</b>	Formulation of the goals (the mission, strategy and vision) of the organization.
<b>Sub-goal 3:</b>	The determination of the specifications that one should consider, while designing the new structure.
<b>Sub-goal 4:</b>	The actual creation of the organizational structure. These steps were are also taken by (Achterbergh and Vriens) in the design phase. First the production structure from macro to micro
<b>Sub-goal 5:</b>	The creation of the control structure from micro to macro.
<b>Sub-goal 6:</b>	The design of the technical systems

**Figure 3.2 The sub-goals of the design phase according to Kuipers et al. (2010)**

These goals are the functional goals of the intervention. To achieve these sub-goals, the steps of the infrastructural dimension (earlier described in the theory chapter) of Achterbergh and Vriens (2019) are used. The last two phases of the functional dimension (integration and evaluation) are due to time considerations, not part of this research.

### §3.3.3 The social dimension

Because this process is focused on the diagnosis and design of the organizational structure of Bildung Nijmegen. The sub-goals of the social dimension are limited to the corresponding functional goals (Figure 3.3):

<b>Motivation goal:</b>	The organizational members must first develop the motivation to change
<b>Sub goal 1:</b>	Let go of current and move to new interaction premises and concomitant interaction patterns (Sense of urgency)
<b>Sub goal 2:</b>	Adopt an episodic intervention as a means to do this (Shared vision)

<b>Adoption goal:</b>	Organization members, based on justifiable confidence adopt new helping interaction premises and interactions that can produce an improved organizational structure and allow for the realization of the goal of the intervention.
-----------------------	--

**Figure 3.3 The sub-goals of the social dimension according to Achterbergh and Vriens (2019)**

These social goals function as the social goals for the intervention. The last phase “integration” is not usable for the diagnosis and design goals of this research.

### §3.3.4 The infrastructural dimension

To reach this all, the infrastructural conditions are needed. These infrastructural conditions allows the intervention to reach the goals of the functional and social dimension, and eventually the goal of the intervention.

To come to an infrastructure, the 5 steps Achterbergh and Vriens (2019) describe have to be elaborated for each session:

**Step 1:** Assess the current status of the intervention. This is done by selecting the functional goals and social goals that have been realized.

**Step 2:** Select the desired functional and social goals that have to be realized. These new goals have to drive the intervention forward.

**Step 3:** What is the gap between the current functional and social goals and the desired functional and social goals?

When this is established, the what, how and who questions are needed. These questions give a first indication on what is needed to close the gap of step 3:

**Step 4:** Answer to the what, how and who questions in order to determine which topics should be discussed, in what way, and by whom. In this way the gap between current and desired functional and social goals of the intervention can be closed.

**Step 5:** Use the answers of the previous steps to create the infrastructure for the intervention’ organization. Design the infrastructure in a way, that the gap between current and desired functional and social goals, can be closed.

In this way the progress of the intervention gets continuously assessed in terms of the ‘proximate’ social and functional goals. Besides that, the procedure allows the continuous adaptation of proximate goals and/or the infrastructure of the intervention that is needed to realize and adapt the proximate goals. A short example for the first meeting:

**Step 1:** Assess the current status of the intervention. This is done by selecting the functional goals and social goals that have been realised.

Current status		
Functional (sub-)goals: realized		
	Diagnosis	Design
Part/aspect	-	-
Part/aspect	-	-

Social (sub-)goals: realized	Motivation	Adoption
Board	Urgency (abstract)	-
Marketing	No info	-
Stakeholders	No info	-

**Figure 3.4 current status**

**Step 2:** Select the desired functional and social goals that have to be realized. These new goals have to drive the intervention forward.

Current status		
Functional (sub-)goals: realized		
	Diagnosis	Design
Part/aspect	Problem inventory	-
Part/aspect	-	-
Social (sub-)goals: realized	Motivation	Adoption
Board	Urgency, creating change relationships	-
Marketing	Urgency, creating change relationships	-
Stakeholders	Urgency, creating change relationships	-

**Figure 3.5 desired status**

**Step 3:** What is the gap between the current functional and social goals and the desired functional and social goals? Differences between figure 3.4 and 3.5 should be noted:



Functional goals: From no problem inventory to problem inventory

Social goals: From urgency at the board to urgency with all groups

**Step 4:** Answer to the what, how and who questions in order to determine which topics should be discussed, in what way, and by whom. In this way the gap between current and desired functional and social goals of the intervention can be closed.

### Structure

What?:

- Current function of Bildung Nijmegen - services, contribution, vision, mission, contribution to environment.
- Relevant developments in the environment of Bildung Nijmegen
- Desired function of Bildung Nijmegen - services contribution, vision, mission, contribution to the environment.
- requirements for this functioning

How?

- Level of participation? High, this creates a shared vision
- Theory of De Sitter (1998)
- Planned discussions according to a facilitator
- Speed is essential, because process should not be delayed
- Interaction should be aimed at convergence

Who?

- As much members as possible

**Step 5:** Use the answers of the previous steps to create the infrastructure for the intervention' organization. Design the infrastructure in a way, that the gap between current and desired functional and social goals, can be closed.

The first session will be one meeting in which the current function, relevant developments, desired function and requirements for this function will be determined. This will be done by high level of participation with use of the theory of De Sitter. Planned discussion will be used under guidance of the facilitator (me). Speed is essential, because the process should not be delayed. All active members of Bildung Nijmegen are invited to create a shared vision together.

In this way the infrastructure stays flexible and can handle the dynamic character of the intervention. To improve the sessions the steps of improvement-driven design regulation are used. For each session these steps are taken to reflect on the sessions before and to check if the functional and social goals were met. Eventually this will lead to the goal of the intervention. After each session the next steps are needed:

### **Steps of improvement-driven design regulation**

In order to deal with opportunities or problems, Achterbergh and Vriens (2019) provide a procedure for improvement-driven design. When problems occur one can:

**Step 1:** Determine the difference between the actual and projected progress of the intervention in relation to the current and desired functional and social goals.

**Step 2:** When the desired functional and social goals are not achieved, analyse the process and search for the causes of not achieving the desired functional and social goals.

**Step 3:** Based on this analysis, redesign (if necessary) the infrastructure of the intervention. This can be done in two ways. 1. Try to attenuate the causes of the insufficient progress. 2. Try to strengthen the infrastructure capacity so that the effects of these causes are tackled.

In order to exploit opportunities:

**Step 1:** Determine the difference between the actual and projected progress of the intervention in relation to the current and desired functional and social goals.

**Step 2:** When there is more achieved than the desired functional and social goals, analyse the process and search for the causes of achieving more than only the desired functional and social goals.

**Step 3:** Based on this analysis, redefine (if desirable) the goals of the intervention and in order to realize these goals; redesign the infrastructure to exploit the causes of achieving more than only the desired goals (Paragraph §2.4).

As stated before, the researcher in action research, participates in this process and its reflexivity is a critical part of AR. By systematically analysing and improving the acting, action knowledge is developed. This action knowledge can create successful patterns that can be applied in the current situation, but also in other situations (Coghlan & Branninck, 2014; Lieshout et al, 2017). This method of Achterbergh and Vriens (2019) provides a systematically way of analysing and improving the acting and creates action knowledge. It continuously assess the process and the actions of the researcher.

### §3.4 Data-collection and analysis

This research used several information sources. In the first place, several confidential documents of Bildung Nijmegen were obtained to get a better view of the organization. These documents consisted of qualitative information about the ideas of how the structure should be according to Bildung Members. These documents were analysed to get a better idea of the organization and the vision of the members, who started the foundation.

Secondly, one semi-structured interview was conducted to get more grip on the current problems at Bildung Nijmegen. Bleijenbergh (2013) describes semi-structured interviews as open questions which are formulated before the interview takes place. Due to the semi-structured character, it is possible to add or leave out questions and steer the interview in a certain way. With information from this interview, the design for this research was set up. Both the interview, as well as the documents were analysed by using coding (Boeije, 2005). First, codes were linked to text fragments using "open coding". These codes describe the main theme of a text fragment, per text fragment (Boeije, 2005). The different codes were then compared with each other to discover overarching codes. Boeije (2005) describes this as "axial coding". The overarching codes were used to find topics that describe the visions and problems in the organization.

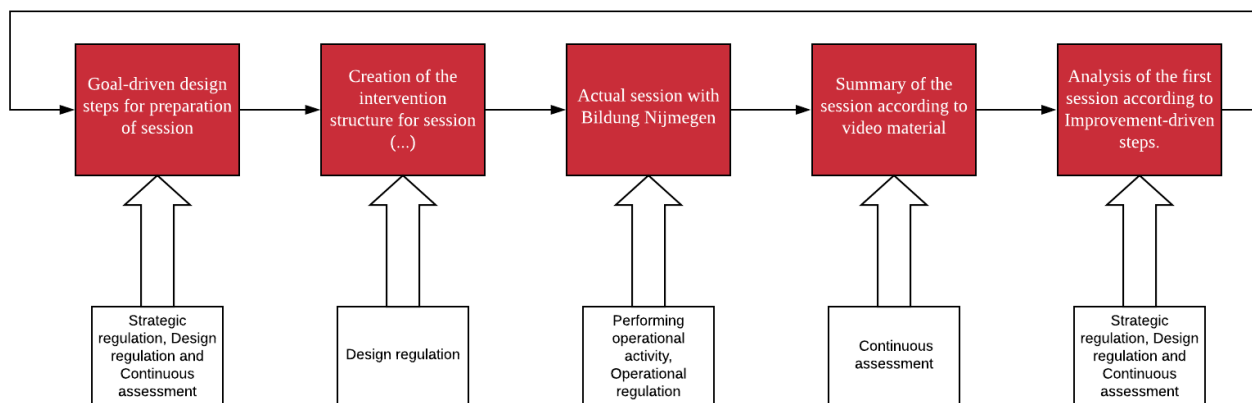
Lastly, most data is retrieved from the diagnosis and design sessions with the organization. In total three diagnosis sessions and three design sessions were held. In total, fourteen members of Bildung joined the sessions. The members had all different kind of functions in Bildung Nijmegen (board member, advisor, pioneer, active member) Each session lasted for at least 2 hours. All meetings were planned in advance and recorded. After the meeting, the video of the meeting was reviewed and reflected on, before the next meeting started.

The analysis of the video was done using the theory of Baarda et al. (2013) about the analysis of qualitative material. They describe that the analysis of qualitative material consists of three phases: the exploration phase, the specification phase and the reduction phase. The exploration phase contains the exploration of the sources. In this phase, the video was analysed according to relevant aspects. Relevant achievements and important quotes were noted. After this, each important aspect was ordered to functional, social or infrastructural aspect in the specification phase. This phase organizes the codes of the exploration phase (Baarda et al, 2013). In the reduction phase, the important quotes or achievements were used in the goal-driven and improvement driven steps of Achterbergh and Vriens (2019). In this way, a summary of the previous session and conclusions for the next session could be made.

This was done, because participatory research is an iterative process. Based on the evaluation of the previous meeting, the approach or planning of the next meeting could change. Theoretical, observational, methodological and reflective memos were also used to reflect on the theory, the behaviour of the participants, the methods used and the actions of me as researcher and facilitator of

the process. The recording and the memo's increase the validity of the research (Bleijenbergh, 2013). Thereby the steps of Achterbergh and Vriens (2019) were used to academically reflect on each session. This contained the goal-driven, as well as, the improvement driven steps.

To analyse each session and drive the intervention forward, each type of regulation (Strategic-design-, operation- regulation and continuous assessment) had to be performed according to Achterbergh and Vriens (2019). Each session was prepared in advance by using the goal-driven steps (continuous assessment) of Achterbergh and Vriens (2019). Based on the theories of chapter two, the goals (strategic regulation) for the sessions were made (see §3.3 for these goals). At the end of the five goal-driven design steps, a small blueprint for the infrastructure of the session was created (design regulation). After these goal-driven steps, the infrastructure had to be created (location had to be arranged, members had to be asked etc.). When the infrastructure was completed (design regulation), the actual session with the members of Bildung could start. In this session the operational activity was performed (finding structure related problems) and operational regulation was performed when disturbances in the session occurred. After the session, a summary of the session was made according to the steps of §3.4. The analysis of this data can be seen as continuous assessment of the process. Thereafter, the analysis of the first session according to the improvement-driven steps of Achterbergh and Vriens (2019) were taken to adjust the functional goals, the social goals or/and the infrastructure of the intervention. When this was done, all described steps were taken again. To get an overview of the data collection for each sessions, a step-by-step plan was created (figure 3.6). Eventually, 90 pages of analysis were retrieved from all the six sessions (See Appendix 1).



**Figure 3.6 Collection of data for each sessions at Bildung Nijmegen**

### §3.5 Research Ethics

This section discusses the ethics of this research. Hammersley and Traianou (2012) describe research ethics as: “*what social researchers ought, and ought not, to do as researchers, and/or about what count as virtues and vices in doing research*” (p. 36). In their research, Bell and Bryman (2007) analysed various ethical guidelines and formed eleven categories of ethical principles. The most important for this research are highlighted here.

According to Bell and Bryman (2007), researchers should not harm participants in a physically or psychologically way and should inform them of the content of the research. To meet this, a first introduction about the process was given to the members of Bildung. In this introduction, information about what the sessions contained and what it would ask from the members was explained. Besides this, a newsletter with a short explanation about the project and its aim was send to all members in October 2019. At the end of the sessions, an update was given to all the members about the results of the sessions. All the sessions were open to every member of Bildung Nijmegen. Each member, who wanted to join or just look, could voluntary join the sessions. Before the session started, the members was told that the duration of the sessions, would last at least two hours. In each session the goals of the complete phase were shown and the goals that we needed to achieve in that particular session. In the sessions, the members had the opportunity to ask questions and to give feedback on the process. In each session, feedback on the process was also asked from the members.

Bell and Bryman (2007) describe two important methods to counter harmful effects for participants. “Confidentiality” and “anonymity”. Confidentiality means that information of participants is protected from other parties. The obtained data of this research will only be shared with the two readers of this research (supervisor and second reader). After the completion of this thesis the data will be deleted, as well as, the videos from each session. Anonymity refers to the protection of the identity of the participants (Bell & Bryman, 2007). To protect the participants, the names used in this research, are not the real names of the participants.

The last and important ethical principle is, that the researcher should be transparent and honest about his findings (Bell & Bryman, 2007). To be transparent and honest, the supervisor of Bildung Nijmegen will join the defense of this thesis and after the thesis is completed, a comparable presentation will be given to the members of Bildung Nijmegen about the findings of this research. In addition, a paper about the new organizational structure will be handed over to Bildung Nijmegen to ensure that the new structure is understood.

# H4 Results

This results chapter is divided into five parts. The diagnosis of the current organizational structure of Bildung Nijmegen is described in the first paragraph (§4.1). Subsequently, the design process of the organizational structure of Bildung Nijmegen is described in the second paragraph (§4.2). The results of the design phase are given in paragraph §4.3. The last two paragraphs are reflective paragraphs. Paragraph §4.4 compares the new structure to its functional requirements. The last paragraph (§4.5) describes the new structure from a theoretical perspective.

## §4.1 Diagnosis of Bildung Nijmegen

This section describes the assessment of the current organizational structure of Bildung Nijmegen. In total, three sessions with 12 different members were held, in order to come to a diagnosis. The overall goal in this phase was to diagnose the current organizational structure, in order to find structure-related problems. In this paragraph, each session is divided into three separate parts. The first part describes the infrastructural choices for the session. These infrastructural choices, for each session, were created by following the five-steps of goal-driven design of Achterbergh and Vriens (2019). Each of these infrastructural choices starts with the functional and social goals of the particular session. Thereafter, the most important infrastructural choices are given. The second part describes the results achieved in the actual sessions. The last part describes the reflective results of the session. These reflective results were arrived from the analysis of the sessions, according to the improvement-driven steps of Achterbergh and Vriens (2019).

### §4.1.1 First diagnosis session

#### §4.1.1.1 Infrastructural choices for session 1

##### **Functional goals:**

- The members of Bildung understand what an organizational structure is.
- Create a problem inventory together.

##### **Social goals:**

- Create a shared vision on the problematic behaviour.
- Create urgency for the redesign of the organizational structure.

To achieve these goals, the idea was to first explain the theory of Achterbergh and Vriens (2010) about infrastructural design. In this way, the members would create a vision on how organizations work and how the influence of infrastructural conditions affects transformation processes. After this, the members should describe their own goals; the current mission, vision and strategy of

Bildung. Next, the members should draw an organizational chart and name HR and technology systems present at Bildung. This all was intended to create a clear vision on what the members were going to change. Thereafter, the members, should interactively make an analysis of current problems according to the steps of the gap analysis (§2.5.2) by Achterbergh and Vriens (2019). Eventually, this had to lead to a problem inventory and a shared vision on the current problems of Bildung Nijmegen.

This all had to be achieved by a high level of participation and use of the two theories. Planned discussion were used under guidance of the facilitator (the researcher). A PowerPoint was created to support the structure of the session. Speed in this session was essential, because the process should not be delayed. All members of Bildung Nijmegen were invited to create a shared vision on the problematic behaviour.

#### **§4.1.1.2 Results achieved in session 1 (26-11-2019)**

The first session was located at the kitchen area of Start-up Nijmegen and lasted 3,5 hours. In total, ten members with different functions (board members, project members, advisory members) were present. In groups of three to four people, the members discussed the goals of Bildung and created an organizational chart. After this, a group discussion was facilitated to come to the overall goals and one general organizational chart of Bildung Nijmegen. The steps of the gap analysis were taken to create an overview of current problems. This caused a lot of problems, because the members did not understand the theory and how they should translate the theory into a concrete problem. Eventually, one member of the board created a lot of problems, because he understood how essential variables could be translated into measurable problems. He explained his theory to the rest of the group and this resulted in more measurable problems. A first problem inventory was created (see appendix 1, SM01).

#### **§4.1.1.3 Reflective results of session 1**

After the analysis of the first session, the actual progress of the intervention was less than expected. The problem inventory was incomplete. Some measurable problems were found, but the members found it difficult to translate the theory of the gap analysis into a concrete problem. Therefore, the first functional goal was not completely achieved.

Also the social goals were not completely achieved. The analysis showed that the members were aware of the urgency to change, but the shared vision on the problems causing the problematic behaviour, was not present. A lot of discussion about the problems and how to change the structure came up in the first session. One member stated: *“It is too early to make things measurable”*(Madeleine, ID01). Another member said: *“First diverge and then converge the problems”*(Tessa, ID01). By these comments, it was clear that the members did not have a shared

vision on how to deal with current problems and did not agree with the way of structuring this episodic intervention.

The insufficient progress can be found in several causes. Firstly, the location was not optimal for explaining the theory. There was no beamer available and the presentation had to be shown from a laptop. Thereby, the location created a more informal atmosphere. One of the members noticed this and gave his opinion about the setting: *"It also depends on how we arranged it. We need a large room with a large screen, so that you can set up the presentation and that not everyone comes in abruptly. " .... "I really want to be able to concentrate on this next time"* (Mido, ID01).

Secondly, the members stated that change was needed and that a lot of problems and irritations were present. The members explained that they wanted a clear structure, but the attitude of people towards the first session contradicted this. For example: pizza was ordered during the session, some people entered the session too late or left earlier. At the end of session 1, one member questioned this attitude: *We can always discuss about problems very long and well, but this causes, that it takes quite a long time before we really put something down ... I think what we encounter now is a problem in our organization. How is it possible that we cannot get this done?"*(Rosalie, ID01).

Finally, the translation of the gap analysis towards understandable language for the participants was insufficient. The analysis showed, that the definition of the theory is not important to the participants. Only the application of the theory is important for the intervention. The idea behind the theory is more important to the researcher, than to the participants.

## **§4.1.2 Second diagnosis session**

### **§4.1.2.1 Infrastructural choices for session 2**

#### **Functional goals:**

- Complete the problem inventory.
- Determine the parameters of De Sitter (1998) that cause the problematic behaviour.

#### **Social goals:**

- Create a stronger shared vision by selecting the causes of the problematic behaviour.

To achieve this, a more formal location was needed. Therefore, the second session was located in a classroom (HAN Nijmegen). This location offered resources (beamer, whiteboard, formal setting), that created a more formal atmosphere.

To achieve the goal of a shared vision, the steps for the problem inventory should be taken again. This time adjusted according to the feedback of one of the authors (Achterbergh). In the previous session, these steps caused a lot of discussion and the theory was not clear to the participants. This time, the members should only answer to questions about the organization. In this way, the members only work with the application of the theory.



Next, functions of current members and coordination mechanisms should be discussed, in order to see what causes the problematic behaviour. The translation of the theory of de Sitter (1998) to understandable questions is therefore needed. Eventually, this gives the structural parameters that cause problematic behaviour. Again, planned discussion focused on speed should be used. As much members as possible are needed to create a shared vision on the causes of the problematic behaviour.

#### §4.1.2.2 Results achieved in session 1 (03-12-2019)

The second session was located at the HAN and lasted two hours. In total, six members were present in session two. In this session, the adjusted steps of the problem inventory were taken. Members of Bildung specified the three essential variables of De Sitter (1998) to their own context. This resulted into an overview of the essential variables, divided into external and internal functional requirements (see figure 4.1).

	External functional requirements	Internal functional requirements
Quality of organisation	Brand awareness	Number of Bildung activities
		Number of promotion activities
		Number of languages
	Continuity	Number of pioniers
		Degree of subsidy dependence
		Degree of information sharing
Professionalism	Number of assignments with external companies	
	Quality of activities	
Quality of work	Commitment	Degree of commitment at Bildung Members
		Compensation
	Development	Opportunities for development
		Amount of performance reviews
Quality of working relations	Communication	Number of reflection moments
		Level of participation in decision making
		Number of vision presentations

Figure 4.1 The essential variables of Bildung Nijmegen.

Based on the internal functional requirements, actual and desired values could be added to these requirements and a problem inventory was created. This completed the first functional goal of session two (see figure 4.2).

V(E)	Internal functional requirements	Norm Value	Actual Value
	QoO (Brand awareness)		
V1	Number of Bildung Activities	<ul style="list-style-type: none"> <li>- Two quarterly modules focused on a specific target audiences.</li> <li>- Open evening once every 2 weeks</li> <li>- Expedition (special activity) once a year</li> </ul>	Too low

V2	Number of promotion activities	- Flyer 1x per month - 1x per month networking (congress) - Social media presence - 1x per year assignment RU and HAN	Too low
V3	Degree of different languages based on participants	Scientific targeted projects, HBO targeted projects, MBO targeted projects	Project targeted at all kind of levels
	<b>QoO (Continuity)</b>		
V4	Number of pioneers	More than current number	Current number
V5	Degree of subsidy dependence	0%	70%
V6	Degree of information sharing	High (expectation management)	Low
	<b>QoO (Professionalism)</b>		
V7	Quality of activities	Content of the activities meets quality requirements	Content activities do not meet quality requirements
V8	Number of assignments with external companies	Once a week	<1x per week
	<b>QoW (commitment)</b>		
V9	Compensation	Higher	Low
V10	Degree of commitment at Bildung members	- Active Pioneers: At least 4 hours a week - Board members: Minimum 10 hours a week - 1x per quarter present at meetings (all members)	<4 hours a week <10 hours a week <1x per quarter
	<b>QoA (development)</b>		
V11	Development opportunities	High	Too low
V12	Number of performance reviews	1x every 6 months	Not
	<b>QoWR (communication)</b>		
V13	Degree of participation in decision-making (Democracy)	High, less top-down	Too low (Top-down)

V14	Number of moments of reflection	1x per quarter	Too little (<1x per quarter)
V15	Number of vision presentations	2x a year	None

**Figure 4.2 Problem inventory of Bildung Nijmegen**

After this, the members had to assess the parameters. First, a parameter was described in detail, then the members answered questions about this parameter in order to assess the parameter (high or low). The assessment led to the following table:

Parameters	Bildung
P1 Level of functional concentration:	High
P2 Level of differentiation of operational transformations:	Low
P3 Level of specialization of operational transformations:	Low
P4 Level of separation between operational and regulatory transformations	High
P5 Level of differentiation of regulatory transformations:	Moderate (operational/design vs strategic)
P6 Level of differentiation of regulatory transformations into parts	High
P7 Level of specialization of regulatory transformations	Low (Board) / Low (projects)

**Figure 4.3 Scores of the parameters at Bildung Nijmegen**

Four parameters were assessed as “high (or moderate)” and, according to the theory of De Sitter (1998), problematic. Parameter one (level of functional concentration) is problematic, because members of the organization are coupled to multiple orders. An order is here defined as “one project”. Members have the freedom to join every project. Therefore, some members are coupled to several projects. For example, a member can be coupled to the expedition activity and also to the external assignments of companies. Parameter 1 was therefore assessed as high.

Parameter four (separation between operational and regulatory activities) was also high. In theory, members of Bildung have the opportunity to deal with disturbances. In practice, most of the time real disturbances in projects are solved by the board. Therefore, this parameter was assessed as high.

Parameter five was assessed as moderate. The idea of Bildung is that people design their own project (design and operational regulation). Some projects comply with this idea, but some projects do not. For example: the expedition project was designed by the board and operationally controlled by the board. Some projects therefore are designed by the board, which causes a moderate score on this parameter.

The last parameter (P6 differentiation of regulatory activities into parts), was assessed as high. In session two a perfect example was given by a member of Bildung; The confidential counsellor oversees the whole expedition (monitoring). When there is a problem the assessment of this problem is done by a board member (assessing). Subsequently, the board instructs the responsible person to deal with this problem. Three parts are needed to solve one problem. Therefore, the sixth parameter was assessed as high. The parameters that were high, were selected as parameters that should change and are causing the problematic behaviour.

#### **§4.1.2.3 Reflective results of session 2**

The actual progress of the intervention was better than specified. The functional goals were achieved and the parameters that should change were already selected. A stronger shared vision was created, by selecting the causes of the problematic behaviour. Besides the new location, other causes contributed to this satisfactory progress:

The members were asked to think about the parameters and the way in which Bildung scored on these parameters. A group discussion, supported by examples of other companies, caused a lot of progress on the assessment of these parameters. By involving all present members in the discussion, the theory was easily translated, because everyone started to give their own thought about each parameter. When a parameter was misunderstood, feedback could be given and the discussion could be guided in the right direction.

Another cause that contributed to the progress, was the didactics of the session. The theory was explained in multiple steps. First, a brief description of the parameter was given. Next, the parameter was more elaborated and thereafter, an example of the parameter was given. Eventually, the discussion led to a better understanding of the parameters.

Despite the satisfactory progress, some improvements were possible for the next session. The session helped to drive the intervention forward, but members did not get the reasoning about the theory. They understood that the theory contributed to the episodic intervention and that it was important to assess the parameters. But the members did not see this method as “the way to do this”.

## **§4.1.3 Third diagnosis session**

### **§4.1.3.1 Infrastructural choices for session 3**

#### **Functional goals:**

- Selection of structural parameters that should change, by a change in the structure of the organisation.

#### **Social goals:**

- Strengthening the shared vision on the parameters that should change.

For the third session, an exercise was invented to create the link between the problem inventory and the parameters. According to three questions, based on the theory of Achterbergh and Vriens (2019), the members had to assess each parameter in combination with a problem. The questions were as follows:

1. Can be expected that a high value of parameter (...) result in problem (...)
2. What problems related to the essential variables can be expected at Bildung when parameter (...) has a high value?
3. Do these problems also occur in Bildung Nijmegen?

This should lead to a scheme in which each problematic parameters is compared to each problem. When all questions can be answered as “yes”, the parameter is causing the problem. In this way, the members should start thinking about the relation between structure and organizational problems. To support the assignment, a manual (see appendix 3) was made. This manual consisted of an explanation of the parameters and functioned as a tool for the assignment. The problem inventory was also printed, in order to have an overview of problems and parameters. The assignment was explained with use of a PowerPoint presentation. After this, the whole session should be focused on the assignment. The level of participation had to be as high as possible, to get more acceptance of the method, because members would think about how structural parameters influence the problems.

### **§4.1.3.2 Results achieved in session 3 (17-12-2019)**

In the third session, seven members were present. The assignment helped to understand relations between problems and organizational structure. Not only the assignment, but how the assignment was set up, helped to understand the theory. Members worked in groups and created a scheme in which all problems (v1 - v15) were combined with all parameters (p1 – p7) (see figure 4.4). The problems were retrieved from the problem inventory and can be found in figure 4.2.

Parameters	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15
P1	high	high	X	high	high	X	high	high	X	high	X	X	X	high	X
P2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
P3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
P4	X	high	X	X	X	high	high	X	X	high	high	X	X	X	X
P5	X	X	high	X	X	high	X	X	X	X	high	X	high	high	high
P6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
P7	high	high	X	high	X	X	high	X	X	high	X	X	X	high	high

**Figure 4.4 Parameters vs. Problems**

When problems did occur at Bildung Nijmegen, the parameter versus problem was assessed as “high”. This means that all three questions were answered with “yes”. If not all question could be answered with “yes”, the score ‘X’ was given. This means that the problem of Bildung Nijmegen is not caused by the particular parameter. In the figure (4.4), one can see that some problems (v9 and v12) do not score on any parameter. This could mean that these problems are (maybe) not caused by the structure of the organization. This assignment showed, that when you change a parameter, the parameter can also solve the problems. The parameters 1, 4 and 7 were excluded in advance, because these parameters were already assessed as “low” in the previous session.

#### §4.1.3.3 Reflective results of session 3

The functional, as well as, the social goal were achieved in this last diagnosis session. But the assignment showed more useful information. A parameter did not cause all the problems. For example: parameter 1 (production structure) causes problem 1, 2, 4, 5, 7, 8, 10 and 14 and parameter 5 (control structure) causes problem 3, 6, 11, 13, 14 and 15. This means, that the parameters cause different problems. The problems of parameter 1 are related to the production structure and the problems of parameter 5 to the control structure. This assignment showed, that when you change a parameter, the parameter can solve particular problems. In this way, the members got more insight in the relation between structure and parameters.

By answering the questions of the assignment, the members thought about the problematic parameters in relation to the problems. In this way, the participants started to reason from the theory. An example: *“Because levels are separated at Bildung, decisions are sometimes made top-down and*

*there is no participation in decision-making by people in the projects. So parameter 5 causes the problem of too little participation in decision making” (Mido, ID03). In this session, it became clear that the shared vision on the parameters that should change was getting stronger: “Being linked to all activities results in less capacity. The promo activities are in this way not optimally used. Problem 2 is therefore caused by parameter 1, because if you are linked to the same type of order, this is not at the expense of capacity” (Nelson, ID03). At the end of session three, the conclusion was that more understanding for the theory was achieved due to the exercise. A shared vision on an episodic intervention as means to do this was achieved. The participants were motivated and wanted to change the structure.*

Finally, the last session showed, that learning by doing is the best way to understand the theory. The assignment contributed to the acceptance and understanding of the intervention. The manual was very important in the understanding of the assignment. If members lost their reasoning and needed to check what a parameter was or what the problem was, the manual helped. The manual gave a good overview and almost no questions were asked about the theory. Some of the members were new with the theory, but the manual also helped for them. They could join the discussion without an explanation of the theory. Eventually, the translation of the theory to the members of Bildung Nijmegen was vital for the success of this phase. The understanding of the theory is important, the more you proceed in the process. To overcome knowledge loss in the next sessions, the idea was to start the design phase with a fixed group.

## §4.2 Design of Bildung Nijmegen

This section describes the design of the new organizational structure of Bildung Nijmegen. In total, three sessions with three members were held in order to come to a design. The overall goal of this phase was to design a new organizational structure, that is accepted by the members of Bildung Nijmegen and reduces the current problematic behaviour. In accordance with the previous chapter, each session is described in three separate parts: infrastructural choices, results achieved and reflective results. In the description of the design sessions, the focus is mainly on the process of this design. The concrete results of the design are presented in the next section (§4.3).

### §4.2.1 First design session

#### §4.2.1.1 Infrastructural choices for design session 1

##### **Functional goals:**

- Select the boundaries of the project.
- Formulation of the goals (the mission, strategy and vision) of the organization.
- The determination of the specifications one should consider while designing the new structure.
- The creation of the production structure (macro to micro).

##### **Social goals:**

- Create a shared vision in the design group on what we are going to change.
- Convince members of the design group of the usefulness of these constructs by letting them invent new ways of dividing work.

To come to a new design, the infrastructure for the design phase was changed. In the diagnosis phase, the sessions were open to everyone and no participating members were obligated to come to each session. Knowledge loss was therefore high in these sessions. In each diagnosis session, the previous sessions had to be discussed into detail, because new members joined the session. To overcome this knowledge loss, the design phase started with a fixed group. Functional goals were planned on beforehand based on the steps of the integral design chain of Kuipers et al. (2010) (see figure 4.5).



Design phase	
Overall goal:	Invent a new structure to overcome the problematic organizational behaviour.
Sub-goal 1:	Select the boundaries of the project
Sub-goal 2:	Formulation of the goals (the mission, strategy and vision) of the organization.
Sub-goal 3:	The determination of the specifications that one should consider, while designing the new structure.
Sub-goal 4:	The creation of the production structure macro to micro
Sub-goal 5:	The creation of the control structure from micro to macro.
Sub-goal 6:	The design of the technical systems

**Figure 4.5 Functional goals of the design phase**

The participants for this “design group” were selected based on the following criteria:

- The members must be familiar with the theory (participated in session 3)
- Available for three design sessions
- If possible, a member of the board should join
- Members with a different function is desirable (pioneer, board member, advisor)

At first was decided, that at least four people were needed for these sessions. As noted before, Bildung is a voluntary organization. This caused some problems in the selection of members for this design group. It was hard to find four people with knowledge of the theory. Four people could eventually be found, but one of them could not join the session because of his/her health state. The choice was made to start the project with three members. One of these members was not familiar with the theory and did not join the diagnosis sessions. This caused again a lot of information loss. To catch up, the first session contained a detailed overview of the diagnosis.

#### **§4.2.1.2 Results achieved in design session 1 (10-01-2020)**

In the first design session, a detailed summary of the diagnosis phase was given. After this, the members argued about the boundaries of the project, the formulation of the goals of Bildung (Mission, vision and strategy) and the functional requirements for the design. The concrete results of the first three steps can be found in paragraph (§4.3) This session was more of an explanatory nature. Members had to listen to the idea of the steps in the design and create a shared vision on the requirements for this design. The information loss caused a backlog. In the session, only the first three functional goals were achieved.

### **§4.2.1.3 Reflective results of design session 1**

The last functional goal (creation of the production structure) was not achieved. Due to the backlog, it was not possible to start with the creation of the production structure. The analysis showed, that the infrastructures capacity was decreased by the new group member. By giving an extended overview of the diagnosis sessions, the infrastructures capacity was increased again. However, the backlog caused that functional goal four had to be taken to the next session.

The second social goal was also not achieved and has to function as a goal of the second design session. Organization members did not practice with the new ways of dividing work. Therefore, the members not really started to believe in the constructs used for the design. The first session focused more on the shared vision of functional requirements for the design phase. The shared vision had to be clear, before the members could be convinced with new ways of dividing work.

## **§4.2.2 Second design session**

### **§4.2.2.1 Infrastructural choices for design session 2**

#### **Functional goals:**

- The creation of the production structure (macro to micro)
- The creation of the control structure (micro to macro)

#### **Social goals:**

- Members are emotionally and rationally convinced of the new constructs

To achieve the goals for this session, the steps in the creation of the structure are derived from the theories of Kuipers et al. (2010) and Achterbergh and Vriens (2019). Achterbergh and Vriens (2019) offer design heuristics for the design of an organisational structure. They divide several requirements in each step. Kuipers et al. (2010) use the same steps, but specify these steps more in their book. Therefore both are used for the creation of the structure. Members should participate intensively in the process of the creation of the structure. The members must create the organisational structure themselves. The chance of acceptance (emotional and rational) is higher when the design team creates its own structure. Speed is still essential, therefore the same fixed group was invited for this session.

### **§4.2.2.2 Results achieved in design session 2 (13-01-2020)**

The second session focused on the creation of the production structure from macro to micro and the control structure from micro to macro. Each step was explained with an example of a comparable organization, the parameter that was involved in the step and requirements for the interpretation of the parameters. The members practiced with several ways of dividing work. For example, the members

had to decide to which orders the organization can be divided; client based, product based etc. The members participated intensively in this session. They thought about other ways of structuring the organization. At the end of session two, a new structure was invented (see §4.3).

#### **§4.2.3.3 Reflective results of design session 2**

The step-by-step guide helped to perform the creation of the structure. Still, some information about the structure was missing at the end of the session: *“Yes, it is important to define the role of coordinator, otherwise you will get the same problem on a lower level. That is what is happening right now. That a hierarchical structure rises in a certain way”* (Nelson, ID05). The structure was not completely finished according to this participant. The roles should be better elaborated, so that the teams know what is expected of them. To overcome this problem, the steps for the creation of the organizational structure have to be done again in the last session.

At the end of session two, a participant gave the following statement: *“Yes, because this changes quite a lot. Because on the board it seems as if it has partly remained the same, but this changes the whole way you would work now. In a positive way then!”* (Nelson, ID05). During this session, the members started to believe more and more in the new way of dividing work. One of the most important steps, was to divide members over autonomous teams. In this way, people were only related to one particular team and not to all projects. The new teams and the new way of regulation, gave new insights to the members. For example: *“The connection team is now a kind of intersegmental control system”* (Richard, ID05). This examples shows that members started to use organizational design terms and that the ways of dividing work created more and more believe along the members.

In the analysis of session two, the conclusion was that the social goal of session two was achieved. Members were emotionally and rationally convinced of these constructs, because the practiced with these constructs and created their own variations. Especially the creation by the members contributed to the emotional part. The functional goal was not completely achieved. Therefore, the functional goals of the last session were adjusted.

### **§4.2.3 Third design session**

#### **§4.2.3.1 Intervention structure of design session 3**

##### **Functional goals:**

- The completion of the production and control structure
- The design of the technical systems

##### **Social goals:**

- based on the 'justified trust', the design members believe emotionally and rationally in the new design and want to implement the designed structure, in their organization.

The last design session was focused on the completion of the organizational structure and the design of technical systems. Extra information about the roles in teams was gathered between design session two and three, in order to complete the structure. A checklist for autonomous teams was added to the steps, in order to define clear roles for the teams. Together with the members, the steps for the creation of the production and control structure had to be done again.

#### **§4.2.3.2 Results achieved in design session 3 (23-01-2020)**

Together with the members, the steps for the creation of the production and control structure were done again. This caused some adjustments in several steps. Eventually, the final structure was created (see §4.3). The necessary technical systems for the new organizational structure were figured out for each team. Eventually, all teams had their own technical systems. These technical systems were based on the theory of Kuiper et al. (2010). Five types of technical systems were distinguished: production systems, preparatory systems, supporting systems, control systems and information systems.

#### **§4.2.3.3 Reflective results of design session 3**

The social goal of the design phase was to convince the members (emotional and rational) of the constructs used, and based on this trust, the members of the design group want to implement the designed structure in their organization. In the last session, this goal was achieved. The members themselves got more and more insights in the new design and started to create thoughts about how the new structure will function in their organization. For example: *"This way of distributing work saves a lot of work for the board"* (Mark, ID06) An other participant answers with: *"That saves a lot of work and creates also a lot more fun for the pioneers and therefore more commitment"* (Nelson, ID06).

At a certain moment, the concept for the organizational structure was shown to the design group. The members created this themselves. Now, an overview was created for them. The reactions to this concept organization chart were positive: *"Wow how nice! I just know if you show this to the board and you color it in nicely, then you don't even have to tell them anything anymore"* (Nelson, ID06). *"Yes, yes, great, yes great"* (Mark, ID06). *"I think it is solid as a rock."* (Richard, ID06). The believe in the created structure was high and the members looked emotionally and rationally related to the new structure. The last task remaining is to convince the board of the organization. According to the design group the board will be convinced of the new organizational structure. The members argued that the board has less pressure in this way and pioneers will have more commitment than before. With this session the last social goal was achieved! The members want to implement the design in their organization and are emotionally and rationally convinced of the new structures.

After the session, the goals of the functional dimension were also achieved. A new structure, that is accepted by the members of Bildung Nijmegen and reduces the problematic behaviour was created. However, this is an action research. That means that the new structure also has to be analysed.

The outcomes of this analysis are further explained in the last two paragraphs of this chapter (§4.4 and §4.5).

### **§4.3 The new organizational structure**

In this section the results of the new design are elaborated. The overall goal of the functional dimension, in the design phase of this intervention, was to invent a new structure that is accepted by the members of Bildung Nijmegen and reduces current problematic behaviour. The sub-goals of this dimension can be found in figure 4.5. In this section the sub-goals are discussed, step by step, in order to show the new created organizational structure of Bildung Nijmegen.

#### **Sub-goal 1: Select the boundaries of the project.**

The proposal was to create an organizational structure for the board, the pioneers, and the people who perform the projects. The group was asked, if the proposal missed anyone. According to the group, we also needed to take the external members (interns etc.) and the advisors into account. The boundaries for the new design are the whole organizational structure including the board, the pioneers, the active members, external members (interns) and the advisors.

#### **Sub-goal 2: Formulation of the goals (mission, strategy and vision) of the organization.**

The group did not agree with all the statements of the diagnosis phase. Important for the design is that the mission of Bildung includes that Bildung wants to provide a platform that provides more space in life for personal education. In this platform values as equality, trust, safety, diversity and room to fail are important.

The vision should strive to more professionalism and the expansion of Bildung in all segments of society. Besides this, Bildung wants to create continuity in their activities. They need repeating events to create more awareness. Another important point is, that Bildung wants to create income from their own business operations and not stay dependent of subsidy.

The strategy to achieve this, is to reflect about the current organization. Where are we now? What needs to change? The organization has to create a clear business card. The creation of the new organizational structure is part of this strategy. The organization should be designed in a way that Bildung can create continuity and obtain assignments from external companies.

### **Sub-goal 3: Determination of the specifications that one should consider, while designing the new structure.**

The specifications that one should consider while designing the new structure, were based on the created external requirements in the diagnosis phase (see figure 4.1). The structure must focus on brand awareness, continuity, professionalism, commitment, development and communication. These external requirements were further disaggregated into internal functional requirements and norms for these internal requirements. The norm values of the internal functional requirements (see figure 4.2) functioned as the functional requirements for the new organizational structure.

### **Sub-goal 4: The creation of the production structure macro to micro.**

#### Sub-goal 4.1 Macro identifying units

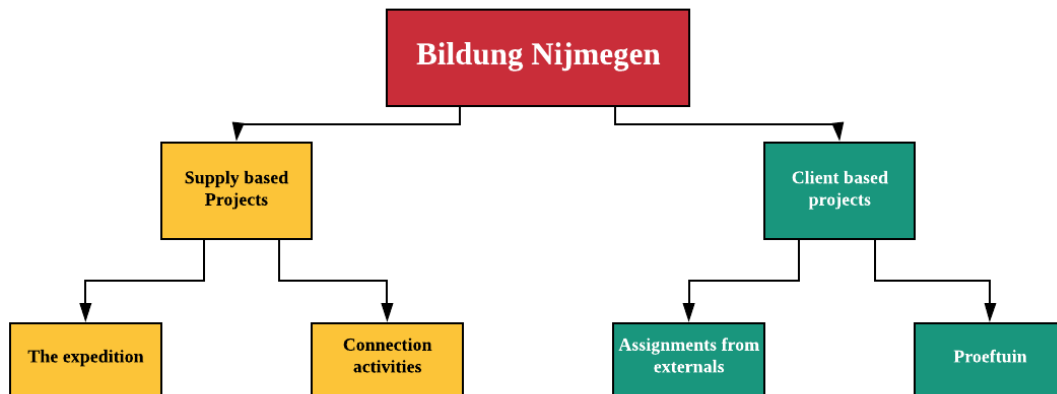
At macro level, the choice for a distinction between supply and customer based orders was made. Some of the projects at Bildung Nijmegen are supply based. Other projects are created by ‘customers’ that want to start a project with their own idea. Each requires a different way of approaching a project.

The supply based orders are made for customers or pioneers within Bildung. On this side, Bildung offers projects that are created in advance. The environment is not complex, because it is a standard program that can be offered and created in advance.

The customer based projects are projects with a more complex environment. For these projects, Bildung is invited to perform a project for a company or someone (external) has an idea for a project. Because the differences of environment and type of approach towards these projects, a distinction between these two macro orders is made. At this moment, everyone is coupled to both sides and to all activities within these order flows.

To further divide these flows the design group separated the supply side into one group for the “expedition” and one group for the “connection” activities. The expedition is a project that has several meetings for external customers in which subjectification activities are performed. This expedition is created by Bildung for external participants. The connection activities are related to supply based activities for the members of Bildung. These consist of informal activities, activities related to development of the members of Bildung and courses for people of Bildung.

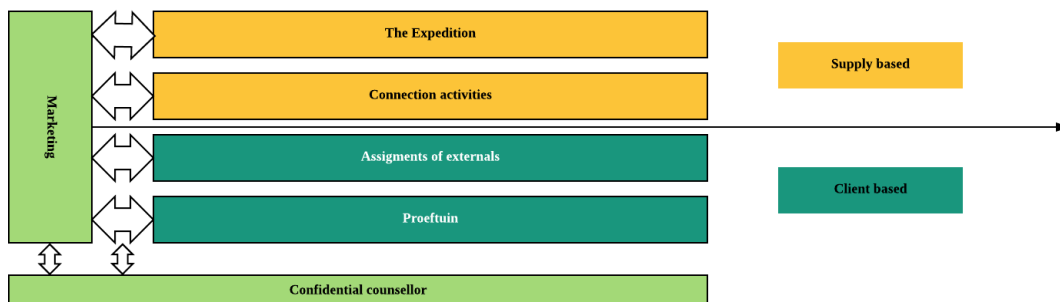
The customer-based side was also divided into the ‘proeftuin’ and ‘assignments with external customers (companies or individuals). Proeftuin is a project that helps customers (individuals) to perform a project (support-based). Bildung has the role of a mentor for the individuals. The assignments from externals consists of requests from companies to perform a project for that company. Here members of Bildung are the performers and the company has the mentor role. The members perform the projects according to the wishes of the client. Fig 4.6 presents an overview.



**Figure 4.6 Bildung divided into supply and client based projects**

Sub-goal 4.2 Meso: identifying operational units.

The design group decided that these four kind of orders could be done by autonomous teams. The only activity that should be central is the marketing of each activity. If each team had its own marketing, this would result in several promotions for the clients, that would lead to problems. Also, according to the participants, a treasurer is needed, who can oversee the financial state of the whole organization. This treasurer will be part of the board. The Treasurer does the bookkeeping of the organisation and deals with the invoices and budgets related to the activities. Each project has its own treasurer, but there is need for someone who oversees the financial state of all the teams together. Lastly, a confidential counsellor is needed that can help people if they have problems with the team or with others. This confidential counsellor is not related to any team. Eventually, on meso level this would look like figure 4.7.



**Figure 4.7 Meso level Bildung Nijmegen**

#### Sub-goal 4.3 Micro: designing of autonomous teams.

For each team, activities were distinguished. These activities can be found in Appendix 1, SM05 and SM06. The only outsourced task is the promotion of the project. Members must have the knowledge and skills to perform the project activities. This means that members have knowledge about each other's work. Ideally, the coordinator of a project can perform the activities of the treasurer and the other way around. In the last session, several roles and activities for those roles were invented for each team. Each team has a coordinator, a secretary, a treasurer and an evaluator (independent person, that does not take part in the creation of the project). Each role has its own activities. This does not mean that these roles and activities are coupled to one person, but all these activities are needed in a team, to perform the project. Therefore, multiple roles can be linked to one person. The team itself decides who has which role. This gives the team the opportunity to design their own project (design regulation, operational regulation).

#### **Sub-goal 5: The creation of the control structure micro to macro.**

##### Sub-goal 5.1 Micro: designing the control structure on team level.

The four created teams, have the decentralized authority to do all the regulatory tasks and production tasks on their own. This includes coordinating the project, doing the finance of the project, take care of their own planning, recruiting of people, and all other activities related to the projects. Ideally, team members will have the regulatory capacity to deal with all disturbances in the project. This means every operational disturbance. For example: arranging of materials, planning activities, recruiting etc. For extreme issues, the Confidential counsellor can be contacted and help with the disturbance. Besides this, the teams has also the opportunity to (re)design the activities (design regulation) or tasks. After each project, the evaluator gives reflection on how the project was and arranges a meeting with the team for the evaluation of the project. The evaluator arranges the design, together with the team, for the next project. Not only design for the activities, but also strategic (re)design of the project is in this way possible for the team members (redesigning project goals).

##### Sub-goal 5.2 Meso: designing the control structure between units.

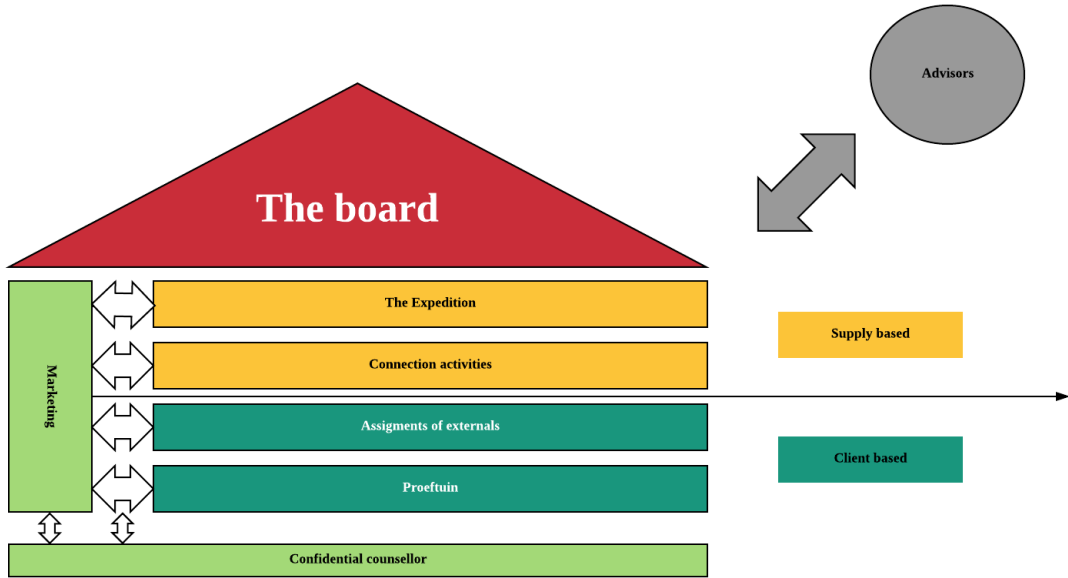
For the regulation between units, team members will have the opportunity to contact the overall marketing department. If there are serious problems within the team, the confidential counsellor is available for communication and problem solving activities. The Treasurer of the board will have contact with the treasurers of the teams about financial problems, ideas etc. On regularly basis, there will be contact between the several teams. This is done by the "connection" team. This team is part of the production structure, because it creates its own projects. The difference with the other teams is that the activities are intended for members of Bildung. They design informal activities, in which team



members can discuss topics that are relevant for all the projects. For example, new ideas about the design of supply based projects. In these activities, team members can share knowledge that helps to solve disturbances. This is a kind of regulation by design.

Sub-goal 5.3 Macro: designing the control structure between orders

Finally, the board is responsible for setting and maintaining the policies. The board consists of three to five members. The board (overall Treasurer) has to maintain a sustainable position and try to create an income model for Bildung. The Chairman, together with the board, has to create a viable strategic policy and expand the relations of Bildung with important parties. The Secretary in this team has the task to arrange meetings between the board and autonomous teams. In the new structure, the members of the board can have separate meetings with each team, about the progress of their projects. Additionally, the Secretary is responsible for the relevant communication to the members of Bildung Nijmegen (agenda, newsletter). The advice team exists of old Bildung members that support the new members in their new function and helps the board with new ideas and projects. Two optional roles discussed in the session were a board member, who is connected to the supply based side of Bildung and a board member who is connected to the client based side. This year’s board exists of five persons. Two extra persons could focus on each side (supply or customer based). See figure 4.8 for the overall structure of Bildung Nijmegen.



**Figure 4.8 Final designed structure for Bildung Nijmegen**

### **Sub-goal 6: The design of the technical system**

For all teams, the necessary technical systems were designed. Because all teams are designed autonomous, each team has their own technical systems. Together with the design group was decided that the technical system were only described, the actual creation of these systems are up to the autonomous teams.

Together with the design group was decided that each project team (expedition, proeftuin, connection activities, assignments for externals) needed:

- An own roadmap. This roadmap consisted of the design of, the execution of, the evaluation of and the redesign of the project.
- Several roles needed to perform the project. (Already described in the analysis of the sessions)
- A document which contains all the legal affairs the autonomous teams have to take into account.
- Contracts for members of the projects.
- An own email address (each teams has its own secretary and thus point of contact)
- A drive (online database) with all relevant information for the project teams (legal affairs, roadmap, roles, activities, transition of the previous team etc.)
- Training programs for the new members. The new members will be trained by the previous team in the form of a training week.
- Structural meetings with the board in which the progress gets explained to the board

For each team individual, additional systems were invented. In Appendix 1 (SM06) these can be found. This, eventually, completed the final structure.

## **§4.4 The new structure compared to its functional requirements.**

An action research is characterized by its reflective nature (Bradbury, 2015) The upcoming paragraphs therefore focus on the analysis of the created organizational structure. Does the new structure meet the functional requirements? What can be said about the new structure from a theoretical perspective?

(§4.5)

The functional requirements for the designed structure were based on the norm values of the internal functional requirements, created in diagnosis session two. In the third diagnosis session, the problems were related to the parameters. For problem V9 (compensation) and V12 (number of performance reviews) no connection was found between structural parameters and problem. These two problems were not selected as functional requirements, but still can be solved with the new design; The new design offers an opportunity for the board to create an income model for Bildung. In this way, the compensation problem can be tackled. Thereby, the created “connection” team organizes

activities for the other teams. Perhaps this team can take the performance reviews problem into account.

The functional requirements of the design phase will now, one by one, be discussed. The first external functional requirement was the “brand awareness” of Bildung. This was divided into “number of Bildung activities”, “number of promotion activities” and “degree of different languages based on participants”. Because not all the members are related to all projects, the members can focus on their own type of activity and are related to only one order type. This increases the capacity of each order type. For example: a member of the marketing team will not join the expedition. His focus will be on this marketing team and therefore more activities and promotion activities can be realised. Because the capacity of each team increases, the teams can in their projects also focus on types of participants (educational level). The new structure thus, complies to this functional requirement.

Continuity must be achieved by more “number of pioneers”, less “subsidy dependency” and a high “degree of information sharing”. By coupling the projects to fixed teams, the members of the project are responsible for their own recruitment. Four teams are now recruiting people and therefore the number of pioneers can rise. The board in the new structure, will be less involved in activities. This causes that the overall Treasurer should have more time to create a sustainable position. Lastly, the degree of information sharing will not necessarily be higher, but more focused. Each team has its own communication system and communication is about the particular order type. The meetings with the board, for example, are focused on one order type instead of four at the same time.

Professionalism was divided into “number of assignments with external companies” and the “quality of activities”. One team will focus on the assignments of the companies. A task of this team is to network and recruit new assignments. The number of assignments can rise, because there is more focus on this type of projects. The board has less obligations towards the project and in the new structure more time will be available for setting goals for the project teams and guaranteeing the quality of the projects.

The “commitment” and “development” of the teams will be higher in the new created structure. The team members have the opportunity to regulate and perform the projects themselves. The roles and activities can be divided over the team members, by the team members. Strategic regulation is also possible in the meetings with the evaluator. Operational regulation, design regulation and strategic regulation is part of their work. According to the theory of De Sitter et al. (1997) the regulatory capacity contributes to the development and commitment of employees. The new way of dividing work, therefore, contributes to these functional requirements.

Lastly, the communication was divided into “degree of participation in decision making”, “number of moments of reflections” and “number of vision presentations”. These internal functional requirements are met with the new structure. As mentioned before, the autonomous teams have the ability to regulate in all three levels. The board has more room for moments of reflections and creating vision presentations. Overall the functional requirements, created in the diagnosis phase, are met.

## §4.5 The new structure from a theoretical perspective.

In the diagnostic phase the following problems according to the parameters came forward; four parameters were assessed as “high (or moderate)” and, according to the theory of De Sitter, problematic. Parameter one (level of functional concentration) is problematic, because members of the organization are coupled to multiple orders. An order is here defined as “one project”. Members have the freedom to join every project. Therefore, some members are coupled to several projects. For example, a member can be coupled to the expedition activity and also to the assignments of companies. Parameter 1 is therefore assessed as high. The participants changed this parameter, by coupling a member to only one order type. Each order type now, has one team that is fully focused on this order. This reduces the amount of interactions needed to perform an activity. The team is autonomous and for the creation of the project less interactions are needed. According to De Sitter (1998) this reduces the structural complexity.

Parameter four (separation between operational and regulatory activities) was also high. At Bildung, people have the opportunity to deal with disturbances theoretically. In practice, the members explained, that most of the time real disturbances in projects are solved by the board. Therefore, this parameter was assessed as high. The new autonomous team have to take care of their own problems. If this is not possible, the confidential counsellor is there to help them with the problems. Pressure is taken from the board and the teams have the opportunity to regulate disturbances. De Sitter et al. (1997) describes this as controllability.  $\text{Controllability} = \text{control options} / \text{control demands}$ . This equation is with the new structure more balanced, because the teams should be able to deal with all disturbances themselves.

Parameter five was assessed as moderate. The idea of Bildung is that people design their own project (design and operational regulation). Some projects comply with this idea, but some projects do not. For example: the expedition project was designed by the board and operationally controlled by the board. Some projects, therefore, are designed by the board, which causes a moderate score on this parameter. In the new structure, the board does not join the projects. The teams should realize the design on its own. The teams also have the ability in meetings to strategically design the project for the next time. Because the teams participate more in the decision making, the differentiation into aspects will be less.

The last parameter (P6 differentiation of regulatory activities into parts), is assessed as high. In session two a perfect example was given by a member of Bildung: the Confidential counsellor oversees the whole expedition (monitoring), when there is a problem the assessment of that problem is at the board (assessing), the board instructs the responsible person to deal with this problem. Three parts are needed to solve one problem. Therefore the sixth parameter is assessed as high. This

parameter is decreased, because disturbances in the projects will be monitored by the teams (evaluator), assessed by the teams and, eventually, also acted to the problem by the teams.

The theory of infrastructural design by Achterbergh and Vriens (2010) shows best what happened to the organization. Each autonomous team now has the ability to perform the four different activities (realizing transformation process, regulating transformation processes operationally, setting goals for the transformation processes and designing infrastructural conditions for transformation processes and their operational regulation) an organization needs to perform in order to be viable. Each team has become a viable team with its own possibility to set goals (meetings with the board, evaluation meeting), to design the infrastructural conditions (role distribution, arranging materials, etc.), to operational regulate (regulate disturbances in projects) and to realize transformations (perform the project).

Theoretically, one can say that the structure meets all requirements, but the structure still has to function in practice. The results have to be tested, in order to really assess the structure on its usefulness. The last two phases, implementation and evaluation, of the episodic intervention need to be completed, in order to see if the new structure functions in its environment.

# H5 Conclusion, Discussion and Recommendations

In this chapter the conclusion, the discussion and the recommendations are discussed sequentially. In the conclusion an answer is given to the central research question. The conclusion is followed by the discussions and limitations of this research (§5.2). Finally, the recommendations for Bildung and further research are presented (§5.3).

## §5.1 Conclusion

The goals of this master thesis were to diagnose the current organizational structure, in order to find structure related problems and to design a new organizational structure, that is accepted by the members of Bildung Nijmegen and reduces the problematic behaviour of the organization. To achieve these goals, this research tried to answer the following research questions:

RQ1: *“How to perform a diagnosis of the current organizational structure of Bildung Nijmegen?”*

RQ2: *“How to design a new organizational structure for Bildung Nijmegen, that reduces the current problematic behaviour and is accepted by the members of Bildung Nijmegen?”*

A participatory action-research at Bildung was performed to answer these research questions. For this action research, the 3D model of Achterbergh and Vriens (2019) for episodic interventions functioned as the method to design the intervention. This model offered practical guidelines, that showed how an intervention can be designed and controlled. According to the authors, each intervention exists of a functional part, a social part and an infrastructural part. The structure of the intervention depends on the functional and social goals that should be achieved. These goals guide the infrastructure of the intervention (Achterbergh and Vriens, 2019).

To design the intervention, functional and social goals for the intervention were selected. Based on these goals, an infrastructure for the intervention was created. Six sessions were held. Three for the diagnosis of Bildung Nijmegen and three for the design of Bildung Nijmegen. After each session, the progress was assessed, based on the achievement on the social goals and functional goals of the intervention. Each assessment led to a new design for the next session. Each session thus, had its own infrastructure.

For the infrastructure of the intervention, theories about diagnosing and designing organizational structures were used. Achterbergh and Vriens (2010) describe the 7 parameters of De Sitter for the diagnosis and design of an organization. These 7 parameters functioned as theoretical background for the sessions. In their 3D model, Achterbergh and Vriens (2019), use this same theory for the diagnosis and design phase. The members of Bildung diagnosed and designed their structure according to this theory.

Eventually, this flexible way of designing the infrastructure for an episodic intervention led to the following results. In the diagnosis phase, four parameters were assessed as “high”. These four parameters needed to change, in order to improve the quality of the organization, the quality of work and quality of working relations. Parameter one (level of functional concentration) was problematic, because members of the organization are coupled to multiple orders. Parameter four (separation between operational and regulatory activities) was also high. Often board members solve problems for the members in the project groups. Therefore, this parameter was assessed as high. Parameter five was assessed as moderate. The idea of Bildung is that people design their own project (design and operational regulation). Some projects comply with this idea, but some projects do not. The last parameter (P6 differentiation of regulatory activities into parts), was also assessed as high. An example, where the three parts of regulating were done by three persons, showed this.

To overcome these problems, an organizational structure was created with low parameter values. The organization is split up in four teams, each with its own project. In this way, the functional requirements of the design were met and theoretically the new structure must attenuate disturbances and amplify regulatory potential. The quality of the organization in the new structure will be better, because flexibility increases. Control over the process is increased, because of the integration of operational and regulatory tasks. This creates better chances for product and process innovation (Achterbergh & Vriens, 2010). Each team now autonomous and can regulate strategically, design-based and operationally. In figure 4.8 the new structure is presented.

## **§5.2 Discussion**

This paragraph reflects on the completed research, by addressing the extent to which the research has fulfilled its goals. The goals of this research were to:

- diagnose the current organizational structure, in order to find structure related problems.
- design a new organizational structure, that is accepted by the members of Bildung Nijmegen, and reduces the current problematic behaviour.

This research diagnosed the organization, with use of the 3D model in combination with action research and concluded that four parameters were causing the problematic behaviour of the organization. These four parameters were adjusted in the design phase by the members of Bildung Nijmegen, to overcome this problematic behaviour. As described before, the new created structure was accepted by the members of the design group.

The 3-D model helped to achieve the goals of this research. The model structured the whole process of diagnosing and designing an organizational structure. On the one hand, the approach created steadiness in the process. Each action was determined. First the preparation of the action, then the action itself and finally the analysis of this action. During the whole process, the researcher knew what was coming. On the other hand, the model made the infrastructure of the process flexible. The

main goals and steps were determined, but an own interpretation could be given to the performance of these steps.

The combination of the 3D model with the action research fitted well in this case. Bildung has certain norms and values. This method corresponded with these norms and values. Bildung is an organisation specialised in the subjectification of its members. The method contributed to this by letting the members explore how to diagnose and design an organisation. The researcher could have made the new structure in a closed office and send it by post to the board, but that would lower the chance of acceptance by the members.

Still, the method also caused certain small problems. The members create the structure according to the information retrieved from the sessions. It is impossible to make organization design professionals of the members in this time period. This is sometimes at the expense of the result. For example, the members created a separate unit with the “Confidential counsellor”. This Counsellor is part of the production structure. This role acts upon complaints and is therefore part of operational regulation. This kind of mistakes are minor flaws and can be adjusted in the process of analysing.

Overall can be said that the goals of the research were achieved. The method of the 3D model in combination with action research contributed to the diagnosis, the creation and the acceptance of the new organizational structure.

### **§5.2.1 Limitations**

A first limitation of this research was the date of the initial interview. This interview was held in May 2019. This interview was held with a member of the organization at that time. According to this initial interview, the research was set up. The actual intervention started at the end of November 2019. Many developments can happen in half a year and this can have negative effects on the reliability of the research. The member interviewed in May was not present in the organization anymore. To overcome this limitation, the problems of other members were discussed in the diagnosis sessions. The problems of this phase were compared to the problems of the initial interview, to check the relevance. Results of the comparison were that the problems stated in the interview, were still present in the organisation, but also new problems were indicated.

Another limitation of this research was the type of organization. This organization is a voluntary organization. This caused several problems in getting members together and caused problems in arranging sessions. Getting the right people for the right session was impossible. For example, the fixed group for the design phase. This group consisted of three persons, but it was preferable to have more members and a member of the board in this group. In non-voluntary organizations, members are obligated to come to work and get paid for their activities. The chance of getting the right person for the design is therefore lower in this type of organizations.



The validity of this study is limited to only this organization. The created functional requirements were met in this type of organization, but in other type of organizations, this type of episodic intervention could create problems in achieving these functional requirements. Bildung is specific type of organization, with certain types of persons in a specific situation.

A big issue in action research is, that it is impossible to determine if the researcher has distanced himself sufficiently from his object of study. In this study, the researcher participated in the sessions as a facilitator. By letting the organization perform the diagnosis and design of the organization, and only facilitating the sessions, is tried to distance himself from the results. Still, the new structure and insights are distorted by the participation of the researcher in the process. The researcher reacts to the participants in a certain way and leads the discussions in a direction.

The last limitation of this research is related to the result of the design. The lower functional concentration of the newly designed structure implies that the members of Bildung Nijmegen are fully capable of performing complex jobs. Bildung Nijmegen is voluntary and open for everyone that applies. New members must be able to handle this complex job and, therefore, creates a requirement for the selection of new applying members. This can lead to problems in the future. To select people on capability for the job, a recruiting activity/unit is needed in the organizational structure. In the current structure, the teams select the new members. For now, this can be a solution, but on long-term this creates problems. An HRM-department can overcome this problem. This unit could deal with the training and selection of the members.

## **§5.3 Recommendations**

To structure this section, the recommendations are divided into practical recommendations (§5.3.1) and recommendations for further research (§5.3.2).

### **§5.3.1 Practical recommendations for Bildung**

In this research, according to the diagnosis phase, four parameters caused the problematic behaviour. The recommendations for the organization are to change these parameters according to the new designed structure and thus implement the developed structure. To do this, the organization should determine the difference between the current and desired structure. The gap between desired and current structure cannot be closed at once.

This should be done in “portions” (Achterbergh and Vriens, 2019). Coherent and manageable parts of the new structure should be implemented one by one. First, these portions should be defined and then the sequencing of these portions should be selected, before implementing these portions. A recommendation would be to select the teams as portions. Bildung can, for example, start with one

team that functions as a “pilot” team. The effect of the new design is still uncertain. The “connection” team does not yet exist in the organization. Because of the uncertainty of the new design, this team is possible to start with. This team has no running projects at this moment and therefore does not disrupt other projects. If the pilot works, the other teams can be changed as well. The connection members then now how to change the structure and a new project for this team is to change the other teams. The connection team is namely about activities between teams.

Before implementing the structure in the other teams, the connection team should first evaluate its own activities. A second recommendation would be to determine criteria for the evaluation of the implementation. Norm values and actual values can be added to the criteria, as done in the diagnosis phase.

A last recommendation for Bildung is theory of Belbin (2012) about team roles. Belbin (2012) distinguishes nine team roles that are needed to become a high performing team. Each role has its own characteristics and contains specific strengths and weaknesses. These roles can be used to create high performing teams. To develop the members, it would be interesting to give roles that does not match the characteristics of the person. In this way, the members can develop themselves and become professionals in team building.

### **§5.3.2 Recommendations for further research.**

A first recommendation for future research would be to test this way of approaching episodic interventions. This approach was tested on solely one organization. Not much can be said about the approach. In this context the method worked, but how would this approach function in a production organization? More contexts need to be tested in order to say something about the approach. The stakeholders of this organization were, for example, already motivated before the episodic intervention started. But what happens when an organization is more rigid. More participatory action research in different contexts is needed to test this approach.

Second, this research has also offered a practical contribution by showing that the 3D model in combination with action research can work to diagnose and design a structure in a project-structured organization. The reader of this research can use this research in similar contexts. The design of this research was flexible but shows a way of structuring the process of an intervention and achieving acceptance from the organizational members.

Lastly, further research should be carried out to see if the created organizational structure can encounter the problematic behaviour. The implementation phase and evaluation phase must be completed in the same structured way. Only in this way, one can conclude that the 3D model in combination with action research can improve the problematic behaviour of the organization. Further research might explore the complete process of an episodic intervention.

# Literature

- Achterbergh, J., & Vriens, D. (2019). *Organizational Development: Designing Episodic Interventions*. Routledge.
- Achterbergh, J., & Vriens, D. (2010). *Organizations Social Systems Conducting Experiments* (2nd ed. 2010). New York, Verenigde Staten: Springer Publishing.
- Aken, J. E. V., Berends, H., & Bij, H. V. D. (2007). *Problem-solving in organizations*. Cambridge University Press.
- Van Amelsvoort, P. & G. Scholtes (1993). Zelfsturende teams: ontwerpen, invoeren en begeleiden. St-groep: Vlijmen
- Ansoff, H. I. (1991). Critique of Henry Mintzberg's 'The design school: reconsidering the basic premises of strategic management'. *Strategic management journal*, 12(6), 449-461.
- Belbin, R. M. (2012). *Team roles at work*. Routledge.
- Bell, E., & Bryman, A. (2007). The ethics of management research: an exploratory content analysis. *British Journal of Management*, 18(1), 63-77
- Bergold, J., & Thomas, S. (2012). Participatory research methods: A methodological approach in motion. *Forum: Qualitative Social Research*, 13(4), 191-222.
- Bergold, J. (2007). Participatory strategies in community psychology research—a short survey. In *Poland welcomes community psychology: Proceedings from the 6th European Conference on Community Psychology*, 57-66.
- Bildung Nijmegen. (n.d.). *Wat, Waarom, Hoe?* Retrieved October 10, 2019, from: <https://www.bildungnijmegen.nl/about>
- Bleijenbergh, I. L. (2013). *Kwalitatief onderzoek in organisaties*. Den Haag: Boom Lemma.
- Boeije, H. (2005). *Analyseren in kwalitatief onderzoek*. Den Haag: Boom Lemma uitgevers.
- Bradbury, H. (Ed.). (2015). *The Sage handbook of action research*. Sage.
- Christensen, C. M., Grossman, J. H., & Hwang, J. (2009). *The innovator's prescription: A disruptive solution for health care*. New York: McGraw-Hill.
- Coghlan, D., & Brannick, T. (2014). Understanding action research. *Doing action research in your own organization*, 43-62.
- Van Eijnatten, F. M. (1993). *The paradigm that changed the work place*. van Gorcum.
- Ertmer, P. A., & Newby, T. J. (2013). Behaviourism, cognitivism, constructivism: Comparing critical features from an instructional design perspective. *Performance improvement quarterly*, 26(2), 43-71.

- Hammersley, M., & Traianou, A. (2012). *Ethics in qualitative research: Controversies and contexts*. Sage.
- Kuipers, H., van Amelsvoort, P., & Kramer, E. H. (2010). Het nieuwe organiseren. *Leuven: Acco*.
- Kuipers, H., & van Amelsvoort, P. J. L. M. (1993). Sociotechniek en werkstresspreventie. In *Werkstress en arbeidsongeschiktheid: preventie en interventie* (pp. 109-130). MAKLU.
- Lange, R. d., Schuman, H., & Montesano Montessori, N. (2011). *Praktijkgericht onderzoek voor reflectieve professionals*. Antwerpen: Garant
- Lieshout, F. V., Jacobs, G., & Cardiff, S. (2017). *Actieonderzoek. Principes van verandering in zorg en welzijn*. Assen: Gorcum BV.
- Nyumba, T., Wilson, K., Derrick, C. J., & Mukherjee, N. (2018). The use of focus group discussion methodology: Insights from two decades of application in conservation. *Methods in Ecology and evolution*, 9(1), 20-32.
- Mintzberg, H. (1980). Structure in 5's: A Synthesis of the Research on Organization Design. *Management science*, 26(3), 322-341.
- Simons, P. R. J., & Ruijters, M. C. (2004). Learning professionals: towards an integrated model. In *Professional learning: Gaps and transitions on the way from novice to expert* (pp. 207-229). Springer, Dordrecht.
- De Sitter, L. U., Dankbaar, B., & den Hertog, F. (1994). Designing simple organizations and complex jobs.
- De Sitter, L.U., & den Hertog, J.F. (1997). From complex organizations with simple jobs to simple organizations with complex jobs. *Human Relations*, 50(5), pp. 497–534.
- De Sitter, L. U. (1998). *Synergetisch produceren*. Assen, The Netherlands: Van Gorcum.
- Schein, E.H. (1987). *Process Consultation*. Reading, MA: Addison-Wesley.
- Swanborn, P. (2010). *Case study research: What, why and how?*. Sage.
- Vennix, J. A. M. (2011). *Theorie en praktijk van empirisch onderzoek* (5e editie). Harlow: Pearson.
- Strien, P. V. (1986). *Praktijk als wetenschap. Methodologie van het sociaal-wetenschappelijk handelen*. van Gorcum, Assen.
- Vennix, J. A. (1999). Group model-building: tackling messy problems. *System Dynamics Review: The Journal of the System Dynamics Society*, 15(4), 379-401.
- Verschuren, P., & Doorewaard, H. (2007). *Het ontwerpen van onderzoek*. Lemma, Den Haag.

Wilkinson, L. (1999). Statistical methods in psychology journals: Guidelines and explanations. *American psychologist*, 54(8), 594.

Womack, J.P., & Jones, D.T. (2003). Part I: Lean Principles, In: *Lean Thinking. Banish Waste and Create Wealth in your Corporation*. New York: Simon & Schuster.

