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## **What happens in between?**

A Techno-Anthropological exploration in the use of VR-glasses as  
painedistraktion for children admitted to Danish hospitals.

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**Master's thesis by Kirstine Mia Stenild**

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## Abstract

This project aims to summeraries a Master's thesis at the study program of Techno-Anthropology. The project is undertaken in collaboration with the Danish firm Khora, located in Copenhagen. The overall theme for the project is the study of how VR-glasses can be used as paindistraction for children during the procedure of having peripheral venous catheter (PVC), when admitted to the hospitals in Denmark.

The study has been focusing on gathering empirical data through research and experiences of the field inside of the organisation. The project uses theoretical inspiration from the theories; Actor-Network Theory, post-phenomenology and gamification and takes methodological standpoint of ethnographic and participatory methods.

The report concludes that user-centered perspective and socio-technial approaches should pay an important role when implementing new healthcare technological artefacts. Finally the project suggest a developing framework for Techno-Anthropological project mangement though a discussion based on the gather empirical data, that can be used for further Techno-Anthropological activities and innovation management. when looking into the user-experience in this specific technology

*“VR-glasses is not necessarily about alienation or a new technological understanding but think of it as a tool, and something that can move and do something. No doubt that we have only seen the beginning of what it can”*

**Ph.d. researchscientist and nurse Marianne E.G.**

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## **Preface**

This Master's thesis is completed by student on the Techno-Anthropological from Aalborg University. I would like to thank my supervisor Lone Strub Petersen, who believed in my idea and engagement of this new territory of technology. Of course also a huge thanks to all the willing healthcare professionals informants from different hospitals in Denmark.

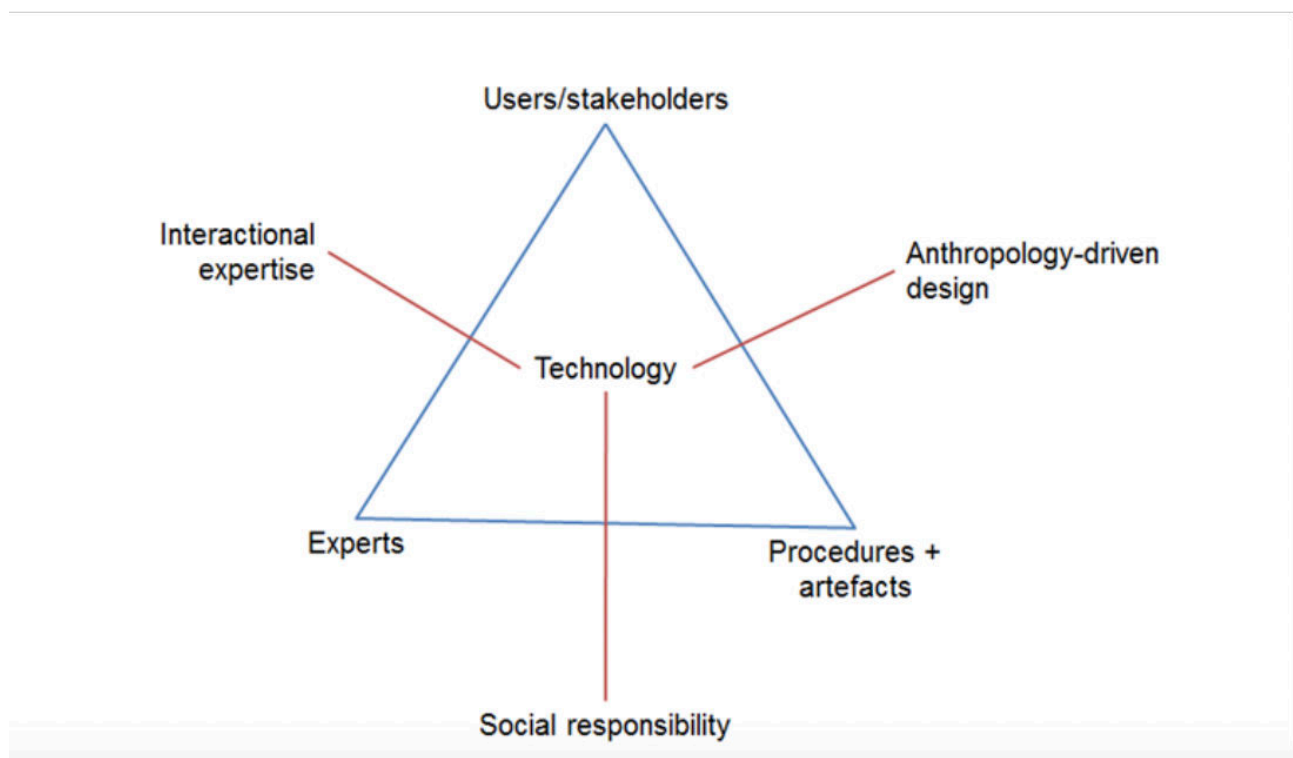
Aalborg Universitet, June 6, 2019

# Chapter 1

## Introduction

This master thesis is a 10'th semester project that took place in the time span from February to the first week of June 2019. It is about the relation between healthcare professionals and their patients, children who is admitted to the hospital and needs to have the procedure PVC (peripheral venous catheter). The project propose how the contact and the way nursing is conducted is changing and how we can involve the users (the children) of this specific technology, VR-glasses (virtual reality glasses).

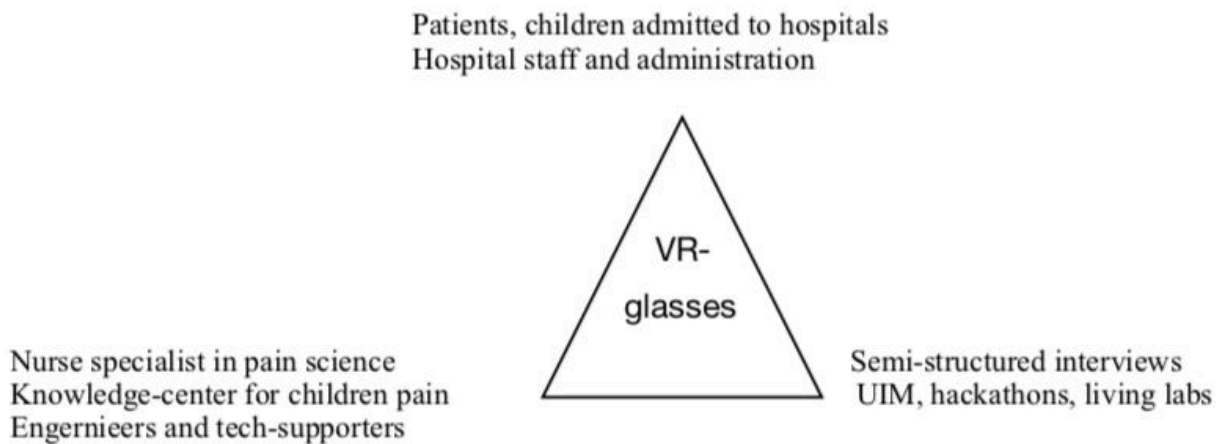
Below is pictured the interdisciplinary work between the patients and users of the technology, the healthcare-professionals and the organisation, as a triangular motion with arrows pointing in both directions.



(Figure above; The field of study, from T. Børsen, 2013)



The figure translated for this specific case and technology;



Up against 25 % of Danish adults have a fear of pain, which often is developed in their childhood. This leads to an tendency to avoid the healthcare system, including compliance of national vaccinationprogram (<https://www.rigshospitalet.dk/afdelinger-og-klinikker/julianemarie/videnscenter-for-boernesmerter/smerter-hos-boern/Sider/procedure-relaterede-smerter.aspx> ).

If the child feels helples or resonates e.g. in connection to a painful or uncomfortable medical procedures, and if there isn't taken care of the child's boundaries, their nervesystem will continue to be high (stressed). This high level of activity will become a cronical tension state for the child. This will not only intensify the pain that already is present because of sickness or damage, but will also cause cronical pain to the child (Ibid).

The Danish firm from Copenhagen Khora and Rigshospitalet have made test on two different groups of children to examine if the game "Ballade på Badebroen" works better, worse or have the same outcome, as other recreation methods, which have been used for many years. Videnscenter for børnesmerter (Knowledge center for children's pain) is the main official department of this field.

They have acknowledge Ballade på Badebroen as a sufficient way of recreation for the children. Previous they have acknowledge methods as soap bobbles, fantasy-travel, music and other forms of recreation. If effect of the specific game Ballade på Badebroen, will show to be as good as expected.

Videnscenter for Børnsmerter hops to expand the method to everyone who would be interested, national and international. So children all over the world can get a better experience of a difficult situation.

## **1.1. Initiating problemstatement**

User exploration in the use of VR as paindistraction for children admitted to Danish hospitals.

## Chapter 2

### Problem analysis

The Danish healthcare sector is well driven and effective by international service quality metrics, and is continuously in development to live up to the healthcare demands, national and international (<https://www.ft.dk/samling/20161/almedel/UFU/bilag/68/1731529.pdf>).

In the present UN's convention it is mentioned in article 3, part 2.; that the participating states in the UN convention, should take consideration to grant the child special solicitude, which have been established in the Genève-declaration from 1924 regarding Childs rights. This has also been declared in Childs rights enacted by the UN in 1959 (General assembly resolution 1386 (XIV)) which is acknowledged in The Universal Declaration of Human Rights, in the International convention about civil and political rights. Especially in article 10 and in the regulation for internationale organisations that take care of the children health.

(<https://www.boerneraadet.dk/boernekonventionen/boernekonventionens-artikler>)

The attended states in the UN should ensure institutions, services and agencies with the responsibility for caring and protecting of children, should be accordance to the standards that is set by competent authorities, with a special consideration to security, health, the healthcare-staff numbers and their qualification, and with a expertly supervision (Ibid).

Studies show that 20 minutes with VR-game reduce the experience of pain with 24% (<https://www.regionh.dk/nythospitalnordsjaelland/nyheder/nyheder/Sider/Vr-som-smertelindring-til-boern.aspx>). The VR work and tests is happening in a combination of the company Khora and Children- and youth department on Nordsjaellands Hospital. Games and movies is selected so they fit different age groups and specific targets of the categories; entertainment, relaxing and diversion. The idea of VR-applicability to distract children during painful procedures on the hospital is inspired by work of Videnscenter and children's pain on Rigshospitalet.

## 2.1. Problemstatement

How is the case of VR-glasses pushing our understanding of pain distraction for children admitted to Danish Hospitals, seen from a healthcare-professionals point of view.

# Chapter 3

## Research design

### 3.1. Theoretical framework

#### 3.1.1. Post-phenomenology

Mediation theory can help to anticipate the impact a technological artefact have on human practices and experiences, and help clarify the relation between human beings and their world, in which technologies play a mediating role (Verbeek, 2015).

What is being designed is thereby not a thing but a human-world relation in which practices and experiences take shape and designing technology is in a way a design of human beings. Technologies do much more than merely function—they help shape human existence and *co-shapes* subjectivity and objectivity (Ibid). Technology creates specific relations between its users and their world, resulting in specific experiences and practices (Verbeek, 2015).

Verbeek builds upon the work of Don Ihde, to understand the mediating role of technologies have when studying the relations between humans and technologies. First by categorize various types of *relations* between humans, technology and the world. Secondly by identifying various *points of application* from where technologies exert their influence on human beings. And thirdly the several types of *influence* that technologies exert on human actions and decisions (Verbeek, 2015).

In the mediation theory it is said, that the field of interaction design is founded upon the idea that, ultimately, it is not *things* that are to be designed, but rather the *interactions* between humans and things.

*Interaction* can be translated literally as “action in-between”, as it indicates what is going on between a human being on the one hand, and a technological artifact on the other (Ibid).

Both humans and technology are *not* poles, but rather a result of the interaction, who have a relation to each other and reacts and shapes off that relation that come about in between them. Thereby it is the interaction that makes it possible to understand the the relations between humans and products, or the technological artifacts in general (Ibid). The concept of interaction therefore presupposes the existence of human subjects and technological objects, *between* which there is a specific kind of *activity* (Verbeek, 2015).

In Verbeek’s text “Short introduction to Mediation theory” From 2015, he distinguish between three approaches when looking at how technologies is an extension of human beings; 1. Technologies can be seen as extensions of the human, 2. there can be a dialectics between humans and technologies and 3. human-technology relations can be approached in terms of hybrids.

<b>Extensions</b>	Technologies appear primarily as tools or instruments. They enable human beings to do specific things and is seen as neutral tools. As extensions, they merely facilitate human practices and experiences, rather than actively helping to shape them.
<b>Dialectics</b>	Instead of enabling human beings to realize their own intentions, technologies are a significant force themselves. Technologies are seen as overpowering or alienating forces while human beings need to find ways to free themselves from them. Tools still have to be operated both physically and mentally by human beings, machines take over the physical part, and automatic machines take over the cognitive part.
<b>Hybrids</b>	The hybrid approach sees a fundamental problem in both the extension/instrumental and dialectical approach. When locating humans and technology in two distinct spheres we fail to grasp the complexity of intertwining of the human subject and technology subject. Technologies help shape the way we behave and interact.

*From Verbeek’s “Short introduction to Mediation theory” from 2015.*

Many of the new recent technologies does however, not fit into Don Ihde’s categories and therefore Verbeek build upon and expand his work, by suggesting that we need to see new technologies into a further deeper light, and categorize various types of relations between humans, technologies and the world.

This is done, since there is configurations of humans and technologies that are even more intimate than an embodiment relation, while others have a more powerful contextual influence than the background relation that Ihde refers to (Verbeek, 2015). A *cyborg relation* would be human/technology -> world, this could be a brain implant that stimulate deep into the brain to that Parkinson's disease, this is not only embodied but merges with the human body into a new hybrid-being (Verbeek, 2015).

*Interactive context*, where the technologies merge with human beings environment into "smart environments" with "ambient intelligence" and thereby becomes more than a background for our existence. This configuration of immersion Verbeek schematize as human <-> technology/world.

A third categorization of mediation Verbeek calls *augmentation*, combining an embodiment relation and a hermeneutic relation: (human-technology) -> world+human -> (technology-world), where technology on one hand can give a n experience of the world and give a representation off the world in a parallel screen.

To look further into mediating theory second step by Verbeek is to identify various points of application from where technologies exert their influence on human beings, where the "contact points" is. Verbeek suggest we look into Steven Dorrestijn and his framework to categorize these contact points. He uses the human body as a reference tool throughout his work.

Dorrestijn categorize four types of contact, corresponding to four zones around the body; "to the hand", "before the eye", "behind the back" and "above the head" (Verbeek, 2015).

The two first zones concerns how human beings encounter technologies physically (to the hand), bodily interaction, like crossing a speed bump, and cognitively (before the eye), where interpreting information given by the technology, like stopping at a red light (Ibid).

The last two zones are contextualized, where the material infrastructure has an impact on our actions and experiences (behind the back), like using the train if only there are good connections between one's home and work. Above the head refers to the role technology plays in our thinking, like having utopian or dystopia expectations of the social impact of technology (Verbeek, 2015).

The last dimension in working with mediating theory, is the destingush of several types of influence that technologies exert on human actions and decisions. Here Verbeek refers to Nynke Tromp et al.'s two dimensions; *visibility* and *force* (Verbeek, 2015). Technologies impact can here be located somewhere between "hidden" and "apparent", and between "weak" and "strong".

Strong also called *coercive*, where technology forces you to take action, e.g. when a car won't start before wearing a safety belt. Weak also called *persuasive*, where technology don't overpowering in their influence.

The hidden weak influences' can be called *seductive*, their impact is non-cognitive and mild, and can for some be seen as a bit more creepy even though they are very common, e.g. a coffee machine in the hall of a company to stimulate social interaction. The final type of influence, *decisive* or *implicative* is both strong and hidden e.g. an apartment building without an elevator that implicitly forces people to use the stairs (Verbeek, 2015).

### 3.1.2. Gamification

R.D. Spechy chose in 1954 to present "Gaming as a technique of analysis" where he found "A virtue of gaming is sometimes overlooked by those seeking grander goals. It has unparalleled advantages in training and educational programs" (Salen, 2008). A game can easily be made fascinating enough to put over the dullest facts. This is an idea that for many people seems quite new and innovative is something he stumbled of this researcher more than 50 years ago.

However today's kids differs in many ways from back then, they are born into a world where concepts like civic engagement and participation is everyday life. They are crafting learning identities for themselves, they are digital "kidness" (Ibid). While many games fosters social organisation and alternative ways of thinking and interacting, more work needs to be done to situate these forms of learning within a dynamic media ecology that has participatory and social nature of gaming at its core (Ibid). We therefor need a more sophisticated understanding of the myriad ways in which gaming could and should matter for those considering the future of learning.

Gamification gives us an opportunity to study how children spend their time and what they learn in the process. Researchers concludes that rather than holding to a *separate worlds* view, where the games takes place, they argue that the culture of video game play is one deeply "*tangled up*" with other cultural practices (Salen, 2008). E.g. Doom-3, a game where the auditory information comes in the form of text which make the gamers learn and understand English better (Ibid).

Researches belief that exposure to the flexible rule sets and iterative play embodied design and gaming practices are critical for thinking about literacy, and drive the children to discover and nurture interests they may not know they have. To play a game is, in many ways, an act of faith that invests the game with special meaning. Without the willing gamers, the game is a formal system waiting to be inhabited.

As design systems, games offer certain terms of engagement, rules of play and engender stylized forms of interaction (Ibid). Play iteration is good learning, and good as a practice rooted in reflection by the gamers action. Games is more than contexts for the production of fun. It delivers learning, experimentation of identity, specialist language in context, and point-of-view.

## **Chapter 3.2. Data collection**

### **3.2.1. Qualitative method description**

Qualitative research can be seen as 1) a field of inquiry and an investigation field, and 2) as a natural part of any phase in any research process (Tanggaard and Brinkmann, 2015). This qualitative research stands against to the objectifying, positivistic and quantifying re- search methods in science. There has seen a big change in how objective scientist should be and be aware of, e.g. Malinowski's famous fieldwork of Trobriand-islands. Being aware of this divide between the different approaches to science, and sensibilities during the ethno- graphic field, we have chosen our field of investigation to be the during the municipality election in the northern of Jutland.

From February 2019 to April 2019 a rapid evessence review (<https://www.cebma.org/faq/what-is-an-rea/>) was conducted through CINAHL, Aub.aau databases were screened in to identify studies exploring VR-glasses as therapies for an intervention to assist in the management of pain or as directly paindistraction. Main outcome measures were for acute pain and functional impairment.

### **3.2.2. Ethnographic methods**

In this project the empirical material is gathered by using ethnographic methods of the interview, with the conversation as the primary research method. The interview always consist in a social context, that is situated in a specific historical or contextual context (Tanggaard and Brinkmann, 2015). As phenomenology scientists I wanted to investigate through the interviews of how the healthcare-professionals use VR-glasses and if there is any specific phenomenons experienced from a first-persons point of view, and what happens in between this specific technology and the user of it.



When interviewing people, one mostly do it to gain access to the informants experience of different phenomenons in their lifeworlds (Tanggaard and Brinkmann, 2015) This is one of the main reasons I wished to investigate VR-glasses within post-phenomenology. The interview gives a privilege to get access to the healthcare-professionals experience of their lifeworlds or different arenas, and can constitute to the beginning of a possible further design-construction and theory development (Ibid).

### **3.2.3. Semi-structured interviews**

As a research-scientist I have tried to get in contact with different healthcare-professionals to get valid and broad information. However it was needed to stop the interviews when I felt that I had reached a satisfying point with interviews with healthcare-professionals that has been in the field for a long time and ward-nurses. I have chosen to highlight different parts in the conducted interviews for which I believe have relevance for the project. Though they might not all be used to analyze on it will make it easier for the reader to get an idea of what I believe is important and interesting empirical data.

The interviews will give a perspective on VR-glasses and ensure insights of the individual experience of the usage of the technology. The original semi-structured interviews can be found on records and be send online for the reader, if interested, else see appendix further down in the report. The conducted interviews was mainly over the phone, and was recorded for further analysis and transcription in original language Danish. Hereafter they have been translated from the original language in Danish to English specific to analyse on the information for the project.

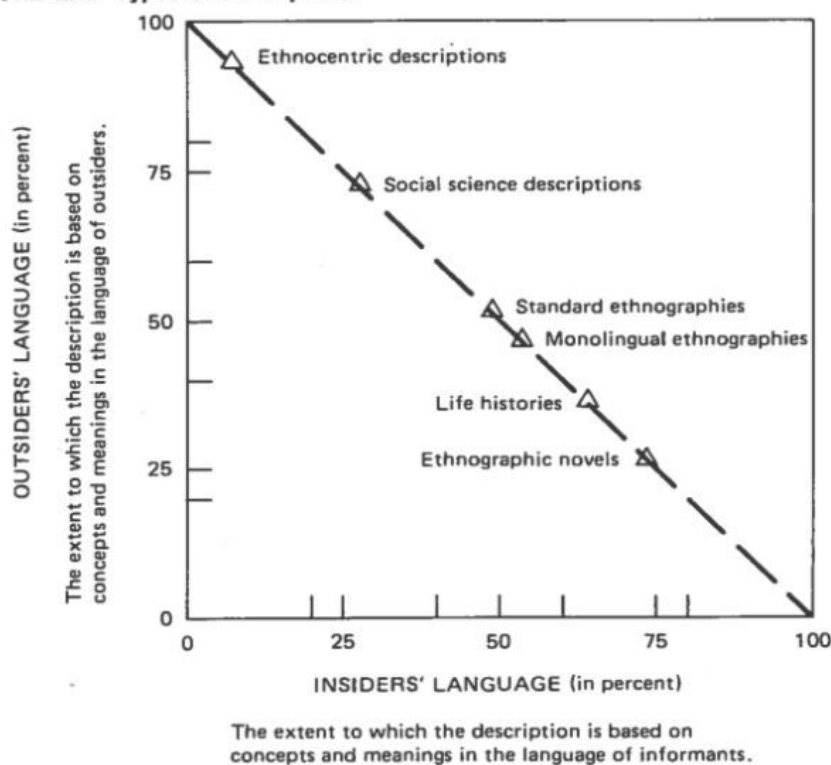
The interviewresearch is happening between the human relations where the interaction between the interviewer and the informant is crucial for the archived knowledge. Different forms of relations in the interviews can lead to different knowledge/outcome to the subject and for the project. Therefore will an emphatic, receptive and active-listening interviewer get knowledge of human experiences, formulated with the informants own language from their lifeworlds. While a more assertive interviewer will produce knowledge of how people argument and explains themselves, this way of conducting an interview can often seem a bit provocative and alien (Tanggaard and Brinkmann, 2015).

In reality it is a lot harder to ask questions and get answer in an interview, and a lot harder to conduct them than one might assume.

Many people may wrongly believe that you without practice and preparation, can formulate questions, ask them to the informants, record the answers, write them out and end up with a useful product within the research field (Tanggaard and Brinkmann, 2015). This is how ever not the case. You cant get knowledge only from try using the interviews as the only research method, often it can be a good idea to combine interview research with other investigation methods, e.g. fieldwork; which can give a more precise view of what people do compared to interviews where people primarily tell what they do (Ibid). By this mean interviews are more suitable to expose the relational, conversational, linguistic and narrative areas.

Semi-structured interviews is one of the most recognized ethnographic method within qualitative research, and highly recommended by many ethno- and anthropologist. When we see the ethnographic interview as a speech event, we will be able to see that it has much in common with a casual friendly conversation. In fact skilled ethnographers gather the most of their data through participant observation and friendly conversations. (Spradley, 1979). In this way we may interview people without their awareness, just because we are having a casual conversation while introducing to a few ethnographic questions (Ibid). When gathering empirical material it is very important to keep in mind the translation that happens when we are having a conversation and do interviews with the different healthcare-professional. “ *An ethnographic description are not equally faithful to the concepts of the informants*” (Ibid).

**FIGURE 2.1. Types of Descriptions**



(Fig. 2.1. from Spradley, 1979).

From Spradley's fig. 2.1. *Types of descriptions*, one can see how language and technique of the interviewer will have different outcomes for the project and the validation of it. Where in the left upper corner we see a beginning of an outsiders perception of ethnographic description, an alien that will make descriptions based on their own concepts and meanings. From there the interview will go more in depth and deeper into the informants lifeworlds and will in the right bottom corner be ethnographic novels, that is based on the informants own language when it comes to meanings and concepts.

In other words, is it important to be observant of the interview should be seen as a neutral technique to achieve uninfluenced answers from the informant, and that it should be seen as an active interaction between the two or more persons, which can else can lead to negotiated and contextualized answers (Tanggaard and Brinkmann, 2015).

While been studying and working for the firm, I have tried to keep an open mind about the project and how/what would define the project. I have gathered the empirical material about how they work intern within the firm Khora. While gathering the empirical material through the interviews, it was important for me to be aware of how I translated the conversation, and what the informants concepts and point of view was without having a narrative or personal way of asking the questions, but being objective as a researcher. As Spradley explains it, it is important to be faithful, by getting a better understanding of the informants lifeworlds (Spradley, 1979).

### **3.3. Case description**

This case is based on an internship at Khora in Copenhagen, where the study is conducted through interaction in the firm as a consultant, to gain insights and work in their team. I have had the option of making participant observation of their office, but since my mainbase is in Aalborg it haven't been as much as expected.

The organisation Khora is a Danish firm, with virtual reality (VR) and argument reality (AR) production house, and is the worlds first VR store and a hub for innovators, right in the citycenter of Copenhagen.

By combining storefront, educational platforms and labspace Khora wishes to connect people of all ages who are interested in the emerging future of this specific technology.

They have entered a collaboration with the Danish researchcenter for childrens-pain at Rigshospitalet (the general hospital in Copenhagen), after an internal study shown that the major cause of pain for children during their stay at the hospital was caused by routine medical procedures, such as PVC and blod draws (<https://khora-vr.com/portfolio-item/pain-distraction-rigshospitalet/>). Mostly the pain was an effect from the anxiety that the children would face when hearing they need to be stuck by a needle. Old and common tactics used of nurses is fantasy journeys, smartphonegames etc. Innovation consultant at Motivates Kristian Bluff and Søren Walther-Larsen consultant for pediatric anesthesia, pain and palliative care at Rigshospitalet reached out to Khora. To explore if VR could provide a new and more effective solution for paindistraction. After some pilot project Khora developed a specific game “Ballade på Badebroen” to distract the children meanwhile being sedentary during procedures.

This game is a shooting game where the child shoots water ballons with a slingshot at seagulls who are stealing fish from the child (Ibid).

Denmark is one of the leading, if not the first, country in the world to develop a game for specific use of paindistraction to children and making research on this new technological area in the healthcare-sector. The game is still being tested and evaluated on in randomized clinical trials at the moment, and the results from these will be available in the upcoming months.

### **3.3.1. Organisational perspective**

Hereby the declared healthcare-law cf. Law declaration no. 191, from 28. February 2018, with the changes that follows. Section XIV; Quality-development, it, research, reporting and patientssecurity.

Chapter 58: Quality-development and it

§193 The regional councils and municipalities boards of directors shall ensure quality development of services by this law, cf. part 2 and 3 and §193 a.

Paragraph 2. The healthcare minister determine in collaboration with the municipality-councils collective settings for quality-development overall in the Danish healthcare-sector.

Paragraph 3. The healthcare minister can determine rules of demands of quality in the healthcare sector. (<https://www.retsinformation.dk/forms/R0710.aspx?id=203757>).

# Chapter 4

## Analysis

### 4.1. What is pain

Pain is a strong uncomfortable sense-feeling provoked by outer violence or a morbid feeling, experienced as a sudden shooting pain or a constant feeling in the body (<https://ordnet.dk/ddo/ordbog?query=smerte>).

According to Shila Irene Hindsø, who is a nurse at children- and youth department on Nordsjaellands Hospital, children has a very liveliness fantasy, and has after 20 years in the field learned that the anxiety for needles is the biggest threat that we need to tackle when we are dealing with children. By making the experience good the children will have a learning that they can use constructive for the rest of their lives (<https://www.regionh.dk/nythospitalnordsjaelland/nyheder/nyheder/Sider/Vr-som-smertelindring-til-boern.aspx>).

Studies show that there is full attestation by saying distraction can be pain alleviating neurophysiological. When the brain is occupied by something else, the experience of pain will be reduced (Ibid).

For children and youth admitted to the hospital there is four mandatory procedures;

1. Local anesthesia (local anesthesia-bandage)
2. 0-12 months: sucrose /breastfeeding against pains due to medical procedures
3. Positioning -do not lay the child down.
4. Distraction (non-pharmaceutical strategies)

Therefor there is different mandatory ways to ensure minimal pain and stress for the children, which differs. It depends on the individual patients needs, age and developmentstage. p. 22

## 4.2. Meditating theory in practice

Mediation analyses' can be used to develop *moral assessments* of technologies, evaluating the quality of their mediating roles in human practices and experiences and their impact on moral actions and decisions.

The gathered insights of a used technological artefact like VR-glasses, leads to rethink the way nursing and communication is conducted in Denmark, and how the technological meditation is incorporated in the way the interaction is conducted. "*Human beings have their own goals and intentions, and products should help them to realize them in an optimal way*" (Verbeek, 2015).

This implies that when we implement new technological artefacts in the Danish Healthcare system it is not merely a new design products but new human practices and experiences as well as being mediators in the lives of human beings. As Verbeek describes it one need to have a thorough conceptualization of human-technology relation and the role design can have in shaping them to deal with this matter in a responsible way (Verbeek, 2015).

However there still seems to be tension instead of a meditation, in our ways of perceiving games on an individual and societal level.

There is a tension in distinction between the real and the virtual, in school and out of school, formal and informal, learning and teaching, knowing and being (Salen, 2008). We are bound by old ways of thinking, that says the new here is games, when in fact the new is the attitude of the gamers, children and tools they use. We are bound to believe that if we need to understand the meanings of the game we need to look at the rules, when we can simply look at players' performance and understand *their* understandings of them (Ibid).

We should see the game as a mediation. When the children take the burden of learning, the rule sets and enter the space of play. They are making a connection.

How can this mediation and connection become a reality at the hospitals?

Marianne E.G. explains the frustration of how to ensure implementation of the right technology can be a bigger struggle than just expected.

“It is worth implement if it e.g. comes from a center as researchcenter for childrenspain, that will makes us say that it is something that we would like to take in. Whereas if it is a salesman that is knocking on our door and keeps saying “You should try this robot, you should try this and this”, and if we then finally says yes, he will reply “Yes it costs 50.000Dkk”. Theres a big difference. That is why we need to find out what the technology can and what we in fact should bet on, especially when we get these many offers. We really do not have the competencies to estimate a game, robot or anything. That is why I lean and trust in people who do know something about it”

### 4.3. Medical Technological Valuation (MTV)

In practice medical technological valuation includes four elements:

**Technological perspective:** This element include a description of the technology and of its clinical effect in quantitative form (e.g. relative risk reduction, odds ratio). The description is based on results from a systematic literature review, and collection of primary data in relation to a clinical study. The goal is to describe the technology by the help of results of studies with the highest possible degree of scientific evidens (Kristensen, F.B, & Sigmund, H. 2007).

**Patient perspective:** Patients point of view regarding the applicability of the technology, is being included in the MTV in the form of patients satisfaction, the able bodied, recurrent on the labour market and ethical considerations.

**Organisational perspective:** This element include a description of which parts of the organisation is affected off the introducing of a new technology, and how. E.g. the need for extra education of personal, new facilities or changes in the workflow process or patient-elapsd.

**Economical perspective:** The economical perspective is being evaluated compared to the decision making perspective. For national dissemination of a new technology, a societal perspective is being used, in a form of cost-effectiveness analysis. Is there talk about about a MTV with a hospital perspective a business case/drift economic analyse is composed, where the expenses and income for the hospital is compared (Ibid).

- To sum up the project, these steps have been translate into practice and how we nowadays can perceive VR-glasses in the Danish healthcare-sector.

### **Technological perspective:**

There are an increased focus on health-preventive, early diagnostic, and an expand of the development of individual based treatment and rehabilitation. The increased digitalization will also change the roles allocation in the healthcare-sector (<https://www.ft.dk/samling/20161/almde1/UFU/bilag/68/1731529.pdf>).

### **Patient perspective:**

As it is now we there are currently being made clinical trials and evaluated on the user experience (both patients and healthcare-professionals) of the technology. The empirical data of the user involvement of the design-process and implementation process are therefore very limited.

Shila Hindsø explains that in her experience the children loves the VR-glasses and they are working exactly as they are intended to do, however “the smaller children can also be deflected, but often they do not like to be shut out from what is about to happen”

### **Organisational perspective:**

To realize possibilities and implementation of healthcare-technology, as VR-glasses it take a complete “eco-system”, where the different actors work together to accomplish a set of common actions and each accomplish individual actions. In the introduction for this paper the different actors for VR-glasses was shown. For a more general view of the eco-system and actors in implementing a healthcare-technology is as shown below.





These different actors together with the specific healthcare-professionals e.g. ward-nurse and board of directors take the decision whether there is a need for implementing the VR-glasses at the specific ward.

When introducing VR-glasses there are a need for extra education of the healthcare-professionals before the respective nurse will remember to use them and feeling safe in doing so. "It all depends on which nurse it is that have to do the procedure if she will make use of the VR-glasses, if she is a fan of new technology or are nervous of it. That is just how the terms are" quotation from Marianne E.G. So if it is a nurse who thinks "Naah I am not completely confident in it" then naturally it will not be used as much, as if you feel you have control and are skilled in the use of the technology".

Shila Hindsø describes another obstacle for implementing and introducing to a new technology as VR-glasses "I know that there are several of my elder colleagues who feels it can be hard to take the technology to use, because they are afraid to seem unprofessional if they are failing". To ensure no nurses will feel like they are compromising their educational pride, it is necessary to have continuous education and open-minded talks about the technology. Also in a practical way. Down to "what happens if I touch this button?". As described in the theory part about gamification, the most evident learning is breaking down the barriers and just do. Just play. In this case with the VR-glasses and the game. See what happens and have the security of knowing that if anything should happen to the technological artefact there are help to get, a number to call. Even nurses can be in need of acute help, not physiology but rather a technological assistance.

In an objective perspective without having any personal experience with the use of VR-glasses Birte Storm is unsure if this technology necessarily will move in the competencies and values of the healthcare-professionals: *“I do not believe that there will be changes in the competencies for the healthcare-professionals by the use of the glasses, but I don’t know. I think that we need to use ourselves to reach the child, in the same way that we do today, and this artefact will just give us one more opportunity of how to take care of the child”*.

### **Economical perspective**

Marianne E.G describes the economical challenges in receiving and implementing VR-glasses is that they are quite expensive and as it is now for the healthcare-sector, these new solutions need to be funded. “Sometimes we are lucky and receive a donation, other times there will be a long wait before we get one. There is times you don’t get it, and usually there’s nothing we can do about that. It is needed that a project will be set and arranged, and be fundraised. Else we don’t have a chance to get in” (read: by in, Marianne E.G. talks about the opportunity to get into the technology-market).

# Chapter 5

## Discussion

Should we produce new VR-experiences and is there enough background knowledge to keep researching and improve the field of VR artefacts? There is still a need of more studies of how VR can be used to reduce the amount of pain, compared to anodyne medicin, laughing-gas etc. It is an every interesting innovation perspective in how we conduct healthcare but there is still a need for the healthcare professionals to be more confidential with the technology, so we create the solutions that is needed for the children, with their specific needs in focus.

Further exploration of game development for children from 3-6 years old is also needed, and if adults should be able to use games similar to Ballade på Badebroen.

### 5.1. The process

Ultimately, I will reflect on the challenges of the project and the process of the problem-based and project-oriented work. It was quite hard to find informants who had the time to do an interview, this might be because the healthcare-sector is under a lot of pressure, and there is a lack of time and hands to do the practical work. So having the time to write or talk to a student outside or during work hours might be neglected or not a preference for everyone. That said, it was a learning experience and a good exercise to juggle between explaining and using theoretical and methodological frameworks. There are still interviews that are waiting to be conducted, and will be done after handing in the thesis.

I have so far been only working in groups during the master-programm at AAU, so it was a new process with new challenges of working alone, and getting enough empirical material while still having enough time to write the paper. There is a lot of different things that could have been done better, e.g. conducting a pilotinterview and analyse the interviews from specific questions but the received answers from the informants have not been stringent or equivalent.

It has also been bit of a challenge (read: impossible) to get in contact and conduct a interview with Ethical Counsel, which I had planned to be my main-informant and expected to be the most interesting part of the report about their view of the technology. However it was not possible to plan a possible date to executing an interview and they replied the reason for not wanting to participate in the project was that they did not have any expert knowledge of this technology.

With the perspective of ANT and the network surrounding the healthcare professionals it would be obvious to extract data from the users, the patients of the technology to illustrate the children's' opinion and get their view of the situation.

However children who are admitted to hospitals is already in distresse and under a lot of pressure, so it is a bit immoral and unethical to go to them in an already stressed situation. It would be better to get a chance to work with the more holistic around the technology, using UIM or other user-centered methods, when having more time and a relation to a specific department, or hospital. This would also require a mutual trust with the children, a relationship with a good dialogue, maybe through media platforms or as previous mentioned social innovative settings as UIM, living lab etc. When having the children to participate in the design thinking it is important to take their value, exciting knowledge, and their social background into account.

The subject of VR-glasses is a new field of technological expertise within healthcare artefacts, and it have opened up to a new and broader view of how healthcare is conducted and what we can expect in the future. It is in my believe that this field will only broaden our view on our lifeworlds and healthcare in itself.

## **5.2. Etisk råd**

Since this technology have been implemented on Danish Hospitals since 2018, it is strange that the Ethical Counsel replied that they didn't wish to contributed to this paper, on the reason of they didn't have expert-knowledge on this specific technology. When they specific work with the ethical questions that concerns peoples lives, and the healthcare-systems function and field of activity (<http://www.etiskraad.dk/etiske-temaer>).

It is specifically peculiar they don't wish to state their opinion on VR, when they wish to work with ethical themes in a different way, where you don't take the point of origin of ethical values and ethical argumentation but instead relate to the futures possible scenarios through science fiction. Especially with the field of neuro-science and how VR affects the brain and will create possible scenarios that marks a fracture in the already existing reality, and therefore will raise a series of new types of ethical questions, e.g. regarding the individual human being (<http://ipaper.ipapercms.dk/dketik/DER/2014/Neuroetik/?page=4>).

## Chapter 6

### Conclusion

In this project I started by having an open mind, a beginner's mind some would say. The fact that I had the opportunity to make an inductive analysis, gather empirical data through ethnographic methods have given me new perspectives and ideas of working further with the technology of VR-glasses in the healthcare-sector.

It has been my aim to make a thick description of the interviews and the field of work so there would not be any interpretations or subjective judgments but instead to follow the respective involved actors. However while analyzing and working with post-phenomenology in the project it was hard not to make any judgments from my own morality. So it was needed to take a step back after transcription and reaching the end of the rapport, and look at what is it in fact that has happened in between. Not only for me as a writer but more importantly for the healthcare-professionals of the technology and its users, the children. How does VR-glasses affect these different actors, what is their perception of the situation and how does this new kind of mediation touch upon human beings and their lifeworlds. Is it changing how the world is?

In the field of design, the interactions between human beings and technological artifacts are often characterized in terms of functions and use (Verbeek, 2015). Products are designed to be used, and therefore the quality of the interaction that people can have with a product is typically indicated by the technologies' functionality and usability. Yet there is a risk in this conceptualization and a risk of immersion when implementing new technologies to a healthcare system.

To further development of the specific VR-game Ballade på Badebroen, it would be beneficial to look into User driven design. To get the children more included and taking part in the further design of the game and have more tests in practice. This would propose what is needed in the hospitals and how it will differ from each specific ward.

It is important to take into consideration when looking at a specific technology and the further development of it. In this way we have focus on the users and keep being responsible, relational and contextual for what is needed in their lifeworlds, in a stressful time.

In order to achieve the goals and intentions of human beings, technology should help to realize them in an optimal way and thereby help shape human existence, as we know it.

Children and young people often experience a rank of unaccustomed, uncomfortable and/or painful situations. It is documented in research projects that VR can improve the patient experience by reducing the degree of pain and un-comfort.

VR-games makes the children more calm and stimulate their fantasy. It can work as mobile solution and have different functions. Be an entertainment tool, which can divert, give preparing information and be preparing for medicine. It is told to be a cheap technologi to implement in a healthcare-system, however there is still a lot of organisation, training and educational work to be done for the healthcare professionals beforehand.

## Chapter 7

### Forward discussion

It is to take into consideration of how we have been using VR-glasses so far and what we will be able to do with this new and fast developing technology.

It has been noticed that demenspatients have lots of benefits of traveling with VR to places that reminds them of their childhood and youth. It gives them a feeling of peace of mind and have a coming effect on their nerve system. (<https://www.regionh.dk/nythospitalnordsjaelland/nyheder/nyheder/Sider/Vr-som-smertelindring-til-boern.aspx> ).

Another special VR-project “Snow World”, have been developed to patients burns, it has shown to reduce the experience of their pain, on a 10 step scale, from 6,3 to 2,8. Also the mass of thoughts of the pain, from 76% to 22% (Ibid).

“I’m thinking that this technology is necessarily only is for the patients, but maybe also for the healthcare-professionals. To make some training séances (in the future) both regarding medical exercises or pharmacology education, or exercise cardiopulmonary resuscitate. So it becomes more lifelike and realistic with some of the things that is necessary to train to have disciplines up to date and in order” quotation from Birte Storm.

For further use of VR-glasses to healthcare-professionals it is needed that we research more into this innovative technology and explore the opportunities that it holds. This would mean that the VR-glasses could be used exercise, training of everyday nursing and procedures, and even further for the training of acute conditions and acute healthcare which is something that would give the healthcare professionals confidence and more experience. Especially for new-educated healthcare-professionals e.g. nurses and doctors who might be a bit nervous when the begin their careers or get job in a new field of expertise.

Another interesting futuristic thought of this technology is the further development of VR-glasses for healthcare-professional at Danish hospitals might just be around the corner, and if so, then the possibility of taking the next step and implement this technology in the development countries, for exercise and education would be very plausible. This would ensure the healthcare-professionals in the developing countries would have the option of continues learning, either during or after graduation. However for this to be done we need more research been done, guidelines and user-involvement in the design-thinking e.g. though living labs or UIM.



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# Appendix

## A. Data overview for the project

1.The data overview contains scheduled data collection in addition to the mentioned activities there have been many ethnographic conversations with staff in the administration and the refuse workers.

<b>Date</b>	<b>Information</b>
17.01.19	Established contact with Simon Max Bloch Lajboschitz, co-founder Khora Aps, through the socialplatform <a href="https://www.linkedin.com">linkedin.com</a>
22.01.19	First telephone call with Thomas Saaby Noer, (CEO at Khora and contact person) with a specific introduction to the different ongoing healthcare projects.
03.02.19	Second telephone call with limitations in the field, specific choice of case and project to work with.
03.02.19-05.03.19	Literature review, while absence of contact person in the firm, due to holiday.
06.03.19	Draft of weekprogram over the project and further limitations of field-research.
21.03.19	Third telephone call with request of specific milestones to accomplished during the internship.
20.04.19	Participant observation at the firm Khora, located in Copenhagen. VR-glasses is introduced in practice and distributed, for introduction at hospitals in Jutland who is interested in making use of the technology.
14.05.19	Interview with Shila Hindsø, nurse at Nordsjaelland Hospital
22.05.19	Interview with Birte Storm, ward-nurse Hjørring Hospital
27.05.19	Interview with Marianne E.G. Ph.d., researchnurse, MScN., Viborg Hospital

## **B. Informants description**

### **Marianna E.G.**

Ph.d researchnurse, MScN.

Institut for clinical medicine -Children and youth, Viborg, Denmark.

Institute for public health, center for nursesresearch, Viborg.

### **Birte Strom**

Ward-nurse at the children's department at Hjoerring Hospital, Region North of Jutland, Denmark.

Previous been a nurse at neurological department.

Been at the children's department in 22 years.

### **Shila Hindsø**

Fulltime nurse at children's department at Hilleroed Hospital, Region H, Denmark.

Many years of experience at the children's department, where she is employed.

initiator at many projects at the children's department.

Eventmanager and entertains the children in her sparetime.

## C. Semi-structured Interviewguide

Præsenter projektet igen, om undertegnet og fortæl at interviewet bliver optaget, der er mulighed for anonymitet mv.

### \* Vil du ikke starte med at præsentere dig selv?

Din baggrund

Alder

Profession

Sygehus og Afdeling

Erfaring

### \* Grundlag for at benytte VR (VR-Briller, virtuel reality-briller)

Hvor lang tid har du haft kendskab til VR?

Kendskab til VR som redskab til smertedistraktion?

Hvordan fik du kendskab til brugen af VR specifikt til dette område?

-Hvis du ikke har hørt om brugen af denne teknologi, hvad tænker du så om det?

### \* Specifik brug af VR på afdelingen

Hvor meget bliver VR benyttet på afdelingen?

I hvilke henseener?

Fra din optik kan VR-distraktionen bruges på andre områder?

Er der nogle kognitive eller neurologiske ændringer for patienten?

-Hvis ikke VR bruges på din afdeling endnu, kan du så se det som en mulighed?

### \* Har VR påvirket din profession?

Påvirket samspillet mellem den sundhedsprofessionelle og patienten?

Påvirket hvorledes sygeplejen/proceduren opfattes og udføres?

Sker der ændringer i kompetencer for sundhedspersonalet?

Skaber VR en ny teknologisk forståelse eller fremmedgørelse?

Rykker det på inddragelsen i værdien, og arbejdsmiljøet?

**\* Ekstra**

Egne tilføjelser til brugen af VR-briller som smertedistraktion

Egne tanker om udviklingen af sundhedsteknologiske tiltag

## D. Mail correspondence with Ethical Council

Their answer to an interview regarding the use of VR-glasses in Danish Hospitals.

4 Ebba Johnsen [ebj@dketik.dk]    [Handlinger](#) ▾  
*Som svar på meddelelsen fra Kirstine Mia Stenild, 10-05-2019*

Til: [Kirstine Mia Stenild](#)

13. maj 2019 14:25

- Du svarede den 13-05-2019 15:30.

Kære Kirstine Stenild,

Tak for din mail til Det Ethiske Råd vedr. brug af VR-briller.  
Det er nok meget begrænset, hvad vi kan bidrage med i forbindelse med denne specifikke teknik, da det ikke er noget, som rådet har arbejdet med.

Med venlig hilsen

Ebba Johnsen  
Sekretær



DET  
ETISKE  
RÅD



Fællessekretariatet

Hej igen,

Nu har vi kigget dine spørgsmål igennem, og som jeg tidligere skrev til dig, så har rådet ikke behandlet denne konkrete teknik, rådet har ingen ekspertviden om den og derfor har vi ikke mulighed for at svare på dem. Mange af dine spørgsmål henvender sig direkte til sundhedsfaglige, som arbejder med teknikken og det er nok der du skal hente din ønskede information.

Med venlig hilsen

Ebba Johnsen  
Sekretær



DET  
ETISKE  
RÅD



Fællessekretariatet  
Det Ethiske Råd og  
National Videnskabsetisk Komité

## **E. Interview with Ph.d. researchnurse Marianne E.G.**

Transcription made in original language, Danish, from audio recording of interview over the phone.

Vi har jo indgået i et samarbejde med videnscenter for børnesmerter, hvor de også har fået evalueringsskema (se bilag). De har udfyldt nogle skemaer men endnu ikke sendt dem over endnu. Dette skete efter de havde set brillerne på Facebook at det blev brugt på Rigshospitalet, hvorefter de blev sendt videre til firmaet Khora. Herefter fik de en donation af danske landshåndboldskvinder.

Vores hospital i Viborg har lavet lokale instrukser specifikt til eget brug, implementeret, vise/introduktion så personalet føler sig trygge, i sær i dagsklinikken bliver det brugt meget, så nu fungerer det rigtig godt. For nogle børn er det rigtig godt og de bliver distraheret men andre børn kan ikke lide vi tager føringen fra dem, ift. At tage synet fra dem og kontrollen over situationen. **Et enkelt barn afviger retningslinjerne, hvor når han kommer ind og skal have lavet en fast procedure, så har de en speciel aftale om at han ikke har brillerne på mens han skal stikkes men får lov til at bruge dem og have dem på efter proceduren.** Det er en aftale med barnet og de pårørende, og specifikt til ham, da det skal bruges i forbindelse med proceduren og ikke blot blive et nyt legetøj i afdelingen. Det er kun ham der bryder mønsteret med at have brillerne på efter, ellers har børnene dem på før og under.

**Sygeplejersken der udfører proceduren oplever derfor at nogle børn ikke bryder sig om at miste kontrollen og viden om hvad der sker, plus det kan være svært for nogle børn at håndtere at brillerne er simpelthen for store for barnet og at de ikke sidder godt på dem, også ift. Elastikken på brillen.**

De er tidligere blevet præsenteret for VR på konferencer, og de bliver tit tilbudt nye teknologier som folk synes de bør afprøve, på den måde kender de godt til det. Det der er deres udfordring er at hvis de skal have noget, så vil de jo gerne have noget der specifikt udviklet til deres behov, og de penge har de jo desværre ikke til at kunne gøre. Så **derfor handler det for en børneafdeling som deres tit om at være heldig om at komme med i et projekt, og via en donation eller lign. Kan man på den måde få lov til at få adgang til teknologien.**

Ift. Hvor meget brillerne bliver brugt på afdelingen så er det en fornemmelse, da evalueringsskemaerne ikke bliver brugt og husket at blive udfyldt hver gang. **Dette kommer selvfølgelig også an på hvilken sygeplejersker det er der benytter det, om de selv er tilhængere af nye teknologier eller om de er forskrækket over det. Det jo sådan vilkårene er.** p. 40



Er det en sygeplejerske der tænker "Ej jeg er ikke helt tryk ved det" så bliver det jo naturligt ikke brugt så meget som hvis man har styr på det, og eventuelt bruger det i sin fritid.

Derfor kan det godt handle om en distancering af teknologien, at man ikke lige husker det eller at man tænker at det ikke lige nødvendigvis er det der er godt for det her specifikke barn.

Jeg tænker godt det kan blive brugt på andre områder, og der er mange ting man kan med det. **Vi samarbejder med et center der ligger i Viborg der hedder Eon, som er et realitycenter. Det er et samarbejde som børneafdelingen har etableret, hvor de har en masse sjove ideer til hvad man kan lave, en spædstart ift. Hvad brillerne ellers kan bruges til. Det er et samarbejde vi kommer til at bruge meget fremover.**

Så derfor har børneafdelingen måske et behov for noget, men har brug for sparringspartnere der kan se hvordan det kan løses men det noget, som de som klinikkere ikke nødvendigvis er i stand til, eller hvad der findes på markedet. Derfor har de behov for andre der kommer og siger at sådan kan det udvikles eller det findes her og her. Så det har de store forventninger til, det håber de bliver godt. **Men vi er der ikke endnu.** Det bliver kun brugt til den ene procedure indtil videre, men det kan da forestilles at det kan bruges på mange andre områder, både med genoptræning og andre forskellige ting og sager. Det her er blot det første skridt på vejen.

**Jeg tænker også at det ikke nødvendigvis kun kan bruges til patienterne, men måske også til personalet. At lave nogle træningsseancer, både ift. øvelser eller oplæring af medicin-givning, medicinregning, optælling eller øvelser med genoplivning. Så det bliver mere livagtigt og virkelighedstro ift. nogle af de ting som er nødvendige at træne for at have færdighederne i orden.**

Jeg hører sygeplejerskerne sige at VR-brillerne virker enormt godt til at være afledende. Børnene bliver simpelthen så optaget af at skyde de her mågerne med ballonerne i spillet, at de bliver afledt. Det nok det bedste ord man kan bruge for det.

Jeg ved ikke om man kan udtale sig om det har påvirket samspillet mellem den sundhedsprofessionelle og patienten, det ved jeg ikke om vi har nok erfaring for endnu. Det er svært at udtale sig om endnu. Det ændrer ikke nødvendigvis på hvordan at proceduren og sygeplejen udføres, for det her er jo kun en del af de teknikker vi bruger. Vi har jo forskellige mestringskasser til at aflede og for nogen er det noget andet der virker og for andre er det lattergas, så det jo individuelt fra barn til barn. **Det er sygeplejersken og lægen der går ind til forældrene og børnene for at finde ud af hvad der skal til for at barnet kan være med til den her procedure.** Der ser vi så VR-brillerne som ét af redskaberne.

Mestringskasserne kan være sæbebobler, tryllestave med forskellige ting. Der er f.eks. en lille bi der laver nogle vibrationer og har kølende vinger, som man sætter over indstiksstedet et lille stykke tid, før proceduren. Det også en måde at distrahere og arbejde med nervebanerne. Den er også meget i brug. For nogle børn der kommer fast, der er det den de vil have. Det kommer an på det enkelte barn, om de er kroniske eller hvorledes, hvor man laver ritualer, hvor barnet ved at det f.eks. er bien som de gerne vil have.

**På den måde er barnet meget medbestemmende.** Andre børn finder ud af det er det med VR-briller som er godt for dem, så er det det de får lov til. Hvor andre børn vil gerne benytte andre muligheder og så er det det de får lov til. **Det kommer meget an på hvor barnet er i deres alder og udvikling, samt udviklingsniveau. Alt efter hvad det er de skal have lavet.** Sæbebobler er f.eks. ikke så smart ift. Hvis man gerne vil have barnet til at sidde stille, at de ikke er for ivrige efter at fange dem.

**VR-briller handler ikke nødvendigvis om en fremmedgørelse eller ny teknologisk forståelse, jeg tænker det er et redskab og noget som kan noget. Ingen tvivl om at vi kun lige har set begyndelsen af hvad de forskellige ting kan.** Vi er meget med på det og meget interesseret i at være med til at udvikle og afprøve nogle ting. Det vi også prøver på er at lade det afspejle hvad børnene laver i deres hverdag. For mange børn er jo van til at spille. Derfor bygger vi videre på det der gør dem trygge i en svær situation. Derfor tænker jeg det som et redskab. Ét redskab i paletten.

I hverdagen tænker vi ikke om det har rykket værdien, som praktikkere. Vi tænker på hvordan fungerer det og hvordan evaluerer vi på det. Hvad er det de forskellige ting kan ift. at få det enkelt barn til at mestre og cope med det der nu skal til at ske.

**Vi er meget begejstret og meget taknemmelig for at Videnscenter for Børnesmerter ligesom har lukket os ind til at være med til at prøve det.** Så på den måde kan man sige det jo ikke er noget vi selv har fundet på. Vi er kommet med på en heldig måde. Det vi taknemmelige for. **Det er godt og vi er altid åbne og vi skal også snart til at afprøve noget med nogen robotter men vi bliver jo også hele tiden bombarderet med folk der står og prøver at få os med på nye produkter.**

Så nogle gange handler det også om at finde ud af hvad vi skal tage ind. For vi kan ikke tage 20 nye ting ind, hver eneste måned og **hvordan finder man så ud af hvad er godt? Det er det f.eks. hvis det kommer fra et center som Videnscenter for Børnesmerter, det gør at vi siger at det noget vi gerne vil tage ind.** Hvorimod hvis det er en sælger der står og banker på vores dør og bliver ved med at sige, *“I skal prøve den her robot, I skal prøve den her og den her”*. p. 42

Jamen så når vi endelig siger ja, så siger han *“ja den koster så 50.000 kr.”*. Der er meget forskel. Derfor skal vi have fundet ud af hvad vil de og hvad kan de, og hvordan får vi satset på de rigtige ting. Fordi vi netop får så mange tilbud. **Det er noget af det der kan være rigtig svært for os. Vi har jo egentlig ikke kompetencerne til at kunne vurdere f.eks. et spil, robot eller noget. Derfor læner jeg mig op af folk der ved noget om det. Derfor når det et seriøst sted som Videnscenter for Børnesmerter der gerne vil være garanten for det, er det noget hvor jeg tænker, så tør vi godt være med på det.**

Omvendt kan det også være farligt hvis vi altid kun vælger de ting som de store steder, eller dem som forsker og udvikler det ligesom siger god for. For så får de jo kun lov til at styre det. Nogle gange skal vi også være lidt friske og tage nogle beslutninger selv, hvis du kan følge mig. Det er en balance og alt afhængig af hvilken lidelse der er på en børneafdeling. Hvad vil de, og er de friske eller tilbageholdende? De penge der skal komme til, er der nogle donationer? Nogle gange så vi jo heldige hvor der kommer en donation og andre gange kan der gå meget lang tid mellem man får det. Andre gange så har man ikke, og det jo ikke noget vi kan gøre i hverdagen, **det skal jo stilles op som et projekt og fondsbasees. Ellers har vi jo aldrig mulighed for at komme ind.**

Ift. Udviklingen af nye sundhedsteknologiske tiltage så er det som optager os meget er det med at lave film, vi er ved at lave al vores patientinformation elektronisk. Hvor vi har alt til et format der fungerer godt på tablets men mere og mere vil vi jo også gerne gøre som videoer. Det tror jeg bliver stort over de næste par år. Det med at lave film som vejledninger. Det bliver både til patienter men bestemt også til personalet og det er nok der jeg tror at jeg kommer til at sætte ind, er med at lave instrukser. F.eks. hvordan blander man en vanskelig medicin. Lav videoer, så man hurtigt kan se det er sådan her man skal gøre. Det ihvertfald noget som kommer til at optage os meget det næste stykke tid.

## F. Interview with wardnurse Birte Storm

Transcription made in original language, Danish, from audio recording of interview over the phone.

Jeg har været sygeplejerske i mange år, tidligere ansat på neurologisk afdeling, men nuværende på en børneafdeling, hvor jeg har været i 22 år. Jeg er 55 år gammel. Arbejdet på børn og unge afsnit på Regionafsnit Nordjylland.

Mit kendskab til VR-briller det er begrænset, men har selvfølgelig arbejdet med andre metoder for smertedistraktion hos børn, i forbindelse med smertevoldende procedurer. Nogle gange er hospitalsklovnene med indover, det kan både være lumbalpunktur eller anlæggelse af PVK. **Der bruger vi klovne til at skabe tryghed for barnet. Ikke for at aflede men for at hjælpe barnet med at være i den situation hvor de er i, hvor der skal ske noget de ikke er van til.** Så bruger vi selvfølgelig også os selv og vi kan også godt bruge det at synge for barnet eller sammen med barnet. Det er også med til at skabe ro og aflede opmærksomheden. Uden at man går ind og siger at det ikke kommer til at gøre ondt, eller det ikke kommer til at være ubehageligt men vi går ind og støtter barnet i at være der og kunne samarbejde om at kunne få gennemført den procedure der nu skal til, og skal gennemføres. For at hjælpe barnet. Større børn der er det også meget samtale og forberedelse på hvad det er der skal til. For så er det nemmere at samarbejde om det. **Vi bruger selvfølgelig også lattergas i nogle situationer. Eller Emla (læs: tryllecreme/trylleplaster, lokalbedøvende) og sukkervand til de mindre børn. Det er det vi gør.**

Vi har ikke tilbuddet med VR-briller endnu, men jeg synes det er meget spændende. Jeg ved at man begynder at bruge det, ikke lige præcis ift. smertedistraktion men at der kommer noget ift. Børn med diabetes, hvor der kommer noget undervisning og oplæring, et tilbud om at bruge VR-briller. For at lære at leve med sin diabetes. Så jeg tænker også at det kommer til os. Jeg kan også godt se at vi kunne bruge det. Ved nogen børn vil det være fint og til nogen bestemte situationer vil det også være fint. Det er jo det der med at ved nogen børn så er det det du kan gøre for at gøre barnet tryk i den situation, som de nu er i. **Jeg tænker ikke at man skal ukritisk sætte VR-briller på alle børn, i alle situationer men i situationer hvor det for det enkelte barn giver mening, at bruge den mulighed og redskab.**

Det kommer meget an på det enkelte barn som du møder. For nogle børn har jo prøvet noget mange gange og har ikke brug for den smertedistraktion, der er det nogle andre ting der hjælper. Der er det jo det der med at kende rutinen; "Når du kommer her, så går du derhen og får noget at drikke og så får du Emla på og så gør vi sådan og sådan". Så kan barnet sagtens samarbejde omkring det. Der skal man ikke gå ind og tilbyde et nyt redskab medmindre der er noget i barnets historie eller den måde som barnet reagerer på, som eventuelt har ændret sig. Man kan godt tage det med som et tilbud til et barn som kommer tit. **Der vil jo også være nogle børn hvor første gang vi møder dem der kan vi simpelthen mærke at det her barn har brug for at vi gør noget andet end vi plejer og der kunne en VR-brille også være fin.**

Så jeg synes det er noget med at tage udgangspunkt i det enkelte barn, om man vil bruge det eller ej. Men jeg vil ikke sige at det her er det eneste redskab jeg har til at gøre det her til en acceptable situation for barnet. Jeg vil sige at VR-brillerne er en mulighed der eksisterer allerede og noget man ser mere og mere, vi har det bare ikke her, på vores afdeling. **Det er en mulighed der vil mere og mere indpasser sig.** Selvfølgelig vil vi også gerne være med til at udnytte den mulighed der i sådan et redskab. Så vi er meget interesseret i det, det kunne være spændende.

Der er altid nogen der er mere med til at prøve nyt end andre og det har også noget at gøre med hvis der er noget teknik i det. **Der vil være nogen der ikke så hurtigt vil springe på, fordi de vil være usikre på hvordan det teknisk fungerer.** Nu ved jeg jo f.eks. ikke selv hvordan det faktisk fungerer, men det er jo nok ikke meget andet end at trykke på et par få taster.

Jeg tænker hvis sygeplejersken er tryk ved at anvende VR-brillen, så tror jeg ikke at det vil påvirke samspillet, for vi er i forvejen vant til at skulle nå barnet på forskellige måder. Så det at man ikke har øjenkontakt når VR-brillen er på, men det tænker jeg ikke behøver at være en udfordring. **For vi skal i forvejen nærme os barnet på mange forskellige måder for at komme ind til det enkelt barn, så det tænker jeg sagtens vi stadig kan gøre, selvom barnet har VR-brillen på under proceduren.**

Nogle gange er der jo også børn hvor man skal være meget bevidst om øjenkontakten med barnet, for at komme tæt på barnet. Nogle gange skal du jo give mulighed for at lade barnet kigge på dig uden at du kigger på barnet imens. **Jeg tror måske at udfordringen måske kan være større for barnet end for sygeplejersken, fordi barnet så heller ikke kan se hvad der forgår. Det må også have en betydning og handle om tillid fra barnets side, men det ved jeg jo ikke noget om endnu for jeg har jo ikke prøvet det. Jeg tænker bare at det er jo barnet der ikke kan se sygeplejersken.** Det kræver naturligvis også at man forklarer barnet hvad det er der forgår og skal forgå.

Det gør vi jo også allerede nu, hvor vi forklarer i forvejen hvad det er der skal ske.

Idag er der jo også børn der bliver afledt med en Ipad, uden sammeligning ellers, men hvor barnet også vender blikket et helt andet sted hen. Det er også noget vi har vænnet os til og vælges i samarbejde med forældrene. Så **jeg tror ikke der sker ændringer i kompetencerne for sundhedspersonalet ved at bruge VR-briller** men jeg skal ikke kunne sige det. **Jeg tror at vi skal bruge os selv og nærme os barnet på samme måde som vi gør idag, og det her giver så bare en mulighed mere for at tage hånd om barnet.** Det er jo spændende at blive klogere på om det er sådan at det forholder sig.

Det jeg tænker om brugen af VR-briller som smertedistraktion det er, at der skal ligge overvejelser bagved før man bruger det redskab. De overvejelser og det redskab skal indgå på lige fod med de andre muligheder som man har, når det handler om smertedistraktion. Jeg tænker ikke at det er det eneste man skal gøre hver gang det er at give barnet en VR-brille på. Jeg synes der skal ligge overvejelser bagved det og gerne tage barnet med. Jeg tænker det er altid vigtigt at inddrage nyeste viden men jeg tænker også at **man skal stille sig kritisk og bruge sin sunde fornuft omkring de sundhedsteknologiske tiltage. For noget er jo rigtig fint men nogle gange er det også helt almindelig grundlæggende sygepleje, kendskab til mennesker, der kan være med til at gøre en situation god.** Det er vigtigt at dyrke den side også, for jeg tror ikke på at en VR-brille kan stå alene, og som det eneste man fortager sig ift. Smertevoldende procedurer. Der skal være et menneske bag (ved siden af).

Der er jo sket meget i løbet af de år jeg har arbejdet på børneafdelingen og der er også en helt anden tilgang til hvordan man tænker man støtter børnene når de skal igennem smertevoldende procedurer ift. Dengang jeg startede. Idag er det jo meget det der med at støtte barnet igennem f.eks. blodprøvetagning eller anlæggelse af PVK. Hvor vi ikke altid har haft barnet med eller forsøgt på det men mere på at nu skulle man have det hurtigt overstået, så kan vi trøste barnet bagefter. Den tilgang har man jo ikke mere, medmindre du står i en meget akut situation. Man giver heller ikke forældrene mulighed for at gå ud, hvis barnet skulle have lavet et eller andet, fordi de synes det var synd for barnet og ikke kunne holde til det.

Idag så søger man jo for forældrene er med til det hele, det giver en helt anden situation for barnet. **Bare det med at man siger at man støtter barnet eller hjælper, f.eks. “jeg hjælper lige med at støtte din arm når vi skal have lagt den her PVK”.** Der er forskel fra at sige “jeg holder lige din arm mens vi lægger den her PVK”. Det gør en kæmpe forskel for barnet, **det her er noget vi gør sammen og der er en der støtter mig, det kan jeg godt klare.**

På den måde tror jeg at holdningen har ændret sig med hvordan man kommer igennem smertevoldende procedurer som barn. Man kommer ikke ud med de samme dårlige oplevelser som barn, som man kunne have gjort tidligere.

For nogle børn er der også noget i...altså vi kommer alle sammen ud for noget der ikke er behageligt eller vi møder alle udfordringer i livet og man kan ikke blive beskyttet mod alt. **Nogle gange så er man nød til at gøre noget, som ikke nødvendigvis gør ondt men noget som man ikke lige har lyst til. Den skal man jo også lære at leve med, sådan er livet jo også.** Der er noget i det her med at nogle gange skal stille op til noget som man ikke lige er det man har mest lyst til at gøre men man bliver nød til at tænke "*det her gør jeg, for det er vigtigt for mig*". Det skal man også lære som menneske på et tidspunkt, for som voksen sidder du heller ikke med tryllecreme og VR-briller, ihvertfald ikke som det er i dag. Der har man jo lært at komme igennem det og komme hel ud på den anden side. Man skal gerne få det på en måde hvor man finder ud af, at det her, det kunne jeg faktisk godt holde til. Det var ikke det fedeste i verden men jeg kunne sagtens holde til det, jeg fik noget støtte til det og der var også noget der gjorde at det ikke gjorde så ondt men jeg kom igennem det og det var mig der klarede det.

**Det tror jeg også man vokser af. Men et barn der skal stikkes hver uge i mange uger, eller flere uger, eller flere år, det er noget helt andet. For der er grænser for hvor længe man kan holde til det som menneske.** For nogle børn er det svært i en periode og så kan der være noget som de forbinder med noget positivt, f.eks. når jeg kommer i ambulatoriet så sidder hospitalsklovnen klar til at sidde og spille UNO med mig. **Så bliver det forbundet med noget godt og barnet har lyst til at komme på hospitalet. Det er ligeså vigtigt at lære og det er også vigtigt at kunne rumme at være i de situationer som man bliver sat i. Det kan jo godt være for nogle børn så det så istedet en VR-brille, som de har at se frem til.** Det handler som sagt om at kigge på det enkelte barn og man skal selvfølgelig også lære som personale at være tryk ved de muligheder der er og kende de muligheder der er og ikke mindst, kunne anvende VR-brillen. Det behøver jo heller ikke at være fordi barnet havde det på sidste gang at det er det, der er det rigtig næste gang. Det gør vi heller ikke med de andre ting, der skelner vi også med det. Vi vil meget gerne høre mere om VR-brillen hvis du vil introducerer det til en fælles undervisning med tværfagligt personale, sygeplejersker og læger.

## G. Interview with nurse Shila Hindsø

Written interview is based on the draft of questions sent by mail, in original language.

### Præsentation

Shila Hindsø, 48 år.

Sygeplejerske på B.0632, Børneafdelingen på Nordsjællands Hospital Hillerød, hvor jeg har været ansat i 13 år. Jeg er een af de få børnesygeplejersker som også lægger PVK på børn.

23 års erfaring, fra ortopædkirurgisk sengeafd., operationsgang, og opvågning.

### VR briller

Ledelsen på Børneafdelingen blev præsenteret for VR brillerne i januar 2018, og jeg blev spurgt om jeg kunne være kontaktperson på projektet. Jeg kendte ikke til brugen af brillerne som afledning inden. Jeg er uddannet i at lave “*drømmerejser*”(\*) som afledning til smertefulde procedurer på børn, og dette minder lidt om samme fremgangsmåde. Vi blev introduceret til VR brillerne via NHN (Nyt Hospital Nordsjælland) som havde hørt om dem via Thomas Saaby fra firmaet Khora som udvikler VR brillerne og har en butik i Kbh.

(\*)Drømmerejser: “Guided Imagery”. En fantasirejse for børn som skal gennemgå en smertefuld procedure. Bernie Whitaker (professor i Australien) uddanner personale i hele verden til denne metode.

### Specifik brug af VR briller

VR brillerne findes på begge sengeafsnit, samt i børnemodtagelsen, og de er for nyligt blevet introduceret til skadestuen, så der er mig bekendt 4 sæt igang på hospitalet. **Vi har besluttet kun at benytte brillerne til smertefulde procedurer, og udleveres derfor ikke til fx. børn der venter/ keder sig.** Vi har talrige andre tilbud (TV, playstation, aktivitetsgulv, film, bøger, osv.) på dette område og har derfor valgt at VR briller skal være en slags “gevinst” for barnet, og ikke mindst et hjælpemiddel for personalet. Vi bruger dem dagligt til blodprøvetagning, PVK anlæggelse (drop), fjernelse af suturer eller katetre.



Brillerne kan kun tilbydes børn over 5-6 år, da de rent kognitivt skal kunne medvirke til spillet. **Mindre børn kan også afledes, men oftest bryder de sig ikke om at “udelukket” fra det der skal ske.**

Jeg er overbevist om at VR briller kan bruges i andre sammenhænge. Det kunne fx. være til fysioterapi genoptræning. Jeg ved der også er nogle plejehjem som bruger brillerne til demente. Her kan borgeren genopleve sin hjemby, og lignende.

Vi kan ikke bruge VR briller til børn med cerebrale handicap, eller neurologiske udfordringer, fx. epilepsi, hovedpine, svimmelhed, kvalme.

Jeg har brugt VR brillerne flere gange om ugen, i halvandet år, og har endnu ikke stødt på nogle komplikationer, hverken neurologisk eller kognitivt.

### **Har VR påvirket din profession**

Som børnesygeplejerske er man vant til at være omstillingsparat, og fleksibel i sin arbejdsgang. Vi skal nogle gange sidde nede på gulvet og undersøge barnet, og det meste foregår på børnenes præmisser. Fordi jeg er vant til at “lege” mig igennem de undersøgelser børnene skal gennemgå, så føltes det nærliggende at kunne benytte et værktøj som børn tiltrækkes af. **Det vækker tillid og tryghed hos barnet at vi kan tilbyde dem en “udvej” for deres angst. Børn vil gerne, og kan nemt, afledes ved smertefulde procedurer.** Effekten af afledning er helt utrolig, og barnet hjælpes til at klare en oplevelse som for mange børn er meget skræmmende og angstpræget.

Der kan være teknologiske udfordringer med VR brillerne, på lige fod med andet teknologisk udstyr. De skal oplades, justeres, opdateres og behandles med forsigtighed. Dette kan være en barriere for sundhedspersonalet, som skal introducere dem. **Oplæring, og erfaring med udstyret er en vigtig forudsætning for at det tages i brug.**

Kontakten mellem patient og sygeplejerske skal helst bygge på tillid. **Børn med nåleskræk oplever at de hjælpes med at overkomme deres angst, ved at blive afledt fra den. Når vi som fagpersoner kan tilbyde denne udvej for barnet, er der større sandsynlighed for at de også stoler på een i andre sammenhænge.** De ved, at vi er der for at hjælpe, og kan bedre samarbejde når der skal laves undersøgelser som kræver at barnet skal ligge stille eller lignende. VR briller er et redskab, som kan være med til at ændre forståelsen af hvad os i de hvide kitler laver. Børnesygeplejersker har sæbebobler i lommen, synger, leger og er fjollede, så børns forståelse af sygepleje ændres helt klart når de oplever hvad vi også står for.

**Den teknologiske udvikling er en løbende proces, som fagpersoner konstant konfronteres med.** Vi har i mange år skulle forholde os til nye computersystemer som implementeres og opdateres på daglig basis. **Vi må erkende at der er et stigende behov for at udvikle og ikke mindst implementere computerspil, VR briller og interaktivt gulv, da det er en stor del af børnenes opvækst, og underholdningsværdien er stor.**

**De etiske aspekter skal vi altid overveje, da det ikke er alle børn som er villige til at blive afledt i en sådan grad at de ikke føler de er "med" når der skal ske noget ubehageligt.** Disse overvejelser tages altid i betragtning og **vurderes individuelt og pædagogisk** ud fra hvert barn.

Som jeg har nævnt før, så er man som børnesygeplejerske omstillingsparat og positivt indstillet overfor nye tiltag så længe det er forsvarligt og giver mening. Hvis børn har gavn af at vi indfører teknologi i sygeplejen, så gør vi det gerne.

Jeg har svært ved at uddybe det nærmere end dette, og det er jo blot mine holdninger og overvejelser der kommer til kende. Jeg ved at **der er flere af mine ældre kolleger som synes det kan være svært at tage teknologiske udstyr i brug da de er bange for at virke uprofessionelle hvis de fejler.**

## H. Evaluation-form on VR-glasses

From Videnscenter for Børne-og ungesmerter, specific from Viborg Hospital.

<b>10.3.3 VR-briller</b>			
Udgiver	Hospitalsenhed Midt > Børn og Unge		
Fagligt ansvarlig	Marianne Eg/MARIEG/ RegionMidtjylland	Version	1
Kvalitetsansvarlig	Rikke Hjorth Mortensen/RIKKMR/ RegionMidtjylland	Gældende fra	07-07-2018
Ledelsesansvarlig	Maria Brinck Krog/MARIKG/ RegionMidtjylland	Næste revision	07-05-2021
Ændringer			

### Formål

[Patientgruppe/Patientforløb/Anden målgruppe](#) [Definition af begreber](#)

[Fremgangsmåde](#)

[Dokumentation](#)

[Ansvar Referencer](#)

### Formål

Vejledning for anvendelse af Virtual Reality (VR) briller med spillet "Ballade på badebroen".

### Patientgruppe/Patientforløb/Anden målgruppe

Børn mellem 7 - 12 år, der skal udsættes for en stikprocedurer i forbindelse med ophold på Børn og Unge Afsnit, Regionshospitalet Viborg.

### Definition af begreber

### Fremgangsmåde

#### Spillets opbygning:

Spillet hedder Ballade på badebroen og foregår på en båd. Barnet har en masse fisk i en spand. Der er en flok måger, som gerne vil spise fiskene og det skal barnet forsøge at forhindre. Barnet skal derfor forsøge at få mågerne væk med at kaste vandballoner med en slangebøsse. En spilrundes længde afhænger af, hvor længe barnet er om at ramme alle mågerne.

På skærmen vil der udover måger, være motiver som f.eks.:

- skibe i horisonten

- søstjerner på bjergene i begge sider af søen og en i båden
- vandballoner i bunden af bunden af båden
- en tæller på slangebøssen som viser, hvor mange måger der er ramt.

Det anbefales, at lade barnet som minimum spille den runde, som de er i gang med færdig.

Når der lyder en ding-ding lyd er der spillet en runde. Man får altid 5 stjerner efter en runde.

De første 30 - 45 sek. er det svært at ramme mågerne, derefter bliver det lettere for igen at blive sværere, når man lige har lært hvordan man skal gøre. Spillet gemmer ikke high-score, så barnet vil altid få succes via sin egen score.

### **Hvornår kan VR-brillerne anvendes?**

VR-brillerne bruges i forbindelse med stikprocedurer.

Der skal være personale til stede til at guide og vejlede i forhold til spillet. Barnet skal ikke bruge telefonen/brillerne uden at personalet er til stede.

### **Kommunikation**

Det er vigtigt, at vi ikke skjuler, at barnet skal stikkes.

Personalet kan f.eks. fortælle barnet, at det kan få lov til at prøve spillet, mens det skal stikkes eller have lagt drop. Det er vigtigt, at vi fortæller hvad vi vil gøre i forhold til stikkeproceduren. Vi skal også fortælle barnet, at vi siger til når prikket/stikket kommer.

Husk at guide barnet ved f.eks. at spørge om barnet vil række deres pegefinger før man bare tager fat. Barnet kan ikke se andet end spiluniverset, når brillerne er på.

Tips til hvad der kan tales om under spillet, for at fastholde barnet i spillet: - Hvor mange måger har du ramt?

- Hvilket tal står der på slangebøssen?
- Hvor mange skibe kan du se?
- Hvor mange søstjerner kan du se?
- Hvor mange fisk har du i spanden?
- Hvad sker der hvis du rammer mågen på vingen?
- Har du set hvad der ligger i bunden af båden?

Større børn kan sætte mål for hvor mange måger de kan nå at skyde, hvor mange har du skudt? Hvor mange mangler du for at nå målet?

## **Udstyret:**

Findes på sygeplejekontoret på Børn og Unge afsnittet.

- Mobiltelefon med spillet "Ballade på badebroen"
- Briller med facepad af kunstlæder, som kan sprittes og skiftes ud. - Controller
- Lader

## **Spillet er nu i gang.**

Kontrolleren (evnen til at skyde med vandballonerne) fungerer på 2 måder: 1 ved at der trykkes på den runde skive på overfladen af kontrolleren ELLER på knappen for enden af kontrolleren. Der er ingen begrænsninger for antal af vandballoner...

Hvis slangebøssen ikke skyder lige frem, holdes den lille knap til højre inde. På skærmen vil ses et lille time ur, når den hvide ring er kørt 360 grader rundt, slippes knappen og slangebøssen skulle da pege ligefrem.

Hvis der i den anledning skulle blive sort skærm med en meddelelse om at programmet skal up- dateres - er det yderst vigtigt, at der trykkes annullere/return to game.

Spillet øges i sværhedsgrad fra level 1 – 10, hvis barnet når igennem level 10, går spillet automatisk tilbage til level 1.

Hvis VR- brillerne tages af under proceduren eller ved endt procedure, stopper spillet automatisk. Spillet genoptages når VR brillerne tages på igen.

Det er ikke nødvendigt at slukke spillet hvis der er flere børn lige efter hinanden, der kan bruge VR brillen.

## **Rengøring og opladning af VR-briller:**

- VR-brillerne tages af, rem og ansigts-krans tørres af med spritservietter.
- Venstre klemme tages aktivt op og telefonen frigøres. Telefonen kan nu tages forsigtigt op af dokken (Det er vigtigt ikke at forcere/vride telefonen ud af dokken).
- Se på skærmen om den er ved at mangle strøm. Der skal minimum være 30 % tilbage. Er der under 30 % strøm tilbage sættes telefonen i opladeren som ligger i kassen.
- Sluk telefonen efter brug, ved at holde knappen til højre på telefonen nede og herefter tryk sluk.

## **Dokumentation:**

Da spillet er indført som en del af en pilottest i samarbejde med Videnscenter for børnesmerter på Rigshospitalet og Khora, skal der udfyldes et evalueringsskema efter anvendelsen af VR-brillerne.

[VR kvalitetssikring \(1\).pdf](#) Evalueringsskema sendes udfyldt til Marianne Eg i cirkulationskuvert Spl. Benjamin Overvad, Børn og Unge Afsnit er superbruger.

10.3.3 VR-briller, version 1.

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