EXPLORING UNFAMILIAR PROBLEM DOMAINS THROUGH USER-GENERATED VIDEO CONTENT AND ROLE-PLAYING IN INDUSTRIAL DESIGN EDUCATION

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ABSTRACT

EXPLORING UNFAMILIAR PROBLEM DOMAINS THROUGH USER-GENERATED VIDEO CONTENT AND ROLE-PLAYING IN INDUSTRIAL DESIGN EDUCATION

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Design students need to explore the problem domain in order to respond to a design problem. Users' disability or health problems, distant cultures or geographies, or time constraints may prevent students from having direct access to users or the usage contexts. Under those circumstances, students were observed that they consulted user-generated online videos such as YouTube videos, and that they employed role-playing techniques to have subjective embodied experiences and a deeper understanding of the problem. Within the scope of this study, a method for the exploratory research in the early phases of the design process was developed to be employed by design tutors and students when direct contact with users or the usage context is not a viable option. The proposed method brings together user-generated video content analysis techniques with role-playing techniques.

Keywords: Exploratory Research in the Early Phases of the Design Process, Idea Generation, User-generated Videos, Role-playing, Unfamiliar Problem Domains, Industrial Design Education

ÖZ

ENDÜSTRİYEL TASARIM EĞİTİMİNDE KULLANICI KAYNAKLI VİDEO İÇERİĞİ VE CANLANDIRMA İLE BİLDİK OLMAYAN PROBLEM ALANLARININ KEŞFEDİLMESİ

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Bir tasarım problemine yanıt oluşturabilmeleri için tasarım öğrencilerinin problem alanını keşfetmeleri gerekir. Kullanıcının engellilik veya sağlık sorunları, uzak kültürlere veya coğrafyalara erişememe veya zaman sınırı gibi çeşitli nedenlerle öğrenciler, kullanıcılara veya kullanım bağlamlarına doğrudan erişemeyebilirler. Bu tür durumlarda öğrencilerin, YouTube videoları gibi kullanıcı kaynaklı çevrimiçi videolara başvurdukları, öznel somut deneyimler kazanmak ve kullanıcıyı daha iyi anlayabilmek için de canlandırma tekniklerinden faydalandıkları gözlemlenmiştir. Bu araştırma kapsamında çeşitli nedenlerden ötürü kullanıcılarla veya kullanım bağlamıyla doğrudan temasın güç olduğu durumlar için tasarım sürecinin erken aşamalarında eğitimciler ve öğrenciler tarafından kullanılmak üzere keşifsel bir tasarım araştırması yöntemi geliştirilmiştir. Geliştirilen yöntem, kullanıcı kaynaklı video içeriği analiz teknikleri ile canlandırma tekniklerini bir arada kullanmaktadır.

Anahtar Kelimeler: Tasarımın Erken Aşamalarında Keşifsel Araştırma, Fikir Üretme, Kullanıcı Kaynaklı Videolar, Canlandırma, Bildik Olmayan Problem Alanları, Endüstriyel Tasarım Eğitimi

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CHAPTER 1

INTRODUCTION

Designers generally gather and interpret the information regarding a design project, and this interpretation has a significant impact on the following process. During the early phases of the design process, designers usually explore the problem domain to form a sufficient background about it. Before the idea generation, the design problem needs to be structured.

From an educational perspective, in the early phases of the design process, design students gain insights into a domain to structure their design problems and generate design ideas accordingly. One of the main goals of design studio education is to teach the students how to frame design problems. Therefore, the early phases of the design process are vital for understanding, getting familiar with the problem domain, and identify opportunities. Design students gather information from primary or secondary resources to form a background knowledge for the design problem. Throughout their education, they design different problem domains with different complexity levels and get familiar with diverse users and usage contexts.

The familiarity of design students with users and usage context is an essential consideration for tutors in developing design project briefs, especially at the undergraduate level. Unfamiliarity with the problem domain and "high distance" to users require more effort for students to empathize with them (Leurs et al., 2011). On the other hand, engaging with users and environments remote from students' everyday knowledge and experiences is necessary to cultivate empathy in students for diverse human experiences. The students are encouraged to explore the problem domain to initialize the design process, and there are various tools and methods rooted in ethnographic methods and participatory approaches for research in the

design process to be employed in this exploration phase which coincides with the early phases of the design process (Sanders et al., 2010; Sleeswijk-Visser et al., 2005). These methods encourage students to have direct access to users' experiences, empower them to pursue a self-directed process, and help them arrive at grounded insights and outcomes.

When designing for user groups or use environments that they are not familiar with, designers may face various limitations. These challenges include users' health conditions or disabilities (Newell et al., 2011), risky or unsafe use environments involving occupational groups such as miners or firefighters, projects involving remote areas or cultures such as promoting healthcare in a remote area (Rodriguez et al., 2006), and time constraints (McQuaid et al., 2003). These constraints limit designers' direct access to users or use environments and make it difficult for them to benefit from the methods or approaches requiring stakeholders' direct involvement.

In the scope of this thesis, the potentials of utilizing secondary sources such as online user-generated video contents (UGVs), and one's own bodily experiences through role-playing techniques when used for the kind of problem domains discussed above are explored. An exploratory research method employing user-generated videos and role-playing in the early phases of the design process is developed to be incorporated into various educational design projects.

1.1 Clarification of Key Concepts

The key concepts that need to be clarified to convey better the thesis study are “unfamiliar problem domains” (further explained in Section 2.1) and “exploratory research for the early phases of the design process” (will further be explained in section 2.7). Within the scope of this study, “unfamiliar problem domains” stand for hard-to-access users and contexts where direct observation of, or direct contact with users is difficult. Design is a process with different phases. The phases are usually referred to as the “early” and the later phases of the design process. From the research

for design perspective, the design process involves three phases of research which are exploratory, generative, and evaluative (Hanington, 2007). “Exploratory research for the early phases of the design process” is the term that will be used throughout this study for emphasizing the phase where user-generated videos and role-playing are employed to make a distinction between exploratory and generative phases of research in the design process. Both exploratory and generative research can take part in the early phases of the design process; however, since unfamiliar problem domains are the focus of this study, exploratory research is an inevitable part of the design process. Considering the nature of these problem domains, a need for exploratory research arises for understanding and gaining insights before generative research or idea generation phase.

1.2 Background

As design studio tutors we observe that when design students cannot have direct access to users and their experiences, they seek for alternative sources for generating design insights. As a teaching assistant in design studio curses these observations triggered me questioning:

What are the conditions that prevent students from having direct access to users and usage environments?

What are the alternative sources that students utilize under these circumstances?

To explore the research field, I conducted a preliminary exploratory study. The first case involved a design studio project which was "Designing Walking Support for People with Cerebral Palsy (CP)" conducted in 2016 Fall semester in Anadolu University Department of Industrial Design, which was characterized as a challenging case in terms of conducting and benefiting from research in design process. Documents submitted by the students for this studio project, interviews with the tutors and focus group session with volunteer students helped me to uncover the challenges and strategies developed by the tutors and the students to cope with these challenges concerning access to users or their caretakers. In this project, reaching to

users was an unforeseen challenge as this was a delicate issue for users and their families and the users had speech disorder.

I further investigated which interventions, methods or tools made it possible to make this project happen and in the end there were successful and potential design ideas that were worth to be developed. The tutors expressed some other new tools they used in an ad-hoc fashion, that made sense about their potentials to be used in such a design problem. During the interviews each tutor expressed that the design problem was unfamiliar for both the students and also for them. During the research phase , they had asked for help from an expert on CP who was a physiotherapist. At first, as the tutors expressed the students were asked to visit the rehabilitation and physiotherapy center to make interviews with experts, caretakers and the people having CP themselves and make observations. The students, as the tutors claimed, had difficulties in conducting such a research. During the focus group, the students also expressed they had confusion about what to observe or what to ask to users or their caretakers. They emphasized that the users and their caretakers were reluctant to talk about the difficulties they have been through but talk about the achievements instead. t*f*±s situation, as the tutors stated, necessitated alternative tools or methods for research in the early phases of the design process and the alternative tools of the research rooted from the students' needs. These tools were decided to be new media tools like user-generated online videos of people with CP which were involving diverse and rich data regarding the design problem. These were the medium to explore the problem domain for them and make sense to some extent. Besides, some of the students were observed to attend a complimentary technique which was another easy access technique: Role-playing. Later on, as the study proceeded, during the reflections on the study notes, it was seen that the physiotherapist at the rehabilitation center was the key actor of integrating role-playing to the process. He tried to compensate for the need of real users to be observed, and he acted out the therapy sessions while also facilitating the students for experiencing the practice.

Another case was a design studio project of preliminary study, was "Designing Outdoor Baby Feeding Set" conducted in 2016 Spring semester in Anadolu

University Department of Industrial Design. For this project, the students expressed that apart from relatives or neighbors with babies, people who they asked to interview were reluctant. Employing role-playing for familiarizing with the problem domain was one of the methods suggested by the tutors to the students. Some of the students acted out feeding a baby with a doll, some of them used YouTube videos, while the others conducted field study like interviews with or observations of parents and caretakers of the babies they could reach.

In 2017 Spring semester, during table critics with the two students who were preparing their graduation projects, I noticed that they employed YouTube videos for exploring their problem domains, one of which was "boots for firemen" and the other was "boots for miners". I sensed more commonalities about "what unfamiliarity was meant for design students". I referred to the literature and the parallel concerns there were evident: When designing for user groups or use environments that they are not familiar with, designers may face various limitations including users' health conditions or disabilities (Newell et al., 2011), risky or unsafe use environments involving occupational groups such as miners or firefighters, projects involving remote areas or cultures such as promoting healthcare in a remote area (Rodriguez et. al., 2006), and time constraints (McQuaid et al., 2003). It was agreed that these constraints limited designers' direct access to users or use environments and made it difficult for them to benefit from the methods or approaches requiring direct involvement of stakeholders. These two cases clarified the need of using of UGVs to familiarize with the problem domain. For instance, with a video on the internet, the student who was designing boots for firemen was able to observe an extreme case of a traffic accident which she could hardly observe in real life. The other student who was designing boots for miners, said she used documentaries on YouTube about mines recorded in different regions of the world such as in Turkey or Australia. Role-playing as supplementary technique was observed to be employed like in the previous cases. Role-playing and simulation exercises for design is known to be recorded by a camera to be edited, interpreted and reflected on for idea generation (Ylirisku and Buuri 2007). Parallel to professional aims, when the design students acted out a situation, it was observed

that they employed cameras to record these sessions like taking photos of important snapshots or video-recording all the session to later elaborate on.

As a researcher, my reflection was there were several commonalities between these projects. First of all, the practices were out of the students' daily routine. Secondly, the users and use context were hard to access, sometimes partially and sometimes entirely. Thus, these two projects had a specific emphasis on unfamiliar problem domains. Design projects focusing on unfamiliar problem domains were observed to have a potential for encouraging students to conduct exploratory research as they do not have prior experience or relevant knowledge about the domain. Besides, new media tools such as vlogs (informal diary-style video entries as posts to the internet) in terms of secondary data were applicable for the students which they could reach within a relatively short time compared to ethnographic methods like interviews and observation. UGVs enabled them to collect rich data for getting familiar with the problem domain; even though role-playing required more time and effort, and sometimes the assistance or supervision of an expert (e.g. a medical expert), it also served the same purpose of getting familiar with the problem domain. I referred to the design problems involving these conditions as unfamiliar problem domains that imply high distance between the students and the design problem at hand.

My overall insights from these four cases were that, when the design students could not have the chance to directly access to users' experiences and context, due to various reasons, they looked for alternative sources. Based on early explorations, I identified user-generated online videos (UGVs) and role-playing (RP) as alternative sources the students utilized for generating design insights. The students who used UGVs and role-playing for exploratory research in the early phases of the design process were generally senior year students with no prior experience or training for employing either UGVs or role-playing techniques. Based on these observations, I focused on these sources to develop a research method for the early phases of the design process, especially for unfamiliar problem domains. Within the scope this study, in role-playing -an umbrella term for several techniques in various forms- the designers are considered as the actors of the performance, and the experts from the

problem domain such as practitioners, user advocacy groups or representatives from the user group as facilitators. By acknowledging their shortcoming or limitations, I investigated the reasons behind employing UGVs and role-playing from an educational perspective to form a basis for putting them into action in a systematic and orderly manner to be utilized in a reliable and structured way in the early phases of the design process.

1.3 Aim of the Study and Research Questions

This study investigates the implications of user-generated videos (UGVs) and role-playing (RP) for exploring unfamiliar problem domains and the ways in which UGVs and role-playing can be related to each other for the early phases of the design process in design education projects. This study aims to find answers to the following research questions:

1. What are the benefits and limitations of user-generated video content available on the internet as research material for exploring unfamiliar problem domains and hard-to-access user groups in the early phases of the design process in design education?

2. What are the benefits and limitations of the role-playing technique for exploring unfamiliar problem domains and hard-to-access user groups in the early phases of the design process in design education?

3. What are the ways in which user-generated video content and role-playing can be related to each other and integrated into the early phases of the design process in design education?

Within the scope of this study, the benefits and limitations of utilizing UGVs and role-playing techniques for exploring unfamiliar problem domains and hard-to-access user groups will be identified, and a method for the early phases of the design process that can be employed in various design education projects will be developed.

1.4 Structure of the Study

This thesis was initiated by the exploration of the research area. The development of the thesis structure started with a series of exploratory field studies, involving a preliminary case and three following cases while scrutinizing the literature. The structure has been informed and evolved by the findings after each field study. The outline of this thesis is presented in Table 1.1.

This first chapter presented the importance, background aim, and research questions of this study.

Chapter 2 presents exploratory research in the early phases of the design process. It starts with a literature review about the definition of research for design, key concepts regarding research for the design process, and the importance of research for the design process and design education.

Chapter 3 explains the use of video in exploratory research in the early phases of the design process. It gives an overall view regarding using video for qualitative research to specific video techniques employed for research in the design process. It puts a particular emphasis on user-generated video content and addresses the ethical and technical considerations for employing them for research.

Chapter 4 explains the use of role-playing techniques in design. It explains the background theories and concepts, acknowledging role-playing as an umbrella term for several similar or related techniques, defines how it is employed and addresses the ethical and technical considerations for employing them for research.

Chapter 5 describes the research methodology with the research approach of the thesis, based on one preliminary study and two field studies.

Chapter 6 presents the preliminary study. This study's conclusions helped the researcher explore the problem context, the implications of using UGVs, and role-playing together as a method to be employed in exploratory research in the early phases of the design process.

Table 1.1 Structure of the thesis

CHAPTERS		
1	Introduction	Importance, aim, and focus of the study
2	Exploratory research in the early phases of the design process for exploring unfamiliar problem domains	Unfamiliar problem domains Research for the design process Exploratory research in the early phases of the design process
3, 4	UGVs and Role-playing as an exploratory research medium	Using UGVs for exploratory research in the early phases of the design process Using role-playing techniques for exploratory research in the early phases of the design process
5	Methodology	Research framework
6	STUDY-I	Exploration of the problem context
7	STUDY-II	Developing and implementing the method to be employed in exploratory research in the early phases of the design process
8	STUDY-III	Revising and implementing the proposed method to be employed in exploratory research in the early phases of the design process
9	Conclusion	Reflection on the doctoral study Guidelines and toolkit of the proposed method employing UGVs and role-playing for exploratory research in the early phases of the design process

Chapter 7 presents the first incorporation of UGVs and role-playing as an exploratory research method into an educational project for a pediatric examination table and its surrounding. This study helped to structure the phases, techniques, and tools to be employed in sequences and propose a method to be employed for exploratory research in the early phases of the design process. The findings and conclusions from the field study aiming at receiving feedback from the design

students about the implications of the method led to the next field study presented in Chapter 8.

Chapter 8 presents the second implementation of the method in a half-day workshop focusing on the same design problem in the previous chapter. This chapter explains revisions of the toolkit and guidelines for the method, the implementation of the workshop, and the findings, and compares the method in crowded student groups or small numbers of participants.

Chapter 8 presents the researcher's reflections on the doctoral study. It reviews its phases, the toolkit and the guidelines for the implementation of the proposed method for the exploratory research in the early phases of the design process, and revisits the potentials and the limitations of the method.

CHAPTER 2

LITERATURE REVIEW

This study explores the importance of UGVs and role-playing techniques in the exploratory phase of the design process. Therefore, this chapter gives an overview of the literature regarding the definition of unfamiliar problem domains, user research for the design process, key concepts regarding research, and the importance of research for the design process and design education. Since this thesis puts a special emphasis on unfamiliar problem domains, it is crucial to explain how an "unfamiliar domain" is described in the design literature and other fields that are interested in the nature of the problem, such as education literature. Besides, the study refers to the term "research in the design process," and it is important to emphasize how it is addressed in the text. The term "research for design" will be explained with its various meanings and usage in the design literature, and the meaning of "research in the design process" will be clarified. The early phases of the design process and its importance in the educational context will also be elaborated upon.

2.1 Unfamiliar Problem Domains

The problem domain refers to the concepts, rules, and principles (the "content") which define the problem elements (Jonassen, 1997). According to Arlin, the domain, goal, and processes implied by a problem may be well-defined or ill-defined, simple or complex, long-term or short term, and familiar or unfamiliar (as cited in Jonassen, 1997). The problem solver's degree of familiarity with the content of the problem has an impact on the challenge of the problem and the problem-solving process. When working on familiar problem domains, designers can rely on

their experience and knowledge. Unfamiliar problem domains, on the other hand, usually require a research process to form background knowledge. Within the scope of this study, "unfamiliar problem domains" stands for hard-to-access users and contexts where direct observation of, or direct contact with users is difficult. In the design literature, the terminology regarding the distance of the design problem to the person dealing with it is usually called "unfamiliar design problems" (e.g., Jones, 1970; Casakin, 2007; Yantaç et al., 2011). In this study, I prefer to use the expression "unfamiliar problem domains" instead of "unfamiliar design problems." First, it defines an area to explore and then problematize it, which is more convenient considering the exploratory nature of the fuzzy front end (or, the early phases) of the design process. Secondly, the problem domain is more than a problem as it refers to other elements such as concepts, rules, and principles that define the problem. The problem implies the domain, but it is not just the problem itself; the conditions and factors that came together causing a particular problem that is intuited, but not explained, thus needs to be explored.

2.2 User Research for the Design Process

In the early 1980s, companies began to invest in the collaboration of designers and social scientists for understanding human/user activities to get a competitive advantage in the market (Squires and Byrne, 2002). Around the early 2000s, experience has become the new phrase for the industry and the criterion for success (Cagan and Vogel, 2002; Desmet and Hekkert, 2007). Since then, there has been a boost in approaches concerning user involvement in the design process and user research methods. In the literature, we witness that the activities of designers during the design process to understand human/user activities, the needs of the users and the problematic issues a product or service is supposed to address is referred to as design research by many (Tso, 1999; Sanders, 2000; Blessing and Chakrabarti, 2009). Much of the collaboration between designers and social scientists have focused on sources of inspiration, uncovering new product opportunities and strategic areas for innovation (Sanders, 2005; Wormald, 2011). These activities are typically conducted

in the early phases of the design process, where opportunities are identified within the problem area, and design problems are defined (Cagan and Vogel, 2002; Wormald, 2011; Sanders and Stappers, 2012). From the perspective of industry, the user has increasingly been associated with innovation, and the research uncovering users' needs and expectations is valued as the critical component that enriches creativity (Bennett, 2006). Therefore, research in the design process has progressively been situated in the early phases of the design process (Sanders, 2005). These developments have impacted undergraduate design education and have evoked various questions concerning research for design in the educational context (Strouse and Arnold, 2009).

Design research is a broad term in the literature with diverse definitions based on different approaches. First of all, there are definitions which approach "design research" from the general perspective of research by describing it as "a systematic inquiry whose goal is knowledge of, or in, the embodiment of configuration, composition, structure, purpose, value, and meaning in man-made things and systems" (Archer, 1981). Design research has different meanings when referred to as research into/about design, research for design and research through/by design. According to Frayling, research into design refers to "a research into a variety of theoretical perspectives on art and design." Research for design refers to "a research where the end product is an artefact, where the thinking is embodied in the artefact." Research through design refers to "an action research of a practical experiment, and the resulting report aims to contextualize it" (Frayling, 1993). Secondly, various approaches consider "research on design process" as synonymous to "doing research for design" (Dorst, 2008) by emphasizing its contribution as informing and inspiring the design process (Sanders, 2008).

These developments triggered shifts in the ways that design activities were carried out and one of them was the movement towards user research (Wormald, 2011). Since then there has been a boost in activities of designers which cover collecting information from people to enrich their knowledge base about users' needs, desires, or thought processes (Hanington, 2003). In the literature, we witness that those

activities of designers are referred to as design research by many (Tso, 1999; Sanders, 2000; Blessing and Chakrabarti, 2009). This is another approach to design research in the literature, which states its purpose as gaining insight into the problem area and the user. Table 2.1 shows various definitions and understandings of design research developed by various scholars. From these definitions presented in the literature, I adopted the approach which considers design research as part of the design process, and its purpose as gaining insight into the problem area and the user; in other words, user research for the design process.

2.3 Phases of the Design Process

Starting with the Design Methods Movement of the 1960s, there have been many attempts to visualize or formalize the design process modelled at various levels of abstraction. Most of this literature has come from engineering design and architecture (Austin et al., 1999). Cross (2000) distinguishes between two models: descriptive models, which are based on observation and aim to describe how designers proceed in a design situation, and prescriptive models, that aim to prescribe how the design process should be carried out to be optimal in some way. These models define the structure of the design process in the form of consecutive phases with iteration loops among them. The design process is divided into several phases and labeled according to the design-related activity or the procedures (Derelöv, 2009). Various phase models are originating from different design professions; therefore, the number of phases of the process or the procedures might be different. Phases of the design process facilitate the construction of an effective design strategy within the process (Cross, 2000).

Table 2.1 Different understandings of “design research” in the literature

Design research as academic research	Design research is an inquiry to determine facts or to seek answers to questions (Cross, 1984).
	Design research is a systematic inquiry about the phenomenon of design (Archer, 1981)
	Design research formulates and validates models and theories about the phenomenon of design, as well as develops and validates knowledge, methods, and tools founded on these theories to improve the design process (Muratovski, 2016).
Design research for the design process	Design research is a beneficial resource of methodologies that generate insights, make significant contributions to all phases of the design process, and yield precise decision-making guidelines (Walton, 1998).
	Design research is a cluster of approaches sharing a common goal of driving, inspiring, and informing the design process (Sanders, 2008).
	Design research is an insightful method for generating meaningful design (Khoury and Khoury, 2009).
Design research as user research for the design process	Design research enables designers to gain conceivable insight and knowledge of the user (Tso, 1999).
	Design research allows designers to understand human/user expectations, deliver products that are useful, usable, and desirable (Sanders, 1992).
	Design research emphasizes the importance of investigating the needs of the users and understanding the situation a product is supposed to improve (Blessing and Chakrabarti, 2009).
	Design research is about understanding real people in the context of their everyday lives and then using what we learn to inspire our work. (IDEO LABS, Retrieved November 15, 2015).

LeBlanc (2012) suggested the following phases for the typical design process: “information gathering” which covers activities like familiarizing with context, gathering and analyzing data, and identifying problems within the area; “problem definition” which covers activities like proposing a design problem; “concept development” which covers activities like idea generation, visualizing ideas, selecting promising ideas and developing ideas into concepts; “design development” which covers activities like elaborating a coherent concept; “design evaluation” which covers activities like evaluating the design solution; and “product development” which covers activities like refining and revising the design (p. 33). From an educational perspective, dividing the design process into phases is more advantageous for following and facilitating the student progress. The definition of these phases is more or less very similar in many phase models.

2.4 Sources of Knowledge Utilized in the Design Process

Design is a novel practice in terms of the use of knowledge (Cross, 2006). Along with their intuition, designers can rely on research methods to elicit knowledge to explore and understand the design context during the design process.

When users are involved in research for the design process, it can also be referred to as user-centered research or only as user research (Rothstein and Shirey, 2004). User involvement is a vague concept covering many approaches (Kujala, 2003, p.1). Firstly, users can be involved either passively or actively in the design process, which specifies two ends (Table 2.3) of user involvement in the design process (Sanders, 2008).

The following categorizations are related to how designers obtain user information. In a broader sense, the classification is made according to the inclusion of a systematic approach. Arnold (2006) classified design ranging from “art/intuitive based design,” which is an informal exploratory activity (Stappers, 2006) to

"scientific research," which is a formal activity where analytical methods are adopted. The inclusion of research methods in the design process is termed "research-based design," where these two ends of the approaches to research in the design process merge (Fig. 2.1).

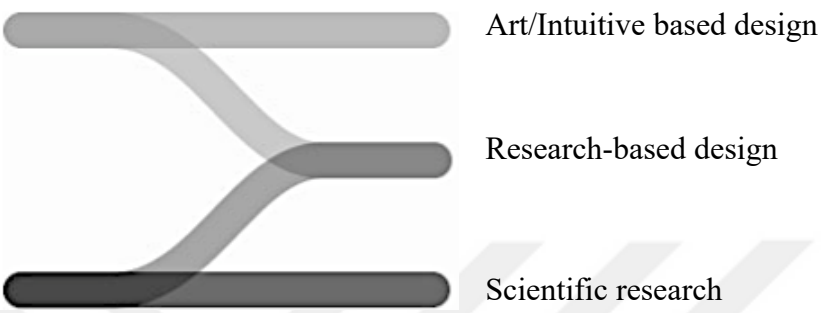


Figure 2.1 Evolution of research-based design (Arnold, 2006)

Informal procedures involve "intuition" where designers put themselves in users' place intuitively (Arnold et al., 2007) or "empathic immersion" where designer tries to understand the problems users encounter in the natural settings especially when the user group is not familiar to the designer (St. Pierre, 2002; Kouprie et al., 2009).

Formal research procedures for design can be carried out by researchers outside the design team, and user information is "outsourced" as a result of the division of labor in current market conditions which require specialization in certain areas and the designer has little opportunity to meet with users (van Veggel, 2005). As the mediator in the design process, the researcher collects data about the user and interprets this information in the form of design criteria, while the designer interprets the design criteria and focuses on design development (Sanders, 2002).

Designers in a team can also conduct formal research procedures for design. The empathic design also has its own emerging methods and techniques; therefore, it can be evaluated under both the titles formal and informal activity (Kouprie et al., 2009). For ethnographic design, the designer, as a researcher, attends the research sessions,

collects contextual ethnographic info, and elicit inspirational responses from people (Hemmings, 2002).

Arnold et al. (2007) further categorized design practice according to the source of knowledge as intuitive, informed, ethnographic design, and participatory co-design. For intuitive design, designers put themselves in users' shoes with their own experiences. However, designers sometimes do not have the required knowledge and need to experience the problem from the users' eye, and this may necessitate another practice which is empathic design. In informed design, user information is provided from outside the design team; in ethnographic design, designers conduct research concerning the everyday people; and in participatory design, people are involved in the design process, which empowers them to express their hopes, dreams and creativity. In Table 2.3, we can see the categorizations based on how designers obtain user data.

2.5 Key Concepts Regarding Research for the Design Process

Before discussing the approaches and techniques used in the design process, the differences between key concepts such as approach, method, technique, toolkit, and tools need to be clarified. The terminology of these key concepts is explained by Sanders et al. (2010, p. 196):

- Approach describes the overall mindset with which the research plan is conducted (user-centered design approach or participatory design approach).
- Method is a combination of tools, toolkits, techniques, and games strategically put together to address defined goals within the research plan.
- Technique describes how the tools and toolkits are put into action (how information is elicited).
- Toolkit is a collection of tools that are used in combination to serve a specific purpose.
- Tools are the material components that are used in activities.

Table 2.2 User research for the design process according to the sources of knowledge utilized

USER INVOLVEMENT				passive involvement	active involvement
ADOPTION OF METHODS	INFORMAL: EXPLOTARY ACTIVITY (Stappers, 2006)	INTUITIVE BASED DESIGN (Arnold, 2006)	FORMAL: APPLICATION OF METHODS (Stappers, 2006)		RESEARCH BASED DESIGN (Arnold, 2006)
USER INFORMATION COLLECTION	Intuition	"empathic immersion"	Outsourcing	Designer as Researcher	Participatory
	Designers' intuition and experiences as users	Simulating the user's condition	Division of labor in current market conditions (requires specialization in certain areas) (van Vzeggel, 2005)	The research conducted have direct application and relevance to design Typically, traditional research methods used in anthropology (e.g. observation and interviewing) were time compressed to appropriately fit the demands of fast product development.	Collective generativity (Sanders, 2000) Collective, co-design
DESING PRACTICE (MODELS) ACCORDING TO SOURCE OF KNOWLEDGE	INTUITIVE DESIGN (Arnold et. al 2007)	EMPATHIC DESIGN	INFORMED DESIGN: User knowledge is provided from outside of design team	ETHNOGRAPHIC DESIGN: People are the subject of research conducted by designers	PARTICIPATORY DESIGN: People are involved in design process through methods that aim to help them express their hopes, dreams, and creativity. Designers generate new knowledge with people / Designers design with people (co-design)
ROLE OF ACTORS INVOLVED IN USER RESEARCH	Designers> • put themselves in users' place with respect to their own experiences (Hasdoğan, 1996)	Designers> • try to understand the problems users encounters in the natural settings, especially when the user is not familiar to the designer,	Researcher > as mediator in the process of user research activity • collects data about the user • Interprets this information (form of design criteria) Designer > • Has little opportunity to meet with users • Interprets design criteria • Focus on design development (Sanders, 2000)	Designer > • as researchers attend to the research sessions, collect, contextual ethnographic info elicit inspirational responses from people (Hemmings, 2002).	Researcher > • Brings frameworks for understanding users (experience) Designers> • are a part of a collaborative team (Researcher-Designer-User) • responsible for the analysis and interpretation of the "data": the user-generated artifacts (Sanders, 2000) Users> • express themselves and to participate directly and proactively in the design development process
DEPENDENCY OF ROLES OF THE ACTORS			Design-driven experiments with researchers / social scientists Roles: designer & researcher distinct, yet interdependent (Sanders, 2000)		• Reciprocal respect between designers and researchers / social scientists • Roles- Case-1: designer & researcher mutually interdependent (Sanders, 2000) • Roles- Case-2: Designers as researchers

Design approaches specify the techniques adopted for research in the design process. Designers can adopt a user-centered or participatory approach. Hanington (2003) calls the techniques that emerged from marketing research, ethnographic research, and HCI as “traditional techniques” and techniques that emerged from participatory approaches as “emerging techniques.” Concerning their innovative opportunities, Hanington (2003) particularly considers generative techniques under emerging techniques, but empathic techniques can also be considered as emerging techniques as they provide innovative opportunities (Kouprie et al., 2009).

Sleeswick-Visser et al. (2007) identified tools for communicating research findings and distinguished them as traditional and emerging tools. They consider written reports which contain a description of how the information was generated and analyzed, and present the most important conclusions and ethnographic maps, which are graphic diagrams that summarize, organize and communicate the data under traditional tools.

Emerging communication tools examples are personas that are envisaged fictional users, narrative forms such as scenarios and scripts, and video-based tools that inspire designers (Sleeswick-Visser, 2007). The personal card set (Sleesvick-Visser et al., 2007) and context-mapping (Sleeswick-Visser, 2005) are examples of hybrid tools proposed to communicate research findings. In Table 2.4, we can see a categorization of techniques for conducting research and tools for communicating them based on the design approach adopted.

2.6 Phases of Research for the Design Process: Exploratory, Generative and Evaluative Research

Within a typical design process, ideas are transformed into one or more prototypes, which eventually become products, and the research that informs each of these phases differs in intent and form (Sanders, 2005). The design process involves three phases of research: exploratory, generative, and evaluative (Hanington, 2007). They

may overlap both in timing and methods used flexibly across the phases of research and design (Fig. 2.2).

• Exploratory research aims to gather a comprehensive knowledge base and empathy with people in cases where designers are engaged in unfamiliar territory (Hanington, 2003). This research involves exploring what happens to products when used by people in the real world (Sanders, 2005).

• Generative research focuses on a deep understanding of user needs, desires, and preferences (Hanington, 2003) for uncovering new product opportunities at the fuzzy front end of the design process (Sanders, 2005).

• Evaluative research aims to assess the prototypes (Sanders, 2005) and determine whether the designed product is useful, usable, and desirable (Hanington, 2007).

Exploratory and generative research inform the early phases of the design process for idea generation, which are less strict processes, while evaluative research informs downstream phases of the design process, which are more established processes (Wormald, 2011).

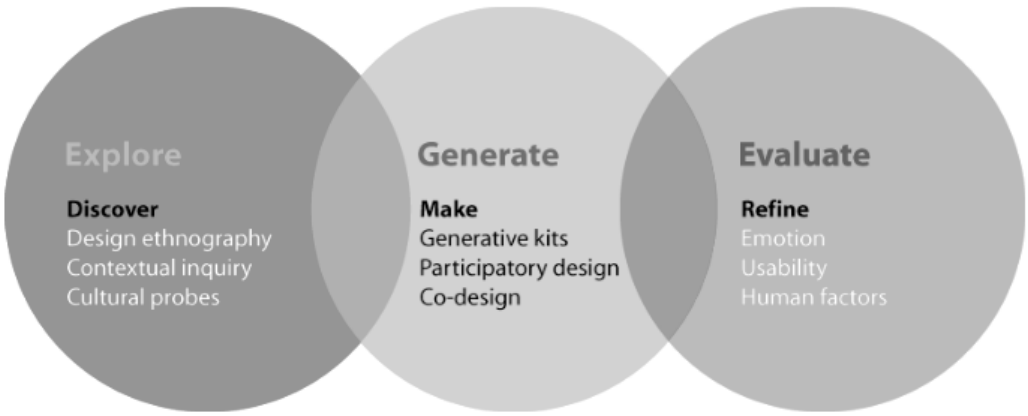


Figure 2.2 Phases of research for the design process: Exploratory, generative and evaluative research (Hanington, 2007, p. 4)

Table 2.3 Research approaches, techniques and tools for the design process

<table>
<tr><td>Design approach</td><td colspan="2">User Centered Design approach</td><td colspan="2">Participatory approach</td></tr>
<tr><td rowspan="2">Techniques employed for design research</td><td>Traditional techniques</td><td colspan="3">Emerging techniques</td></tr>
<tr><td>Originated from Market research
Focus groups
Surveys Questionnaires
Interviews
Observational research
Participant observation
Still, video documentation

Originated from Ethnographic Research
Video ethnography
Cultural inventory

Originated from HCI
Think aloud protocol
Cognitive walkthrough
(Hanington, 2003)</td><td>Empathic techniques

Simulating the user's condition
Role-playing techniques:
product handling
experience prototyping
bodystorming
informance (Buchenau and Fulton Suri 2000).
the designer takes the perspective of the user, and acts out the user's life (Sleeswick Visser, 2009)
Self-modeling (e.g. Patricia Moore)
Shadowing (St. Pierre, 2002)</td><td colspan="2">Generative techniques

<table><tr><th>TALKING, TELLING AND EXPLAINING</th><th>MAKING TANGIBLE THINGS</th><th>ACTING, ENACTING AND PLAYING</th></tr><tr><td>Stories and storyboarding through writing, drawing, blogs, wikis, photos, video, etc.</td><td rowspan="2">2-D collages using visual and verbal triggers on backgrounds with timelines, circles, etc.</td><td>Game boards and game pieces and rules for playing</td></tr><tr><td>Diaries and daily logs through writing, drawing, blogs, photos, video, etc.</td><td>Props and black boxes</td></tr><tr><td rowspan="2">Cards to organize, categorize and prioritize ideas. The cards may contain video snippets, incidents, signs, traces, moments, photos, domains, technologies, templates and what if provocations.</td><td>2-D mappings using visual and verbal components on patterned backgrounds</td><td>Participatory envisioning and enactment by setting users in future situations</td></tr><tr><td>3-D mock-ups using foam, clay, Legos or Velcro-modeling</td><td>Improvisation</td></tr></table>
(Sanders et. al., 2010)</td></tr>
<tr><td rowspan="2">Tools for communicating design research findings</td><td>Traditional tools</td><td colspan="3">Emerging tools</td></tr>
<tr><td>Written reports: contain a description of how the information was generated and analyzed and it presents the most important conclusions
Ethnographic maps: graphic summaries as a way of communicating, diagrams that organize and summarize the data. (E.g. 'grounded innovation map' by Diggens and Tolmie, 2003) (Sleeswick-Visser et. al., 2007)</td><td colspan="3">Personas: envisaged fictional users (Grudin & Pruitt, 2002; Pruitt& Adlin, 2006)
Narrative forms: Scenarios / Scenario building (Go & Caroll, 2004) & Scripts (Henze & Kahmann, 2003)
Design documentaries : video-based tools to inspire designers (Raijmakers, 2006)
Personal Cardset (Sleeswick Visser, 2007)
Contextmapping (Sleeswick Visser, 2005)</td></tr>
</table>

Exploratory research in the early phases of the design process aims to form a knowledge base of the problem domain, particularly in cases where designers are engaged in unfamiliar domains. Before generative research, it is a research phase, which is more focused research forging a deeper understanding of user needs and preferences and evaluative research intending to determine the qualification competency of the designed product (Hanington, 2007).

2.7 Research in the Early Phases of the Design Process

The early phases of the design process involve identifying opportunities within the problem area and structuring the design problem (Cagan and Vogel, 2002; Wormald, 2011; Sanders and Stappers, 2012). Companies have been experimenting with and seeking new tools and methods for research for sources of inspiration, uncovering new product opportunities and strategic areas for innovation (Sanders, 2005; Wormald, 2011). Therefore, as mentioned before, research has progressively been situated in the early phases of the design process to uncover users' needs and expectations (Sanders, 2005). Much of the collaboration between designers and social scientists since the early 1980s have related to the development of design-related user research activities associated with the early phases of the design process (Wormald, 2011).

Before a designer developing abstract relations and concepts, various problematic issues need to be raised and structured (Kokotovich, 2008). Research in the early phases of the design process enables designers to gain insights into a particular domain and generate creative and innovative design ideas. It is a process in which designers gather data to enrich their knowledge base about the problem domain and structure their design problems and then make sense of what they have learned. By gaining insights, they find relationships or themes in the research data and uncover meaning in what is observed to apply to the design problem at hand (Kolko, 2010). While Wormald (2011) states this process as moving from raw research data to clear statements of design insights, and then exploiting those insights into actionable

propositions or product opportunities, Arnold (2005) indicates it as translating research findings into actionable design guidelines.

2.8 Research in the Early Phases of the Design Process in Design Education

The contributions of research in the early phases of design for problem structuring (Kolko, 2010), for innovation (Wormald, 2011) and creativity (Bennett, 2006) indicate that this process is an essential part of the design studio. Today there is consensus amongst educational researchers on the growing importance of research in design education (Yee, 2010; Mimoso, 2011). In a typical design studio project, a design problem space is offered to the students, and they are expected to structure their design problems. In the early phases of the design process, the explicit raw data obtained from research becomes design insights (Dixon and Boncoddo, 2009).

CHAPTER 3

USING VIDEO FOR RESEARCH IN THE DESIGN PROCESS

3.1 Using Video for Qualitative Research

The use of video for research, which has come into prominence within sociology, anthropology, education, and psychology, is currently a significant resource for many contemporary social researchers (Haw and Hadfield, 2011). Visual representations are gaining more importance on written texts supporting "visual mentality" in research by triggering visualization and imagination (Knoblauch et al., 2012). There are different ways of using video for qualitative or interpretive research that differ from those of standardized forms of video analysis and coding procedures practiced in psychology or engineering (Knoblauch et al., 2012).

Video can be used in several ways for qualitative research, including participatory video, videography, video elicitation, and existing video data (Jewitt, 2012; Whiting et al., 2016). Participatory video research uses participant-generated videos documenting an aspect of their lives (Jewitt, 2012). Participant generated videos involve materials such as video diaries, autobiography, or community videos (Whiting et al., 2016). Videography is recording people in the context as a way to capture their activities and covers methods such as interaction analysis and ethnographic video analysis (Knoblauch et al., 2012). Video elicitation uses videos created by the researcher, or existing videos to prompt discussion and provide a basis for reflection for the participants. The use of existing videos involves the analysis of videos not recorded by the researcher or participant (Jewitt, 2012; Whiting et al., 2016). Haw and Hadfield (2011) list specific uses of video in various forms of research concerning five key modalities for generating deeper insights: the extractive mode involves capturing a representation of a phenomenon under study; the reflective mode is used for encouraging participants to reflect on their experience;

the projective and provocative mode supports participants to criticize existing norms, structures, and traditions; the participative mode engages participants to direct the research, and the articulative mode gives voice to participants to communicate their opinions to others.

The most prominent approaches in interpretive or qualitative video analysis are ethnographic video analysis, sequential analysis, and conversation/interaction analysis (Knoblauch et al., 2012). For studying people in "natural situations" like at work, in a museum or a café through video, researchers are inclined towards ethnographic video analysis (Knoblauch et al., 2012). Sequential video analysis is the intuitive selection of a key scene that coincides with the video data structure. It involves freezing the video to create motionless stills to describe them in detail, exhausting the data through comparisons for validation and arriving at an objective meaning (Knoblauch et al., 2012). Conversation analysis is based on transcriptions from audio and video recordings. The aim is to explore the conversation between people within a specific context. Interaction analysis is built on conversation analysis and focuses on people in action within a specific context (Ylirisku and Buur, 2007; Knoblauch et al., 2012). In Table 3.1, we can see the terminology of video research in terms of video production, data collection and compilation, and video analysis processes. The qualitative data goes into coding, clustering, relating variables, patterning, and relating findings to general theoretical frameworks (Robson, 2002) for concluding.

One of the most prominent approaches in qualitative video analysis is conversation analysis (Knoblauch et al., 2012, p. 13). The "AEIOU" framework developed for interpreting data obtained from conversation analysis (Martin and Hanington, 2012) for research was originated at Doblin by Robinson et al. (1991). It is an organizational framework reminding the researcher to attend to, document, and code information under a guiding taxonomy of "activities, environments, interactions, objects, and users" (EthnoHub, n.d.).

Table 3.1 Terminology regarding the video research

	Video research	Terminology	How video is used for research?
Video research methods and techniques	modes of using video/use of video in various forms of research (Haw and Hadfield, 2011)	extractive mode	capturing a representation of a phenomenon under study
		reflective mode	used for encouraging participants to reflect on their experience
		projective/ provocative mode	supports participants to criticize existing norms, structures and traditions
		participative mode	engage participants to direct the research
		articulative mode	give voice to participants to communicate their opinions to others
	ways of using video (Jewitt, 2012) video research methods (Whiting et al., 2016)	participatory video research	uses participant-generated videos for documenting an aspect of their lives
		videography	records people in the context as a way to capture their activities
		video elicitation	uses videos created by the researcher, or existing videos to prompt discussion and provide a basis for reflection for the participants
		use of existing videos	found data study which involves an analysis of extant videos that are not recorded by the researcher or participant
Video analysis techniques	Most prominent approaches within the field of interpretive or qualitative video analysis (Knoublauch et al., 2012)	ethnographic video analysis	studying people in "natural situations" like at work, in the museum, in a café, etc. Through video
		sequential analysis	intuitive selection of a key scene: freezing the video to create motionless stills to describe them in detail, exhausting the data through comparisons for validation and arriving at an objective meaning
		conversation analysis	exploring the conversation between people focuses on people in action within a specific context
Video transcription/ presentation techniques	transcribing video data (Mavers, 2012)	multimodal transcription	transcribing video in a range of ways in writing and various forms of image, as well as diverse layouts

Activities are sets of actions to achieve a task; environments are the spaces in which activities take place; interactions are between a person and other beings, and are the building blocks of activities; objects are crucial elements that go through sophisticated uses in the context; users are the people that are under observation. The elements of the framework are interrelated parts with critical interactions (Martin and Hanington, 2012).

3.2 Multimodal Transcription

How to represent multimodal interaction has become a vital issue for video-based social research, and researchers have introduced new forms of representation to the multimodal transcripts in social research. Video data that are turned into multimodal transcripts are not merely descriptive but are edited representations for facilitating and articulating a particular professional vision (Goodwin, 1994). Re-constructing video data is inevitable and essential for video analysis, and this provides the researchers and their audiences to interpret what is observed concerning their disciplines (Bezemer and Mavers, 2011).

There is no such standardization in multimodal transcription. Contemporary researchers continue to experiment with transcribing video data in various ways, in writing and various forms of image, as well as diverse layouts. The free nature of it enables transcribers to select the most suitable method for their particular professional needs (Mavers, 2012).

Mavers (2012) describes multimodal transcription as a transcript that contains more than one mode, including images and text in which the transcriber decides on the meaning and the relation between the modes. There are various usages of images. A series of photographic stills provides certain information regarding the setting, objects, and people, which may not be reflected with a text and offers the flexibility of inclusion of details to emphasize the researcher want to share with her/ his audience.

Multimodal transcription is interested in how speech, articulation, gaze, gesture, action, and body position can be represented as writing or image (Norris, 2004). The data that will be transcribed can be organized under behavioral data and attitudinal data where behavioral data outlines how someone acts and behaves, while attitudinal data inquire into what people want and believe (Goodman et al., 2012). Sanders (2001) categorized these data as explicit data where it is directly seen as what people say, whereas what people do or make shows their tacit or more implicit knowledge. The videos provide both behavioral data and attitudinal data, both explicit and implicit knowledge to be transcribed.

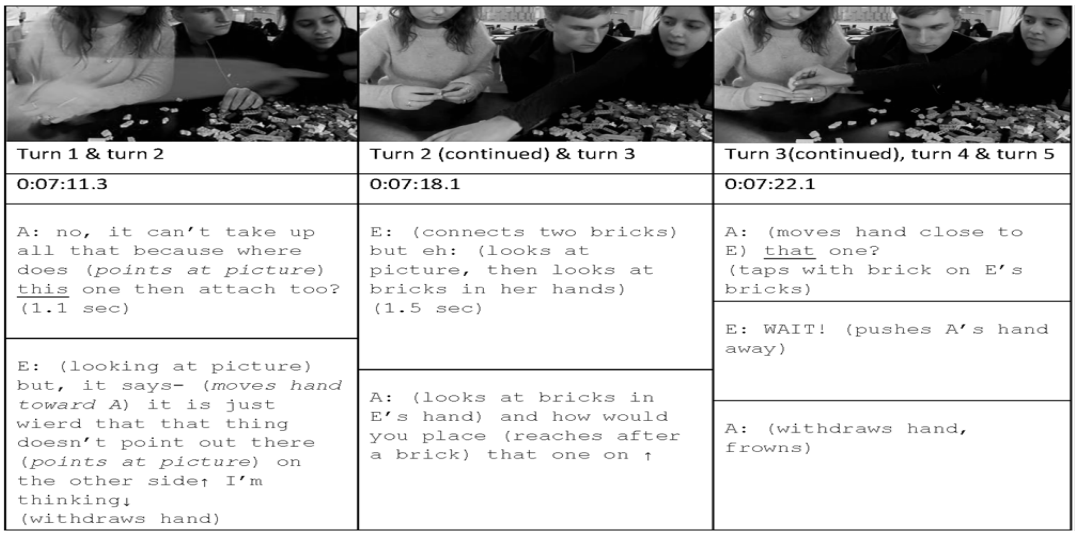
Based on constructionist notions of transcription Bezemer et al. (2011) developed a social semiotic framework to treat transcripts as artefacts or as empirical material as a social meaning-making practice. The multimodal landscape of representation is concerned with the interaction mediated by the body, while the social semiotic perspective on transcription helps meaning-making for gaining insights and developing theoretical arguments.

Different types of images are used in transcripts, including video stills, drawings, and computer-generated images to depict people's visual characteristics, objects, and places, and relationships between them, as well as sequences of action. Video stills can bring out visual characteristics and appearance, such as clothing, facial expression, posture, gesture, and spatial proximity (Bezemer and Mavers, 2011; Mavers, 2012). Transcription also requires making decisions about how these will be set out on the page or screen. Figure 3.1 presents a sequential series of video stills, where the researcher has chosen to highlight the moments in an ongoing activity (Norris, 2004).



Figure 3.1 A section from a multimodal transcription example using video stills (Norris, 2004, p. 102)

To illustrate another multimodal transcription example, the visual board prepared by Abildgaard and Christensen (2017) can be an example (Fig. 3.2). They were focusing on how personal space invasion and micro-conflict occur during teamwork; therefore, for coding, they used Excel versions of the transcripts based on turn-talking in the dialogue. Together with relevant video still, speech, gesture, and gaze were noted as transcripts to be used for their subsequent analysis.



Turn 1 & turn 2	Turn 2 (continued) & turn 3	Turn 3(continued), turn 4 & turn 5
0:07:11.3	0:07:18.1	0:07:22.1
A: no, it can't take up all that because where does (*points at picture*) this one then attach too? (1.1 sec)	E: (connects two bricks) but eh: (looks at picture, then looks at bricks in her hands) (1.5 sec)	A: (moves hand close to E) that one? (taps with brick on E's bricks)
E: (looking at picture) but, it says- (*moves hand toward A*) it is just wierd that that thing doesn't point out there (*points at picture*) on the other side↑ I'm thinking↓ (withdraws hand)	A: (looks at bricks in E's hand) and how would you place (reaches after a brick) that one on ↑	E: WAIT! (pushes A's hand away)
		A: (withdraws hand, frowns)

Figure 3.2 Multimodal transcripts based on turn-talking in the dialogue (Abildgaard and Christensen, 2017)

Transcribers make meaningful representational choices, for framing, selecting, and highlighting in the transcript:

- Framing: Video extracts selected for transcription are then framed considering the purpose of the research.
- Selecting: Once a portion of the video footage has been selected for particular attention, the researcher engages with recorded materials in an incremental refinement process for responding to the issue.
- Highlighting: Researchers draw attention to the focus elements by highlighting them in the transcript by removing, blurring, or blocking out (Bezemer and Mavers, 2011).

For highlighting the image can be edited by using a range of modifications:

- Spatial detail: The image may represent the spatial proportions of people and objects, size and positioning;
- Pictorial detail: Items may be given more or less detail;
- Depth: A continuum can be suggested by variation in size, overlap or shading;
- Color: Represented items may or may not be given color, and may be varied in terms of saturation, differentiation, and modulation;
- Background: The background or may not be included in a more or less recognizable way (Bezemer and Mavers, 2011).

For example, blurred lines (Fig. 3.3 Left) provide more details of space, depth, and background than outlining (Fig. 3.3 Right) where attention is drawn to a person who remains mostly on the periphery as her embodied engagement becomes the focus of analysis (Bezemer and Mavers, 2011).).

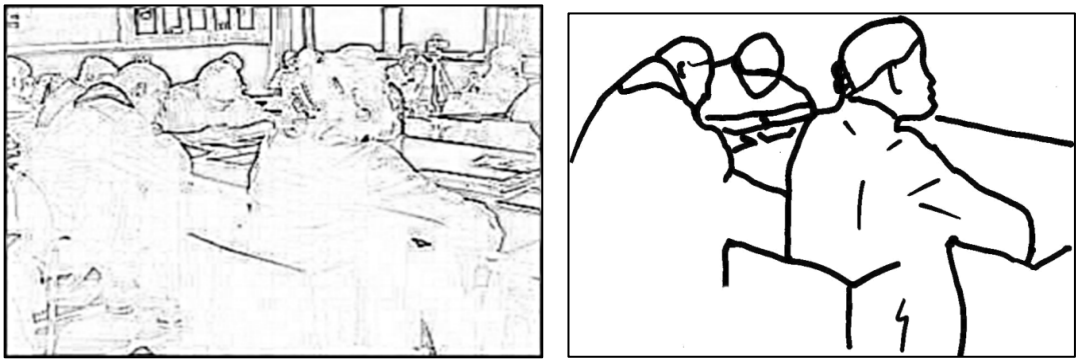


Figure 3.3 Representational choices; Left: blurred lines; Right: Figure outlining (Bezemer and Mavers, 2011)

Representing interactions, communicating an action, and spatial relations foregrounds a different aspect. The video stills provide a detailed visual inventory of people, objects, and space within the camera's frame; the sketch focuses on body positioning and action; the verbal transcript reports spoken words. This visual transcription process supports the identification of all elements of the interaction, both verbal and nonverbal. A transcription by Keifert (2015) that represents the verbal and the nonverbal data such, gaze, body positions, and gestures, by editing out distractors was exemplified by Ramey et al. (2016) as a visualization approach. This approach allowed the researcher to focus on features of the interaction related to their argument where visual transcripts serve to make decisions and document them (Fig. 3.4).

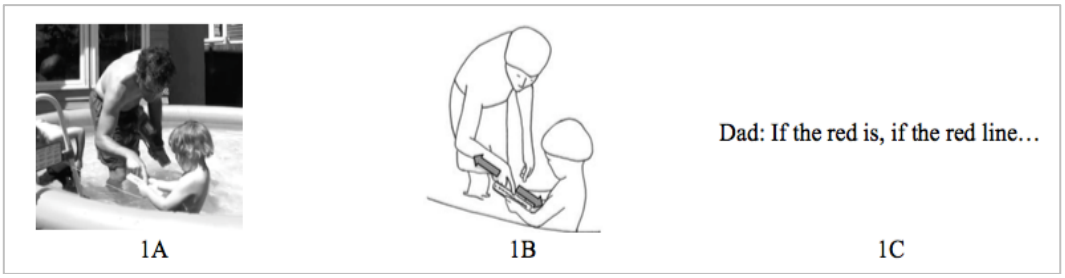


Figure 3.4 Representations of video data as a video still (1A), a sketch (1B), and a verbal transcript (1C). (Ramey et al., 2016, p. 1036)

Some video stills may require to be rendered into line drawings due to privacy and permission issues to enable communication of the findings. The line drawings can

be more advantageous when compared to small video still images for easily being reproduced. Moreover, the drawings enable emphasizing relevant details and leave others out. Several issues like resolution, image quality, and privacy can be overcome by line drawing, which allows the researcher to study the interactions, body language, and positions more carefully by visualizing the details that would not have been noticed otherwise (Ylirisku and Buur, 2007).



Figure 3.5 A line drawing providing advantages for resolution, image quality and privacy (girls testing the Lemmu cushion; Ylirisku and Buur, 2007, p. 80)

3.3 Video Analysis Tools

Different video analysis tools can be employed for qualitative and quantitative research. Quantitative video analysis tools are mostly used in sports studies for analysis of motion and postures in terms of annotation and measurement, while qualitative video analysis tools make a multimodal transcription of videos easier. The most commonly used examples can be found in Appendix H.

For quantitative video analysis tools, Kinovea, a video player for sports analysis, can be given as an example (Fig. 3.6). It is organized around four core missions related to studying human motion: capturing, observation, annotation, and measurement.





Figure 3.6 Left and Right: Kinovea software used for studying human motion which are capturing observation, annotation and measurement (https://www.kinovea.org)

For qualitative video analysis tools, Otranscribe, a basic online app for transcribing recorded interviews in which the video seconds can be pinned to annotate with written notes (Fig. 3.7).

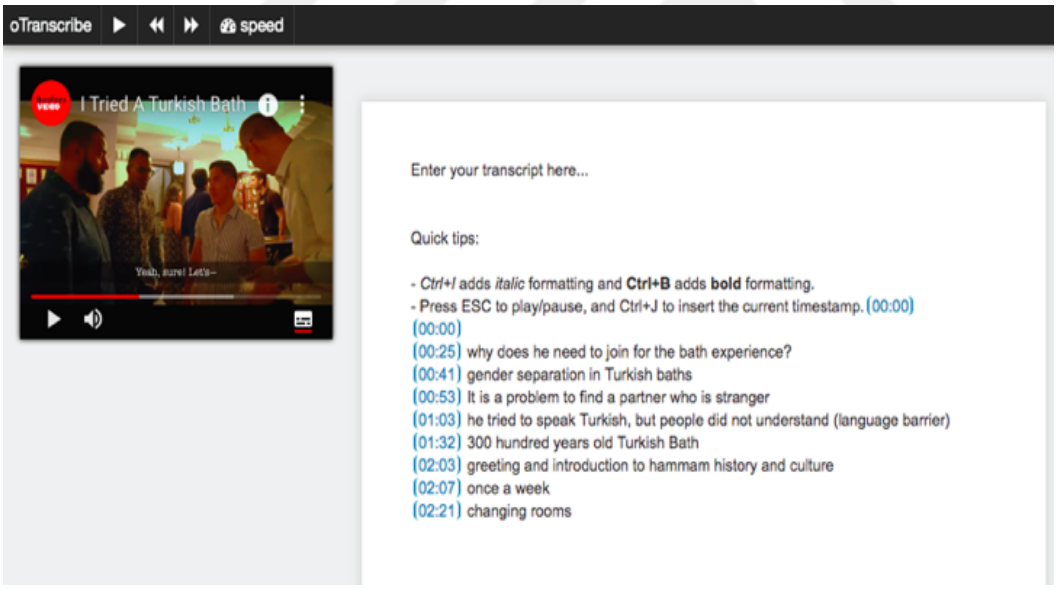


Figure 3.7 oTanscribe online transcription tool (oTranscribe)

3.4 Video Traditions in Design

Videos can be used in different research traditions, including usability studies, design ethnography, participatory design, and scenario-based design. Usability studies

identify users' problems by simulation of usage situations in a laboratory experiment. Usability researchers use video as a tool to document test subjects' reactions for analysis of the results. Ethnography, broadly defined, as a methodology used to represent everyday life. Design ethnography focuses on the broad patterns of everyday life that are important for the new product or service conception, design, and development. (Salvador et al., 1999). Design ethnography uses videos to examine potential users' everyday practices and transfer results to designers in which the users are in the role of informants (Ylirisku and Buur, 2007). Participatory design is defined as a process of examining, understanding, reflecting on in a mutual learning environment where multiple participants act with collective reflection-in-action. Participants own the two leading roles of designers who try to experience the user situation's reality and users who try to articulate their desired goals and learn appropriate technological means (Simonsen and Robertson, 2012). Participatory design involves users as participants in a design process, and videos are used to document actions and verbal and non-verbal interactions (Ylirisku and Buur, 2007). Scenario-based design is a family of techniques that describes the use of a future artifact at an early phase of the design process. Narrative descriptions are employed in various ways for the intended usage of an artifact, which guides the development of the qualities that will enable these user experiences. A user interaction scenario is a sketch of use that captures the essence of those interactions between the users and the artifact (Rosson and Caroll, 2002). The scenario-based design uses video as a medium to generate and convey stories about future user interactions with imaginary products in which users are generally actors within these stories. In the following sections, the practice of each tradition is going to be clarified.

3.4.1 Using Video for Usability Studies

Usability studies were developed in the early 1980s for making software products more comfortable to use, more efficient, and satisfying for users. For usability studies, the users are instructed to fulfill specific tasks with a mock-up, a prototype, or a finished product, and asked to think aloud during their interaction to enable the

researchers to capture their thoughts with their actions. Video is used to understand user interactions without interrupting the process and obtaining a detailed record for later studies and presentations (Ylirisku and Buur, 2007).

3.4.2 Using Video for Design Ethnography

The use of video in design ethnography originated in the work of visual anthropologists in the 1980s (Ylirisku and Buur, 2007). Design ethnography involves capturing naturally occurring data, the ongoing interaction of people in a specific context, and all aspects of the environment that structure those interactions using video cameras (Jewitt, 2012).

3.4.3 Using Video for Participatory Design

Participatory approaches have grown since the late 1990s within the context of action research and practice-based interventions that are concerned with the empowerment of people, concerning especially international development, health programs, and marginalized communities (White, 2003). Participatory methods aim at bridging the gap between the conceptions of researchers and people who are empowered to make their experiences visible (Jewitt, 2012).

Participatory approaches involve users as co-creators in the design process and enable people to generate ideas through a set of stimulus items, which are also called "generative tools" (Sanders, 2008). Video is employed to document design-related discussions and activities in these design workshop sessions (Ylirisku and Buur, 2007). Letting people self-record their practice and reviewing their constructed stories and materials for empathy and understanding their experiences is also a part of this approach (Jewitt, 2012).

3.4.4 Using Video for Scenario-based Design

The scenario-based design uses video as a medium for creating and telling stories of future use interactions with imaginary products in which users are often seen as actors in these stories. Scenarios embed the use context into the presentation of a product to enable the audience to understand the target user, the usage environment, and its functions and benefits (Ylirisku and Buur, 2007, p.23). Scenario-based design can adopt a user-centered or participatory approach. Scenarios can be acted out by designers themselves (Buchenau and Suri, 2000) or by potential users (Sveneas and Seland, 2004); both designers and users act along with each other (Iacucci et al., 2002), or professional actors perform for an audience of designers or stakeholders (Howard et al., 2002).

Table 3.2 illustrates different use of video traditions in research regarding usability studies, design ethnography, participatory design, and, scenario-based design.

Table 3.2 Examples for the use of videos in research for the design process

Usability studies		Testing a mock-up of a wireless e-mail reader with family members (Ylirisku and Buur, 2007, p. 35).
Design ethnography		Design ethnography of the mechanic's garage: "how technical knowledge and preventative car care might be supported through the design of services and artefacts?" (Martin and Hanington, 2012, p. 61).

Table 3.2. (cont'd)

Participatory design		Generative tools: the participants use creative toolkits for design input, and offer feedback on prototypes: "appliance design for the aging population" (Martin and Hanington, 2012, p. 129).
		Design probes: support empathic understanding through information gathering over a prolonged period, where the researcher cannot be present. The probe kits in this study collected user reflections on experiences through their personal stories, told using digital voice recorders, cameras, postcards, diaries, and stickers. (Kumar, 2012, p. 55).
		Self-recording: "eating and drinking on-the-go", the participants were given instructions with examples of the types of pictures they should take to document their eating and drinking habits (Kumar, 2012, p. 264).
Scenario-based design		Designers act out: the design team took a train journey themselves for gaining subjective experiences as they acted out roles assigned to each member of the team (Buchenau and Suri, 2002).
		Users act out: three health workers improvising new technology and work practice. The nurse is holding a foam model of a tablet (Svenaes and Seland, 2004).
		The designers and users, or stakeholders act along with each other: designers working with a financial services company to design new travel services (Simsarian, 2003).

3.5 Video Driven Research Methods in Design

In the previous section, the video traditions in design were discussed. There are methods employed in these video studies according to the ways of obtaining data from the people. Sanders (2001) proposes three ways for exploring what people know: What people say provides a perspective about their conceptualization of their practice; what they do uncovers issues beyond people's verbal expressions; and what they make through tangible and visual tools reveals their thoughts, feelings, and dreams. Ylirisku and Buur (2007) list four "video study methods" in relation to Sanders' framework: shadowing, situated interview, in-situ acting, and self-recording (Fig. 3.8).

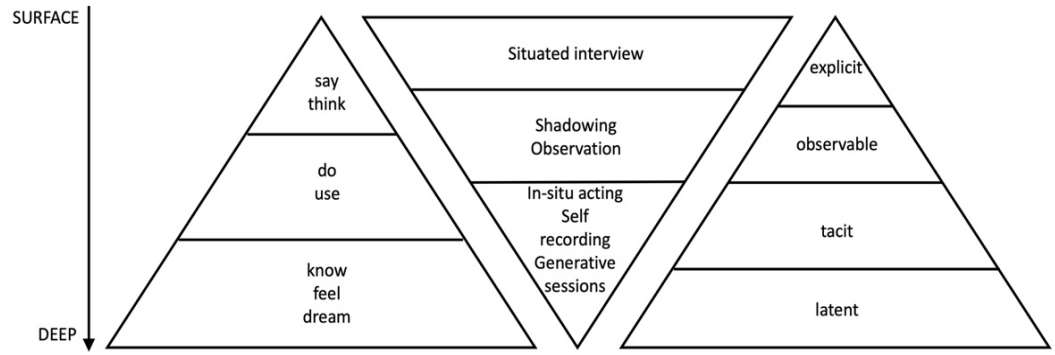


Figure 3.8 Sanders' "say, do, make" framework in relation to video study methods (adapted / combined from Sleeswick-Visser et al., 2005 and Ylirisku and Buur, 2007, p. 56)

3.5.1 Situated Interview

Interviewing is a qualitative research method that involves conducting intensive individual interviews with respondents to explore their perspectives about contexts and offer a view on people's current and past experiences (Sleeswick-Visser et al., 2005). In situated interviews, the participants have direct access to the details of their practice during the interview. Being situated in a real context helps them express themselves by introducing the tools they know in the real setting. Through the

situated interview, people can convey how they perceive the material world through their personal stories (Ylirisku and Buur, 2007).

3.5.2 Shadowing

Shadowing is an exploration method for observing people's practices unobtrusively, such as their actions, and their interactions with things and other people. Shadowing is a research technique that involves a researcher closely following a member of an organization over an extended period. When the person being shadowed walks around, the researcher follows them (McDonald, 2005). While people –who are aware of the camera– try to act predictably by providing clues such as orienting towards something, or pointing with their eyes, the designer follows them with the camera and encourages them to show things that can lead to opportunities for design (Ylirisku and Buur, 2007).

3.5.3 In-situ Acting

Acting out is employed to revive details about people's practices (Seland, 2010). In-situ acting is a method for exploring the details of people's practices by being in the real context or constructing the context as accurately as possible. Being in-situ promotes acting out existing or future situations relevant to the product or service (Ylirisku and Buur, 2007).

3.5.4 Self-recording

Self-recording may focus on documenting interactions in existing practices, capturing an individual's thoughts, or encouraging visual stories about experiences with products both current and potential (Ylirisku and Buur, 2007, p. 76). Self-recording is a form of a video diary and uncovers what people think (Raijmakers et al., 2006). Video diaries allow the users to record things from their perspective

without any interference, and their private areas voluntarily (Ylirisku and Buur, 2007).

3.6 Camera Styles for Research in the Design Process

The camera can take different roles based on its distance from the action and provides different kinds of information to the viewer of the video. The viewer can feel in the space as the camera scans the room, see another's perspective, hear the stories, see the circulation and actions in the space, and observe the details as the camera accompanies closely the person recorded (Blauhut and Buur, 2009).

The video's role and influence depend on how much attention is drawn to the camera and video recording. The designer can choose to observe as a proverbial "fly on the wall" or, at the other extreme, to actively encourage people – with the camera as a "fly in the eye" – to reflect on their practice, and how it might be influenced by a proposed product (Ylirisku and Buur, 2007, p. 49).

The different roles that the camera undertakes correspond with three camera styles: the surveying camera, the composing camera, and the engaging camera style (Table 3.3). In the surveying camera style, the camera follows the person's daily routines unobtrusively with a respectful distance. In the composing camera style, the camera, as a communicative listener, records how people move and act while keeping its distance.And the engaging camera style, as a part of the atmosphere, tries to see other people's perspectives and join the conversations to create a direct interaction to record the detailed information (Blauhut and Buur, 2009).

The surveying camera style like the "fly on the wall" is convenient for employing the shadowing method that follows people at a respectful distance. The composing camera style fits the objectives of a situated-interview in which the users express themselves by the tools and context they are familiar with, and the in-situ acting shows how people move and act. The engaging camera style like the "fly in the eye" is suitable for either a situated-interview or in-situ acting, especially for focusing on

the details of what they find valuable about their practice (Ylirisku and Buur, 2007; Blauhut and Buur, 2009; Bech, 2014).

3.7 Video Artefacts

Video provides an effective means for designers to externalize their interpretations and edit them into different kinds of video artefacts, which are video stories, collages, and portraits to facilitate exploratory research in the early phases of the design process (Ylirisku and Buur, 2007) (Fig. 3.9).

A video story illustrates how things happen and involves a combination of observations, the flow of actions, or a particular user task. A video portrait conveys empathy and is a combination of the voice, image, and activities of a person, which illustrates the person's life, attitudes, and values. A video collage shows how things could be in the future and provokes thinking and facilitates exploration of new directions or opportunities (Ylirisku and Buur, 2007) (Table 3.4).

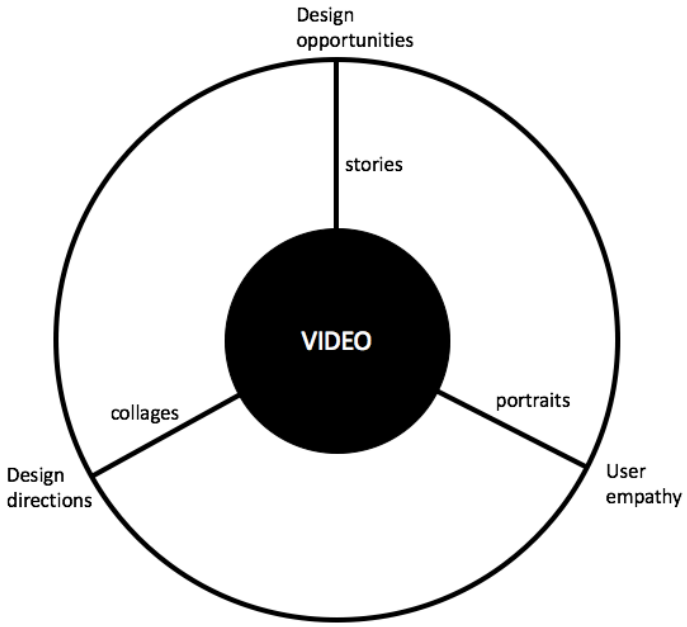


Figure 3.9 Video artefacts –video stories, collages and portraits– and their roles in design: exploring design opportunities, conveying user empathy, and providing new directions (adapted from Ylirisku and Buur, 2007, p. 118)

In a case study exemplified by Ylirisku and Buur (2007), the designers used three primary forms of video artifacts for addressing an interactive kitchen design. First, video stories of home chefs helped figure out the flow of action and the conflicts in current practice, making it possible to identify new opportunities. The practice of pinning each flow of action demonstrated how differently people prepared the dishes. Second, designers created video portraits which required slightly more editing skills than the video stories since it required capturing the essence of each person's practice and personality and then communicating this through scene se lection and editing. The subjects examined showed very different personalities in the way they cooked, in their values and preferences. Third, since everyone in the design team was familiar with cooking, in addition to analyzing the flow of actions and describing people's values; the designers edited video collages by interpreting and grouping video clips. Discussions on topics such as "the social recipe book" and "measuring with the mouth," which were discovered through a joint interpretation of the video clips, helped the design team determine how people can be seen when cooking in their kitchens.

Table 3.3 The screenshots that exemplify the surveying camera, the composing camera and the engaging camera (Blauhut and Buur, 2009, p 5-6)



The surveying camera; “Fly on the wall”	The composing camera	The engaging camera; “Fly in the eye”

Table 3.4 Video artefact representations (adapted from Ylirisku and Buur, 2007)

Video artefact	**illustrates, conveys, provokes...**				
Video story	how things happen	combination of observations	flow of actions	particular user task	 The video story shows the actions of the task of making of lentil soup
Video portrait	who s/he is	voice, image and activities	life, attitudes and values		 Video portrait: Tanja the Gourmet
Video collage	how things could be in the future	exploring new directions	exploring design opportunities		 Video collage: The skilled knife (Video collage on various ways of using the big knife)

3.8 Video Card Game

The video card game developed for the industry aims to create a social process inspired by participatory design (Buur and Sonnengaard, 2000). In the video card game, a set of visual cards representing the video clips are prepared before the game. Participants choose the cards, make quick observation notes, and annotate them as they watch the video clips, group the cards according to their priority, and then present the reason behind this structure. Then they choose the favorite group of cards, find a theme for it, and contribute to the themes of other participants with their cards until they are finished fostering idea generation (Lucero et al., 2016) (Table 3.5).

Table 3.5 Video card game (adapted from Lucero et al., 2016, p 88-90)



1- Video cards representing eight selected video recordings from user research
2- Two video cards annotated with observations after watching each clip
3- The participants watching video clips in pairs from a laptop computer
4- One participant writes down notes with the pair's observations from that particular video clip
5- One pair arranging their hand by grouping their cards on the table
6- The resulting groups of cards and their corresponding titles
7- Discussing the posters with video card themes and notes

The role of the video card game is to explore inspiring themes. To elaborate on this with an example, a design team at a pharmaceutical company that develops products for the treatment of diabetes, decided to work through video recordings rather than direct collaboration with people for not to enter people's private lives while gaining insights into the daily lives of people with diabetes. The video card game was organized for the team to learn about their "users" while collaboratively analyzing the video to identify design opportunities. They together watched and discussed a video clip and in which a diabetic person was eating his breakfast. One of them focused on the identified person as an alternative, while the other was interested in the syringe with which the man injected his insulin. He then noticed that the person was eating breakfast out in public, which triggered the other participant to focus on the personality, not being particularly shy to inject himself in public, which brought out the new theme "public diabetic." This dialogue between the two participants illustrates that people sense different things from the same video. Writing on the

video card was useful to encourage participants to collectively reflect on what is essential in the video (Ylirisku and Buur, p. 111-114).

3.9 User-generated Videos and Research for Design Process

According to Pink (2007), visual content generated by a researcher with a particular research agenda in mind may be re-appropriated based on the viewer's perspective. She exemplifies this with students' diverse perspectives when shown a series of pictures of a woman bullfighter's performance, involving anti-bullfighting discourses or interpretations based on Spanish cultural context, which were quite different from bullfight aficionados' interpretations who focused on details of the bullfighter's technique and her female body (Pink, 2007).

Similarly, an existing video that was initially recorded for other purposes can be addressed in different perspectives and repurposed according to the current design project's needs. For instance, the same video content might be used with a different focus: For a "kitchen container design" project, the focus might be interacting with various containers and situations around storing, moving and fetching the ingredients, while for a "mobile digital kitchen" project, information flows in the kitchen would be of concern (Ylirisku and Buur, 2007).

The growing use of video in people's everyday lives, in institutional practices and public spaces, provides researchers with naturally occurring video data with detailed expressions, body postures, and gestures (Jewitt, 2012). With the advancements in information technology, high-quality video cameras in mobile phones or webcams, and free and easy video editing applications, user-generated content (UGC) has become a promising research resource.

Many researchers use existing videos such as security camera recordings, broadcast media, and YouTube videos, as a data source and repurpose them (Whiting et al., 2016). The repurposing of existing video data for video-based research, let it be from an archive, video-sharing websites, or an institution's video database, requires the researcher to understand the background, context, purpose, audience, and how they

are reflected in the video (Jewitt, 2012). Free video-sharing websites allow subscribed members to generate, upload, and share content varying from homemade videos to movies (Lange, 2007).

Using existing videos involves an extractive mode that presents the researcher with a representation of a phenomenon under study neither produced by the researcher nor for the research. It is a research study that enables using the methods employed for other forms of video. In the following section, video use modalities that are specific to design will be discussed.

3.9.1 User-generated Content (UGC)

With the advancements in information technology, high-quality video cameras in mobile phones or webcams, and free and easy video editing applications, the digital and internet technologies have become a part of our everyday lives and unfolded new social behaviors in turn (Tapscott and Williams, 2006). These new habits of producing media content were accompanied by the voluntariness of people to share their lives with others (Blossom, 2009). Today people visualize their experiences and express themselves through texts, photos, and videos to their peers and people around the world and take a more active and collaborative role in content generation and consumption on the internet (Wunsch-Vincent and Vickery, 2007).

User-generated content (UGC) is publicly available over the internet, which reflects a certain amount of creative effort, is created outside of professional routines and practices by the user (Vincent and Vickery, 2007). Various types of UGC, such as personal diaries, professional portfolios, or travel journals, may be utilized as rich data sources for research (Hardey, 2011).

With emerging forms of social life that are noteworthy for their diversity, accessibility, and persistence, these materials have attracted the attention of researchers across diverse disciplines (Berry, 2004). As a medium for self-documentation, UGCs can be used indirectly for exploring the users' experiences, values, behaviors, activities, environment, associations, and attributions, as people

voluntarily attribute meaning to them (Jewitt, 2012). Accompanied by titles and brief explanations, the content is also equipped with search opportunities.

UGC provides descriptive representations of real users' experiences through visual materials. User-generated online video content has become a topic of discussion and inquiry within the scholarly literature, with a particular focus on their potentials and pitfalls in teaching and learning (Snelson, 2009; 2011).

Much anonymous user-generated content may enable empathic inferences without meeting the users directly. As a free and expanding source, UGC platforms have the potential for exploratory research in the early phases of the design process for the designers who have limited professional experience and resources (Mura, 2014) and provide a productive environment for research and learning. During the early phases of the design process, designers need to explore the problem domain to form a sufficient background about it. In cases where designers do not have direct access to users for exploratory research in the early phases of the design process, other sources such as UGCs may provide rich data for research and support designers in gaining design insights for idea generation.

3.9.2 User-generated Video Content (UGV)

User-generated videos (UGVs) have different potential among other UGCs. These materials are different from other media because, first of all, the UGVs are promising and arise for designers as a learning medium that is convenient, accessible, and abundant in quantity. The social sphere channels such as YouTube come into prominence for specific features, making them advantageous agents such as easy-to-use, easy-to-access, and easy-to-upload and providing longitudinal data.

Online video's versatility, accessibility, breadth of content, and up-to-date materials afford both tutors and students opportunities to shape and contribute to course content and increase student engagement in classroom discussions and activities. A significant challenge lies in harnessing the potential of these expanding resources as learning tools. Incorporating online videos in the design and delivery of a college

course provides endless opportunities to enhance class and homework activities while simultaneously developing students' skills (Sherer and Shea, 2011).

There are several free video sharing sites to watch and upload videos such as YouTube, Blip, Dailymotion, Vimeo, Vine, and Metacafe. Among them, YouTube is the leading video sharing site (Netpaths, 2018; eBizMBA, 2018). The domain name "YouTube.com" was activated in 2005. Currently, it can be navigated in a total of 76 different languages, which cover 95% of the internet population. According to YouTube usage statistics, YouTube is the world's second-largest search engine and third most visited site; 400 hours of video are uploaded to YouTube every minute, and over one billion hours of YouTube video a day are watched. On average, there are one billion mobile video views per day (Brandwatch, 2018). Although other video sharing platforms such as Vimeo may be gaining popularity, YouTube is dominating the online video sharing platforms because it keeps itself up-to-date with the technology. It plays a pioneering role in introducing new video formats to the online community, enabling the upload of high-resolution videos unless they violate copyright laws (Rival IQ, 2018). The type and length of the video content on YouTube varies (Fig. 3.8); the average video length is the shortest for "Trailers" and the longest for "Movies"; "People and Blogs" is the category with the highest volume of upload, 41% of all videos uploaded to YouTube; the "Gaming" category follows it by 14 %. While YouTube is famous for music videos, they constitute only 5% of all videos, which is a rather small percentage.

Today we see that online video content-sharing is a prominent resource of information. Many people engage in constructing knowledge or seeking information from online content-sharing destinations, particularly YouTube, which creates a social, digital community interested in a particular topic (Oum and Han, 2011). Although seen as a medium for entertainment rather than an educational tool by many, YouTube can be used as an innovative and efficient learning medium (Lee and Lehto, 2011).

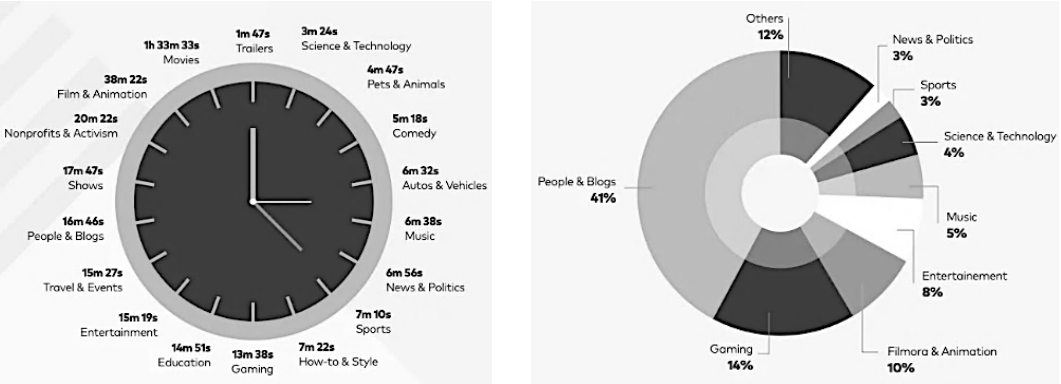


Figure 3.10 Left: The average video length uploaded on YouTube, 2017; Right: Video uploads by category in 2017, retrieved December 2019, from https://filmora.wondershare.com/YouTube-video-editing/mind-blowing-YouTube-stats-facts-2017.html

A study conducted to obtain a consensus from experts about research priorities in video content-sharing technology showed that the second-highest priority category involved investigating its impact on transforming education such as classroom use in various educational settings (Snelson et al., 2012). There are many scholarly examples of usage of YouTube videos in nursing, clinical skills, surgical education, etc. (Duncan et al., 2012; May et al., 2013; Basch et al., 2017).

Lee and Lehto (2012) conducted a study to identify why people use YouTube for learning. According to them, acceptance of and intention to use YouTube as a learning source depends on the ease of use and usefulness of it. As an easy-to-use information source, it is seen as useful; this satisfies users and thus positively affects the intention of using it for learning in turn. The usefulness of YouTube is related with the preferred way of learning such as visual learners would prefer visual media; as well as providing fresh and diverse content that correspond to users' information needs, being a rich sensorial environment and people's beliefs in their own ability to utilize YouTube for learning (Lee and Lehto, 2012).

Apart from discussions regarding research or learning, videos are also seen as valid sources for fostering new media literacy and cultivating global citizenship and empathy among students around the world. .For instance, The Global Lives Project initiated in 2014 (globallives.org) offers a video library comprised of a collection of

films recorded by amateur filmmakers that capture lives of individuals from around the world which aims at encouraging students to explore the diversity of human experience and empathize with people outside of their communities.

3.9.3 Ethical and Technical Considerations in Using UGVs

The use of videos as a source of data for design has a considerable history; videos used for design ethnography or usability studies (Ylirisku and Buur, 2007); yet, the use of user-generated videos for research purposes remains a relatively less explored area. Several considerations make the use of user-generated video challenging that a researcher needs to approach cautiously. All UGVs might not be suitable to be employed as research material. In the literature, we come across several discussions about technical and ethical issues regarding utilizing UGVs as research material.

The technical limitations of the use of video and user-generated video, particularly in social research, originate from the current state of having a few guidelines and the difficulty of linking video-based data to the theories of conventional social research (Jewitt, 2011). Firstly, as research material, user-generated videos as data need to fulfill specific criteria. For a video to be available for research, it should capture the essence of an event, provide the viewer with a sense of being there, represent the order of events to make the meaning comprehensible, and make the video recorder's point of view clear (Goldman, 2007). Repurposing existing videos for research requires understanding the background, context, purpose, and audience, how they are reflected in the video (Jewitt, 2012), and awareness of ethical, credibility, archival, and representational issues.

Ethical Issues. In terms of ethical limitations, the ease of sharing and accessing video particularly in a context of social networking such as YouTube can raise concerns when negotiating research access, such as anonymity which can be addressed by negotiation, and the development of consent protocols for different aspects of the use of the video data (Jewitt, 2011).

There has been an ongoing debate in the context of online research concerning privacy, confidentiality, informed consent, and repurposing of data about individuals' lives (Bakardjieva and Feenberg, 2001; Berry, 2004). Some argue that UGCs need to be private for being an individual's life story; on the other hand, there are arguments which classify UGCs as non-private material intentionally made public and accessed freely, and therefore not requiring special permission.

Several universities provide guidelines regarding considerations and recommendations concerning internet research and human subjects research or research involving the secondary use of existing data. In these guidelines regarding research based on the secondary use of existing data provided by human protection committees, it is denoted that informed consent from the authors of the content is not a requirement since they are not considered human research. Data, although contain identifiers but can be accessed freely by the public without special permission or application, are not considered to be private. Secondary data, such as data from the internet, is regarded as human subjects research as long as data about individuals is both private and identifiable. Studies involving publicly accessible forums or comments sections where users do not expect privacy (e.g., New York Times, YouTube, etc.) are unlikely to be evaluated under human subjects research. (Cornell University, Human Research Participant Protection Program, 2014; the University of Berkeley, Committee for Protection of Human Subjects, 2016; University of Chicago, Social and Behavioral Sciences, 2014).

In August 2019, YouTube announced privacy politics, especially regarding the children due to Children's Online Privacy Protection Rule (COPPA) officially coming into force in 2013. They informed the families that upload video content involving the children about the risks and the precautions.

Credibility Issues. Besides ethical issues, the credibility of UGC has also been questioned. Credibility is based on two major factors: trustworthiness and expertise. Trustworthiness refers to the morality of the source and can be described with terms such as well-intentioned, truthful, or unbiased, while expertise refers to the perceived knowledge of the source and can be described as knowledgeable, reputable, and

competent (Tseng and Fogg, 1999). The information in the UGVs is the author's self-reported image or profile involving a username, usually a nickname, and the content with a title and date posted in the logs (Juffinger et al., 2009). Deception, unstated bias, and incompetence or lack of authority in the source are common problems of credibility for UGVs (van House, 2004).

Archival Issues. One of the critical issues to consider when researching digital platforms is well-founded data documentation, protection, and author permitted archival (Domingo et al., 2014).

Representation Issues. The possibility of representation of the elderly or people from lower-income groups via UGVs is another issue. Although the content uploaded by other people might include them or environments of them, they are less likely to be represented (Wunsch-Vincent and Vickery, 2007). This might limit access to these people and their environment (Mura, 2014).

Despite the arguments on the necessity of informed consent for internet research, the ethical responsibility can be fulfilled by using the data regarding an individual's life anonymously or by disguising her/his identity. Concerning credibility, a prior literature review from credible sources, as well as feedback regarding the content from the experts, may provide a background to evaluate the credibility of UGVs. For using such materials to trigger discussions and gain insights in an educational context, sophisticated archival issues are not the primary concern. When these issues are considered thoroughly, UGV can be a rich source of data for designers, especially for exploring unfamiliar problem domains. It is suggested that the users for the design projects need to be chosen among people represented in user-generated media (Mura, 2014).

CHAPTER 4

ROLE-PLAYING AS A SUPPLEMENTARY TECHNIQUE

The earliest use of role-playing can be traced back to Ehn and his colleagues' project, where skilled graphic users used mock-up simulations to pretend that they were doing a page make-up (Bodker et al. 1997; Ehn, 1988). Those mock-ups simulated computer page make-up, a more fruitful approach in enabling the workers to participate. According to Ehn (1988), a focus on non-linguistic artefacts in the form of physical props to employ in an embodied process enable users to share their ideas.

In the 1990s, several interaction research groups started to experiment with different variations of role-playing in design. One of them was Interval Research Group, where Burns and his colleagues worked together. Burns et al. (1994) introduced the concept of informance as a design technique where designers role-played as users with simple prototypes as "props."

Since then, researchers in the design fields in different countries have employed role-playing methods in various ways. Apart from the difference in the rationale that motivates different techniques, these methods also differ based on who acts out, what performance or theatrical techniques are used, what role the role-playing plays within the design process, where the role-playing is carried out and where the prototypes come from (designed through the process or created beforehand) (Seland, 2006).

Role-playing is both employed within a user-centered and participatory design tradition. Boess et al. (2007) adopted a user-centered approach. They summarized the rationale for role-playing in design as dealing with complexities brought by technology, empathizing with users with lived and bodily experience, enhancing communication within the design process, and attentiveness to social change. Seland (2006) by adopting a participative approach, reported the reasons given by the authors for employing role-playing in design as understanding users and context

(Buchenau and Suri, 2000; Simsarian, 2003; Rodriguez et al., 2006); exploring, generating, evaluating and communicating ideas (Buchenau and Suri, 2000; Barandt and Grunnet, 2000; Iacucci et al., 2002); and involving users by creating a collaborative space between users and designers (Binder, 1999; Barandt and Grunnet, 2000; Svanaes and Seland, 2004). As seen, role-playing within the participatory mindset has been concerned with user involvement in the design process, while the user-centered design mindset has been more concerned with role-playing as a designer's technique for understanding users and context (Seland, 2010).

The technique can be used for different purposes in the design phase it is employed. It can be employed in the early phases to explore a particular situation or generate design ideas and improve them further. In the later phases, it can be used to evaluate and test prototypes (Boess et al., 2008). The authors' most referred theoretical perspectives are from the theatre with a particular focus on becoming the other and social sciences domains that focus on the internal process of the designer, such as reflection in/on action (Seland, 2010).

4.1 Theories and Concepts Concerning Role-playing

There are two main areas that role-playing as a design technique is built on. One of them is performing arts, and the other is social sciences. Concepts derived from performative arts mostly refer to improvisation and its rules, while concepts from social sciences refer to the cognitive side of the technique.

4.1.1 Theories and Concepts from the Performing Arts

The Forum Theatre is improvisational, employing principles of Brazilian Augusto Boal's "Theatre of the Oppressed" (Boal, 1974), which explores ways to empower politically and socially oppressed people. It begins with presenting a problem, in which the audience gets involved in the performance by suggesting ideas or acting out (Brandt and Grunnet, 2000). Another concept is Johnstone's improvisational theatre techniques, which set up restrictions and guidelines (Johnstone, 1979), such

as acting out a specific user than any user (Brandt and Grunnet, 2000). The other concept is Russian actor-director-teacher Stanislavskij's "The magic if" technique (Stanislavski, 1940) in which actors envision themselves in the position of the acted person (Brandt and Grunnet, 2000). One other concept is Eugenio Barba's "theatre anthropology" (Barba and Savarese, 1991), which suggests that consciousness in performances fosters reflective thinking (Iacucci and Kuutti, 2002).

4.1.2 Theories and Concepts from the Social Sciences

Iacucci and Kuutti (2002) refer to Schön's reflection-in-action concept (Schön, 1991), which means thinking about what one is doing while doing it. Role-playing sessions enhance "reflection-in-action" by providing consciousness while performing (Iacucci and Kuutti, 2002). Oulasvirta et al. (2003) put forward concepts from cognitive psychology to explain why role-playing may enhance idea generation. Being in simulated or real environments, externalizing representations provide contextual cues to the designers and users, helps them retrieve personal memories more effectively (Oulasvirta et al., 2003). Shared understanding and creative participation for exploring, generating, communicating, discussing, and evaluating design ideas is another concept (Sato and Salvador, 1999; Buchenau and Suri, 2000; Iacucci et al., 2002; Simsarian, 2003).

4.2 Factors that Cause Variations in Role-playing

Role-playing can play many different roles in design and can be employed in various ways. Although these variations in role-playing are mostly formed due to the tradition used in theoretical backgrounds, purposes, and phases, there are more specific factors that accompany it.

According to Iacucci et al. (2002), who reviewed cases that employed role-playing for design, these variations originate from the role of the participants (actors) and the quality of context, such as being real or staged. Seland (2006) reports these factors in more detail by addressing the following questions: "Who does the actual acting

out (end-users, designers, professional actors)? Where do the props/prototypes come from (designed in the role play, designed beforehand)? Where (context) is the role-play being done (in the field, in a lab, in the designer's studio)? Where do the scripts come from (improvised through the role play, given beforehand, based on field studies)?" Another critical point to consider is the presence of the audience and their roles during the improvisations (Hosseini, 2009), and the presence and role of the facilitator, moderator or supervisor (Seland, 2006; Buchenau and Suri, 2000).

4.3 The Actors of Role-playing

In role-playing for design sessions, the designers can be actors that act out as users. Burns et al. (1994) narrate a design process in which the design team improvised (bodystormed) in a studio by using simple props, based on observational data. Buchenau and Suri (2000) describe different situations in which designers act out to experience through prototypes and explore, communicate, and evaluate design ideas. When designers role-play a user's experience, they may need to use simulators. Simulation exercises and simulators will be explained further in this chapter.

Potential users can also be actors. Iaccucci et al. (2002) conducted several case studies that used performances to involve users in the design process for exploring, generating communicating, and testing ideas. Svanaes and Seland (2004) describe a workshop structure in which potential users explore future work practices and technologies through role-playing, scenario building, and low-fidelity prototyping.

Both users and designers can act out along with each other. For example, in a workshop by Bodker et al. (2000), users were asked to talk to a "wizard-of-oz" screen dubbed by a designer, to explore how they would use new technology. In the Wizard-of-oz technique, a researcher acts as the "wizard" that simulates the system behind the scenes, while users interact with (Martin and Hanington, 2012).

Professional actors can act out for a group of designers and/or other stakeholders such as users or clients. Sato and Salvador (1999) discuss a role-playing session in which designers and professional actors acted out scripts and presented the product

concept with a prop to an audience of potential users for initiating discussions. Howard et al. (2000) address a workshop in which actors enact scenarios of using a technology provided by the design team beforehand, and designers and users suggest product features during the performance. In Marquis-Faulkes et al. 's work (2003), professional actors acted out scenarios of using a home monitoring system, which was video-recorded to be later shown to and discussed with the elderly.

4.4 The Role of the Facilitator in Role-playing

Various authors discuss the difficulties of managing a role-playing session in terms of participant engagement, familiarization to drama techniques, overcoming the feeling of frustration or uncomforting during role-playing sessions (van der Lugt et al., 2012; Oulasvirta et al., 2003; Svanaes and Seland, 2004; Rodriguez et al., 2006)

Van der Lugt et al. (2012) asserted that people might feel uneasy and need support to be brought into the mood for play for acting out. Similarly, Oulasvirta et al. (2003) also addressed the hesitation of participants for acting out who were unfamiliar with role-playing. Svanaes and Seland (2004) discussed the designers' problems regarding unfamiliarity with role-playing and feeling comfortable when acting out as users. Rodriquez et al. (2006) stated that managing a role-playing session was difficult for both workshop organizers and participants without prior experience. To cope with these problems, Svanaes and Seland (2004) asked a theatre instructor to direct the role-playing workshops while Rodriquez et al. (2006) stated that they conducted these sessions with the help of a role-play facilitator.

Role-play facilitator's instructions influence the participants' experience of the reality and engagement of role-playing (Seland, 2009). Buchenau and Suri (2000) exemplify role-playing a train journey experience where a professional actor familiar with improvisational theatre techniques acted as the facilitator. During role-playing sessions, the facilitator instructed one designer who acted out a traveler with "Buy a return ticket for yourself and a child," while directing another designer who acted out a ticket machine to be "very helpful and friendly" (Buchenau and Suri, 2000).

4.5 Context of Role-playing

The role-playing space can be featured in very different ways. Closed spaces that simulate the original space by employing simple decor and props can be chosen for role-playing, making it easier to conduct and manage it (Hosseini, 2009). For example, for developing electronic services for refrigeration technicians, Brandt and Grunnet (2000) turned a room into a stage representing different locations such as the car, the road, the supermarket, and home. Simple decor, like boxes and chairs, were used for setting the stage.

Role-playing sessions can also take place in real contexts. For example, to explore a train journey experience, the design team first role-played in a staged space, and then, to bridge the gap between prototyped and real experiences, they explored passengers' experiences in the context of their own train journeys. When role-playing sessions are integrated into the everyday life of users, although they do no play imaginary roles, these enactments can still be considered to be role-playing where users can experience a prop and imagine it to be a real product that can fulfill their needs (Hosseini, 2009).

4.6 Improvised or Scripted Role-playing

Role-playing sessions in design can be based on a script formed beforehand and improvised without a script. As stated by Seland (2006), there are different sources of scripts.

The designers can write scripts based on their observations from a field study before the role-playing session (Howard et al., 2002). The users, as participants can write and develop the scripts through improvisations during the role-playing session (Svanaes and Seland, 2004). The designers can write based on users' stories narrated in a prior workshop, followed by the role-playing session (Kankainen et al., 2005). The workshop organizers write beforehand and are developed by the participants (Rodriguz et al., 2006).

While improvisation in theatre happens at that moment and is not based on any previous decisions or scripts, Johnstone (1993) suggests that it is easier to work with a set of guidelines or instructions than improvising freely for improvisational theatre. From a design perspective, it should be more comfortable for the actors to improvise with guidelines or instructions (Brandt and Grunnet, 2000), and the predetermined sequence of scenes which contain the scene's rules, goal, and roles of the actors and audience ensures that necessary activities and contextual situations are covered (Buchenau and Suri, 2000).

Burns et al. (1994) start role-playing with observations. A scenario, based loosely on the observations/reviews, is written. Based on the scenario, props are generated. Through these scenarios, designers improvise with props, explore, and generate ideas. Then designers act out in front of an audience to visualize and communicate their design ideas. A similar sequence of activities for role-playing is also suggested by Simsarian (2003) with a slight difference. While both express experiences as the source of inspiration through improvising, Burns et al. (1994) suggest that the improvisations need to be based on a scenario built on previous research. Simsarian (2003) suggests that building a scenario based on experiences through improvisations would be better. In both cases, the users are involved. Boess et al. (2007; 2008) who use role-playing in an educational context in which the users are not involved in the role-playing sessions, asked students to start by taking a situation from the prior contextual user research, setting a scene within that situation, defining characters and their relationships, improvising and then settling on a story, acting it out, and visualizing the experiences. All these cases, whether involving users directly in the role-playing sessions or not, make previous knowledge about users prioritize building a scenario or the role-playing activity.

The scripts usually involve issues regarding setting, social norms, and behavior of people, the problems that people face while performing a particular practice, goals, and motivations in different situations that inspire the people's decisions and actions, emotions and experiences they face, interactions, ergonomics and conditions (Iaccucci et al., 2000; Simsarian, 2003; Hosseini, 2009).

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The scripts usually involve issues regarding setting, social norms and behavior of people, the problems that people face while performing a certain practice, goals and motivations in different situations that inspire the people's decisions and actions, emotions and experiences they face, interactions, ergonomics and conditions (Iaccucci et al., 2000; Simsarian, 2003; Hosseini, 2009).

4.7 The Role of Props and Prototypes

Props are dummy physical representations that simulate future products and are employed during role-playing sessions (Iaccucci et al., 2000). They have varying qualities aiming at different purposes. First, designers employ props to involve users in the design process to generate ideas. For example, users can improvise around a given theme by using props (Brandt and Grunnet, 2000), or imagine and show by acting out how they would use props in everyday work (Binder, 1999). For example, while acting in-situ in a hospital, the physician needs a paper form for ordering a blood test from the nurse, however during improvisation, the physician can realize that he can order this form by using the prop representing his PDA. He attaches a post-it note on the prop by sketching what he wants to see on the PDA like "order blood test" (Seland, 2006). Secondly, props help designers to furnish the stage of role-playing and enable designers to explore, generate, and evaluate ideas through the experience they afford, like tactility and physicality (Buchenau and Suri, 2000). Game boards can also be employed for role-playing exercises. For instance, Iacucci et al. 's (2000) method comprise elements like toy characters, environment representations, incident cards, and game rules.

Props can take different roles in an educational setting based on the design phase in which role-playing is employed. In the early phase, props can be employed for exploring a particular situation or generating design ideas and improving them further. In the later phases, they are used for evaluating and testing prototypes (Boess et al., 2008).

4.8 Visualization Techniques for Role-playing

A visualization technique for role-playing is the photoboarding technique (van der Lugt et al., 2012), which bridges between storyboarding and acting-out techniques. Designers set up a scenario and act out a series of scenes captured with a digital camera, printed vaguely in greyscale using a fast printer, and laid down in a storyboard collage with added captions and annotations. Reviewing and discussing

photoboards as a group usually leads to new insights that can be acted out and worked into the photoboard again. Boess et al. (2007) call this technique a "storywalk collage."

Figure 4.1 illustrates a photoboard sequence about brother and sister fighting over the TV's remote control, and father placing the control out of their reach (van der Lugt et al., 2012). The collage in Figure 4.2 shows two alternative stories for waiting at the station; the top one is depicting the involvement of a design intervention that brings the story to a happy end (Boess et al., 2007).



Figure 4.1 The photoboard sequence (van der Lugt et al., 2012, p. 80)

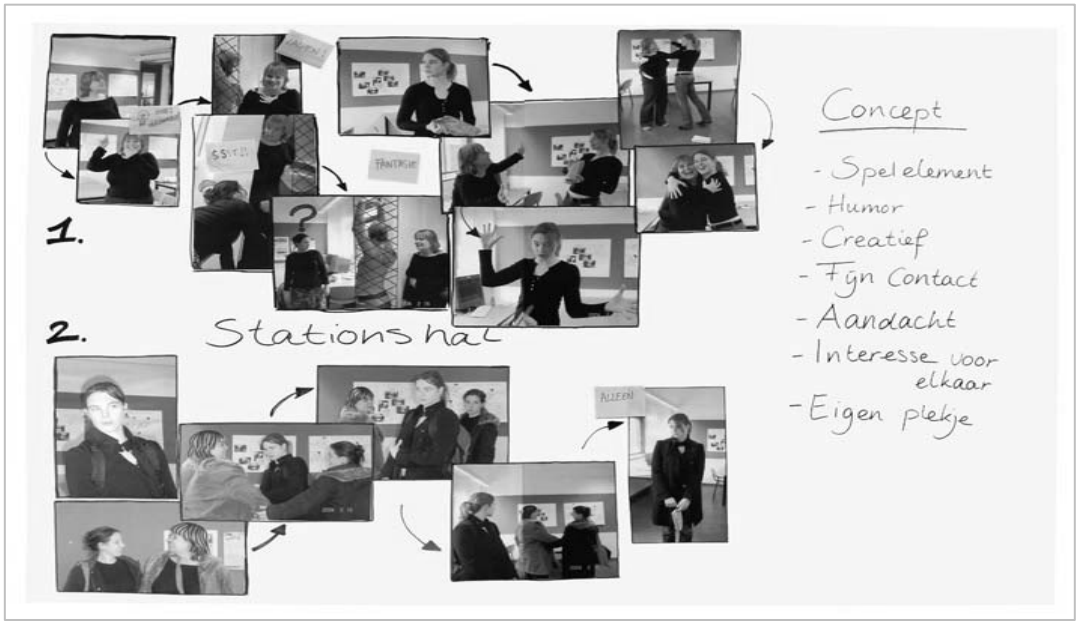


Figure 4.2 The collage shows two alternative stories for waiting at the station (Boess et. al., 2007, p. 280).

4.9 The Most Common Techniques of Role-playing

Several role-playing techniques are used in the design process. Some of the techniques address the designers as actors. These techniques aim to help the designer to emphasize with the users and situations in an embodied way. Some of these techniques consider the users of a particular artefact as the actors who experience specific situations through role-playing while the designers to be informed observe or record these performances. Other techniques involve both the designers and users to the role-playing process as actors. These performances are considered participative since the experience is shared between the stakeholders of the problems or situations that aim to be uncovered through acting out.

4.9.1 In-situ Acting

In-situ acting is a technique developed for overcoming the difficulties in observing real users in their own context duration of the design project is short. Although acting out does not meet the real activities at all, building up the context as close to the real one as possible and employing props if required helps the designers and users experience situations and explore the details of the practice. The acting out process is recorded and documented through videos (Ylirisku and Buur, 2007).



Figure 4.3 Capturing schoolhouse caretaker in action who acts out a situation where he uses the prop that he has designed for his work (Ylirisku and Buur, 2007, p. 73)

4.9.2 Informance

Burns et al. (1994) from Interval Research Group introduced the concept of "informance" as a design technique where designers role-played as users, with simple prototypes as "props." With a user-centered design approach, they used role-playing to improvise a technology to be used in a hair salon. Later, they acted out the detailed scenario in front of their peers to communicate their design concept and the context of use and, thereby, named the technique "informance." According to Burns et al. (1994), the nature of informances is enactive and evaluative like user testing; however, unlike user testing, they are intended to explore design ideas in ways that are generative (Burns et al., 1994). A year later, they described a spontaneous improvisation to explore design alternatives in their brainstorming sessions, which was later defined as bodystorming (Seland, 2009).

4.9.3 Bodystorming

The bodystorming technique is also credited to the Interval Research Group (Burns et al., 1995; Martin and Hanignton, 2012). Interval Research (Burns et al., 1994; 1995) invented the terms "informance" for informative performance and "bodystorming" for physically situated brainstorming to describe the differences between how role-playing is employed for different purposes (Buchenau and Suri, 2000). Bodystorming is physical brainstorming, which is experiential, and generative, combining active role-play with props, employing role-playing to inspire new ideas through empathic and spontaneous prototyping (Martin and Hanington, 2012). Burns et al. (1995) defined bodystorming as "repping: reenacting everyday peoples' performances and living with data in embodied ways by performance and improvisation" (p. 119).

Through bodystorming, designers immerse themselves in situations as they move through a constructed context while paying close attention to interactive experiences and emotional responses. While traditional role-playing helps to gain an empathic

sense of users, bodystorming encourages active idea generation, and even idea testing (Martin and Hanington, 2012).

"Props" used in bodystorming are not complex. Cardboard or foam can be used for building up the scene; boxes or existing furniture can represent fixtures, landmarks, or obstacles. Besides, scenarios may be partially scripted from observations, while bodystorming is spontaneous to encourage improvisation to capture real-life situations. (Martin and Hanington, 2012).



Figure 4.4 A design team acting out with a financial service company employees to design new travel services (Simsarian, 2003, p. 1013)

Oulivistra et al. (2013) approaches to bodystorming differently and claims that it attempts to solve the problem in the real context. In this way, they contrast it with “traditional” brainstorming conducted in an office environment. In some cases, participants are encouraged further not just passively observe but also act out the activities. Generated ideas are recorded on-site and later discussed and elaborated in groups. Bodystorming is, essentially, brainstorming conducted “in the wild.” The key idea is not to use brainstorming for inducing creative ideas, but the idea of “being there” and living with data in embodied ways (Oulasvirta, 2013). The critical idea in bodystorming is that participants have descriptions of a problem domain (i.e., design

questions) beforehand so they can concentrate more on the description of the problem's aspects. This idea requires a pre-research phase before the bodystorming session (Oulasvirta, 2013). The bodystorming technique has similar qualities with in-situ acting; however, bodystorming is brainstorming activity in situ, while the other requires bodily experience sometimes with props and real objects.



Figure 4.5 Conducting bodystorming at a grocery store: observing customer activities without disturbing them (Oulivistra et al., 2013, p. 128)

4.9.4 Experience Prototyping

Experience prototyping is a technique that enables design team members, users, and clients to gain first-hand experience of existing or future situations through active engagement and subjective experience with prototypes. Buchenau and Suri (2002) employed it for three critical design activities: understanding real experiences, exploring design ideas, and communicating design concepts.

Understanding existing user experiences. Experience prototyping here is applied to understand the context and to identify design opportunities. The aim is to attain a high-fidelity simulation of an environment that would not be accessed directly since it is unsafe, unavailable, or expensive. For instance, for experiencing a train journey,

IDEO design team explored different types of travelers, their needs, and various unexpected situations during specific stages of a train journey (e.g., entering the station, ticketing, waiting, riding the train, connecting to other means of transportation) with role-playing (Buchenau and Suri, 2002). The scenes were introduced by a card with rules, explaining the goal, and the roles of actors and audience. A professional actor familiar with improvisational theatre techniques acted as the facilitator by giving instructions such as "buy a return ticket for yourself and a child", playing "the role of a ticketing machine" or considering different conditions such as "wearing gloves on" or "dark and windy." In the following phase of the research for the same design task, the team took a train journey themselves, and to encourage exploring unusual situations or opening their minds to various experiences, they gave specific tasks to each other such as "pretending not being an English-speaking person" or "being hungry, and finding something to eat." This exercise aimed at bridging the gap between real and prototyped experiences where the context and people were real, but the designers' feelings and behavior were mixed with performance and acting (Fig. 4.6). The key idea in both these role-playing experiments is to have the designers explore by themselves that makes them easy to understand and discuss. These real and owned experiences, according to Buchenau and Suri (2000), help for subjective, memorable influences that guide the designers throughout all phases of the design process.

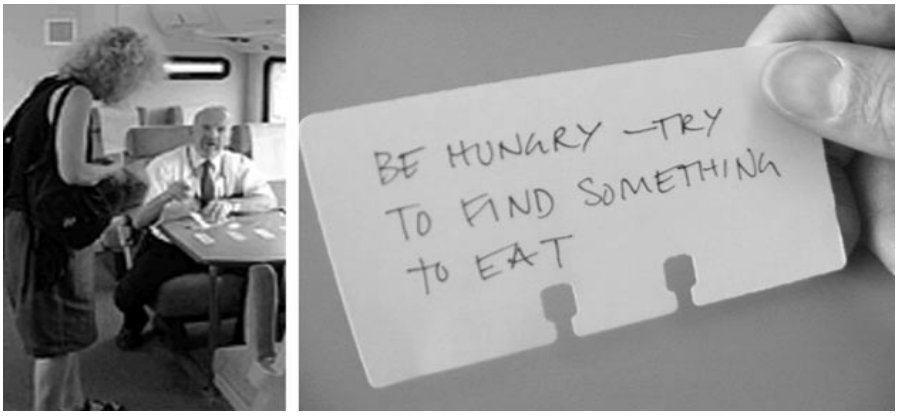


Figure 4.6 Experiencing a train journey with role-playing (Buchenau and Suri, 2002, p. 427)

Exploring and evaluating design ideas. The purpose of experience prototyping in this task is enabling the exploration of possible solutions and directing the design team towards tangible components that create the user experience around specific artifacts. For instance, for experiencing an airplane interior, involving early exploration of ideas for the interior layout and components of an airplane, the design team together explored a foam-core built environment simulating the inside of an airplane with bodystorming. They bodystormed different social tasks and situations like sitting, reading, sleeping, talking with someone, and ordering meals in different arrangements by using props, such as chairs available (Fig 4.7).



Figure 4.7 Bodystorming for an airplane interior (Buchenau and Suri, 2002, p. 428)

Communicating ideas. The role of experience prototyping here is to help designers, users, and clients understand the value of a design idea by directly experiencing it. For instance, for enabling their clients to experience a digital camera interaction, the designers built a "look and feel" working prototype controlled by a desktop computer accompanied by an appearance model to communicate the appropriate size (Fig. 4.8).



Figure 4.8 Digital camera experience prototypes; Left: "look and feel" working prototype; Right: appearance model (Buchenau and Suri, 2002, p. 430)

Brandt and Grunnet (2000) claimed that both designers and users could use role-playing, designers to create an empathic understanding of users, and users to share their ideas. They used role-playing with props in several projects with similar aims as in Buchenau and Suri's experience prototyping to introduce a bodily dimension into the design process and making users active in a design process since these performances become a communication language for users and designers. They described how users and designers used role-playing to create collaborative ideas through two projects they conducted. In the Smart Tool project, the designers acted out scenarios based on the user's environment where the users visited the design team when they participated in the user workshop (Fig. 4.9). In the Dynabook project, the scenario work was taken a step further in the sense that the users themselves created the scenarios in their own settings where the design team was the guest (Fig. 4.9).



Figure 4.9 Getting a bodily understanding of the work of refrigeration technicians by performing “frozen images” (Brandt and Grunnet, 2000, p. 14)



Figure 4.10 The prop used for finding out what is wrong with the car, and for checking the prices of spare parts and finding the way to the car workshop (Brandt and Grunnet, 2000, p. 16)

4.9.5 Simulation Exercises

Simulation exercises are designed to enable an immersive, empathic sense of real-life user experiences by providing deep familiarizations to human or environmental conditions (Martin and Hanington, 2012). For instance, a way to experience capability loss is simulating its functional effects bodily by the designer. Spectacles obstruct tools that can simulate various kinds of vision loss and arm and hands restraints can restrict movement, simulating some of the effects of arthritis (Goodman et al., 2007). A special suit and helmet system can simulate the physical conditions of the elderly to enable empathy for designing. In Fig 4.11, the designers performed everyday activities of the elderly by wearing a special suit and helmet that constraints the neck and spine, yellow the vision, restrict bending, throw off the center of gravity, and reduce tactile sensitivity. The unique gear, developed by the MITLab, is calibrated to simulate the dexterity, mobility, strength, and balance of a person in his 70s for empathy. Low-tech simulations can also expose designers to age-related deficits, such as deterioration of vision and mobility, for empathic translation into design criteria (Martin and Hanington, 2012). These simulators can help a designer empathize with users and gain an internalized understanding of capability loss. They fit with designers' preferred characteristics by being tangible and stimulating, thus engage the designer in experiencing the user's situation at first-hand (Goodman et al., 2007).



Figure 4.11 The designers perform everyday activities of the elderly by wearing a special suit and helmet



Figure 4.12 Low-tech simulations (Martin and Hanington, 2012, p. 161)

4.9.6 Puppet Scenarios

The puppet scenario is a technique used to encourage participation and collaboration for different stakeholders. It brings together people from diverse backgrounds, expertise, and competencies for building future scenarios, helps participants make their ideas tangible while engaging them in a collaborative environment. It works through the following steps:

- Setting the stage and creating puppets and construction kit;
- Establishing a story and assigning roles;
- Preparing design cards, what-if cards, and before the workshop;
- Sharing everyday stories using design cards;
- Exploring opportunities, evoking possible directions for your project using what-if cards;
- Facilitating the action: Act out puppet scenario;
- Documenting on video; and

  Making room for reflection and discussion (Ylirisku and Buur, 2007; Kumar, 2011).

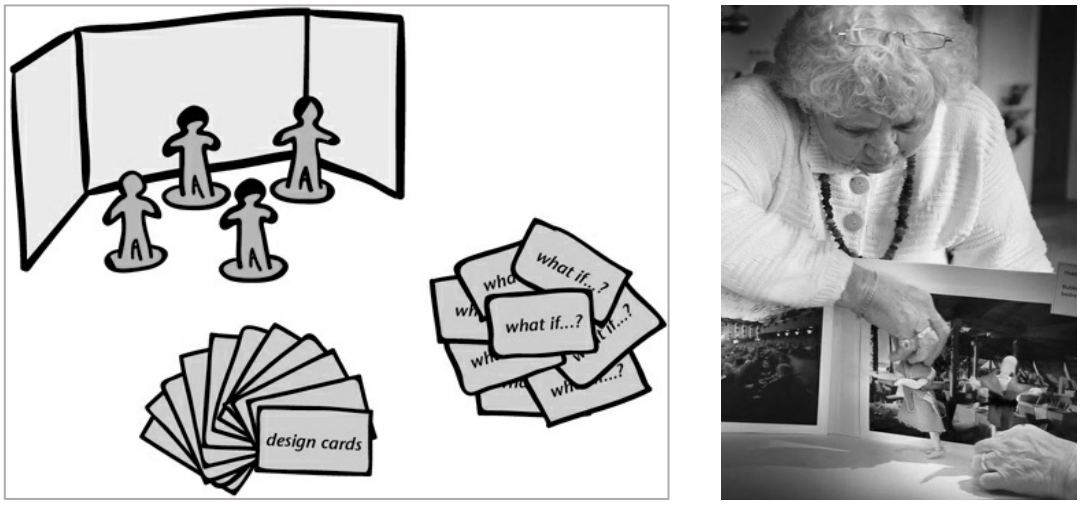


Figure 4.13 Left: The required items for puppet scenarios; Right: A user acting out with puppet scenarios (Kumar, 2011; p. 402; p. 405)

The actors act out through representations by playing puppets. The participants project their ideas and attitudes onto the representations and communicate through movements and speech. Puppet scenarios provide a good overview of what several actors do simultaneously. The small scale offers a "God's eye" view of the actors in another room or even country. Rather than interaction with technology, the puppet scenario allows participants to work with overall relations and functions or services. Created from real experiences or imagination, participants can enter a constructed reality utilizing puppets. For instance, kitchen puppets were a half-day design workshop where "social kitchen" was the concept of designing kitchen appliances that support social interaction between family members. For exploring how "social" the microwave concepts would be in a real family, the participants watched a video of cooking practice in one of the families and then were asked to explore how those microwaves could change their behavior. Later on, the teams played the scenarios with a small-scale cardboard model with the layout of the family's kitchen and puppets representing the family members. The teams were encouraged to rebuild parts of the environment if changes were required in their scenarios utilizing legos or wooden bricks. The sessions were video recorded for the discussions on the impact of the concepts on the household.

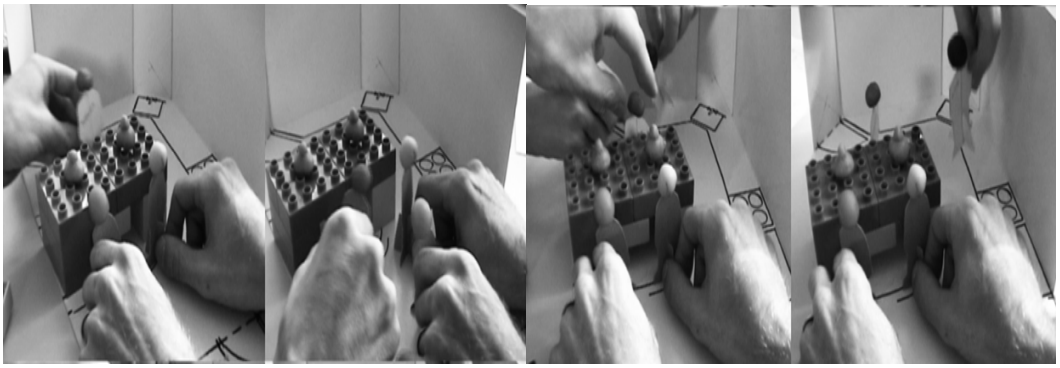


Figure 4.14 Kitchen puppets (Ylirisku and Buur, p. 147)

An example of how puppet scenarios are integrated into the design process is Botin and Poulsen's (2016) project. For the idea generation phase in an educational design project focusing on “a transport information service for blind people,” the students worked with Lego figures as a means to generate, test and discuss their ideas, and facilitated generative “what if” discussions. These situations that were recorded were found valuable in terms of the discussions between designers and their partners. While some of the students used puppet scenarios as a method, others placed themselves in front of the camera and acted out their ideas. Before the session, preliminary observation and documentation were conducted. From the documents, interesting situations were evolved into design questions regarding events, experiences, or practices of users (Botin and Poulsen, 2016).



Figure 4.15 The puppet scenario illustrates a transport information service for blind people (Botin and Poulsen, 2016, p. 14)

To investigate the “Nomadic Internet User of the Future,” role-playing games were used to allow users and experts to envision and act out new product concepts. The participants used the given set-up and roles to imagine what services could support their mobility and communication (Iacucci et al., 2000) (Fig. 4.16).



Figure 4.16 Go Project (Iacucci et al., 2000, p. 197)

Sanders (2009) used “three-dimensional toolkits,” employing it to engage participants to contribute who were stakeholders of the design problem. In a workshop in Helsinki with academics, company members and hospital personnel explored future mobile technology for use within the hospital environment, and a 3-D toolkit was employed for modelling smaller-scale spaces such as nurses’ stations and patients’ rooms.

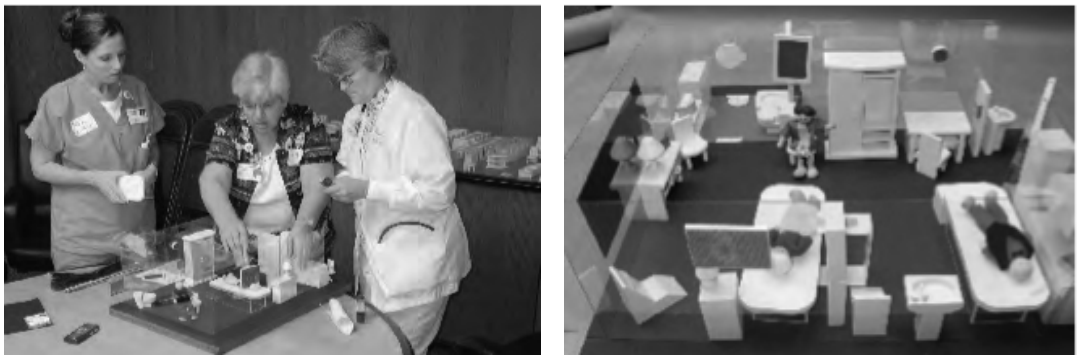


Figure 4.17 Nurses building a hospital environment with three-dimensional toolkits (Sanders, 2009, p. 18-19)

A group of nurses collaboratively generated a patient room of the future. They were working within some see-through walls. They built a single patient room where there were two patients and two beds, however, the case was, one of them was the patient's husband who was sleeping on a couch. To build an environment for puppet scenarios provided the same advantage of seeing all the context and actors at the same time (Fig. 4.17).

Puppets, for some people, brought out the emotions in the stories of the future. In this example, a patient living with type 2 diabetes acted out with the puppets to externalize what he and his wife were talking about (Fig. 4.18). There were a doctor, a nurse and a patient, and other puppets for encouraging people to tell about their experience (Sanders, 2009).



Figure 4.18 A patient acting out with puppets (Sanders, 2009, p. 21)

4.10 Role-playing in the Educational Context

Boess and her colleagues (2006, 2007, 2008) used role-playing as a design technique in an educational setting for several projects. The actors of the role-playing were design students, and role-playing was employed for different purposes based on the design phase it is employed in or the design problem given. In the early phases, role-playing can be employed for exploring a particular situation or generating design

ideas and improving them further. In the later phases, it is used for evaluating and testing prototypes (Boess et al., 2008).

The definition of the design problem drives the students to employ role-playing in different ways. If the design problem is narrower, students focus more directly on the generative role-playing process like idea generation and concrete design ideas. For instance, working on a design problem like "a mobile pill dispenser," the students treated the props as prototypes, and during the role-playing session, they improvised searching a pill-box in a handbag in public with these props and improved them with features like clip-on or luminosity (Boess et al., 2008, p. 2020).



Figure 4.19 Generative role-playing process: Acting with rough pill dispenser prototypes (Left: Boess et al., 2007, p. 281; Right: Boess et al., 2008, p. 2021)

In a broader design problem like "stimulating communication and interaction among people interested in volunteering for fighting with illegal drug deals," the students used an informative role-playing process to explore the structure of the situation of "illegal drugs deal" by acting out with a set of unspecified props (Boess et al., 2007, p. 2022). In this kind of design problems, design students handled props for transferring experiences from the role-playing in these situations to their design ideas (Boess et al., 2007).

When user research is not involved, and a generic situation is set for the students by the tutors like an initial scene, characters and a potential for conflict, such research aims at giving students a first feel for the interactions probably going on in a particular context, even before they have done any research. Involving prior user

research forms a resource for students, and such a study aims at facilitating the students' step from contextual user research (e.g., observations, interviews, and cultural probes) to design ideation.

As exemplified by Boess et al. (2007), a student's prior use research provided the background knowledge and enabled insights of commonalities in the secrecy and negotiation of the drugs deal and persuading citizens to engage in volunteer work (Boess et al., 2007, p. 2022). Fig 4.20 illustrates an informative role-playing process. The image on the left shows a role-playing a drugs deal scene, the image in the middle involves early prototypes, buttons, to role-play with and the image on the right shows the final design which is a sculpture for public space that grows with parts added by volunteers and a digital repository of volunteer projects.



Figure 4.20 Informative role-playing process: Exploring a particular situation and transferring these experiences to the design ideas (Boess et al., 2008, p. 2022-2023)

Here we see that for broader design problems, students adopted an informative role-playing process, while for narrower design problems, they adopted a generative role-playing process.

Role-playing can also be employed for evaluating and testing prototypes. Fig. 4.21 shows the work of a student who developed a new kind of market stall, made a full-size model of it, tested it with classmates in the studio, and later also in a shopping center with real users. She put herself in the role of the market seller (Boess et al., 2007).

While in the early phases, it is employed for exploring a particular situation or generating ideas and improving them, in the later phases, it is used for evaluating and testing prototypes (Boess et al., 2008).



Figure 4.21 Left: Testing of a market stall in the studio with role playing. Right: Testing of a market stall at a shopping mall with role-playing (Boess et al., 2008)

4.11 Ethical and Technical Considerations in Role-playing

Scholars who studied role-playing in design in the last decade consider different actors in role-playing. Role-playing within the participatory tradition has been concerned with user involvement in the design process, while the user-centered design tradition with a designer as an expert in mind, has been more concerned with role-playing as a designer's technique for understanding users and user needs (Seland, 2010).

Despite the diversity among the approaches the scholars adopt in terms of actors, context, structure or phase of the design process, they make a general emphasis on similar purposes of role-playing in design which are exploring current practices, envisioning and evaluating future products and scenarios by adding a tangible and embodied dimension to the design process.

Although found useful for the authors' purposes, it is crucial to consider the following points discussed in the literature. Using role-playing as a stand-alone method, elaborating on only a few scenarios (Seland, 2006), making participants act who are

inexperienced in drama (Seland, 2009; Rodriguez et al., 2006) and a possible delusion of becoming someone else when acting like someone (Kullman, 2016) are some of the limitations of role-playing in design.

Authors emphasize using it in combination with other methods or with prior user research studies or resources for several reasons like comprehending diverse perspectives (Seland, 2006), acting with prior considerations in mind (Boess et al., 2007; Rodriguez et al., 2006) and avoiding delusion of becoming someone else when acting like someone (Kullman, 2016).

On the other hand, supplying role-playing techniques with other materials and methods, elaborating on diverse aspects of activities and situations, covering various scenarios in role-playing sessions (Seland, 2006), supports developing a clear understanding of what these performances provide or fall short. Improvising with rules like prior considerations in mind, getting help from a drama instructor for facilitating role-playing sessions or encouraging the participants by adding some fun and humor via a warming session (Seland, 2009; Rodriguez et al., 2006), involving various parties or stakeholders into the process prevent designers' overwhelming sense of becoming someone else.

In the next section, the potentials using of UGVs available on the internet as research material and employing role-playing techniques for exploring unfamiliar design problems and how design students make use of them are discussed through examples that are provided by the students retrospectively. The examples in this section are collected at different times from the same educational department of undergraduate industrial design students who are undergraduates. The students used UGVs and role-playing for exploratory research in the early phases of the design process within a self-directed way. To explore how undergraduate design students make use of online user-generated videos and role-playing techniques for exploring unfamiliar design problem domains and idea generation, focus group sessions or semi-structured interviews with them were conducted, and the documents provided by them were analyzed.

CHAPTER 5

METHODOLOGY

The doctoral study has evolved into many phases composed of comprehensive field studies. In this chapter, the research approach, the field studies, data collection, and analysis procedures will be explained.

This process started with the intention to investigate the implications of employing user-generated videos and role-playing for the early phases of the design process in design studio projects. To this end, a preliminary study was conducted to explore how industrial design students employed them. The main motive behind this study was my observation of the quest to design students for alternative sources to generate design insights when they cannot have direct access to users and their experiences. Additionally, I noticed the students, even though not having prior experience or special training, and not asked by the tutors, intuitively picked, and employed both user-generated videos and role-playing. By doing this, as they stated, they expected to understand and empathize with the users via other sources such as observing descriptive representations of a particular problem domain or gaining subjective experiences of users' specific tasks.

After this preliminary study, the literature about the usages of videos in qualitative research in general and in research and role-playing their implications for the design process was scrutinized. However, a question appeared about the systematic combination of user-generated videos and role-playing and incorporation into design studio projects. For this reason, in the following study, user-generated videos and role-playing were first incorporated into an educational project (Chapter 7) and then a half-day workshop. (Chapter 8) respectively. Firstly, user-generated videos and role-playing were incorporated into an educational design project (pediatric examination table and its environment) at the undergraduate level in the fall semester of 2018. In this case, I mainly focused on developing and implementing an

exploratory research method, including the phases and the ways to employ user-generated videos and role-playing credibly.

The design brief delivered to the students was used as a guideline, and samples from the previous study as analysis formats were used as the toolkit for this study. This case included the most comprehensive part of the field study since it covered different layers of data collecting procedures such as observation, analysis of class discussions, and individual interviews. The results of this research led to developing the method further that was based on the analysis of the documents the students submitted, the analysis of in-class discussions, and the interviews conducted with volunteer students. The changes in the method had an emphasis on a more structured toolkit for the ease-of-use of the video and role-playing analysis, such as formatted guidelines with templates and samples. After revising the proposed method to be employed for the exploratory research in the early phases of the design process, it was incorporated into a half-day workshop design project (the same project with the previous study: pediatric examination table and its environment) in 2018. This time, keeping the duration of the design project short was taken into consideration to gain feedback about the pros and cons of the method as the researcher could directly observe the video monitoring and analysis process with the participants of the workshop. The researcher prepared a guideline and a schedule for the workshop. Based on the conclusions and findings from this study, several improvements on the method were made to develop it further by considering the phases, guiding information, and toolkit of the method to be delivered to an interested audience to employ efficiently (Chapter 9). For this, information for the ways of employing UGVs and role-playing systematically, the ethical and scientific considerations were included in the guideline and the toolkit of the method.

The field studies were planned based on the findings from each case. At the beginning of the study, a draft outline of the methodology was defined; however, due to the exploratory nature of the research approach, it was shaped as the research proceeded..

5.1 Research Approach

In this thesis, the implications of user-generated videos (UGVs) and role-playing (RP) for exploring unfamiliar problem domains in design education projects were revealed to be utilized for developing a method. A research model was used to reveal these implications regarding how and why UGVs and role-playing were employed by the design students and developing a method to be employed for the exploratory research in the early phases of the design process.

In this model, a qualitative research approach has been adopted to address the primary purpose of the study with a holistic approach (fig 5.1). Qualitative research is the systematic inquiry into social phenomena in natural settings (Corbin and Straus, 2008) in which researchers attempt to make sense of or interpret phenomena in terms of the meanings people bring to them (Denzin and Lincoln,2005).

Different qualitative methods were systematically used together to answer the research questions that the study aimed at answering. These qualitative methods were case study and action research. A case study is "a research approach in social sciences, that is used to generate an in-depth, multi-faceted understanding of a complex issue in its real-life context" (Yin, 2003, p. 13). This approach is particularly useful to employ when there is a need to obtain an in-depth understanding of a subject of interest in its natural context. In this study, for exploring the problem context, which constitutes the first step of research, the case study approach was employed.

Action research is "a systematic inquiry conducted through the medium of practical action; calculated to devise or test new, or newly imported, information, ideas, forms or procedures and generate communicable knowledge" (Archer, 1995, p. 11). The practice-led nature of action research makes the researcher an important actor whose interventions must be explained in such studies. Within the scope of this study, the researcher, as a member of the studio team or the workshop convener, got involved in the development of the projects' briefs and timeline, and the implementation of

the method in the design process. Therefore, the research approach employed for Study-II and Study-III corresponds with action research.

Depending on the research approach, more than one data collection method and tool were used. Data collection methods used in this study are designed to complement each other for achieving the overall purpose of the study and for allowing the subject to be comprehensively covered from different aspects. Data collection methods and tools used to answer the research questions are presented in Table 5.1.

Document analysis is a systematic procedure for reviewing or evaluating documents. A document is any written or recorded material not prepared for the evaluation or the inquiry (Lincoln and Guba, 1985). As a qualitative research method, document analysis requires the data to be interpreted to elicit meaning and gain understanding. Data collection involves reviewing existing documents that provide insights into a setting and/or group of people (Corbin and Strauss, 2008).

An interview in qualitative research is a conversation where questions are asked to elicit information (Mason, 1994). Semi-structured interviewing is a data collection technique based on a qualitative research approach, where the researcher can gain in-depth knowledge from participants by asking pre-determined open-ended questions in the interview with additional ones when required (Yıldırım and Şimşek, 2005, p. 107).

A focus group is a small group of carefully selected participants who contribute to moderated open discussions for research. The researcher carefully selects participants for the study to represent the broader population they aim to target. Within a focus group, a moderator poses a series of questions for gaining insights on a particular subject (Morgan, 1996).

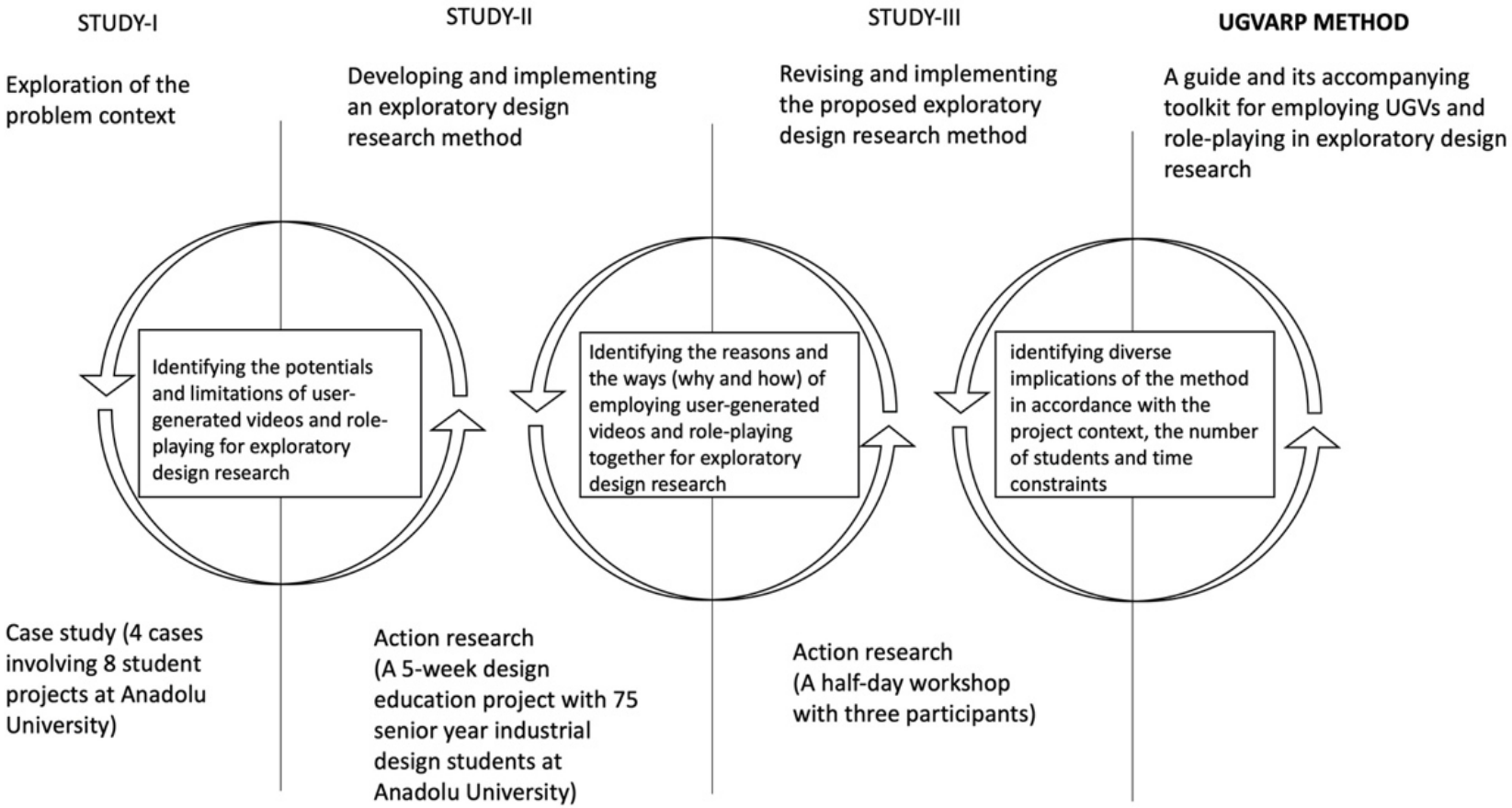


Figure 5.1 Model of the research process

Table 5.1 Research approach, data collection methods used to answer the research questions

Research questions	**Research approach, data collection methods**
1. What are the benefits and limitations of user-generated video content available on the internet as research material for exploring unfamiliar problem domains and hard-to-access user groups in the early phases of the design process in design education?	**STUDY-I: Exploration of the problem context** Case study (4 cases involving 8 student projects at Anadolu University) Document analysis, semi-structured interviews with students and tutors, focus group with students
2. What are the benefits and limitations of the role-playing technique for exploring unfamiliar problem domains and hard-to-access user groups in the early phases of the design process in design education?	**STUDY-II: Developing and implementing a method to be employed for the exploratory research in the early phases of the design process** Action research Participant observation, document analysis, semi-structured interviews with students
3. What are the ways in which user-generated video content and role-playing can be related to each other and integrated into the early phases of the design process in design education?	**STUDY-III: Revising and implementing the proposed method to be employed for the exploratory research in the early phases of the design process** Action research Document analysis, participant observation

Observation is a method of data collection in which researchers observe within a specific research field. Participant observation involves the observer being a member of the setting in which they are collecting data. The researcher not only observes the research participants but also actively engages in the activities of the participants. This requires the researcher to become integrated into the participants' environment while also taking objective notes about what is going on (DeWalt and Dewalt, 2002).

The details of each study, including the scope, data collection, and analysis process, will be clarified in the following three sections.

5.2 Study-I: Exploration of the Problem Context

Study-I explored the potential of UGVs and role-playing techniques for exploring unfamiliar problem domains in an educational context and examined how the design students used them. The data were collected at different times at Anadolu University Department of Industrial Design (Eskişehir), where the researcher works as a teaching assistant. Study-I covered four cases involving eight student projects from different semesters and design studio projects. These cases were chosen since the students employed UGVs and/ or role-playing for exploring the problem domain.

The first case involved a studio project for the senior year industrial design students was "a walking support for cerebral palsy (CP) patients" in which the tutors advised students to employ online user-generated videos for user research and, some students supported this exploration process with role-playing and documented their findings. The six-week project involved 45 students, and the course was co-conducted by three tutors. When observing and interviewing the persons with CP and their caretakers were the tutors' initially proposed methods, the students experienced various challenges concerning these methods. They stated that they could not interview people with CP or their caretakers. Since most of the potential participants with CP had speech disorders, it was challenging to have a regular conversation. The students indicated that the caretakers were rather sensitive and reluctant to comment on the difficulties or problems they had been experiencing; they were more eager to highlight the positive experiences. The students also stated that they lacked appropriate skills for conducting interviews with particular groups and on sensitive issues.

Following this project, it was observed that some students kept using UGVs and role-playing intuitively for exploratory research in the early phases of the design process in other design studio projects. The other three cases in Study-I regarding "outdoor baby feeding set, boots for miner and boots for firemen" design projects further exemplified the use of UGVs and role-playing techniques in different educational projects. Study-I covered these four "illustrative cases" as a description of the

problem context this thesis aimed at investigating. Illustrative case studies utilize a small number of instances to analyze and clarify a situation by characterizing important variations and serve to make the unfamiliar familiar and give the readers a common language about the topic (Yin, 2003).

5.2.1 Data Collection for Study-I

Case-I was explored through a review of the documents submitted by the students as classwork, semi-structured interviews with the tutors, and a focus group with volunteer students after the completion of the project. Semi-structured interviews with all the tutors conducted separately; the interviews lasted between 30-45 minutes. Out of 45 students who took the course, 13 had prepared a presentation concerning the "troubles" they encountered during the research phase. These presentations were also collected to get familiar with the types of problems and challenges faced by the students. Additionally, out of these 13 students who prepared these "trouble sheets," six students volunteered to participate in a focus group session, which lasted approximately one hour. The focus group session was videotaped, and the interviews with the tutors were voice recorded by the consent of the participant students. (For consent form and interview guide for focus group see Appendix A). Documents submitted by the students for this project was also reviewed to have a broader comprehension of the problem context.

Case-II was explored through a review of the documents submitted by the students. The students were asked to explain the reasons for preparing the work they submitted to understand the expectations and motivations behind employing UGVs and/or role-playing for exploring the problem domain. They were also asked whether they had prior experience or special training regarding employing UGVs and role-playing to understand their expectations and motivations behind it.

Case-III and IV were explored simultaneously through a review of the documents submitted by the students and semi-structured interview questions delivered to both students as online surveys. The students worked on their graduation projects; one

was working on “boots for miners,” and the other was “boots for fireman.” They were observed to employ UGVs and role-playing together to explore the problem domain. Similar concerns were on the agenda regarding the existence of prior experience or training when the expectations and motivations behind employing UGVs and role-playing together.

Throughout all of the cases in Study-I, while why and how the students utilized UGVs and role-playing are questioned, scientific and ethical considerations for employing UGVs as research material and role-playing technique, the stakeholders required to be involved in employing them effectively and credibly were identified through the document analysis together with a concurrent literature review.

5.2.2 Data Analysis for Study-I

Due to the diversity of the raw data gathered, the analysis was different for each study. The analysis of the entire study is mainly qualitative. In Study-I, due to the exploratory nature of the study, the analysis was conducted to understand how and why the students employed UGVs and role-playing, the benefits and limitations of them as material to be employed for the exploratory research in the early phases of the design process.

For the preliminary case (Case-I), voice recordings of the interviews with the tutors were verbatim-transcribed and analyzed through content analysis. These investigations were conducted at the beginning of the research when the researcher noticed that when design students could not have direct access to users and their experiences, they sought alternative sources to generate design insights. After the interviews, the tutors also advised investigating the students' works that are covered broadly in Chapter-6. As the students' works were being reviewed, a focus group was also conducted with volunteer students. The focus group questions were designed to understand the conditions that prevented the students from having direct access to users and usage environments and the alternative sources that students utilized under these circumstances. The document analysis, although conducted simultaneously

with the focus group, were aiming at different motives. The document analysis was more concerned with how, while the focus group why the students employed UGVs and role-playing.

For the analysis of the second case, the junior year students designing "outdoor baby feeding set" who employed UGVs and/or role-playing together were chosen. Since all the students were not advised by their tutors to use them intentionally, the ones who intuitively employed UGVs and role-playing were selected for this case. The students were asked to explain their experience on UGVs and/or role-playing, their works, and their intentions to conduct such research and documentation.

For the third and fourth cases, the answers of the students to the online survey were analyzed to understand how and why the students employed UGVs and role-playing.

The expectations and motivations of the students who claimed that they had no prior training regarding employing UGVs and/or role-playing, the actors involved for employing UGVs, and role-playing more effectively and credibly are discussed together with the analysis of documents submitted by the students. The students were asked for their consent to record interviews and use their documents as data for scientific purposes (for a detailed analysis, see Chapter 6).

5.3 Study-II: Developing and Implementing a Method to be Employed for the Exploratory Research in the Early Phases of the Design Process

Based on the illustrative case studies in Study-I, a method to be employed for the exploratory research in the early phases of the design process was developed and implemented, combining UGVs and role-playing techniques. The analysis of the previous study revealed the benefits and limitations, the expectations and motivations of the students who employed UGVs and role-playing, and how they utilized and documented their observations, findings, and insights effectively. The actors involved to make this happen. This time, the ways of employing UGVs and role-playing together systematically and sequentially were investigated. In this study, a design studio project "pediatric examination table and its environment" was

given to senior year industrial design students at Anadolu University Department of Industrial Design in the 2018 Fall Semester. It was a five-week project which involved 75 students and three tutors. There were 15 groups composed of 5 students. For this study, after informing the design studio team about the aim and scope of the thesis study, the pre-planned subject, phases of the project, the analysis samples compiled from the documents of the previous cases were first presented to the studio team. After consulting, getting feedback and suggestions from the three studio team members of the project, the brief and the time-table of the project were prepared by the researcher and delivered to the students who were aimed at employing the analysis tools of the method. The students were informed about UGVs, and role-playing would be our primary sources for the exploratory research in the early phases of the design process when they were introduced with the design project. The implications of employing UGVs and role-playing for the exploratory research in the early phases of the design process and the examples from the previous cases were presented to the students through a presentation by the researcher. Preparing the UGV analysis posters was given as homework to the students by informing them that their posters will be discussed in the class in the following course day.

5.3.1 Data Collection for Study-II

Throughout the study, a copy of the documents the students prepared as classwork and homework for each task of the studio project were collected by the researcher in the teams' portfolios.

Since it was an essential phase of the studio project in terms of the thesis study, in-class discussions regarding UGV analysis posters prepared by the students as homework, were voice recorded, which lasted approximately 15 minutes for each team. The following role-playing session was conducted in a pediatric examination room of a hospital. The pediatrician, whose room the tutors and eight representatives from student teams visited, got permission from the hospital administration for our visit. Before meeting in the room, he told us the rules among which he mentioned there were limited permission regarding recording the hospital room, just for taking

a few photos was acceptable, but video-recording was not allowed. This process was documented by note-taking and with a few photos by the consent of the pediatrician.

Post-project interviews were conducted with the volunteer students in order to identify the benefits and limitations of employing UGVs and role-playing, the strategies they employed for searching, deciding, and implementing the analysis. At least one member of the student teams was aimed to be interviewed; however, more than one student was chosen from the teams who covered more issues during the table discussions and submitted more analysis posters. Nineteen students volunteered to participate and were interviewed between April and May 2018 (for the consent form and the interview guide, see Appendix D). There were three sections in the course, and in each section, there were five teams composed of five students. The interviews lasted about 30 minutes to 1 hour. In Table 5.2, the distribution of the interviewees from the student teams is presented. Sixteen of the interviews were transcribed, and 3 of them were excluded due to voice-recording quality problems (Table 5.2). Since Study-II was the field study that the researcher intervened by implementing the method into a design studio project, to conduct the interviews with the students for Study-II, the researcher applied for permissions from Human Subjects Ethics Committee of both METU and Anadolu University where the study is conducted (Appendix E).

Table 5.2 The number of students that were interviewed/transcribed from each team

Sections	**A**					**B**					**C**				
Teams	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
interviewed/ transcribed	3/3	1/1	0/0	1/1	3/3	1/1	1/1	0/0	2/2	3/1	1/1	1/1	0/0	1/0	0/0

5.3.2 Data Analysis for Study-II

The qualitative analysis consisted of extensive data that had to be organized and analyzed. The analysis process was developed using various tools and techniques such as content analysis and document analysis. The primary considerations in the analysis process were the research questions that allowed the interpretation of the data, associating the verbal data with the visual data and the interpretation and inference of relationships between them.

In-class discussions of UGV analysis posters prepared by the students as homework were voice recorded, verbatim-transcribed, and analyzed to identify how the students refer to the UGVs. Content analysis was conducted to analyze the data obtained from the in-class table discussions of UGV analysis. The observation notes taken by the researcher were analyzed for gaining insights regarding the role-playing process.

The posters submitted by the students as a team were analyzed to identify how the students organized their observations, findings, and insights on a video analysis poster. These analyses provided the input for the toolkit of the method.

Post-project interviews were conducted to identify the benefits and limitations of employing UGVs and role-playing, the strategies the students employed to search, decide, and implement the analysis. These analyses provided the input for the guidelines of the method.

The students were asked for their consent to record interviews and use their documents for scientific purposes (for a detailed analysis, see Chapter 7).

5.4 Study-III: Revising and Implementing the Proposed Method to be Employed for the Exploratory Research in the Early Phases of the Design Process

In Study-III, the tools and the guideline of the method were developed and put into a structured format and shared with the workshop participants throughout a half-day workshop process to identify diverse implications of the method in accordance with

the project context, the number of students and time constraints. In September 2018, a workshop called “Found Data: User-generated Online Videos for Design Insights and Idea Generation (Buluntu Veri: Fikir Gelişitiriciler Olarak Çevrimiçi Videolar)” was conducted within the third National Design Research Conference (UTAK) at METU. The invitation for participation in the workshop was made by the conference organizing committee. The workshop involved three participants, who were a senior industrial design academic, a junior interior architecture academic, and a senior year industrial design student. The project subject was decided to be the same with Study-II to provide the participants with a concise literature review reorganized, together with a YouTube playlist of related videos compiled from that study. UGV analysis samples and templates reorganized from the documents of Study-I were provided as a toolkit of this study.

5.4.1 Data Collection for Study-III

Throughout the Study-III, participant observations were made, and these were recorded at the researcher’s diary after the workshop. For this study, the researcher, while directing the workshop with an agenda, actively participated in the video analysis process. As the workshop participants were observed to favor a format that allowed a more open-ended group work, the idea of building a concept map emerged upon agreement. Thus the process and analysis tool were revised. The document prepared by the participants was collected to be analyzed, which was a concept map employed as a video analysis tool. The process was also photographed by the help of the workshop organization committee of UTAK 2018.

5.4.2 Data Analysis for Study-III

The observation notes, together with the photographs taken during the workshop, were analyzed to finalize the method, its toolkit, and the guidelines. Since the aim was to identify different implications of the method in diverse project contexts, such as the number of participants and time constraints, the observation notes were

analyzed accordingly. While Study-II involved a crowded student group within a relatively long-term project (5 weeks), Study-III involved a small number of participants and a short-term project (half-day) (for a detailed analysis, see Chapter 8).

The workshop participants were asked for their consent to record the workshop through photographs and use the documents that emerged in the workshop as data for scientific purposes.

5.5 Conclusion of the Methodology Chapter

The phases, data collection tools used in conducting the research, and participant information are presented in Figure 5.2 on a timeline.

The findings obtained within the scope of the thesis study will be presented in the following four chapters.

Chapter-6 presents the identification of implications of how and why UGVs and role-playing are employed by the students in the early phases of the design process.

Chapter-7 presents the application of a method to be employed for the exploratory research in the early phases of the design process utilizing UGVs and role-playing together in the early phases of the design process in a design studio project.

Chapter-8 presents the application of the revised method in a different context to reveal diverse implications of the method in accordance with the project context, the number of students, and time constraints.

In the conclusion chapter of the thesis, the findings obtained from these three studies will be shared as the answers obtained for the research questions of the thesis and the UGVARP method, which is the method created as a result of the thesis. A method, a guide, and its accompanying toolkit designed according to the findings revealed within the scope of the thesis study have been developed, and detailed information about the use of this method is presented in Chapter 9.

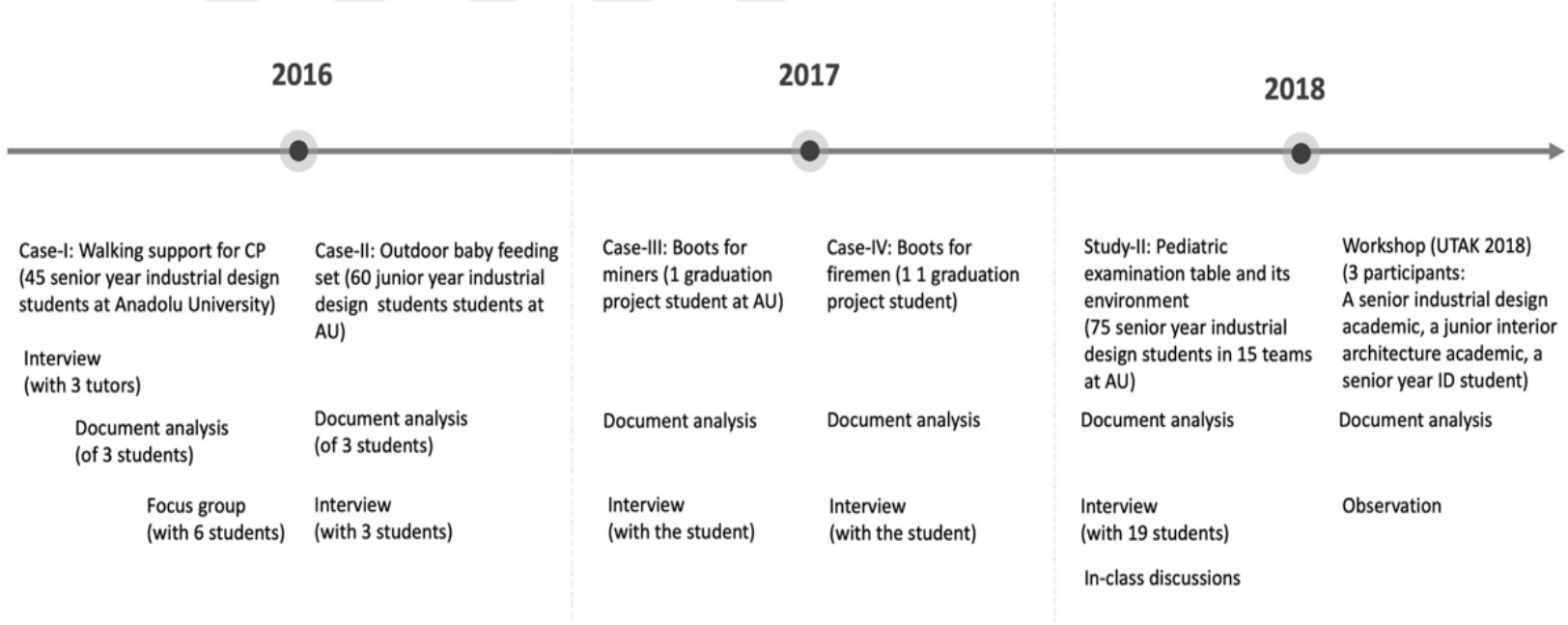


Figure 5.2 Research process on a timeline

CHAPTER 6

STUDY-I: EXPLORATION OF THE PROBLEM CONTEXT

In this chapter, the use of user-generated videos as research material and role-playing techniques for exploring unfamiliar design problems, and the ways in which design students make use of them are discussed through examples. These examples are collected at different times from undergraduate industrial design students at Anadolu University. The use of UGVs and role-playing were observed to start with an educational design project for senior year industrial design students in which tutors advised students to employ online UGVs for design exploration, and some of the students supported this exploration process with role-playing. The case is explored after the project finished through discussions with the tutors and the students. After this project, some of the students were observed to use UGVs and role-playing for design exploration within an intuitive way in other projects, even though not having prior experience or special training, and not asked by the tutors.

6.1 Using UGVs and Role-playing: Example Projects and Students' Works

In this section, four consecutive cases are discussed through the documents submitted by the students. In these cases, the students engaged in unfamiliar problem domains concerning the design problems they handled, such as vulnerable issues, disabilities or health conditions, or unsafe use environments, and employed UGVs and/or role-playing intuitively within these circumstances (Table 6.1). For Case-I, the examples that illustrate diverse usages of UGVs were chosen as almost all of the students employed them. One specific example shows the use of them together facilitated by an expert in this case. In the following cases chosen for the thesis study, the students were in similar conditions with the students in the Case-I and employed UGVs and role-playing in the early phases of the design process.

Table 6.1 The student participants that constitute the research cases

	Project	Term	Student	student's work
Case I	walking support for persons with Cerebral Palsy	2016 fall	Student-1 Student-2 Student-3	CP strip CP trail CP carpet tile
Case II	outdoor baby feeding set	2016 spring	Student-4 Student-5 Student-6	baby tray feeding a doll in a café measuring cups
Case III	boots for miners	2017 spring	Student-7	boots for miners

6.1.1 Case I: A Walking Support for Cerebral Palsy (CP)

In this case, the senior year students' design studio project was "walking support for persons with cerebral palsy (CP)." The six-week project involved 45 senior year industrial design students, and the course was co-conducted by three tutors. Semi-structured interviews were conducted with all the tutors separately; the interviews lasted between 30-45 minutes. Out of 45 students who took the course, 13 had prepared a presentation concerning the "troubles" they encountered during the research. These presentations were analyzed to get familiar with the types of problems and challenges faced by the students.

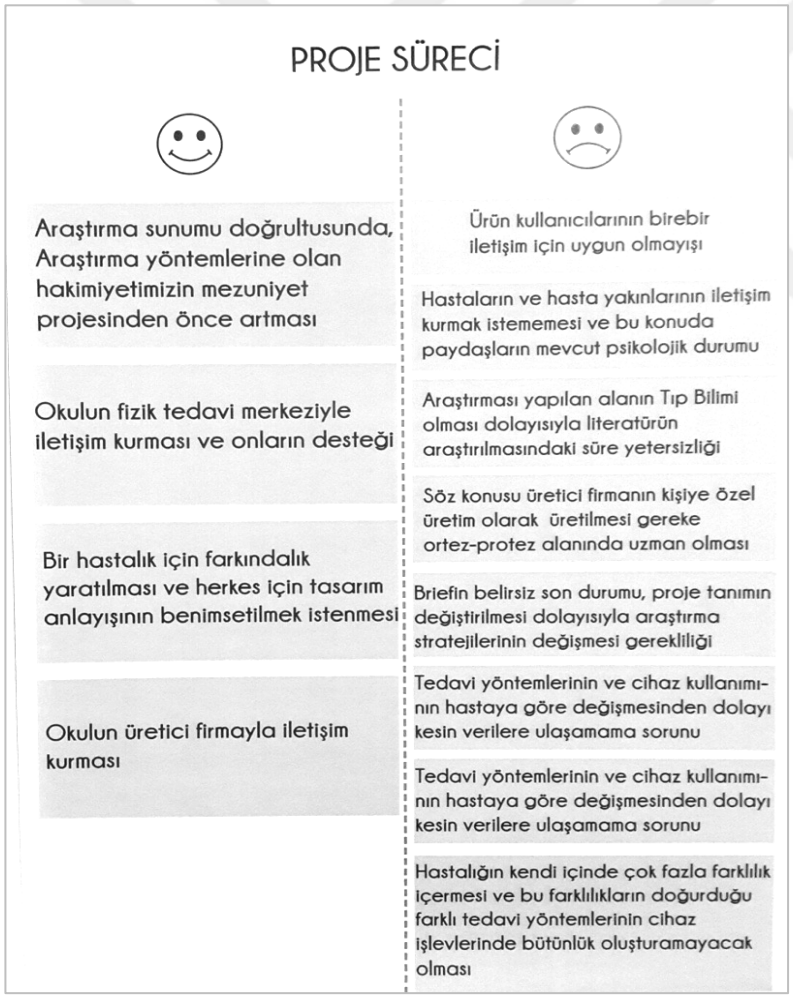
Additionally, out of these 13 students who prepared these "trouble sheets," six students volunteered to participate in a focus group session that lasted approximately one hour. The focus group session was videotaped, and the interviews with the tutors were voice recorded with the consent of the student participants. These recordings were transcribed and analyzed through content analysis. These analyses were used for understanding the circumstances and the reasons for employing UGVs and role-playing. The documents submitted by the students were analyzed simultaneously. The document analysis helped to explore the ways how the students utilized them. The reason for the choice of the documents among the others submitted by the students for the analysis in this study was to cover the diverse ways how the students utilized these sources.

These posters, interviews, and focus group helped the challenges faced by the students concerning access to users or their caretakers and strategies developed by the tutors and the students to cope with to be uncovered. In this project, the tutors arranged a meeting for the students to conduct interviews and make observations at a rehabilitation center where a medical expert accompanied them. The sessions were arranged group by group not to disturb the people and their caretakers during the therapy. However, reaching users was an unforeseen challenge as this was a delicate issue for users and their families, and the users had a speech disorder. Some of the students said they used the pieces of equipment at the rehabilitation center themselves with the medical expert's help. Due to these challenges, the students tended to use UGVs, some of them supported the insights from UGVs with role-playing.

Student-1 explained the method she adopted for analyzing videos as identifying the first group of actions as getting support from a partner, walking, falling, getting up and balancing, and further specifying the sub-groups of actions under walking as crawling, slow walking and walking while getting support from somewhere.

She reported that she tried to measure the frequency of actions to understand how often these actions were performed and how effective a particular action was in the process. She compared two different videos of children having similar levels of CP to reveal the commonalities and variations of the conditions. Through these comparisons, she tried to quote a video section where a design contribution would make sense. She color-coded the group of actions to specify which actions were common and typical to each child.

She took screenshots from the video section, wrote captions under them, and put color-coded marks on them. She explained that the strip used during the walking therapy might need a design contribution since the pressure caused by the strip on the body required to be distributed, and tensions on the strip might need to be relieved with flexible parts. The student specified design requirements as handles, a wrapping portion contacting the child, and flexible parts (Fig. 6.4).



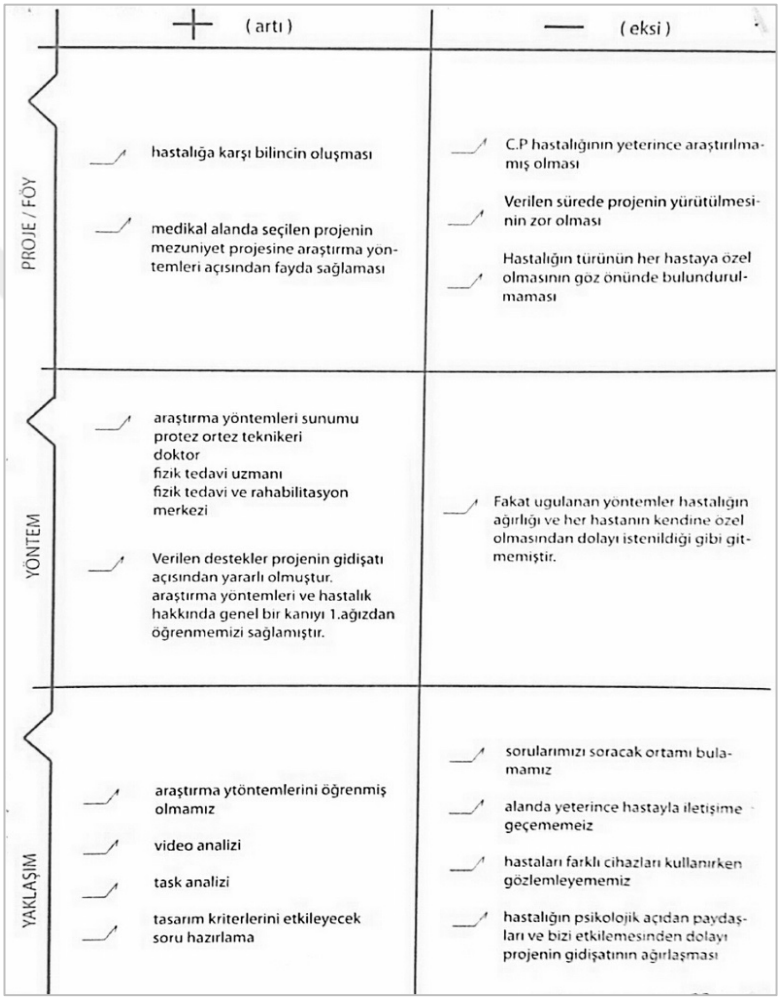


Figure 6.1 Top. Two examples from the student “troubles sheets”



Figure 6.2 Student-1's YouTube video analysis for "a walking support for people with cerebral palsy (CP)" project (Elif Kurt, 2016)

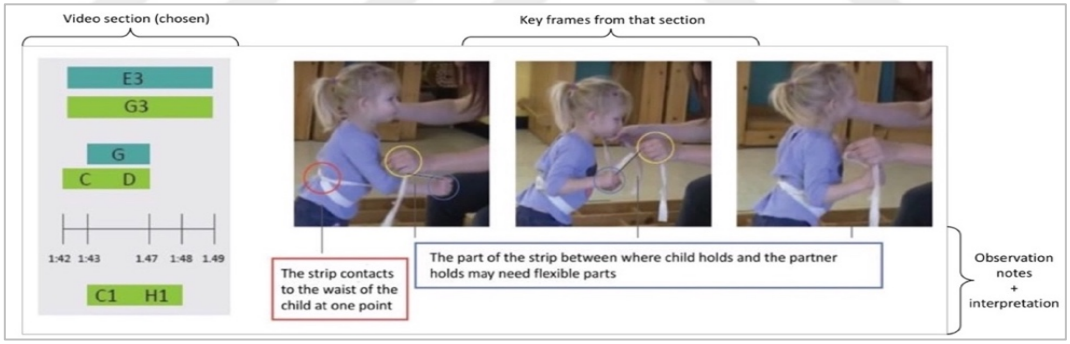


Figure 6.3 Student-1 identifies a video section with a potential area to address by design (Elif Kurt, 2016)

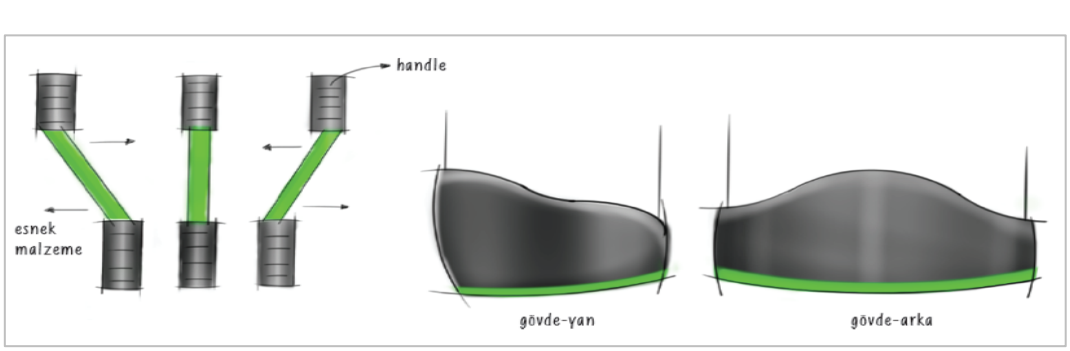


Figure 6.4 Student-1's design requirements (Elif Kurt, 2016)

Student-2 used multiple videos for comparison. She took screenshots from different videos and narrated her observations with interpretations. She chose videos of children with different levels of CP and different kinds of walking support apparatus. She coded the needs of children with pictograms: "partner support" and a "walking apparatus." She explained that she tried to explore and document different factors that encouraged children and supported them for walking exercises: motivation, rewarding, and providing a target. Her design idea was a walking trail that encourages children to walk and provides rewarding, and a target that supports them during walking exercise while developing the child's kinesthetic sense, ensuring that they have fun during the exercise (Fig. 6.5).

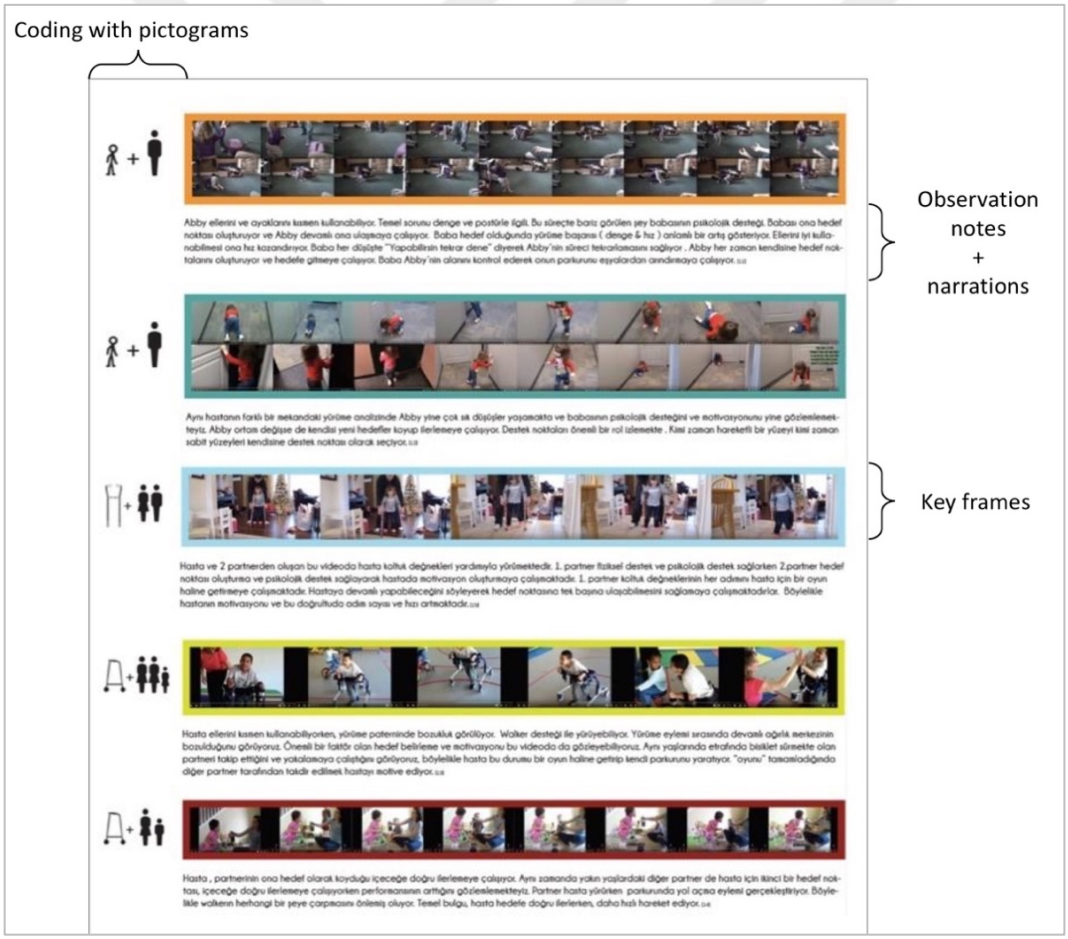


Figure 6.5 Student-2, narrating videos, coding with pictograms (Gizem Severoğlu, 2016)

Student-3 documented videos with screenshots and wrote what she observed by indicating the frame's time in the form of a storyboard without adding her interpretation.

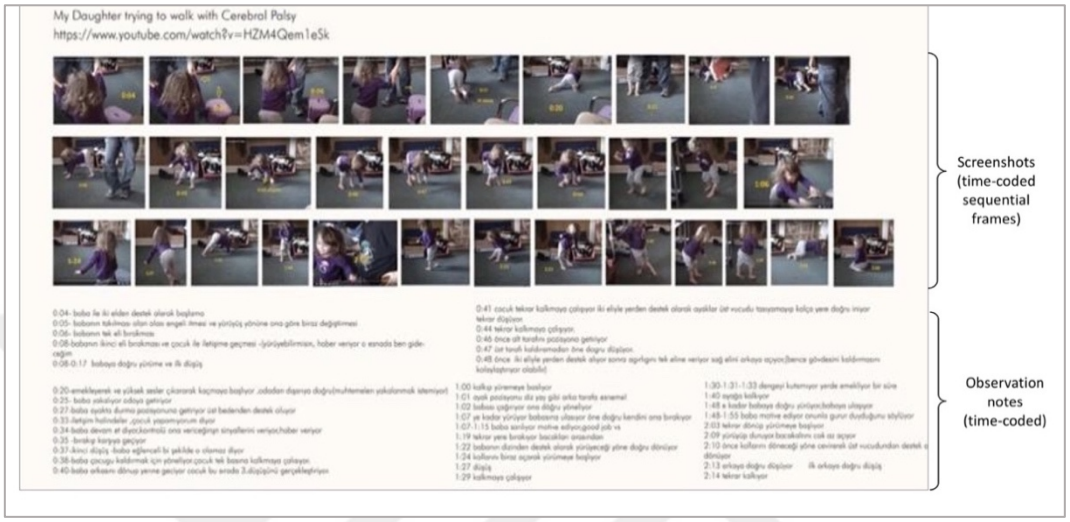


Figure 6.6 Student-3, screenshots and captions as observation notes (Şansın Tütengil, 2016)

A medical expert at the rehabilitation center suggested the students try the medical products on themselves. First, he acted out the task performed by the people with CP when they use a piece of particular equipment himself (Fig. 6.7) and then assisted Student-3's role-playing process by giving instructions (Fig. 6.8). This student who documented UGVs with storyboards did the same for role-playing sessions.



Figure 6.7 Role-playing: A medical expert acting out the task performed by the people with CP when using a particular equipment Şansın Tütengil, 2016)



Figure 6.8 Role-playing: Student-1 experienced a walking therapy equipment with the assistance of a medical expert Şansın Tütengil, 2016)

This student had prior knowledge from the literature search on "weak floor perceptions of people with CP." She was inspired by the YouTube video where a girl with CP does this exercise at home with her dad to integrate the qualities in this equipment used for balance therapy to the child's room. She looked for domestic features for addressing the qualities of the medical equipment she experienced.

The student's design idea was a carpet tile for the user's room for daily exercises that helps increasing feet and floor interaction for overcoming walking problems caused by weak floor perception (Fig. 6.9).

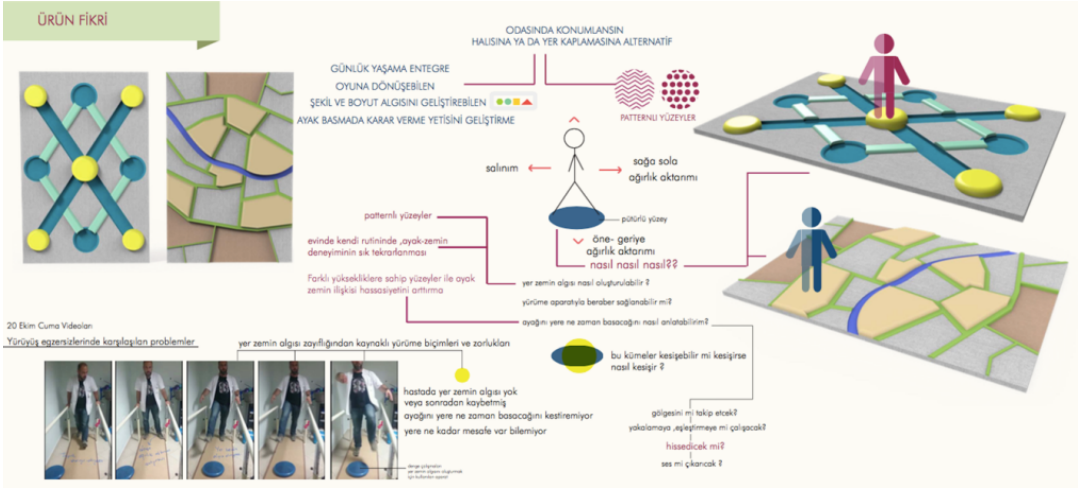


Figure 6.9 Student-3's design idea: A carpet tile for user's room for daily exercises (Şansın Tütengil, 2016)

6.1.2 Case II: An Outdoor Baby Feeding Set

A design studio project for junior year students was “outdoor baby feeding set.” For the exploratory research in the early phases of the design process, the students were supposed to conduct interviews with persons who take care of a baby -parents, grandparents, caretakers, etc. The user group was unfamiliar to the students, and most did not have direct experience with baby feeding. During the exploration phase, they tried to get in touch with their relatives or neighbors with babies. The students who tried to talk to persons with babies in the parks or the malls reported that they experienced difficulties; some users politely declined their interview requests or were reluctant to talk. Then, some students said they found videos on YouTube, which helped them explore important baby feeding issues.

Student-4 reported that she reframed her design problem as “feeding babies in restaurants, creating a hygienic surface on feeding chairs, and letting the baby feed himself.” She watched YouTube videos and made a documentation of important issues that may help generate design ideas. She took screenshots from videos which she found relevant and significant, wrote captions and annotations under them, and put color-coded marks on them. She explained that she tried to document hand functions concerning the caretaker's actions and the baby while considering the range of the baby’s reach on the feeding chair (Fig. 6.10).

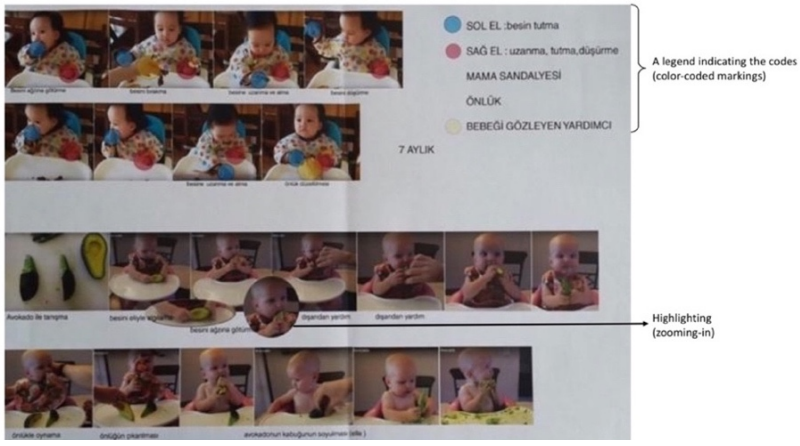


Figure 6.10 Student-4’s YouTube video analysis for “outdoor baby feeding set” project (Melis Konez, 2016)

Then she documented which kinds of food are placed on the surface in front of the baby considering baby's range of reach and the textual features of the food like soft fruits or hard fruits which are swallowed and which are chewed (Fig. 6.11). Her design idea was the tray serving the food and to the baby.

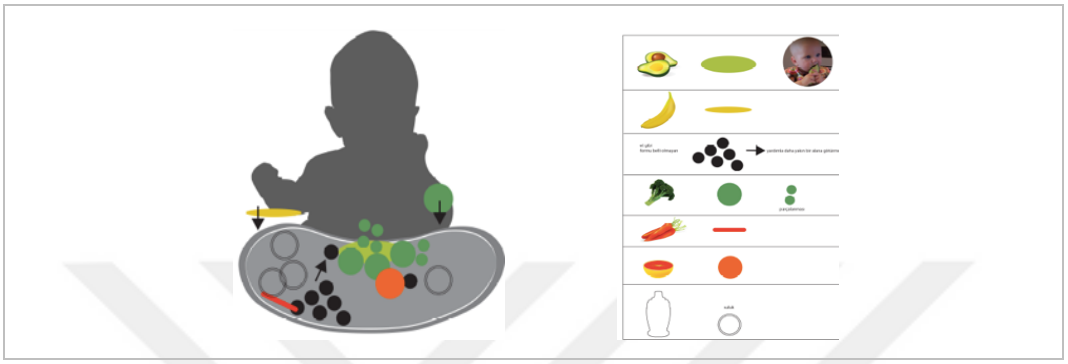


Figure 6.11 Outcomes of video analysis which document the places of fruits vegetables and meat on the surface in front of the baby (Melis Konez, 2016)

For the same project, Student-5 reported that after role-playing, she reframed her design problem as "non-contagious lids for semi-fluid baby food." Accompanied by a friend for getting help for taking photos, and acting with a doll, she made rough documentation of essential issues that may generate design ideas with those photos (Fig. 6.12).



Figure 6.12 Role-playing: Student-5 is feeding a baby doll in a cafe, trying to observe challenges from the point of view of the user (Fatmanur Önal, 2016)

Student-6, in her kitchen, role-played the preparation process of the meals for the baby before going out, from her prior literature review she knew the dietary requirements and weight in grams for a baby to take daily. She experienced the process and externalized her knowledge on the measures of the required amount to feed a baby for a day and the volumes of the containers, compared the amounts of the meal as the baby grows up (6-10, 10-12, 12-18 months respectively). She documented this process with photographs, printed out these pictures on the same page, and took notes regarding the amounts of the food (Fig. 6.13).



Figure 6.13 Role-playing: the measures of the required amount to feed a baby (6-10, 10-12, 12-18 months respectively) (Nazlı Hilal Özoğul, 2016)

6.1.3 Case III: Occupational Safety Boots for Miners

Student-7, who was designing boots for miners for her graduation project, said she used documentaries about mines recorded in different regions of the world such as Zonguldak in Turkey and Australia, and YouTube to get familiar with the problem domain and the user group. She analyzed these videos to understand the user, such as their body postures while working and the environment they worked in.

She took screenshots from the videos and put color-coded marks on them to recall the ones related to the body postures or the environment. She marked the screenshots related to the body postures with red and the ones related to the environment with green (Fig. 6.14).



Figure 6.14 Screenshots from YouTube videos regarding the body postures of miners and the environment they work in (Seda Yetkiner, 2017)

Then she further explored the keyframes by figure outlining regarding the task-related body postures by highlighting the contours. Then, she took off the background elements to simplify the image and focus on postures (Fig. 6.15).



Figure 6.15 Left: Drawn-in elements such as contours. Right: Highlighting body postures (Seda Yetkiner, 2017)

After that, she acted out miners' tasks and marked pressures, tensions, and flexion on the feet on her socks. She documented the results of this process with photographs (Fig. 6.16).



Figure 6.16 Exploring flexing and tension areas on the foot Seda Yetkiner, 2017)

She explained that she identified these pressures, tensions, and flexion on the feet and lower legs concerning the postures from the orthopedics literature (Fig. 6.17).

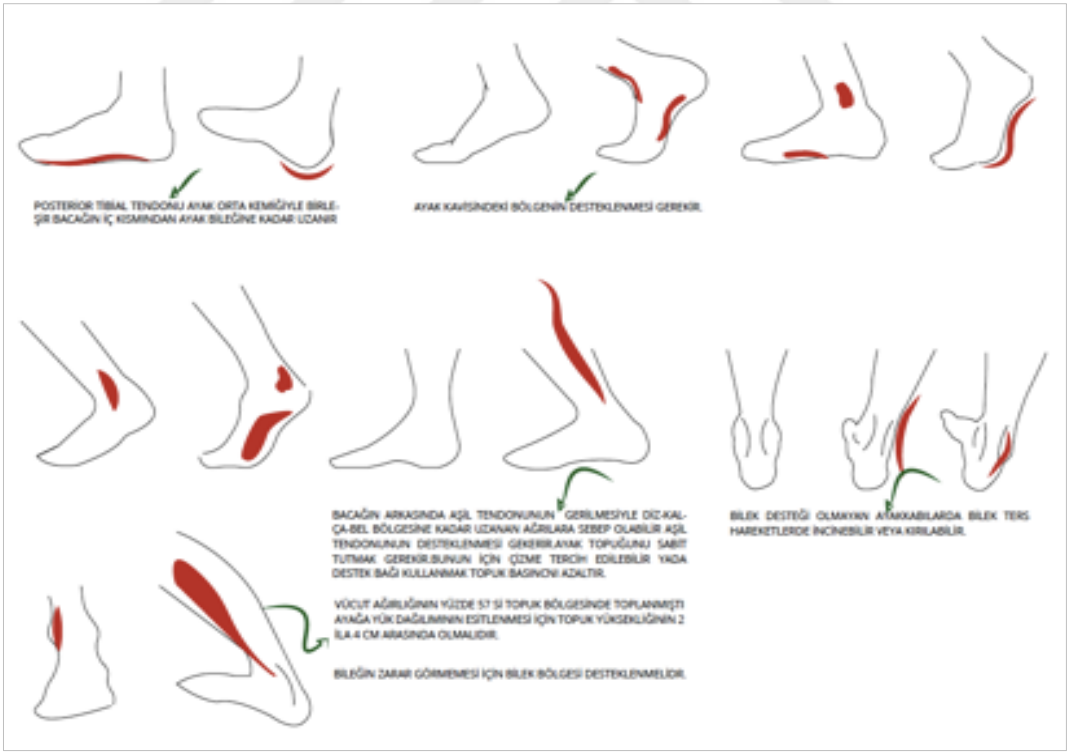


Figure 6.17 Identifying pressures, tensions and flexion on the feet and lower legs concerning the postures (Seda Yetkiner, 2017)

The design requirements reported by Student-7 were light weighing, having breathing surfaces, a high coefficient of friction on the base of the shoe, protective surfaces for the toe cap and metatarsal area, easing flexion-extension movements.

6.1.4 Case IV: Occupational Safety Boots for Fireman

Student-8, who was designing boots for firemen for her graduation project, said that she used YouTube videos to get familiar with the problem domain and the user group. Through videos on the internet, she observed extreme cases difficult to observe in real life, such as traffic accidents and wildland fires. She prepared a photo collage with screenshots from different videos documenting different ways of handling the hose in different contexts of burning structures or hazardous areas. This student had prior knowledge from the literature search on the fireman buddy system for hose carrying and handling. She explained that she tried to explore the task-related body postures in detail while carrying the hose, directing its tip to the fire, and the boots' contact areas to the suit and the ground (Fig. 6.18).



Figure 6.18 A collage with screenshots from different videos documenting firemen handling the hose in different contexts (Miray Hamarat, 2017)

She asked a fireman how he gets his boots and suits on when he received an emergency call. She video-recorded this process and later documented it in the form

of a storyboard. She referred to the seconds of the keyframes and wrote captions since these were important information for her (Fig. 6.19).



Figure 6.19 Keyframes from a video a fireman acting out how to get on boots and suit on (Miray Hamarat, 2017)

As reported by her, the design idea was based on the fact that firemen wear different boots at the workstation, and when they are on duty, and wear the duty suits and boots on, demands them to be as quick as possible. This idea emerged from the video analysis, where the user acted out getting boots and suit on in the station. To shorten this process observed in the video, she considered a transformable form between workstation boots and on-duty boots. The video collage made of UGVs helped her to consider the necessary details to fix the boots when used as on-duty boots and stretched to be used long and to observe the contact areas between the suit and boots by providing essential clues on different body postures while the fireman is performing his duties in the extreme conditions of a fire.

6.2 Using UGVs and Role-playing: Example Projects and Students' Works

Two tables explaining the analysis modes and coding techniques in the video analysis and role-playing posters are presented (Table 6.2 and Table 6.3) for Study-I, which is composed of four cases. To convey a detailed view of how visual

materials extracted from UGVs were interpreted and represented by the students. These tables illustrate the kinds of video analysis or interpretation ways were applied regarding the quality of the design problem. For example, the problem domains like walking support may need counting the frequency of actions, while designing boots for miners may require exploring various body postures of the user and compiling them on the same page. These modes and techniques may vary according to the design problem at hand or how the students want to frame them.

6.2.1 Using UGVs for Exploratory Research in the Early Phases of the Design Process

The examples from student projects indicate that design students utilize online UGVs in different ways for exploratory research in the early phases of the design process. In terms of content, they explored several issues like emotions, behaviors, routines of practice, tasks of the users, related actions, contextual features, the roles of the stakeholders, problematic situations, and design requirements.

A taxonomy of the modes of analysis and coding techniques employed by the students in various educational projects were presented in Table 6.2. Typically, the video analysis boards prepared by the students were observed to be a compilation of screenshots from the videos or a sequential organization of them. There were also rare cases where students attempted a more quantified approach and visualized the data quantified. The analysis boards were also supported by labels, captions, marks, pictograms, comments, and citations from the videos and the literature search conducted before the video analysis. The significant modes of analysis identified were thematic collage making, quoting, storyboarding, and quantifying; these modes showed some variations within themselves. The coding techniques identified were diverse and rich, and included labeling, marking, figure outlining, commenting, diagramming, etc.

Table 6.2 Video analysis modes and coding techniques

UGV ANALYSIS

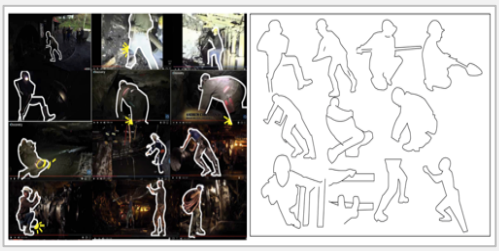
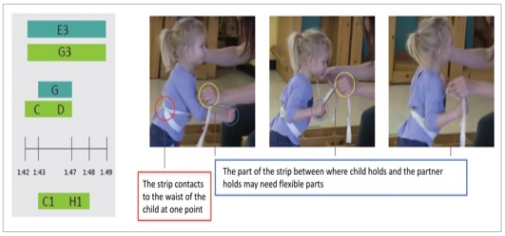
Mode of Analysis	Coding Techniques	Examples
Thematic collage making	**Labelling** In the example, video frames showing the ways in which firefighters handle the hose were brought together, categorized, labelled and described verbally.	
	Figure outlining In the example, video frames showing various body postures of miners were brought together, outlined and the outlined figures are isolated for further analysis.	
Video quotation	**Marking, commenting** In the example, sequential video frames are chosen to comment on a design insight.	
Storyboarding the video content	**Documenting time-coded observation notes** In the example, observation notes are given in relation to the time-coded sequential frames.	

Table 6.2 (cont'd)

Storyboarding the video content	**Labelling** In the example, specific regions on the sequential frames are marked and labelled. **Documenting observation notes, zooming in** In the example, observation notes are given in relation to sequential frames, and a specific part of the frame is shown as close-up.	
	Narrating, Labelling with pictogram In the example, sequential video frames are brought together around a narration. Each narration is categorized and labelled with a pictogram.	
	Marking In the example, the whole video is summarized with video frames ordered sequentially. The frames which include specific elements are marked.	
Quantifying the video content	**Diagramming, Visualizing quantified data** In the example, various actions of two separate users are quantified and visualized comparatively.	

Thematic Collage Making. Student-7 brought together similar and related images from different videos. In the example, video frames showing how firefighters handle the hose were brought together, categorized, labeled, and described verbally (Fig 6.18).

Video Quotation. By taking screenshots from the video and making a video line with specific keyframes, Student-1 reported that she tried to quote a video section where a design contribution would make sense. She color-coded the group of actions to specify which actions (Fig 6.3).

Storyboarding the Video Content. By taking screenshots from the video and making a storyboard from sequential video frames, Students 2, 4, 6, and 7 presented their observations (Fig. 6.5, 6.10, and 6.14). Student-2 made comparisons between videos for exploring the variations concerning the walking support needs of people with CP: similarities and differences, common problems, and individual needs.

Storyboards provide a visual narrative that generates empathy and communicates the context in which a potential product will be used. Storyboarding can help visually capture the essential clues that shape the context of how, where, and why people engage with products. By illustrating contextually rich narratives, storyboards can be used to build empathy for end-users in the early phases of the design process (Martin and Hanington, 2012).

Figure 6.19 illustrates a typical storyboard format employed in the movie or animation industry. This storyboard is filled with keyframes involving the information regarding the action, dialogue, timing, notes, the scene, and page number. The storyboards are used as a base, and pre-visualization for animation later be created. Within the design process, it can also be used in a different mechanism and purpose, depending on the phase it is employed in: Research, idea generation, or presentation. Storyboards are employed in the design field to understand contextual elements into a narrative and help designers to consider how products and services could improve people's lives (Martin and Hanignton, 2012). Video quotation and

storyboarding the video content with an approach to making a narrative line both employ storyboarding

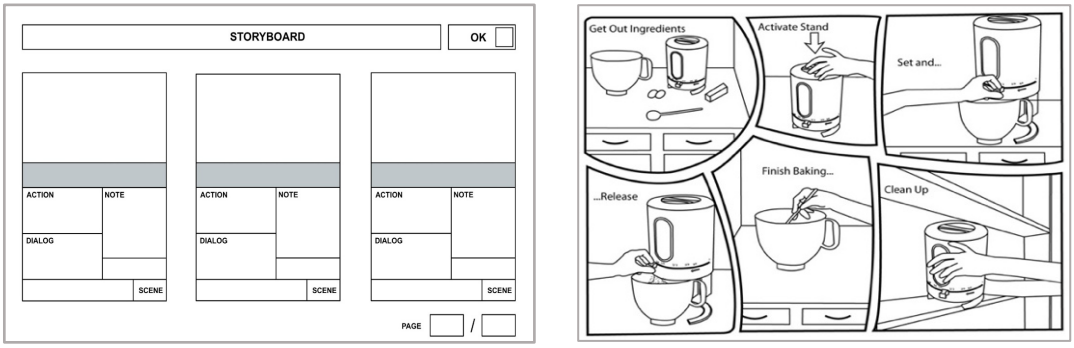


Figure 6.20 Left: A storyboard template (reproduced by the researcher); Right: Storyboard example used in design (Retrieved December 5, 2019 from https://blog.usejournal.com/storyboards-how-to-separate-good-ideas-from-bad-designs-d701a9e82d7c)

Quantifying the Video Content. One of the approaches developed by the students (Student-1) was quantifying and visualizing the quantified data. In the example given in Fig. 6.2, the student intended to measure the frequency of activities and sub-activities to understand how often these actions were performed and how effective a particular action was in the process. She adopted a comparative approach and made comparisons between two separate videos concerning two children with similar levels of cerebral palsy to reveal the commonalities and the variations in their conditions. For this purpose, she used a time-line diagram showing when and for how long an activity or sub-activity took place. She color-coded them in the diagram considering the child in the video to show the situations specific to each child and the commonalities between them. Understanding similarities and differences helped the student observe common problems and individual needs, the variations concerning the walking support needs of people with cerebral palsy, and the exploration of which actions needed care.

Coding Techniques. The video analysis board examples prepared by the students for various projects are used as a canvas to be enriched with labels, captions, annotations, and citations from videos or their literature review before the video

analysis. They highlighted things they considered necessary with drawn-in marks or contours. They color-coded the drawn-in marks to distinguish different information. The marks were used when students wanted to preserve the context of use and the contours; in other words, figure outlining was used to simplify the background and focus on specific things. Some of them labeled them with pictograms to summarize and simplify the information related to the partner support and a walking apparatus. The student who prepared a themed collage used labels to categorize the information. Some of them elaborated on timing, time frames, or time sections in the video. The others added a "legend," explaining the meaning of the symbols used to code the marked or highlighted elements.

6.2.2 Using Role-playing for Exploratory Research in the Early Phases of the Design Process

Examples from the student projects indicate that design students utilize role-playing in different ways for exploratory research in the early phases of the design process. In terms of content, they explored several issues like routines and current products of the practice, contextual features, and related problematic issues. They adopted role-playing for understanding users and context of use while adding an embodied and tangible experience dimension to the design process. These performances were self-directed or expert-driven such as being facilitated by an expert (e.g., medical expert, fireman).

Student-6 and Student-7 performed a self-directed informative process of role-playing while Student-3 and Student-8 expert-driven process of role-playing. The reason for specifying these processes as the informative process is rather than generative is that students explored the structure of the problem by acting out transfer experiences from the role-playing in these situations to their design ideas instead of directly generating ideas. In terms of mode of analysis, the ways they adopted for interpreting the data can be described as storyboarding the role-playing content, modelling and employing props, identifying and specifying: performing by considering a prior knowledge regarding the topic, for documenting observations,

externalizing the knowledge from literature as props: measures and volumes of baby food (Table 6.3).

Storyboarding the Role-playing Process. Student-3 performed an expert-driven informative process of role-playing. A medical expert facilitates the process. First, the expert acted out the task performed by the people with CP when they use a piece of specialized equipment himself (Fig. 6.7), and then assisted the student's role-playing process by giving instructions in which the student mimicked the users' exercise process with a piece of specialized equipment in the real context for tangible and embodied experience (Fig. 6.8). This process enabled her a kinesthetic sense of the situation to recall. Then she reflected on and externalized the outcomes of this process in the form of a storyboard.

Student-8 asked a fireman to perform his getting ready routine when he received an emergency call in the real context. In this case, an expert is involved in the process for acting out, and like Student-3, this was an expert-driven informative process of role-playing (Fig. 6.19). Unlike her, the student did not act out this process herself. Thus, this performance provided her with only visual experience but not a kinesthetic experience. Since the user is partially accessible when he was at the station, the student was able to learn about the current practices, however, when he is on duty, it is not easy to access the context, and that is where using UGVs contributed.

Modelling and Employing Props. Student-7 performed a self-directed informative process of role-playing by mimicking miners' tasks in a staged context for tangible and embodied experience and externalized the outcomes of this process in the form of a 3D model and photographs of the model. During experiencing the miners' tasks of digging by mimicking their body postures, since she was interested in the leg and foot area for designing occupational safety boots for miners, she marked the flexion and tension areas on her socks. She produced a 3D model of the foot from clay, put on her sock, and took photographs. Then she referred to the knowledge from the literature concerning pressure and flexion-tension areas on foot. This process gave her a kinesthetic sense of the situation to recall and transfer experiences from role-playing in these situations to her design ideas. She verified the embodied experience

by returning to the literature, referred to the knowledge from orthopedic literature concerning pressure and flexion-tension areas on foot (Fig. 6.16).

Student-5 performed a self-directed informative process of role-playing and mimicked a caretaker's feeding a baby in a café. She acted out with a doll, and with the help of a friend, she was able to take photographs as snapshots of important moments and document and externalize them to recall later or communicate her findings (Fig. 6.12). Unlike storyboarding in which one can return and reflect on essential issues later, the time of the recording, in this case, was the moment when the student decided documenting them.

Identifying and Specifying. Student-6 performed a self-directed informative process of role-playing and externalized the knowledge from the literature review regarding measures and volumes of amounts to feed a baby daily. She took photographs of the outcomes of the role-playing process in which she prepared the baby food required daily according to the baby's developmental level.

6.2.2.1 The Actors and Facilitators

Let it be a self-directed or expert-driven role-playing process; we can say that the students who mimicked routines of the practice such as digging the ground with specific work tools (Student-7), routines of walking therapy (Student-3) or preparing the daily required measures a baby needs to be fed (Student-6), on a prior video analysis or literature review, built a structured-base for role-playing. Student-7 decided to mimic specific postures of a miner performing his tasks for a kinesthetic sense and to document the process by marking her socks, Student-6 decided to externalize the measures of the food and Student-3 decided to record the process of role-playing of using a piece of walking therapy equipment with a video camera beforehand. However, Student-5 feeding a doll in a café, performed an unstructured role-playing process, and improvised with no rules and as she explored essential issues, and took snapshots of them.

Table 6.3 Role-playing modes and coding techniques

ROLE-PLAYING ANALYSIS

Mode of Analysis	Coding Techniques	Examples
Storyboarding role-playing process	**Documenting time-coded observation notes** (In the examples, observation notes are given in relation to the time-coded sequential frames.)	
Modelling and employing props	**Capturing just-in-time** (In the example, a rough documentation of important issues is done by taking photos)	
	Marking (In the example, cloth worn on the body are marked with related motions: tension and extensions)	
Identifying and specifying	**Documenting observations, zooming in** (In the example, observation notes are given for measures in the cups)	

6.2.2.2 Using UGVs and Role-playing for Exploratory Research in the Early Phases of the Design Process

While utilizing UGVs, the students documented the critical issues in UGVs in different modes. Unlike the UGVs which were ready found from online platforms, for role-playing, they first needed to perform, thus create the research material to later document and analyze. In terms of content, UGVs and role-playing are observed to enable them to explore several important issues discussed in the previous sections. These performances were self-directed or expert-driven such as being facilitated by an expert.

The opportunities created by the combined use of UGVs and role-playing technique can be seen through the design process of Student-3 (support for persons with CP), Student-7 (occupational safety boots for miners), and Student-8 (occupational safety boots for firemen).

Using UGVs and role-playing enabled Student-3 to transfer the information obtained from the literature search into applicable knowledge. This student had prior knowledge from the literature search on "weak floor perceptions of people with CP." She used UGVs to familiarize herself with the walking exercises of a child with cerebral palsy. In the rehabilitation center, she experienced a medical balance board through role-playing. She was inspired by the YouTube video where a girl with CP does this exercise at home with her father to integrate the qualities in this equipment used for balance therapy into the child's room. She looked for domestic features for addressing the qualities of the medical equipment she experienced and designed a carpet tile for rooms of children with CP (Fig. 6.21).

Student-8 asked a fireman in the real context to perform his getting ready routine when he received an emergency call. In this case, a fireman as an expert was involved in the process for acting out, and as Student-3 did, it was an expert-driven, informative process of role-playing; however, unlike her, Student-8 did not act out this process herself. Thus, this performance provided her with only visual experience but not a kinesthetic one.

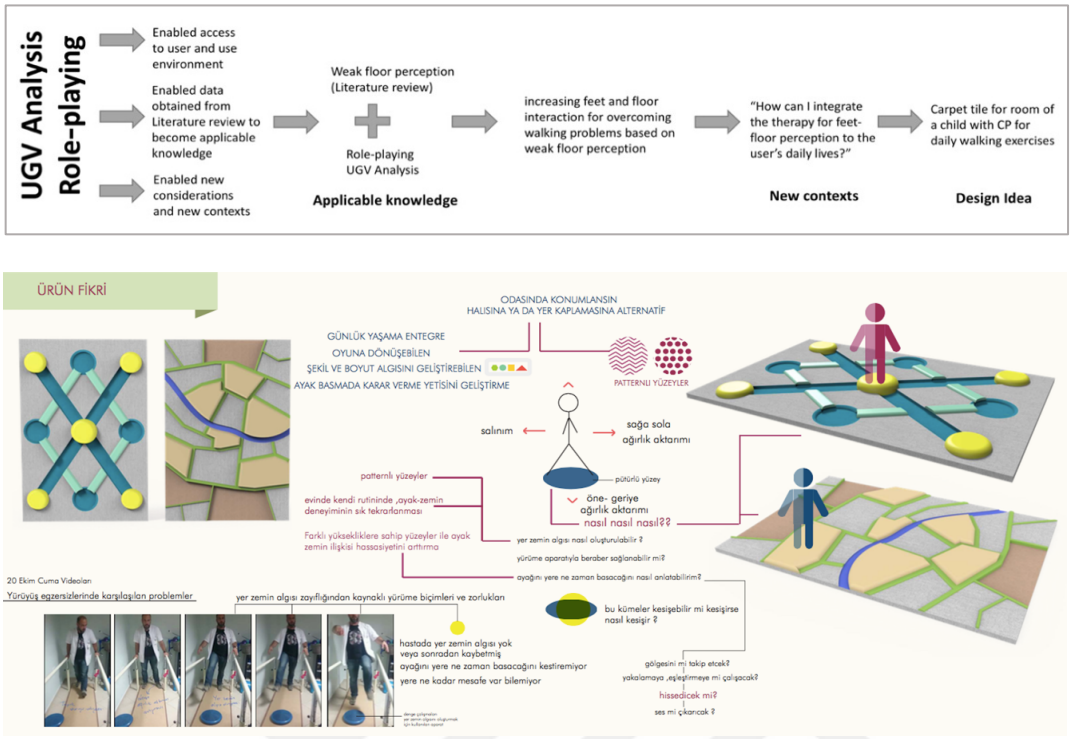


Figure 6.21 Top. Student-3's exploratory research in the early phases of the design process; Bottom. Student-3's design idea (Şansın Tütengil, 2016)

Since the fireman was at the station, the student was able to learn about the current practices through observations; however, when the fireman is on duty, it is risky to access the real context for the student, and that was where using UGVs contributed. The student was inspired by the performance of the user who acted out how to get boots and suit on at the station. She had prior knowledge from the literature search on the fireman buddy system for hose carrying and handling. She explained that she tried to explore the task-related body postures in detail while carrying the hose and directing its tip to the fire, and the contact areas of the boots to the suit and the ground. She considered a stretchable form that can transform from workstation shoes to on-duty boots in which the video collage made of UGVs helped her recall the body postures and consider the necessary details to fix the stretched boots.

Student-7 verified her embodied experiences from role-playing regarding the pressure and flexion-tension areas on foot, referring to the orthopedic literature. The

design requirements presented by her were based on these body postures and the environmental conditions in the mines such as the wet and slippery floor.

The sequence followed by the students was the literature search, UGV analysis, and role-playing. A literature review conducted before UGV analysis and/or instructions given by the experts provided the required background knowledge to the students to evaluate the credibility of UGVs. What students have learned from the literature search and UGVs formed a structured base for role-playing. Instructions provided by the experts as facilitators enriched the experiences the students had gained from the role-playing process. The literature review also provided the critical information concerning the user and the context (e.g., weak floor perception of people with cerebral palsy, a fireman buddy system for hose handling, occupational security for miners, the daily required amount to feed a baby according to developmental level), the UGVs provided descriptive representations of real users' experiences through visual materials. Instructions by experts influenced the students' experience and provided the background knowledge and for role-playing sessions to some extent (Fig. 6.22).

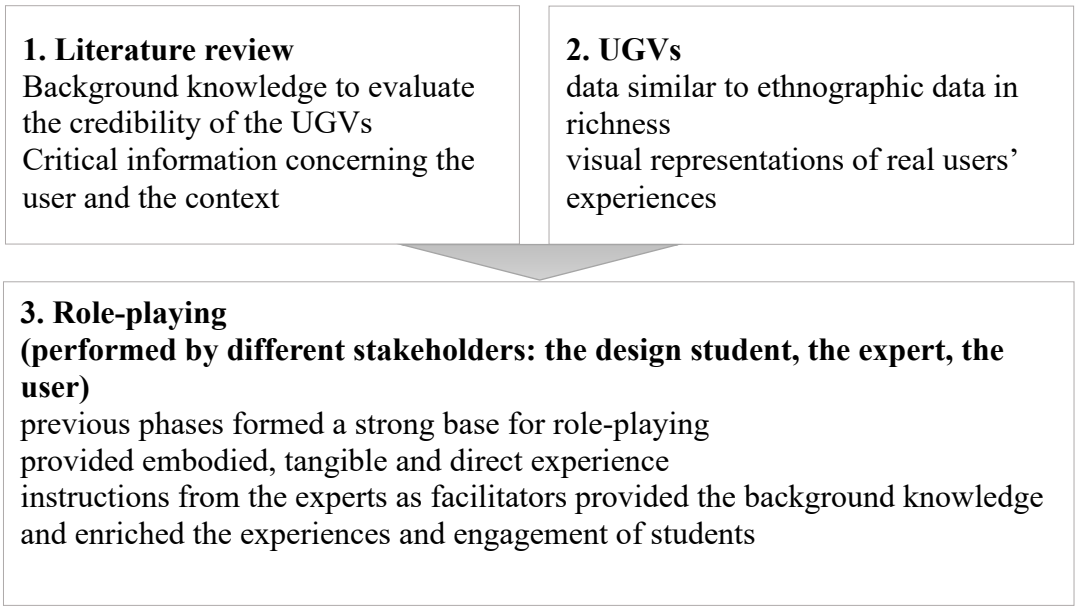


Figure 6.22 The order in which particular methods and tools were employed for the exploratory research in the early phases of the design process

6.3 Evaluation of Study-I

Among the examples, some of the students only employed UGVs or only role-playing during the design process. Although UGVs or role-playing as a stand-alone can provide insights to some extent, using both together has increased the potential to arrive at diverse ideas and concentrated solutions. For instance, the students who used UGVs as stand-alone might have experienced kinesthetic or tactile senses, obtained tangible clues, and explore diverse dimensions of the problem through these senses. The student (Student-5) who employed role-playing as a stand-alone technique, with prior UGV analysis, would have explored diverse contexts search rather than a café, which might have enriched the design opportunity possibilities.

Although using UGVs provides valuable insights, improving the viability of information in UGVs by connecting the analysis process with people like experts, caregivers, user advocacy groups, or representatives from the user group, who can also facilitate role-playing sessions are necessary with regards to a verifiable design process and idea generation. This process can also be advantageous in providing the students a preparation phase for the rest of the design process and a better understanding and comprehension of the problem, especially in which direct contact with real people involves sensitive issues, thus requiring extensive preparation and care. Student-6 (designed carpet tile) and Student-8 (designed boots for firemen) conducted expert-driven role-playing, and since an expert facilitates this process, they experienced a more reliable process. Therefore, considering the ways of integrating various stakeholders such as experts, user advocacy groups, or representatives from the user group into the role-playing process is essential.

According to Study-I, employing UGVs and role-playing as consecutive mediums is considered a novel approach. One side -UGVs- makes it possible for the students to access domains that were, in fact, inaccessible in real life like the issues discussed, while the other side -role-playing- support the students for empathizing with users with lived and bodily experiences. They complement each other with their various features that drive exploration. The UGVs provide descriptive representations of real

users' experiences through visual materials, and role-playing provides subjective embodied experiences that may help to sense and feel.

CHAPTER 7

STUDY-II: DEVELOPING AND IMPLEMENTING A METHOD

This thesis study investigates the implications of user-generated videos (UGVs) and role-playing (RP) for exploring unfamiliar problem domains for developing a method to be employed for exploratory research in the early phases of the design process utilizing them together. Through the insights provided by Study-I, it is seen that UGVs and role-playing have the potentials for exploratory research in the early phases of the design process. Study-II was planned as a case addressing an unfamiliar design problem for the students, in which UGVs and role-playing be employed together. This study was conducted for structuring the phases, and the tools and guidelines of the proposed exploratory design method. Table 7.1 illustrates findings from Study-I. UGVs and role-playing can be both employed as expert-driven or self-directed ways; the expert, him/herself, can act out or facilitate the students to act out. The documented content is generally related to the practice, and related problems and different modes can be employed to analyze or document the observations. Study-II was based on the findings from Study-I, and Table 7.2 shows how the study proceeded. In Study-I, the implications of using UGVs and role-playing together as a method to be employed for exploratory research in the early phases of the design process were explored, insights from the four cases were documented and reported, while in Study-II, the techniques, toolkit, and guidelines of the proposed method were organized in sequences.

Table 7.1 The ways design students use UGVs and role-playing in Study-I

	UGVs	Role-playing
Exploratory research	Expert-driven / Self-directed	Expert-driven / Self-directed
The content	Routines of the practice Practice-related situations Problematic issues Frequency of actions Differences / Similarities Emotions, facial expressions Contextual features The roles of the stakeholders	Routines and current products of the practice Contextual features Problematic issues Kinesthetic experience Visual experience
Mode of analysis	Quantifying the video content Video quotation Storyboarding the video content Thematic collage making	Storyboarding the role-playing content Modelling and employing props Identifying and specifying

Table 7.2 How the study proceeded from Study-I to Study-II

STUDY-I: Exploring the problem context		**STUDY-II: Developing and Implementing a Method**
Implications of using UGVs and Role-playing together for exploratory research in the early phases of the design process	Documenting and reporting insights from Study-I: 4 Cases	Organizing the techniques to be employed in sequences (and developing its toolkit and guideline)
How the students used UGVs and Role-playing	Phases and sequences: • Literature review • Video analysis • Role-playing	Literature review User-generated videos • 1st: Providing credible video resources (by the researcher from a compilation of different examination videos) • 2nd: Creating a YouTube playlist Expert-driven-role playing (Role-paying as exploratory research technique) Puppet scenarios
	Mode of analysis	
	Coding techniques	
	The content	
	Performative ways (for role-playing)	

7.1 Educational Project on Pediatric Examination Room

Study-II aimed to propose a method that combines the analysis of UGVs available on the internet that provides indirect access to user experience with the role-playing techniques that facilitate embodied experience. Besides, it is applicable in a short time, be appropriate for novice designers, and be customizable to different design projects.

Since it was expected for the students to have some knowledge base regarding understanding and empathy for users and the educational outcomes are so accordingly, third or 4th-year industrial design students were considered for the study, and 4th grades were chosen for the study the 2018 fall semester.

There were 75 students, three tutors, and one teaching assistant who was the researcher in this class. There were approximately 25 students in each group of tutors. For the project, students formed teams of five, and 15 groups completed the project. The project duration was five weeks (October 13 - November 17, 2017). The student teams participating in this study were named by considering their sections; the teams in section A were A1, A2, A3, A4, and A5; in section, B were B1, B2, B3, B4, and B5; and in section C were referred to as C1, C2, C3, C4, and C5.

7.1.1 Introduction of the Project

Unfamiliar problem domains, hard-to-access users, and contexts were important issues for choosing the project subject. Therefore “A pediatric examination table and its surrounding design project” was chosen for the qualities since it was not seen appropriate to let students access the real context of a sick child. Instead, they were expected to access real users through the videos uploaded by them or their parents on the internet since they were rich sources of information. An expert would be the agent to check the credibility of videos with the students and provide important clues regarding the practice while the tutors would facilitate this exploratory phase. They could meet with healthy ones, but the meeting environment was neither provided by

the tutors nor by the researcher. Rather than being solely based on the students' efforts, facilitating a collaborative process with a strategic involvement of stakeholders in the process such as tutors, experts of the topic, user advocacy group or a representative from the user group was seen important for helping students to enlarge their perspectives and find new opportunities for design. The students were expected to gain some insights from the literature and videos before meeting the expert for easing building a common language before meeting stakeholders of a pediatric examination room who were health personnel, doctors, parents, and the child who was purposefully chosen as an inaccessible user for the students (Fig. 7.1).

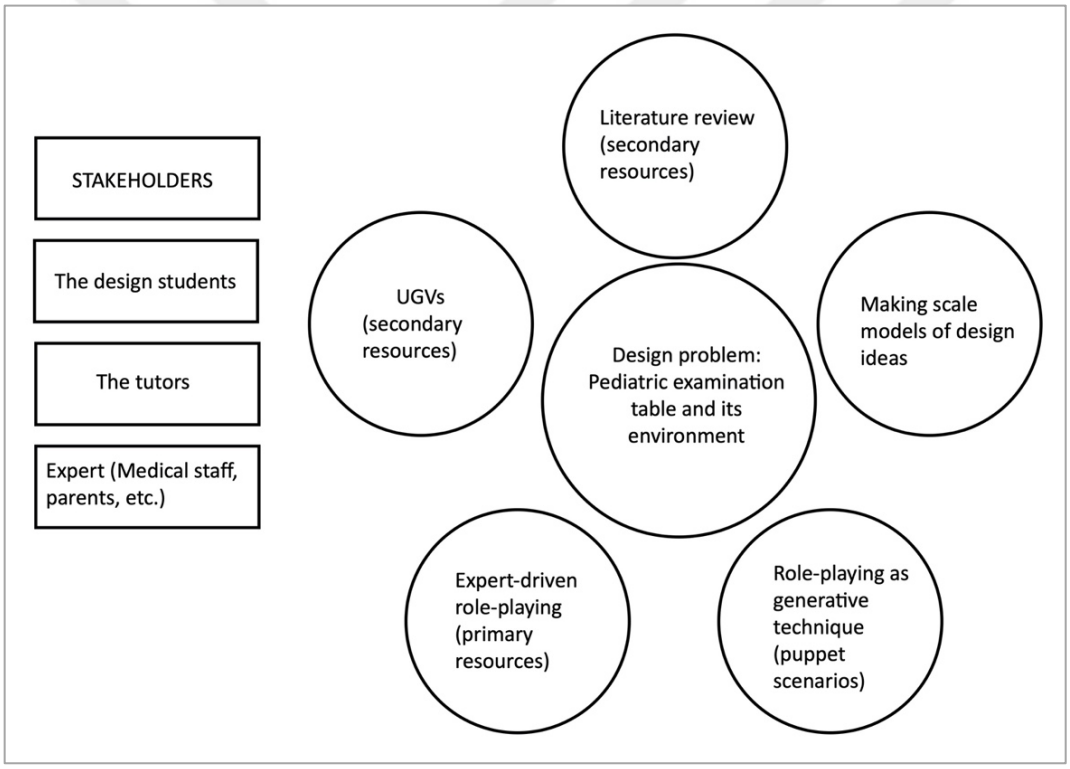


Figure 7.1 The model of Study-II

7.1.2 The Phases of the Project

Literature Review (LR). The project started with a literature review. There were 5 teams in each section and one topic was given to each team to be presented in a poster (Fig. 7.2). These topics were:

- Team 1: What is pediatrics? What are the differences between examination, diagnosis, and treatment? What is the pediatric examination, what processes does it involve? What are the responsibilities of the medical staff and the parents in the hospital before, during and after the pediatric examination? What are the pediatric examination room hardware and equipment? (to think of the examination process as holistic, to know the name of the medical staff, to inform the family of the hospital, waiting environment)
- Team 2: Anthropometric measures (weight, height) about childhood, physical, cognitive, social, and emotional development according to age
- Team 3: A historical view on pediatric diseases and health; developments, legislations (e.g. World Health Organization: child health and welfare), safety standards regarding hospitals
- Team 4: Existing inspection rooms (MRI, PET, CAT imaging rooms may also be included in the examples).
- Team 5: Well-designed examples of good physical environment for children (schools, parks, etc.)

The posters were hung at the walls and presented in the studio by the teams, each section composed of 5 teams were in in a different classroom. The 5 teams presented their topics in 15 minutes one by one. After each presentation there was a discussion session. All of the 15 teams were not able to listen to each other's presentation, however, during the breaks they were able to walk around and see other sections' posters. This, provided knowledge share in between the sections and the teams.

Table 7.3 The overview of the weekly program of the project

Start	**Oct 13, 2017**	Delivering the project	Introducing the brief and schedule
Week-1	Oct 16-20, 2017	LR (Literature Review)	5 topics / 5 teams in each section Presentations and discussions
		UGVA (User-Generated Video Analysis)	Introduction: UGVs Sharing credible videos (by the researcher) Sharing a YouTube playlist (by the researcher) The students add videos to the playlist Presentations and discussions
		EM (Expert Meetings)	Getting ready: Writing down the questions to the experts Role-playing (the expert and the students)
Week-2	Oct 23-27, 2017	IFC (Insights/ Findings/ Conclusions)	Compilation of LR, UGVA and EM Presentations and discussions
		Project themes and dimensions	Project dimensions Project themes: by tutors (based on students' reports) IGM worksheet
		IGM (Idea Generation Matrix)	Warming-up: exploring themes Phase I: filling the Solution Areas (fill in 5 SA covering all the themes at least once) (Peer-review I) be inspired (voting good ideas with stickers) Phase II: completing the rest
Week-3	Oct 30-Nov 3, 2017	Mock-ups	Choosing at least two SA from the IGM to develop one alternative (scale:1/10)
		PS (Puppet Scenarios)	
		Getting ready	Introduction: what is a scenario, elements of a scenario, "how their design concepts might contribute to the pediatric examination practice?" Building 1/10 mock-ups of the examination table, room and, dummies to act-out with
		Warming-up	Preparing the role-playing set-up
		Role-playing	Peer-review II: PS (5 students: 2 guest students + 3 from the team)
Week-4,5	Nov 6-16, 2017	Finalization	Detailed drawings and models
Finish	**Nov 17, 2017**	Final presentations	Evaluation and feedback

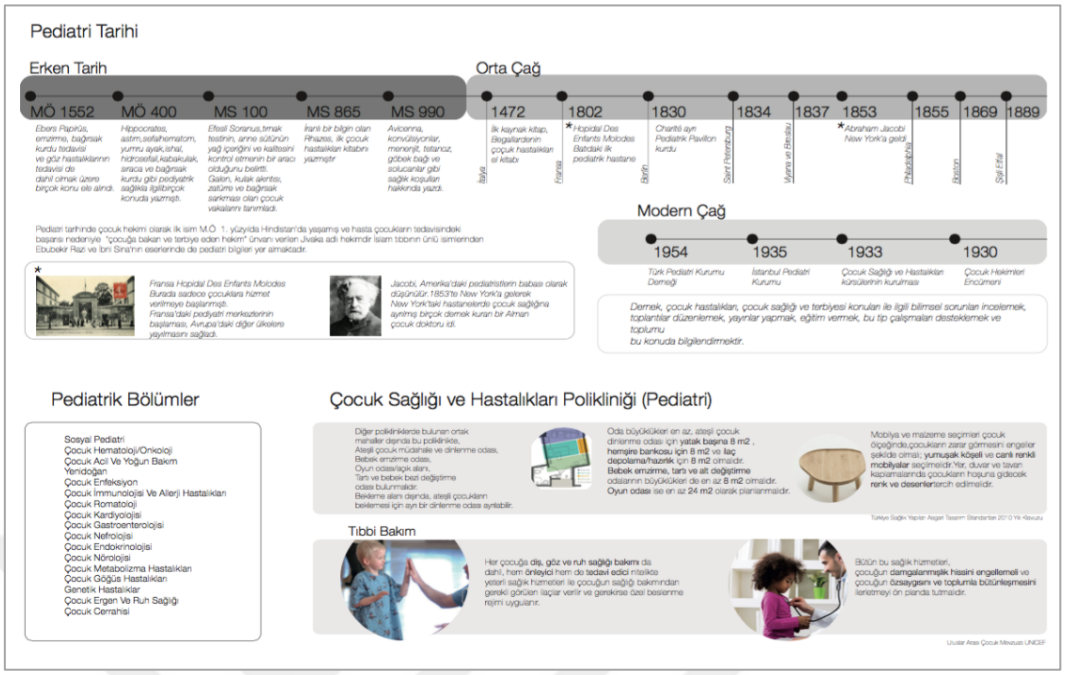


Figure 7.2 An example poster of Literature Review (Team B3)

Compiling videos for UGV Analysis in a YouTube Playlist. Compiling videos for UGV Analysis in a YouTube Playlist. After this study, certified video materials regarding pediatric examination were shared with the students. These video materials involved different examination ways of different parts of the body and were part of a book concerning pediatric examination (Fig. 7.3). The videos were shared as a Dropbox file by reminding the students not to share them publicly since they are subject to copyright.

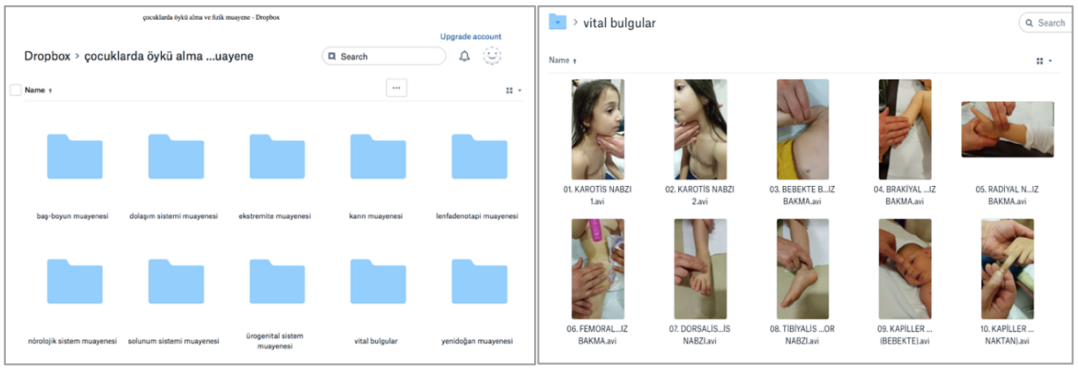


Figure 7.3 Videos of pediatric examination of different parts of the body (Çil et. al, 2017)

Then students were asked to upload videos regarding pediatric examination in a shared YouTube channel. The videos are watched by the researcher and two of three tutors, to minimize the risk of uploading videos to the project channel not appropriate for the project. All the UGVs uploaded by the students were found to be authentic and uploaded by the real users (Fig. 7.4).

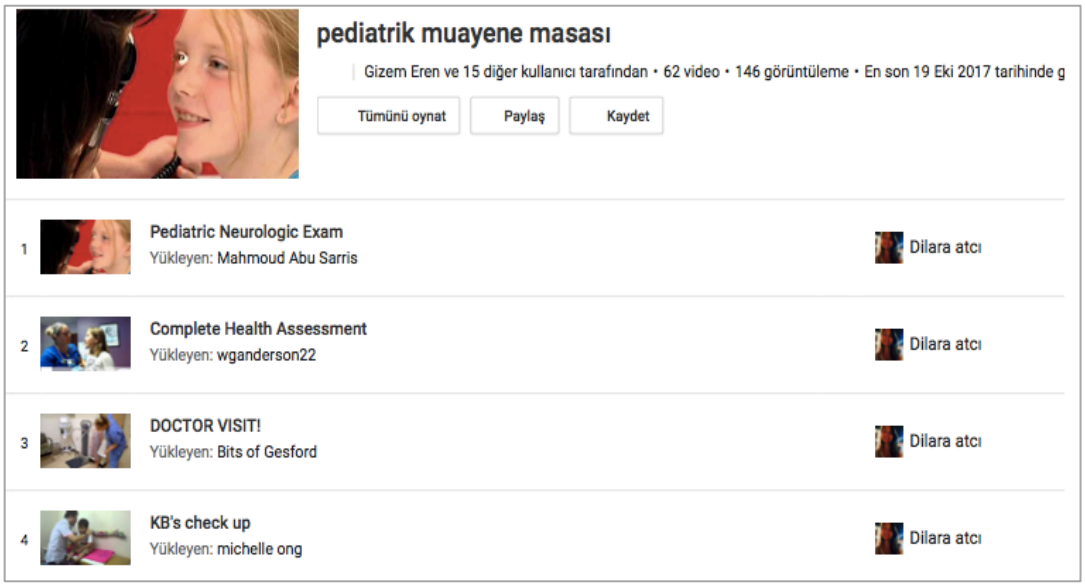


Figure 7.4 YouTube playlist of the project

UGV Analysis (UGVA). The students were provided with the UGV analysis posters prepared by the students discussed in Chapter 6. How they used UGVs, the modes, and the information they captured were shared with the students as a handout with a presentation by the researcher. They were asked to determine five related situations from the videos such as examination positions, the equipment used, the frequency of a problem observed, the attitudes and behaviors of the health personnel, etc. and present them in the form of a poster. During the UGVA discussions session, the students shared their observations from the videos (Fig. 7.5 and 7.6).



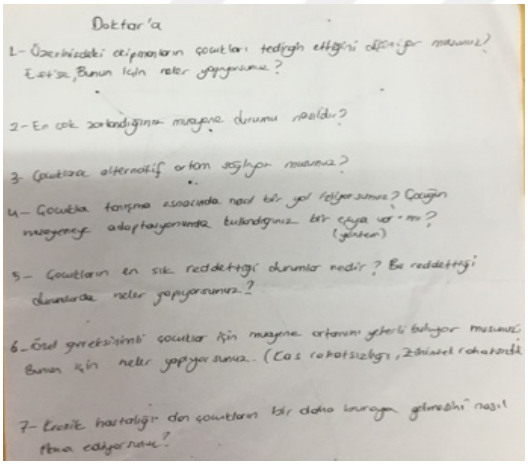
Figure 7.5 Video analysis mode: Thematic collage making (Team A5)



Figure 7.6 Video analysis mode: Storyboarding the video content (Team A4)

Expert Meetings and Role-playing (EM). After these discussions with tutors, the student teams were asked to write questions about what they wanted to learn from the experts and stakeholders of the context since the following session was going to be meetings with doctors and parents. Three students out of five from each team were asked to conduct different field studies (Fig. 7.7).

One of them was going to meet the three parents, who are academic staff in the faculty. These parents were female, one of them had one 4-year-old son, the other had a 3-year-old son, and one had a 6-year-old son and a 2-year-old daughter. The other student was going to visit a pediatric examination room of Mavi Hospital (Eskişehir Yunus Emre Devlet Hastanesi), which is inside our campus accompanied by a nurse since that day was a doctor's off-day. One another student from the group was going to visit the doctor's examination room in Eskişehir Acıbadem Hospital, where the doctor, as an expert, would accompany them. The students were later expected to bring these observations in the form of video, photograph, or personal notes and share them with the other team members.


Doktor'a

1- Üzerinizdeki etiketlerin çocukları tedirgin ettiğini düşünüyor musunuz? Evetse, Bunun için neler yapıyorsunuz?

2- En çok zorlandığınız muayene durumu nedir?

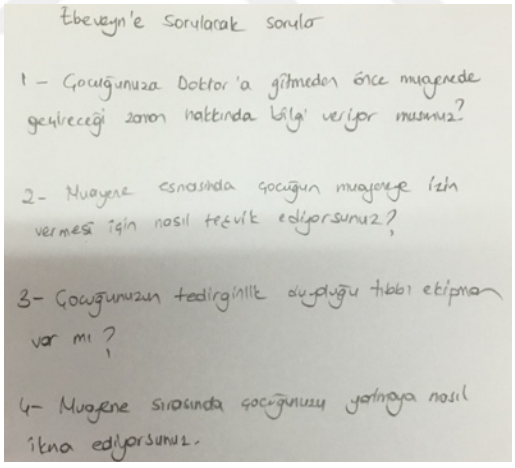
3- Çocuklara alternatif ortam sağlıyor musunuz?

4- Çocukla tanışma esnasında nasıl bir yol izliyorsunuz? Çocuğun muayeneye adaptasyonunda kullandığınız bir eşya var mı? (gösteren)

5- Çocukların en sık reddettiği durumlar nedir? Bu reddettiği durumlarda neler yapıyorsunuz?

6- Özel gereksinimli çocuklar için muayene ortamını yeterli buluyor musunuz? Bunun için neler yapıyorsunuz. (Cos rahatsızlığı, Zihinsel rahatsızlık)

7- Kronik hastalığı olan çocukların bir daha muayene olmaları nasıl ikna ediyorsunuz?


Ebeveyn'le Sorularak sorular

1 - Çocuğunuza Doktor'a gitmeden önce muayenede gerçekleşeceği zaman hakkında bilgi veriyor musunuz?

2- Muayene esnasında çocuğun muayeneye izin vermesi için nasıl teşvik ediyorsunuz?

3- Çocuğunuzun tedirginlik duyduğu tıbbi etkinler var mı?

4- Muayene sırasında çocuğunuzu yatmaya nasıl ikna ediyorsunuz.

Figure 7.7 Questions that the students prepared based on their literature review and UGV analysis (Team A5)

The UGV analysis session was planned to be followed by role-playing sessions facilitated by the other stakeholders of the context, lacking the vulnerable user who was the ill child, to give the students a kinesthetic and visual sense of the routines

of the practice. The students were expected to experience the situations from their prior video analysis sessions through role-playing. The aim was involving other stakeholders of the project topic such as pediatricians and parents in the role-playing sessions as experts. Since the parents were not in the real setting and there were no props, the meeting between students and them turned out to be an interview involving a rough acting-out.

One student from each team should visit the pediatric examination room of another doctor who was not there but accompanied by a nurse. The students could only observe the environment and take photos since the nurse only accompanied but did not give any information regarding the pediatric examination (Fig. 7.8).



Figure 7.8 A photo from the pediatric examination room in which students were accompanied by a nurse (Mavi Hastane, Eskişehir)

The visit to the doctor's examination room provided the means appropriate for role-playing. Since we had limitations like having permission from the hospital's directory and having a limited time at the children's department of the hospital, and air ventilation and hygiene was an important issue, only eight students were able to visit the doctor's examination room. Based on their prior literature review and video analysis, students directed questions to the doctor, and the doctor responded to some of them by acting out (Fig. 7.9). After this morning session, the doctor was invited to the school to meet the other students in the afternoon. These acting outs were repeated in this session again, but this time the context was not real. The students

took observation notes as they watched to document the role-playing and interview session.



Figure 7.9 Left: The doctor and the student acts out "inviting the child to the examination table"; Right: The doctor acts out to support the child enacted by a student, as she put her step on the eskabo and then sits on the examination table

Insights, Findings, Conclusions, Presentations, and Reports. After these exploratory sessions, the students were expected to prepare a compilation poster of insights, findings, and conclusions and present them (Fig. 7.10).



Figure 7.10 An example from student's Insights posters (Team B3)

Project Themes and Dimensions. The students were expected to suggest project dimensions in the form of adjectives based on their previous research studies. It was homework, and students sent it in the form of an A4 paper report format. These project dimensions were compiled as to form an Idea Generation Matrix (IGM), composed of project themes and dimensions.

It was observed that students focused on various but related issues in their "project dimensions" study. The proposed dimensions were grouped under the headings, "accessible, connecting, informative, and encouraging" by the tutors to use in the idea generation matrix (Table 7.4).

The project dimensions and themes have been compiled by the researcher and one of the tutors considering the findings of the process and the presentations of the teams. First, the adjectives offered by all the teams were placed on a table, and then the similar adjectives were color-coded and categorized under a particular project dimension that covered the others. They created input into the IGM, an idea generation tool developed in METU Department of Industrial Design, and used since 2004 in design studio courses (Korkut and Dogan, 2010). The teams have developed their design ideas based on at least two of the solution suggestions they have produced in the idea generation matrix, and they have done a 1/10 scale examination room model.

Project dimensions consist of more specific findings of teams. For the access of the child to the examination table on her own, the ability to transform the examination table and the availability to switch to different examination positions "accessible"; for communication of stakeholders, eye contact and being at the same eye level "connecting"; for directing the child within the room without physical intervention and being honest and transparent about the examination process "informative"; for the child's emotions, providing a sense of belonging, enabling leaving a mark on somewhere in the room, peer motivation and trust "encouraging" were considered as project dimensions (Table 7.5). Project themes were expressions that triggered students' imagination and were open to personal interpretation. In the IGM, the general atmosphere of the examination room, the circulation patterns around, the

examination table, and examination positions, among the prominent subjects in the students' findings, were involved in the theme of "adventurous path." The interaction between the child and other stakeholders was grouped under the theme of "my well-being team at work." The transition of the child to the examination process and interaction with the medical and spatial equipment and instruments were included in the theme of "feels like home" (Table 7.5).

Table 7.4 Project dimensions proposed by the teams and grouping of these dimensions

Project Dimensions	**Other related terms**
Accessible	directing, convertible, accessible, modular, adjustable, flexible, safe, efficient, hygienic, easy to clean
Informative	informative, transparent, visible, non-concealed, respectful to child's consent and individual autonomy, triggers a sense of curiosity, honest, explanatory, instructive, accustoming, identifying
Encouraging	rewarding, changing focus, engaging, comfortable, reassuring, reflecting the colors of the child's world, revisitable, entertaining, soothing, supporting, intriguing, leaving traces, feeling at home, familiar, specific, persuasive, unusual, surprising, relieving, peer-motivated, gamified, customizable
Connecting	collaborative between stakeholders, interactive, socializing, fellow, partner, confidant, shared, inclusive, stakeholder, facilitating communication, identical, mutual, respectful to confidentiality, participatory

Table 7.5 Creation of inputs from research findings and project dimensions of the teams to the matrix: Project dimensions and themes

Project dimensions	**The way the key issues are addressed in the IGM**	**Project themes**
Accessible	Solutions that will serve the actions, circulation patterns and examination process	Advanterous path
Informative		
Encouraging	Solutions to interact with stakeholders	My wellbeing team at work
Accessible	Solutions regarding the mood of the child (anxiety, restlessness), to reduce uncertainty	Feels like home
Connecting		

Investigation of solution areas with Idea Generation Matrix. The IGM was an all-day and two-phased classroom exercise. Handouts were delivered to the students, and the expectations of the study were explained to them

Table 7.6 Handout for IGM

dimensions / themes	connecting	informative	enabling, engaging, empowering	accessible	a dimension defined by you
Advanterous path					
My well-being team at work					
Feels like home					

Since this handout was prepared by the researcher and one of the tutors based on the reports, an explanatory handout was prepared for the other two tutors as well. This guideline helped us to provide support when the students were confused.

The students were asked to explore project themes and dimensions, what these terms mean to them, and write on post-its and stick on the poster. Then, they started sketching into the solution areas. The IGM has three project themes and five project dimensions. One of the project dimensions was left to the teams, and they were told to use a dimension that they would determine. In the first round, they were expected to fill in five solution areas covering all the themes at least once. After this session, the peer-review session started; students were provided with stickers to vote for the good ideas. This process enabled them to discover peers' design ideas and be inspired by them. After the peer-review session, students completed the Idea Generation Matrix as a group in the classroom. In Figure 7.11, the IGM of the team A1 is given as an example. The A1 team used personalization as a design strategy at the intersection of encouraging and feels like home" and proposed a solution that encouraged the child to examine an object she was familiar with, such as her toy. Similarly, at the intersection of "my well-being team at work" and "encouraging," the team has adopted a figurative design strategy to make the child feel like a

superhero, take the necessary examination position, and construct Superman figure as a virtual guide that directs the child.

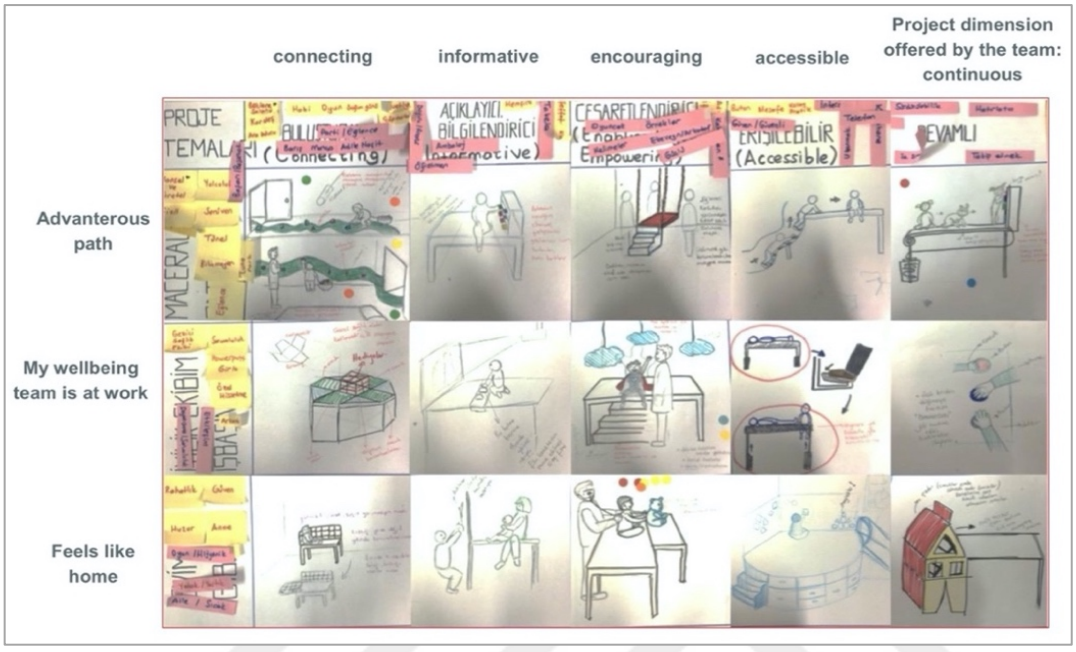


Figure 7.11 IGM poster (100X70 cm) prepared by Team A1 (Şirin Altınışık, Nurçin Özcan, Gizem Açgül, Merve Dilan Özkan, Damla Tuzlacıoğlu)

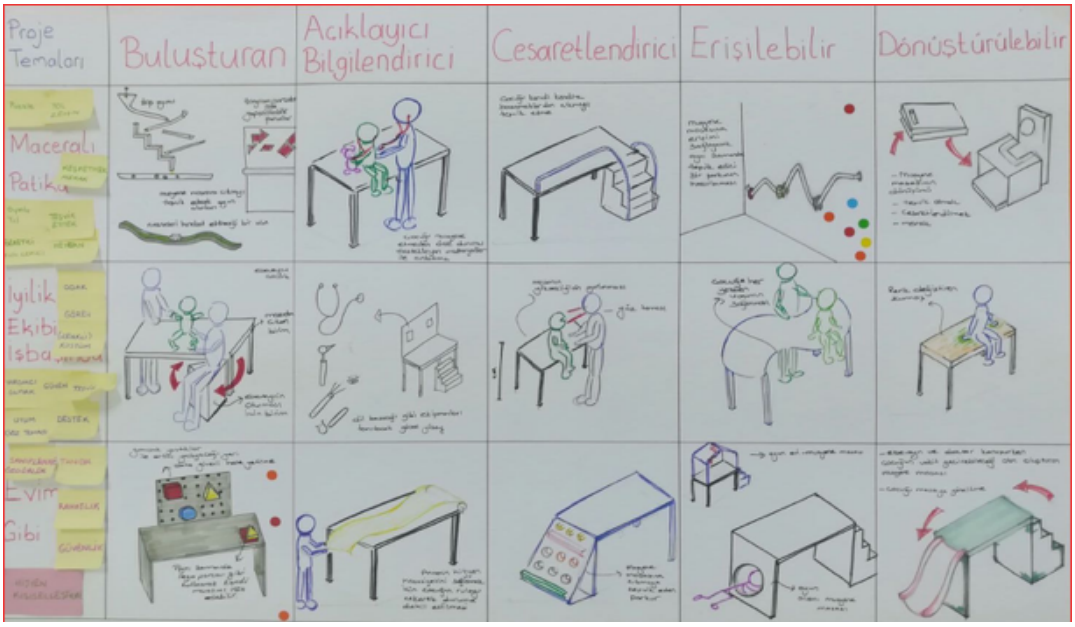


Figure 7.12 IGM poster (100X70 cm) prepared by Team B4 (Dilara Atcı, Tuğçe Durmuş, Ebru Erenler, Bilgesu Babur, Ebru Demirciler)

Mock-ups. After completing the Idea Generation Matrix, the students were asked to develop two alternatives, by choosing at least two solution areas from the Matrix to develop design ideas in the form of 1/10 scale mock-ups and sketches (Fig. 7.13).



Figure 7.13 Mock-ups of alternative ideas of Team B4

The tutors evaluated the idea alternatives, and one idea was chosen to be tested. In a group, the students were observed to role-play a child's getting on the examination table with unspecified props such as chair and desk to get kinesthetic feedback while questioning the eskabo part of their pediatric examination table together with their tutor (Fig. 7.14).



Figure 7.14 Left: The mock-up of Team A5 with eskabo detail; Middle and Right: the students acts out "getting on the examination table routine" as shown by the doctor

Building puppet scenarios, dummies, and scaled examination room models. As homework, the students were asked to build their pediatric examination rooms by considering the Neufert standards, put necessary equipment and furniture inside the room and build dummy models in the form of clay and wire armatures to be animated in the role-playing session. They were asked to write a puppet scenario that occurred in their pediatric examination room as well. They were expected to elaborate on how their design concept would contribute to the pediatric examination practice. They added details like the age of the child, where the hospital was located, its qualities, and the aim of the doctor visit.

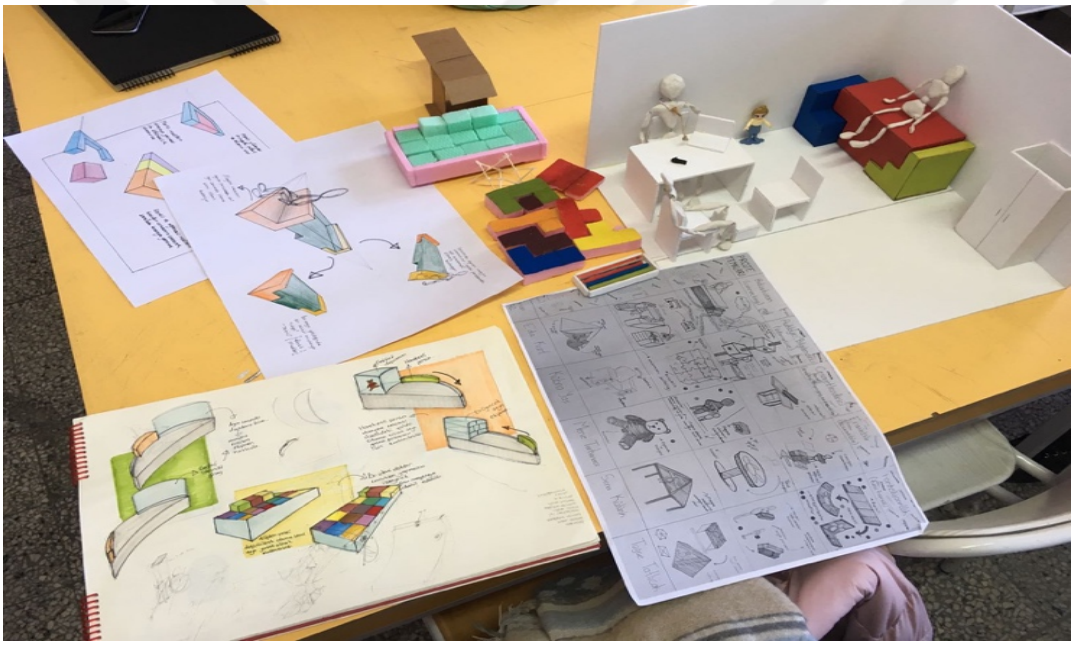


Figure 7.15 Puppet scenarios mock-ups, dummies and previous works (Team A2)

The Puppet Scenarios (PS) workshop. Role-playing can also be employed for idea generation, therefore since it is an educational context it was employed as a peer-review workshop session. Puppet scenarios are one of the methods used for role-playing. The qualities of puppet scenarios are that they enable to observe the complex interactions and relationship between stakeholders within the context. In puppet scenarios there is little focus on precise interaction with product; rather, the puppet scenario allows participants to work with overall social relations and general

functions and services (Ylirisku and Buur, 2007). Puppet scenarios were employed for thinking on the ways of "how connecting or informative the design concept can be", as defined in the project dimensions by the students and externalized through idea generation matrix and then mock-ups. It is added by the researcher for its qualities that enable working on social relations and general functions and services, since the project was part of a service and there were complex relationships between the stakeholders in the context.

There were five students in each team. Two students from each group were transferred to another team in the role of child and parent. The remaining three students had roles of being the doctor, being the observer to take notes as the performance proceeded and the other one was video recording. They enacted a pediatric examination routine in which their design concepts were integrated. After the role-playing session, the group members came together to watch the videos and look at the observation notes. After that they wrote a report of project directions that are based on the critics from their peers and the features needed to be revised by experiencing the context and relationships through role-playing as peer-review session.

The students who were not the designers of the concept to be employed for PS, were actors of the scenario to be improvised, that involves an initial scene, characters, and a potential for conflict. The remaining students had roles of other stakeholders of the practice, one student from the team was the observer to take notes as the performance proceeded and the other one undertook video-recording. They enacted a pre-determined scenario regarding the practice in which their design concepts were integrated. After the PS session, team members came together to watch the videos and look at the observation notes. After that they wrote a report of project directions that were based on the critics from their peers, and the features needed to be revised by experiencing the context and relationships through role-playing as peer-review session, and discussed these with their tutors (Fig. 7.16).

The process of Puppet Scenarios consists of 4 phases:

- Writing the scenario: The Puppet Scenarios workshop is expected to help the students understand how their product concept would affect and change the experience of stakeholders who are users of the pediatric examination room. The students were asked to create a scenario for using their product concept with this study:
- Describing the actors of this scenario, giving each one a name, providing information about age, gender, the reason for the doctor visit, etc.
- Giving information about the space, behavior's, expectations, roles of stakeholders and the design idea.
- Preparing the stage and dummies; preparing the props, the stage and dummies to be used.
- Acting out with puppets. This exercise is a process which the student team understands how their design idea works and how it can contribute to a routine of the practice. As a team, the students develop a design idea for project dimensions such as "personalized, bringing together, encouraging". The performance helps them to discover the strong and weak points of their design ideas in meeting these dimensions and how to develop these ideas.
- Reporting the outcomes: Each member shares their observation notes in the workshop, the strengths, and weaknesses of the product, and how they will change and improve product concepts. An A4 report would be prepared that describes the critics they have received from other teams, and how to intervene in line with these critics, a photo from the puppet scenarios workshop would be attached along with the report. The name of the report would be "the Puppet Scenarios Workshop Report" and the scenarios would be included in the report. Finally, the list of which roles the team members have taken would be filled in as a google excel sheet or in the final report.

Since this role-playing session particularly addressed unfamiliar problem domains, the PS was not employed in the exploratory phase. The problem was ambiguous in nature, but PS required preparation and props to act out with.

Finalizing the project. The final two weeks were reserved for finalization. The students finalized their design concepts by discussing their design directions from the puppet scenarios with their tutors. They decided on the materials and production methods of the designed product.



Figure 7.16 Scenes from Puppet Scenarios session from two different teams (Left: Team C2; Right: Team B1)

Final presentations. In the final presentation, the final design solutions of the teams were tried to be compared with their research findings since it was important for determining the usefulness of the design method proposed. Many student teams were observed to refer to their literature review, video analysis, and expert meetings during the final presentations for supporting their design solutions (Fig. 7.17; Fig. 7.18). The prior studies provided them the knowledge to proceed with a design embodiment. The most difficult times they experienced were observed to be the finalization and design embodiment process. Deciding on the right form to meet their design proposals was observed to demand most of the support and feedback from the tutors. However, the task-based nature of the project enabled them to explore relevant issues and generate initial ideas. Thus, the proposed method worked well for the early phases of the design process. Puppet Scenarios workshop enabled them to rethink on the embodiment of their design concepts, whether it meets the project dimensions they have chosen or not.

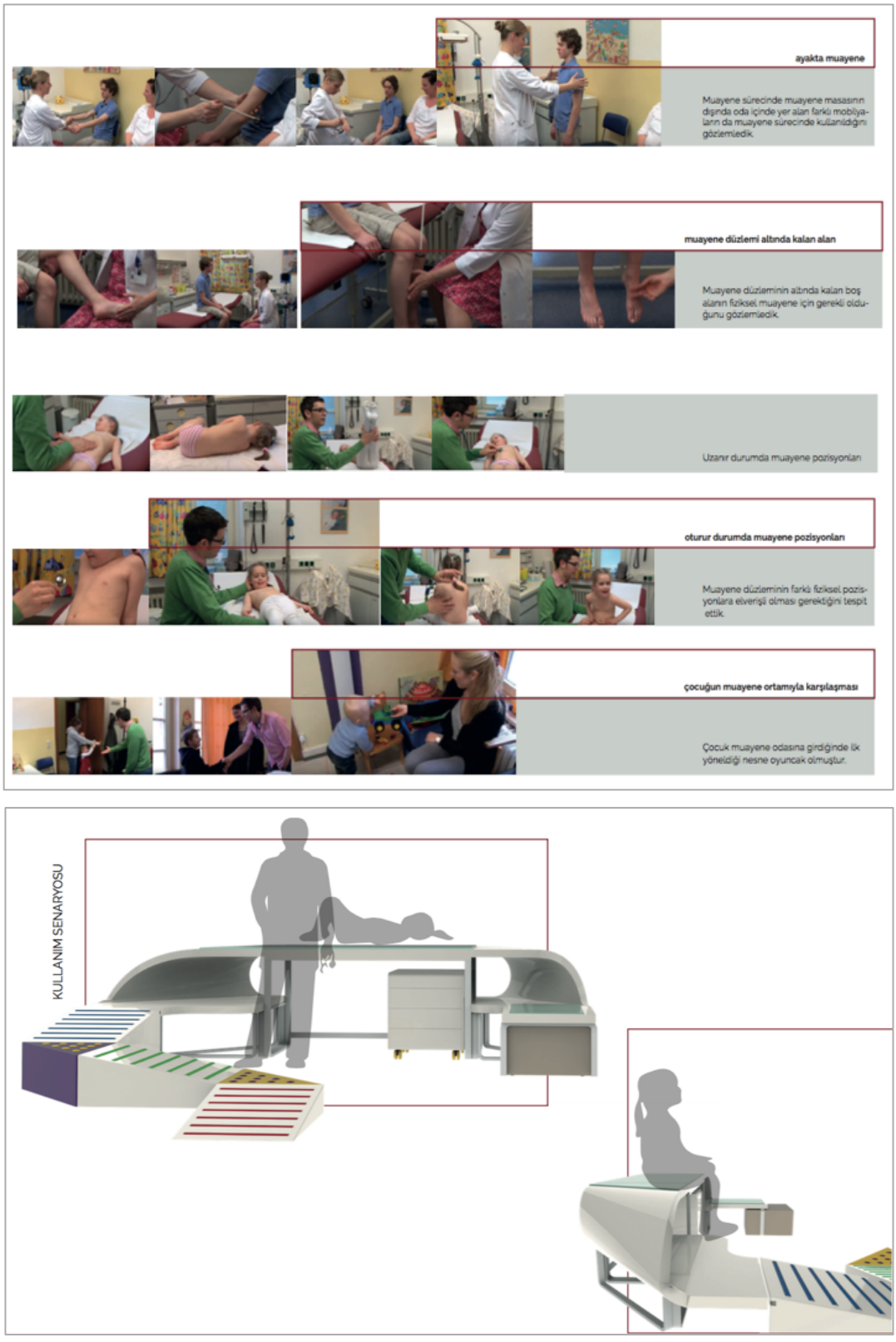


Figure 7.17 Top. Team B1's examination positions analysis through videos; Bottom. Final design of the team

One of the teams referred to the UGVs differently than they did for the UGV analysis phase before finalizing their design decisions. They looked for circulation patterns of the stakeholders in the pediatric examination room around the examination table and marked them (Fig. 7.18 Top). They told that they watched several videos and found a pattern of circulation of the parent, the doctor and the child around the examination table which interfered with the doctor's reach to the child, and since the parent wanted to hold the child, she would not interfere with the circulation but still needs to stay there. Thus, the students looked for alternative areas for her around the examination table.

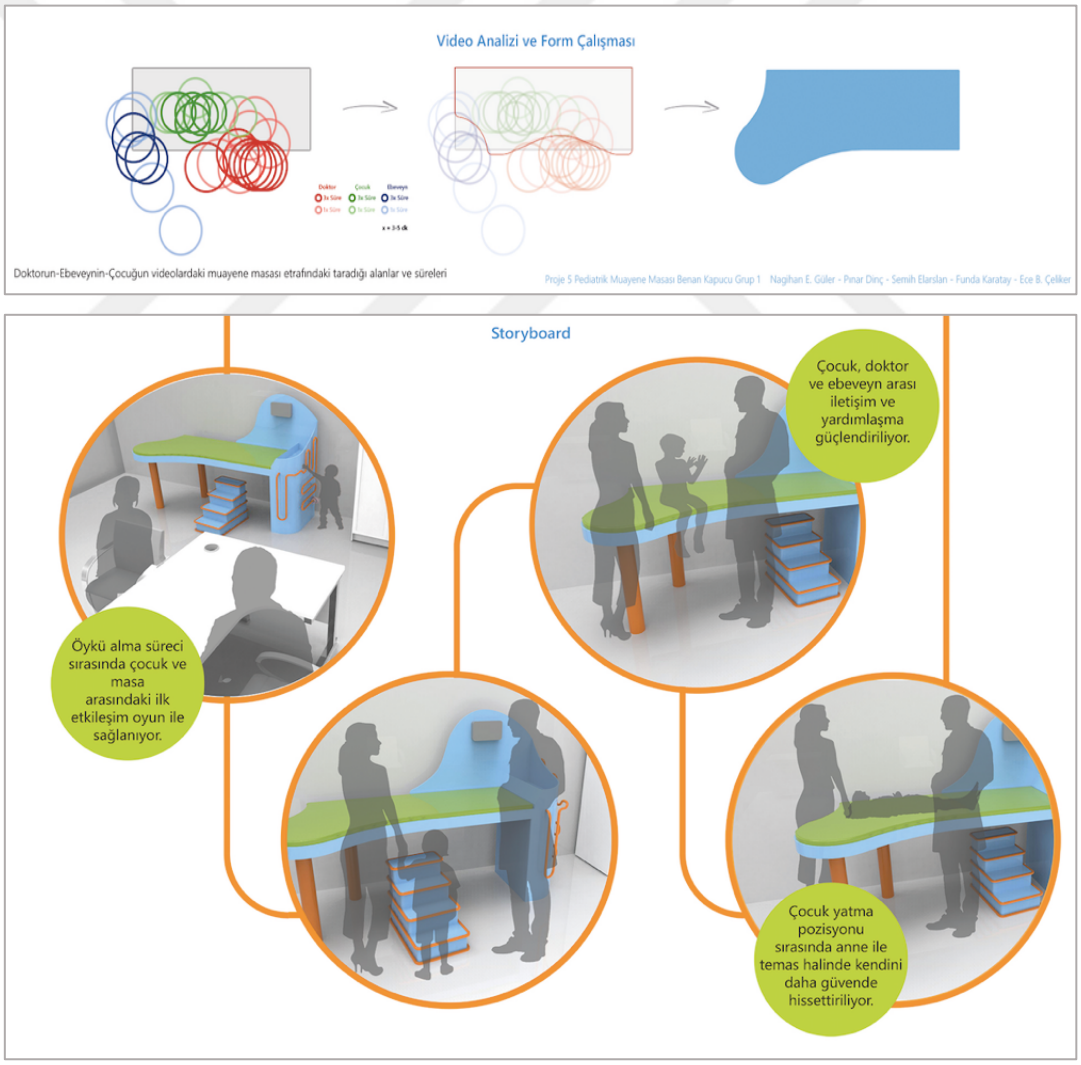


Figure 7.18 Top. Team C1's circulation analysis through videos; Bottom. Final design of the team

7.2 Findings

For user groups that students are not familiar with, Study-II indicates that employing the proposed method within a user-centered mindset enabled them to build background knowledge regarding the problem domain. A user-centered research process was employed to enable students to have access to the information they need. The primary user group (especially the sick children) was a group that was difficult to access, therefore, the students were encouraged to obtain information from online videos created and shared by internet users.

7.2.1 UGV Analysis (UGVA)

In the UGV analysis phase, the students were provided with examples from Study-I. They were informed about the mode of analysis the students in each example adopted, such as quantifying the video content, video quotation, storyboarding the video content, and thematic collage making. They were also informed that they were able to add their techniques. During this study, instead of reorganized samples and templates, just raw examples were provided to the students. The aim was to explore the potentials throughout the study as the researcher herself was involved in the process. After seeing the results of Study-II, it was planned to reorganize them for the next study (Study-III)..

7.2.1.1 Mode of Analysis

For Study-II, the students were provided with documents from the previous study (Study-I), as they were prepared by the students, not edited into a specific format. The aim was to see the students' approach and interpretation of video analysis. In terms of mode of analysis, the students generally observed to choose storyboarding the video content or collage making from different videos (Table 7.7, e.g., Fig. 7.5 and 7.6; (For UGV analysis poster submitted by the teams for the pediatric examination table and its environment studio project see Appendix B).

Table 7.7 Mode of analysis chosen by the teams

Teams	Thematic collage making	Video quotation	Storyboarding the video content	Quantifying the video content
A1			X	
A2	X		X	
A3	X		X	
A4			X	
A5	X	X	X	
B1	X		X	
B2	X	X		
B3		X		
B4		X	X	
B5	X	X		
C1	X	X		X
C2		X		
C3	X	X	X	
C4	X	X		
C5	X	X		

7.2.1.2 Table Discussions on UGV Analysis

For Study-II, the video analysis presentation session's audio-recordings, which was recorded on October 20, 2017, were transcribed and analyzed. The study aimed at generating a clear point of view about how students make use of UGVs. It was expected that they needed to apply them as secondary resources of information. It was then needed to investigate what they had learned from them and how it was reflected in their design ideas. Besides the topics that students discussed, how UGVs served the exploratory design phase was also important. Therefore, this analysis aimed at finding answers to the following questions:

Table 7.8 Analyzing table discussions

What does UGVA serve for?	Q1- What do the discussions between the students and the tutors indicate about the qualities of UGVs for exploratory research in the early phases of the design process
How does UGVA serve?	Q2- How are UGVs as source for exploratory research in the early phases of the design process?

To find an answer to Q1, first, the content the students mentioned were analyzed. The content during the table discussions was related to the routines and terminologies of the practice. They talked about the general atmosphere of the examination room, the phases of the examination process, emotions and mood of the child, roles, and attitudes of other stakeholders, furnishing and equipment, actions, space, and circulation patterns. The session was transcribed and put into a word cloud software, illustrate the context most referred by the students (Fig 7.19).


examination
table
child
doctor
position
actions
himself
circulation
parents
space
sitting
physical
equipment
contact
attention
interaction
feeling
standing up
pediatric
interfere
place
age
direct
attitude
communication
sick
father
psychological
security
personal
anxiety
scared
behaviours
speaking
hospital
reaction
colorful
arms
ears
wall
cold
situation
on the ground
expression
choice
baby
on the chair
sitting on the lap
eye contact
nervous
comfortable
inadequate
soft
play
legs
scared
together
effect
rewarding
from the left
uncertainty
distance
fever
hygiene
naked
pain
crying
lying down
medical
beside
family
sign
paper
relationship
stranger
fun
toy
back
close
apron
head
waiting
preparation
illness
muscles
holding
duration
autonomy
needs
mutual
limits
healthy
height
between
stable
eye level
cover
focus
syringe
steps
shey
age
space
information
permission
distress
materials
ergonomics
uncomfortable
individual
around
examination phases
from the drawers
conversation
circulation
medical
fear
nervous
position
individual
difficulty
arms
equipment
dangerous
locus
child
speaking
books
personalization
statescope
speaking
sitting
choice
introducing
measuring
honest
parents
mother
brother
Türkiye
books
controlling
persuasion
deceiving
perception
clothing
cloths
interfere
nurses
stable
between
head
scared
healthy
wall
limits
behaviours
support
needs
mutual
attention
examination phases
from the drawers
conversation
circulation
medical
fear
behaviours
nervous
position
individual
difficulty
arms
equipment
dangerous
locus
child
speaking
eye level
cover
communication
controlling
books
Türkiye
family
direct
toy
fun
stranger
security
feeling
paper
measuring
introducing
honest
parents
mother
brother
hospital
close
height
waiting
apron
head
reaction
colorful
distance
age
psychological
relationship
sign
beside
duration
autonomy

The topics that come forward in students' findings in UGVA can be grouped as:

- Stakeholders and their roles, interactions
- Emotions
- Furnishing and equipment
- Actions
- Space and circulation

These are the topics that students addressed while framing their design problem. While showing the diversity of the findings, the expressions of the students illustrated that each category had a close relationship with each other. Since this project involved a complex environment with various stakeholders, and the product to be designed had connections with other furnishings and equipment in the space. For instance, medical equipment that the child is unfamiliar with were expressed to trigger fear and extreme reactions like screaming or crying by Team B3 which was the first team met during the UGV poster discussions (Fig. 7.19). The team also came up with a design proposal "involving various personalization practices to relieve or change the focus of the child in examination room" which defines the design problem around the child's mood and the general atmosphere of the room, as well as came forward with a suggestion for personalization.

Here the data students looked for can be organized under behavioral data and attitudinal data where behavioral data outline how someone acts and behaves, while attitudinal data inquire into what people want and believe (Goodman et al., 2012). Sanders (2001) categorized these data as explicit data where it is directly seen such as what people say, whereas what people do or make shows their tacit or more implicit knowledge. The videos can be evaluated to provide both behavioral data and attitudinal data, in other words both explicit and tacit knowledge embedded in a certain practice. Behavioral data can be seen such as actions, environments, objects, posture, head movement; and attitudinal data as interactions between users (stakeholders) and modes such as proxemics, gesture, gaze, spoken language (Norris, 2004) (Table 7.9).

To employ the UGVs to frame their design problems, the students tried to form image schemata that consist of dynamic spatial patterns that underlined the spatial relations and actions (Gibbs, 2006, p. 91). The session was transcribed and put into a word cloud software illustrate the logical relationships most referred by the students (Fig. 7.20).

Table 7.9 Routines and terminologies of the practice referred by the students during the discussions

THEME	CODE	SUB-CODE	EXAMPLES
Routines and terminologies of the practice	Attitudinal data	Stakeholders and their roles	child, doctor, parent, father, mother, family, communication, interaction relationship, speak, show,
		Emotions	feeling, nervous, scared, fear, crying, attitude, attention, psychological, comfortable
	Behavioral data	Furnishing and equipment	medical, cover, apron, napkins, abele slang, steps, table, chair, toy, colorful, paper, drawers, drawings, walls
		Actions	examination, transition, position, sitting down, upright, lying down, interfere, contact, eye contact, reactions, rewarding, play
		Space and circulation	room, place, security, direct, beside, eye-level, around, hygiene, ears, arms, legs, head, back, drawings, atmosphere



Figure 7.20 Concept cloud of table discussions in terms of forming mental schemata

By forming image schemata, the students tried to understand the routines and terminology of the examination practice step by step (Table 7.10). In this practice, some factors are difficult to intervene, such as parents' behavior and attitudes. However, the students searched for proofs of negative experiences in the examination room that can be reversed positively. UGVs helped students to understand and empathize with children, the experiences they were facing, such as the anxiety, hesitation, and fear in the pediatric examination room. It is important to note that after table discussions, the students asked their questions to the expert who was a pediatric doctor and evaluated their validity and weights of importance.

The first team met was team B3. Therefore a section from the table discussions with them is given as an example for detailing the image schemata that was built. (For the UGVA posters of the team refer to Fig. 7.21).

Table 7.10 Relationships and connections used by the students during table discussions

THEME	CODE	EXAMPLES
Forming image schemata	reasoning (cause and effect), questioning	because, since, effect, depend on, thus, therefore, question
	comparing and contrasting	when compared to, in contrast,
	emphasizing, restating, detailing, diversifying	in addition to, besides, and also, like, such as, in detail
	inferencing, future projections, generalization	in our opinion, imply that, seems like, infer, interpret, guess, predict, indicate, significant, in this way
	comments and suggestions	you better ask, recommend, suggest, you also look at
	exemplifying	for instance, for example

An example conservation between students were proceeded as:

> Student A: We noted the problems we observed in the videos. For example, the examination equipment is foreign to the child, and he is uneasy about this.
>
> Tutor A: Is the problem here just looking alike, or there's something else here? For example, this equipment is cold… I wonder if it is related to the examination equipment making the child uneasy, or is it a concern about not knowing what will happen?
>
> Student A: Uncertainty… It triggers more.
>
> Tutor B: In what situations is the child afraid?
>
> Student B: In different videos, the child tries to climb up, but cannot. Because it's high.
>
> Tutor B: You could also select that sequence in the video. The moment the child tried to get to the examination table. What obstacles does he encounter? In order to identify obstacles, that part can offer you data.
>
> Student C: The doctor directs the child, but we thought it might be better to have a non-disturbing orientation for her/him."

> Student D: We wrote here that the doctor had to direct the child to the examination table. The doctor lifts and puts him on the examination table, but the child might feel safer if he does that himself."
>
> Student A: In one video, the child sits on the lap of the pediatrician, the doctor talks to the child; he asks what he is doing and asks how old he is. In the videos we watched, the conversation between the doctor and the child in the foreign videos (not Turkish) was a little longer.

The conversation started with a focused issue from the student team's observations, which was the fear the child experienced due to several reasons. The tutors suggested them to diversify their focus, and then the students interpreted their observations through a wider perspective. The tutors suggested them to give details about their observation. After that, the students tried to generalize their interpretations by giving examples from diverse videos. The tutors suggested them to re-address the certain sequence in the video which they found missing. The conversation proceeded with design-related questioning that the students referred to, such as a non-disturbing orientation for the child. Later, the students continued making future projections and inferences; for instance, if an adult did not intervene in the child, he would feel safer. The students went on with comparisons between the videos from different regions of the world.

The content that the students mentioned and their image schema of UGVs are discussed above. Through UGVs, it is observed that they were trying to understand the patterns of the practice. The students explained their findings through reasoning, interpretation, inference, etc. They did this in order to explain the content of the video, and the relationships between the building blocks of the content such as emotions of a child, the examination room atmosphere and equipment. They were modelling behaviors such as how the doctor should behave with the child, showing respect to the child as an individual, or the distance of contact, which actor should behave how or adopt roles. They were modelling the context such as the atmosphere, the equipment, and their places. They were trying to build an image schema of the routine of the practice step by step.

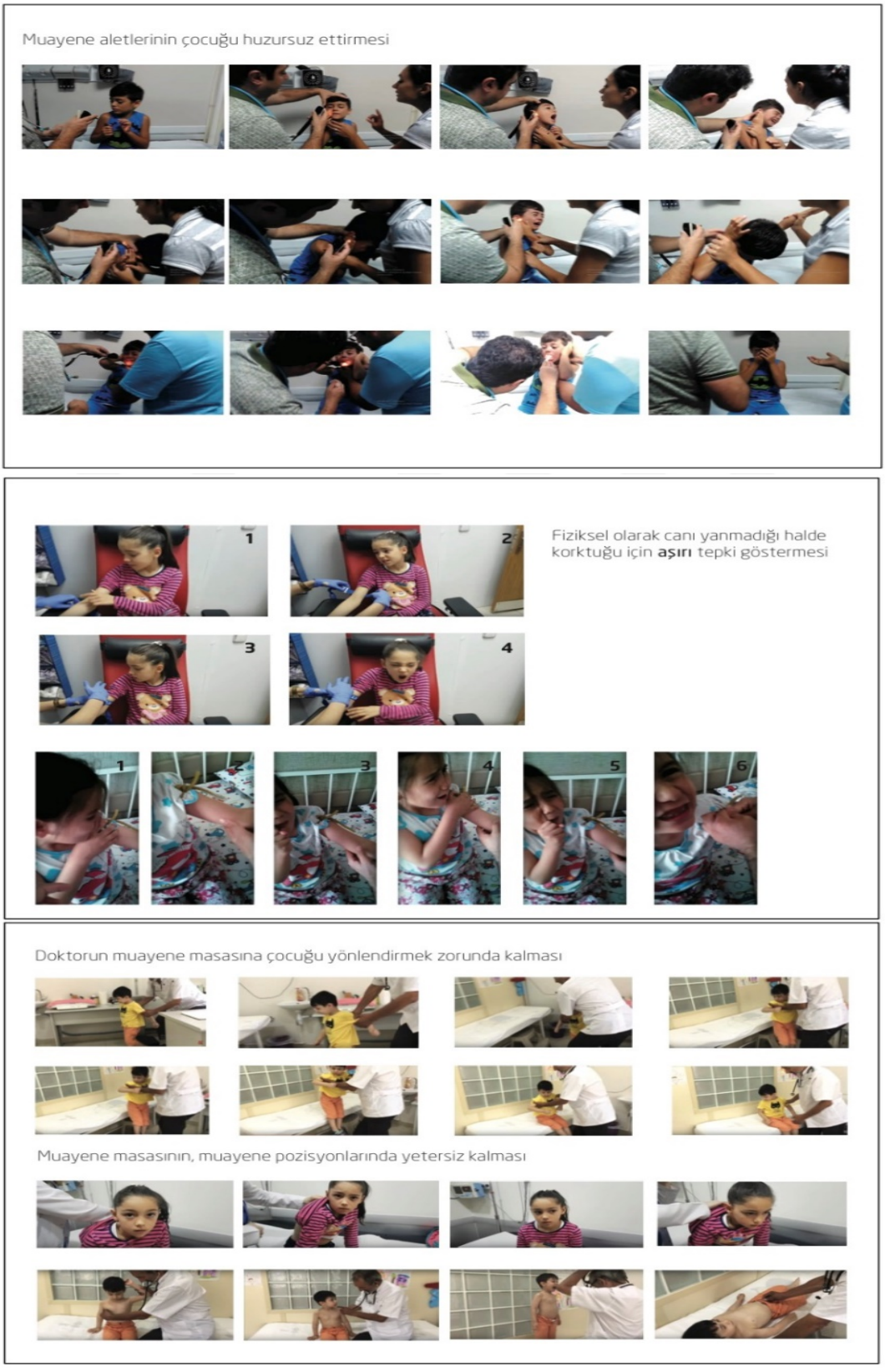


Figure 7.21 UGVA poster of team B3

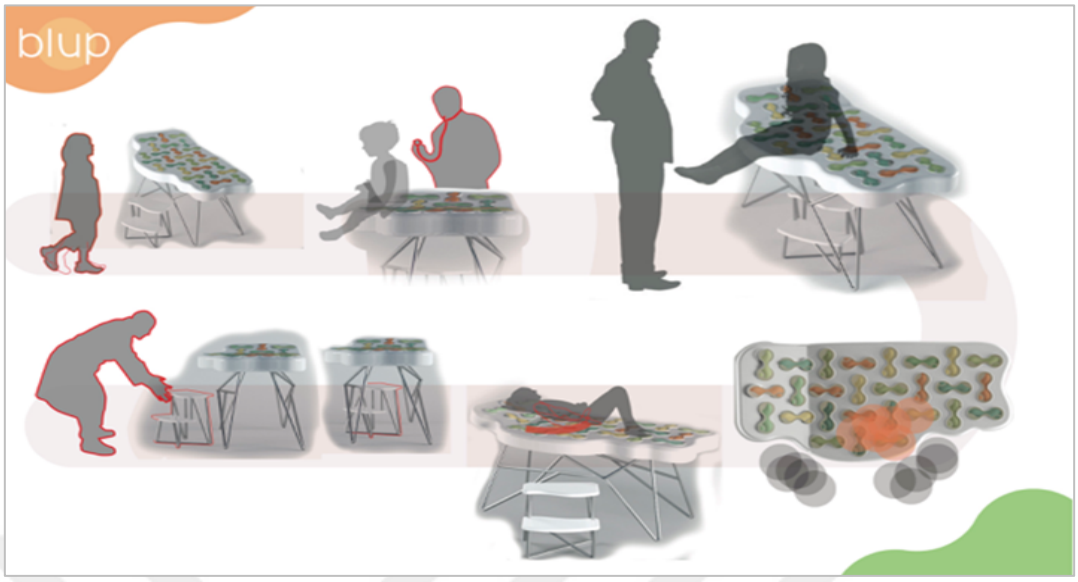


Figure 7.22 The final design of team B3

What they have explored throughout the UGVs can be summarized as although an examination practice might be a routine for the doctor and hospital personnel, there was something unfamiliar for the parents (or the caretaker) and the child, it was not an ordinary experience for them. There were irreversible things in this practice, as the behavior of the parents as the students had mentioned, however, there were also things that a designer could interfere with reversing the negative experiences in this room.

The analysis's implications indicated that the videos helped students empathize with children to some extent since they talked about situations like anxiety, timidity, and fear that a child experiences in a pediatric examination room. The students were observed to focus on the issues around the child who was in the middle of an unordinary experience with ambiguity, which made one nervous. The general solutions of the teams were observed to reverse this negative experience into a positive one.

The presentations were held as table discussions between the tutors and the students. Both parties were not experts in the topics. Therefore, these conversations were rather a discussion, and many speculations were made, it is seen that they avoided

claiming exact judgments. There was an atmosphere of negotiation on how to handle problematic situations.

The tutors suggested diverse problems related to pediatric examination practice throughout the presentations, though they were observed to return to their major findings from the UGVA to express them in more detail. For example, although the tutors directed the students (e.g., Team B3) for discussion about the circulation in the examination room, at one point, one of the students in the team emphasized their findings of the anxiety of ambiguity in an examination room again. As these were still design students, it was observed that they were focusing on certain issues more and passing other issues slightly; in other words, they were missing the big picture. Therefore, table discussions with the tutors served to lessen this short-sightedness and to listen to other teams' discussions that analyzed other videos enlarged their perspectives. Their approach to the design problem can also be observed in their final designs. Their design ideas aimed at relieving the child and directing his/her attention to something else rather than the examination environment, to detain his/her attention and give time to the doctor to introduce the equipment to the child to relieve the anxiety (for final design solutions and strategies of the teams, refer to Appendix F).

To sum up the answers to Q1 and Q2, the students formed image schemata, and while doing this, they avoided exact judgments or arrived at conclusions. Instead, they were employing UGVs as a material to trigger discussions rather than pure data. While doing this, they were familiarized with the routines and terminologies of the practice.

7.2.1.3 Post-project Interviews on UGVA

To pursue interviews with the students, at least one member of the student teams was aimed to be interviewed; however, more than one student was chosen from the teams who covered more issues during the table discussions and submitted more analysis posters. Nineteen students volunteered to participate and were interviewed between April and May 2018. There were three sections of the course and five teams

composed of 5 students in each section. The interview sessions lasted around 30 minutes to 1 hour. Out of nineteen interviews, sixteen were transcribed, and three were excluded due to voice-recording quality problems.

Thirteen interview questions were directed to the students To learn their opinions about UGV analysis (Table 7.11).

Table 7.11 Interview questions for UGVA

PHASES	INTERVIEW QUESTIONS (APPENDIX B)
Framing the video search	Q1- How did you choose the topics to look for in the videos? Q2- Which keywords did you use? What are the resources of the keywords that you have used?
Searching and browsing the videos	Q3- From which sources did you reach the videos? Q4- How did you search and browse videos?
Deciding and selecting videos, sequences, and frames	Q5- Among how many videos have you chosen the ones you used for analysis? Q6- Why did you choose those videos/sequences/frames? What factors affected this choice?
Conducting the video analysis	Q7- How did you proceed within the video analysis process? Q8- How did you decide the presentation format? Q9- What highlighting techniques did you use? Why? Q10- Which program did you use for preparing UGV analysis posters?
Benefits	Q11- How did you benefit from the UGV analysis?
Limitations	Q12- What were the difficulties you faced during the UGV analysis?
Suggestions	Q13- Do you have any suggestions for conducting UGV analysis?

Content analysis was conducted to analyze the data obtained from the interviews. Interview records were coded by considering common and similar opinions, and similar codes were put together into themes. Codes and themes created during the analysis were presented in the form of tables.

The students were asked to express their UGVA experience throughout different phases. The first theme was framing the video search; the second was searching and browsing the videos; prioritizing the videos, sequences, and the frames; organizing and implementing the video analysis representations, and further specify the benefits and limitations of UGVA together with their suggestions. The codes and

explanations related to the coding obtained from the views of the students are presented as tables in this section. Determining the topics and keywords of video search is expressed in 2 different codes under the theme of framing the video search (Table 7.12).

Table 7.12 Framing the video search

PHASE 1: Framing the video search		
THEME	CODE	EXPLANATION
Framing the video search	Using keywords and topics	The project brief (APPENDIX B)
		Past experience of the students
		Literature search assignment
		Keywords translated into different languages

The students had framed their video search based on the background knowledge from the past and literature review. As they were asked how they had chosen the topics to look for in the videos, they generally referred to their prior knowledge. Many of the search topics were about the relationship between stakeholders such as the doctor, the child, and the caretaker, the equipment used, the examination space and activities, or circulation. The keywords they used for video searches were usually from the brief. The most used term referred to by the students was “pediatrik muayene (pediatric examination).” Some of the students mentioned that they translated the terms into other languages. One of the most common reasons was seeing differences and similarities in other countries and making comparisons. This indicates they were interested in diversity in videos. The other common reason was the limited number of Turkish videos. Student-6 expressed that they wanted to watch pediatric examination practice in Germany for their reliability. She mentioned that they considered what they were doing as more proper and realistic in terms of pediatric examination, their attitudes, and the duration of the examination. Student-7 explained that Turkish videos were less in number, and they were not reliable to them. She said it seemed that the people in the video were usually acting out in a fictitious scenario, which was not realistic. After searching for and finding one video,

the students claimed that they browsed other videos suggested by YouTube, which was the prominent video resource.

The question regarding reaching for relevant videos and their sources are expressed in 2 different codes under the theme of searching and browsing the videos (Table 7.13).

Table 7.13 Searching and browsing the relevant videos

PHASE 2: Searching and browsing the relevant videos		
THEME	CODE	EXPLANATION
Searching and browsing videos	Search engines used	YouTube, Google
	Mode of working	Searching and browsing altogether as a team
		Searching and browsing individually and sharing with other team members
		Searching and browsing as a team, then finding the rest individually
	Mode of sharing	Storing the videos themselves in a shared Google drive folder
		Creating a shared YouTube playlist

The students had searched and browsed the relevant videos as a team or individually. They used YouTube or Google as sources of videos. To work as a team or individually, the students employed several strategies. Some groups searched and browsed videos individually, and they came together for discussion, while some of them searched and browsed videos together as a team. For working separately, they used an online folder or online video playlists. This claim refers to the flexibility and accessibility of working with videos on shared platforms. Sharing a digital platform via a link provides flexibility in terms of data sharing, and reaching the source of research, which were online videos with a link, provides accessibility in terms of working as individuals or as a team. Student-7 expressed that they, as a team, created a drive file on Google, and posted links to the videos they had found. This file helped them to see which videos were found interesting by a team member. After that, when everyone was at home, they examined the videos, and then they got together for discussion.

The question regarding prioritizing videos, sequences, and frames among randomly browsed ones, to use for presentation and discussion is expressed in 3 different codes under the theme of deciding and selecting videos, sequences, and frames (Table 7.14).

Table 7.14 Deciding and selecting videos, sequences and frames

PHASE 3: Deciding and selecting videos, sequences and frames		
THEME	CODE	EXPLANATION
Selecting the videos, sequences and frames	Iteration	For their compliance with pre-determined topics or as a proof
		For comparing or questioning contradictory issues
		For finding the one among many similar videos
	Video choice	For its resolution and visual clearness
	Verification	For verifying the reliability of the video
	Understanding content	The video that seems realistic, natural and authentic
		The videos that were recorded in Turkey (native country)
		Videos from different countries and environments
		Videos are a part of series (e.g. different age groups)
	Strategies	Note-taking identification tags to recall
	Deciding on sequences	Different phases of the practice
		A clear progress
	Deciding on frames	Meaningful screenshot(s)
		Random screenshots become prioritized keyframes
		A clear view angle

The students went through a randomly browsing process to the prioritizing process. The random videos became a resource to discuss the pre-determined topics, specific sequences became significant narratives to watch and take screenshots carefully, and the random screenshots became keyframes of the following phase, which was the preparation of presentation posters.

In terms of the nature of the analysis, it is seen that iteration was needed. They watched all related, then they eliminated for using in the analysis presentation

posters, watched again, and took screenshots of essential scenes. For doing so, they developed some strategies such as note-taking identification tags of the video and the scenes such as the name of the video or the second of the scene to recall. They looked for videos according to pre-determined topics that were framing their search. Student-1 said they decided on five main topics, and as they discovered overlapping issues in that video, they decided to use it in their posters. Student-16 expressed watching the videos randomly at first, to see what was there; posture disorder of the child during sitting at the examination table and the doctor's position were the things they already dealt with from the very beginning, which was complemented with the videos they had chosen. Student-12 explained that while watching the videos, they paid attention to find videos involving hospitals not having a cold atmosphere. They also looked at hospitals in different countries. For example, there was a hospital in America, where there were calendars that children could use, visuals with cartoon characters that invited the child's attention, and provided information to support him. These examples illustrate that the students were employing videos as a supporting material about their opinions regarding the examination practice. For instance, they were choosing videos for comparing the attitudes as right and wrong. Student-4 exemplified seeing the doctor who was offering candy in a video, but in the other video, the child was given an ID card having a superhero on it. Then they decided to involve both videos in their presentation to bring to the agenda and discuss it with the tutors and experts.

The reason for video choice among many similar ones as claimed by the students was generally high resolution and visual clearness in the videos that match the topics they are looking for, clear and step-by-step explanations in terms of description of the process. For instance, Student-3 expressed they looked for videos that showed the whole atmosphere in the examination room, such as all the stakeholders in the videos being clearly involved in the visuals or at least by the conversations. Similarly, Student-10 said in the video they had chosen; the doctor did not proceed in the examination process very quickly; he was talking to the child, and he was receiving the child's complaints with the mother. Therefore, they had an advantage in terms of capturing the scenes.

The other most common claimed reason was verifying the reliability of the video by comparing it to other various videos, selecting the most realistic, natural, authentic one. Student-16 explained that they were skeptical about the authenticity of the video; some of the videos were slightly different from an examination practice that was supposed to be. They decided to choose videos that were more natural such as they saw the anxiety on the face of the child, or the children were giving nervous reactions. Similarly, Student-9 expressed that the people in specific videos were seemed to be acting out because there was a camera there. For this reason, they tried to find different alternatives.

Some of the students said they selected videos that were shot in Turkey. As explained by them, the reason was to both understand the conversation and the accompanied actions more clearly in their native language. Student-2 said they watched videos from other countries and saw differences in practices, but they could not understand the accompanying conversation. Student-15 expressed that after some time in the Turkish keyword search, the results were already clogged, then they switched to English. That search came in quite diverse age ranges and, as they had seen, much more diverse forms of examination in those shot abroad. All of them claimed that videos that were in Turkish or shot in Turkey or uploaded by a Turkish citizen were significantly lower in number. They expressed that they watched videos from different countries and environments and saw differences in practice. Student-1 explained that they could not reach the issues they wanted and searched with different languages, such as in English and German. They were just able to take the phases of pediatric examination as images, but what kind of dialogue was going on between them, that is, if the doctor was talking to calm the child or not, was a bit of a problem to understand. She emphasized that Turkish videos helped them in this direction, but they could reach practical details on videos that varied in foreign videos. Moreover, they noticed differences here in Turkey and foreign countries in the form of examination. In other words, when they searched in different languages rather than in one language, they realized that there were different types of examinations.

An exciting approach to videos was claimed by one of the students that the videos are a part of series such as pediatric examination of different age groups. Student-6 stated that the videos they used for their poster were a series composed of six videos. In this way, she claimed they had observed many different examination types and positions, such as lying down or sitting, resulting from the child's age.

The students interviewed claimed that they watched some videos they considered critical several times, and on a piece of paper, they noted the name of the video and pinned the seconds of important scenes. Student-3 explained that for the videos they considered as their primary resource of the presentation, they took information regarding the name of the video and the seconds of the scenes that they wanted to involve.

In terms of sequences, the students interviewed seemed to be interested in different phases of examination practice. Several students claimed that they had chosen the videos showing the whole process rather than a specific phase of the examination. The reason for video choice was also related to clear progress in sequences such as the steps of the examination practice. For instance, Student-13 explained that the particular video they used for their poster showed all the process step by step, from getting out of the home to the way to the hospital, waiting room, consultation and physical examination process, and the farewell from the doctor's room.

In terms of deciding on the frames, the students explained that to collect images for their presentation posters, they paused the video as they were watching, took several screenshots, and later decided to use the clearest and meaningful ones. For this, they developed some strategies such as creating an image album and then eliminating them by considering the criteria such as clear and correct view angle, good resolution, or involving several issues such as the mood of the child and the attitude of the doctor or parent. Throughout this elimination process, the random screenshots became the prioritized keyframes. For example, Student-11 explained they wanted to capture the face of the child in order to document his feelings, and at the same time, they looked for a frame in which the doctor and the father were in the view angle. Similarly, Student-10 claimed that they were expecting to capture the frames

regarding issues such as how he (the doctor) was holding the child, what the child's reaction to it was, whether the conversation was at eye level or not.

The question regarding transferring the videos to the presentation posters are expressed in 3 different codes under the theme of organizing and implementing the analysis (Table 7.15).

Table 7.15 Conducting the video analysis

PHASE 4: Conducting the video analysis		
THEME	CODE	EXPLANATION
Conducting the video analysis	Determining the analysis mode as *storyboarding the video content*	Storytelling throughout the process
		Arranging keyframes that form the story
		Keeping the reader in the mood to watch the video when the poster is read from beginning to end
		Preparing a fluent presentation with and a reasonable number of visuals for the narrative not to be boring
	Determining the analysis mode as *video quotation*	Arranging keyframes that consist of a Specific sequence of the video
		Emphasizing inspiring moments in the video
	Determining the analysis mode as *thematic collage making*	Expressing situations or actions under a concept
		Arranging keyframes that reflect the concept under question
		Comparing the issues under a concept
	Determining the layout and coding techniques	Visual integrity and harmony
		Specifying the title
		Specifying the captions
		Highlighting by color
		Highlighting by contours
	Software used for poster presentation design	Illustrator, Photoshop

The students used three different modes of analysis in general, which were storyboarding the video content, video quotation, and thematic collage making. For storytelling throughout the process and accessing the entire story, they arranged frames that form the story. For keeping the reader in the mood to watch the video when the poster is read from beginning to end, they employed the storyboarding

mode. For preparing a fluent presentation with and a reasonable number of visuals in the narration not to be boring, they chose keyframes.

For arranging keyframes that consist of a specific sequence of the video and emphasizing inspiring moments in the video, they employed the video quotation mode.

For instance, Student-15 explained that they found the moment the child tried to climb onto the examination table by himself inspiring because there was no adult intervention, but it was also difficult for the child to climb up.

When they captured a pattern, to express situations and actions, or to compare them under an umbrella concept, they employed the thematic collage mode. They arranged keyframes that reflect the concept under question. Some teams employed the collage mode to bring keyframes of similar issues together under a particular concept. For instance, Student-2 told that the doctor in one video gave the equipment to the child and allowed it to be examined. Another video showed the drawings of the children who came to the examination room was hung on the wall. They brought those together under the concept of collaboration. The other team brought contrasting issues together. Student-4 said that they saw that the doctor was offering candy in this video, but in the other video, the child was given an ID card having a superhero on it. They decided to compare them under the concept of rewarding.

In terms of the layout and keyframe choice, they said that they were concerned with the visual integrity and harmony. In terms of the information they involved in their poster presentations, they generally talked about the highlights and the captions they used. For highlighting specific topics, they used color codes and titled and arranged them on the posters. For example, Student-5 explained they used orange circles in the frames where the examination positions were the most observable, and they wanted to draw attention there, so they wanted to point out that there were different positions they wanted to pay attention to. For emphasizing several postures, they highlighted the body parts with contours. Student-16 said they outlined the body to identify the differences in those postures. As she explained, the child sat upright, but

his feet were hung freely in one frame, and his back was turned to the doctor in another. These specific frames were chosen for their posters. As discussed before, the number of frames was decided not to make the presentation boring but also involve and reflect the essence of the videos.

Finally, the most common tool employed by students to prepare the posters was claimed to be Illustrator, and the following was Photoshop.

The benefits of the UGV analysis, as claimed by the students, were constructing patterns about routines of the practice, exploring exciting things that they found surprising, unexpected, unusual, out of the ordinary. As they watched videos, they documented them to refer back in the future and easily remember when they checked back. To clarify this claim, what Student-10 said would be a good example. As she explained, they took observation notes under the frames; they chose to explain them in one sentence as much as possible for easy recall, determined and color-marked to make the posters more understandable and distinctive when they looked back in the following phases.

The limitations of the UGV analysis claimed by the students were the language barrier and that they failed to understand dialogues in foreign languages and lack of enough videos in their native language.

Finally, some students suggested to give them templates for poster preparation besides samples. One of the students whose team member was living in another city proposed that if this study were planned as teamwork, it would be better to do it as classwork to bring the team members together. Another student said that direct expert involvement in these discussions, rather than preparing questions and then visiting him to ask, would be better. For instance, Student-15 said:

> "During the doctor's visit, we had a limited time to discuss our questions broadly. The other teams had questions too, so I preferred to choose one question, which I considered the most important for our team."

The interviews' results indicate that the students frame their research questions based on several topics first and proceed to search the sources. The key issues were found

to be framed based on their previous experiences and their literature reviews. As they browse and watch videos, they pin the specific videos that overlap with the questions on their minds. The pinned issues were sometimes seen to be contrasting with their expectations or sometimes surprising. For example, giving a child a candy as a reward was found not to be stable for a team, but they involved this in their presentation, so they brought it into the agenda and discussed it. By doing this they decide and select which videos, fro,m those videos which sequences and from those sequences which frames are determined. Throughout this process, random videos become prioritized videos, from those videos, certain sequences become more important specific carefully and from those sequences some frames as the keyframes to be employed for the poster presentations. After the key topics and keyframes were determined, the implementation started. The students employed programs such as Illustrator or Photoshop to organize their posters. While organizing, they aligned their keyframes with several markings, used captions to tag them, notes to define them, text boxes to further interpret them. Those markings were were color-codes to categorizing, outlining for highlighting postures, circling certain areas on the frames to call attention. These posters then became a medium for discussions and speculations. These discussions evoked several questions on the students' minds. The following phase required the questions to be answered by an expert in the practice. As a stakeholder of the pediatric examination practice, the doctor would enlighten the students and the tutors. Therefore an expert meeting was already arranged, just to be held just after the UGVA discussions.

7.2.2 Role-playing (RP)

During the expert meeting (visit to doctor's examination room), the students discussed their questions that emerged from their previous studies, which were literature review and video analysis. As the main focus of role-playing and discussions were the issues that emerged from the literature review and video analysis, not a whole practice was experienced through role-playing, but certain sections of the practice were acted out, which can be named as partial role-playing.

Partial role-playing in education literature is mostly referred to for accommodating students to perform for full role-playing, which aims to teach them specific social skills such as conflict resolution (e.g., OPHEA, 2000).

The expert meeting had challenges and, thus, limitations according to the students. In this study, the role-playing session was not documented as in Study-1 due to several limitations. In the scope of this study, as the context was a medical child examination room, we were not allowed to take pictures in the room by the hospital administration. Secondly, as the room had limited space, only representatives from the student groups could visit the examination room. During the visit to the doctor's examination room, as the students asked the questions, the doctor answered it by showing up the part of the practice, which was the medical examination of a child while sometimes employing his stuff like dolls he kept for the children or medical equipment. The practice was acted out with the students together. As one of the students took the child's role, the other students were recording their observations by note-taking. A question that emerged from their UGVA sessions was acted out, observed, or experienced. The doctor and students role-played these particular issues, which were a fragment of the practice. Therefore, in the following process, another acting out technique named puppet scenarios was intentionally involved due to this foreseen challenge. Through these role-playing sessions, the students could experience empathy. One of the students said she would prefer to visit the doctor's examination room themselves instead of with the tutors and other teams to understand and experience the practice more deeply.

One of the students who was the representative of her team to visit the doctor's room said she was able to ask only one question since the other students were waiting for their turn. As mentioned before, a representative from each team visited the doctor's room in the morning, and then, the doctor visited the studio in the afternoon to meet other students and further discuss the pediatric examination practice with them. As all the class was there, the most convenient documentation way was note-taking again. It is seen that role-playing can be documented in different ways based on the conditions, whether the participants are crowded or not, or the environment was

available to record or not differ and change the role-playing recording and documentation processes. The role-playing session itself was not as structured as the video analysis; the process was intuitive in that sense. There were no rules, but just the questions at hand and the hospital's regulations that prevented us from documenting the process through videos or photographs. Therefore, the students' opinions were usually about the time limitations and the number of people in the pediatric examination room during the expert meeting. Due to the limited documentation of the process, it was difficult to conduct a post-interview on this expert meeting role-playing session since it was difficult for the students to recall their experience.

7.2.2.1 Puppet Scenarios (PS)

Puppet Scenarios were an optional idea generation phase of the project, which was involved purposefully. It was used as a peer review technique that involved role-playing with scaled models. It can be employed in various ways in different phases of the design process. PS is usually chosen as a role-playing technique; it is aimed at observing the context and the relationships when there are multi-stakeholders of the practice that a particular product is a part of, like in this case, a medical examination table. As the primary user was an ill child who was inaccessible for this phase, the students acted out based on their previous experience and the experience they have built on during the project. This technique was employed in the idea generation phase. For this phase, a doctor or a parent as an expert would involve and facilitate the acting out process. In the scope of this study, the expert was missing; thus, the students and tutors conducted the process.

Since the role-playing with the expert session involved a partial role-playing session in exploring particular issues, the puppet scenarios aimed at providing a whole role-playing session of the pediatric examination practice. The partial role-playing session with the expert where the expert acted out certain routines of the practice as the students asked their questions was employed in the exploratory phase, and a holistic role-playing session as puppet scenarios was employed in the idea generation

phase at which the students grasped a big picture about the pediatric examination practice. The students, unlike in Study-I, documented this experience in the format of an A4 size report due to the time limitations of the project.

7.2.2.2 Post-project Interviews on PS

To learn their opinions about Puppet Scenarios, the interview questions directed to the students were as follows:

Table 7.16 Interview questions for PS

PHASES	INTERVIEW QUESTIONS (APPENDIX B)
Writing the scenario	Q1- What are your opinions regarding "writing the scenarios, preparing the stage and dummies"?
Performing the scenario	Q2- What are your opinions regarding "acting out with puppets"?
Reflection	Q3- What are your opinions regarding "reporting the outcomes"?
The benefits of PS as a role-playing technique	Q4- In which ways have you benefited from PS as a role-playing technique?
The benefits of PS as a peer-review technique	Q5-Have you experienced a situation that you were not expecting before, but the guest members made you think and consider of?
Limitations	Q6- What were the difficulties of PS?
Suggestions	Q7- What are your suggestions about PS as an overall technique?

Content analysis was conducted to analyze the data obtained from the interviews. Interview records were coded by considering common and similar opinions, and similar codes were put together into themes. Codes and themes created during the analysis were presented in the form of tables.

It was asked to the students to express their PS experience. The PS involved four phases: writing up the scenario, setting up the stage, the performance, and peer-review process and reflecting on the performance submitted in the form of an A4 size report.

The first theme is the benefits of PS as a role-playing technique, and as a peer-review technique, the second is limitations, and the final one is their suggestions. The codes and explanations obtained from the views of the students on this are presented in the following tables.

The question regarding making use of PS is expressed in two different codes under the theme of the benefits of PS (Table 7.17).

Table 7.17 The benefits of PS

THEME	CODE	EXPLANATION
Benefits of PS	Benefits as a role-playing technique	Scale models enable focusing on issues such as space, environment, stakeholders, circulation
	Benefits as a peer-review technique	Experiencing a situation that you were not expecting before, but the guest members made you think and consider of

The students had benefited from PS in two different ways in terms of role-playing technique and as a peer-review technique. As a role-playing technique, the scale models enabled them to focus on issues such as space, environment, stakeholders, and circulation. Student-15 expressed that working on the scenario of the overall practice rather than the examination table, in particular, was an effective way to observe when these people enter the room, where they sit, how the child accesses the examination table, whether the doctor helps or not, and where the parents and child were positioned were observable on a scale model.

As a peer-review technique, PS enabled them to experience situations that they were not expecting before, but the guest members made them think and consider it. Student-2 said, what they saw as biased, the guest actors could look completely neutral and reveal the mistakes. After the acting out, they noticed it in the video that the moving part of their stairs was an unreliable way for a doctor to direct the child to the examination table.

The question regarding difficulties of PS are expressed in two different codes under the theme of limitations of PS (Table 7.18).

Table 7.18 Limitations of PS

THEME	CODE	EXPLANATION
Limitations of PS	Roughly detailed models	Limited in terms of details such as working principles and materials
	Hands in control a scaled space	The hands hit each other
		The hands prevent the scene to be recorded properly

The students had difficulties in terms of comprehending the detail of the models and the hands that controlled the puppets. For instance, Student-1 said that in their previous product design processes, they tried to work with 1/1 scale mock-ups to question the mechanical parts. Since they worked on a small scale, they could not identify the ergonomics or working mechanisms' problems. Student-5 explained that working with scale models was beneficial, but when they acted out on a small-scale model, everyone's hands were hitting each other, which affected the video recording process.

The question regarding their expectations from the PS is expressed in five codes under the theme of suggestions regarding PS (Table 7.19).

The students had suggestions regarding the name of the exercise, the scenario, the setting, the performance, and reflection.

In terms of the name of the exercise, some of the students suggested a more formal name for the exercise would be better. The word "puppet" was expressed not to be serious by several students.

In terms of the scenario, giving less detail, considering alternatives with a focus on project dimensions when writing the scenario, was suggested by the students. Student-15 said they had a hard time deciding on whether the child should be on a regular examination or a patient who was sick, with a fever of 40 degrees or a hurt leg, a sore stomach, or a very nauseous child since all these changed the scenario.

Table 7.19 Suggestions regarding PS

THEME	CODE	EXPLANATION
Suggestions regarding PS	The name of the exercise	A more serious name rather than “Puppet Scenarios”
	The scenario	Less detailed scenarios, just touching on crucial points, not dealing with details
		Alternative scenarios can be acted out: a sick child, routine examination
		Focus on the project dimensions: (e.g. how encouraging the design idea is)
	The setting: the stage and the environment	All the teams need to be ready at the same time
		A quiet environment for better concentration
	The performance	Everyone would watch each other's performance
		Each team member be present during the performance of their team
		The tutors would facilitate the performance, manage and direct the process of each team one by one
	Reflection	The tutors would provide written feedback rather than verbal

The scenarios were suggested to be written considering the project dimensions; for instance, if the students were defining their design ideas as “encouraging,” they would involve in what ways the examination table and its surroundings encourage the child to assent to climb on the table. Student-9 said the guest members acting out did not focus on their scenario covering their project dimensions, and she added that in her opinion, they did not understand their design concept properly.

In terms of the setting, the students suggested everyone in the class be ready and keep quiet while others performed. According to Student-3, the noise was so high that they could not record their speech properly. Similarly, Student-13 expressed that the other teams were still making their mock-ups during they were expected to start performing, and waiting for the others was a waste of time for their team.

In terms of the performance, the students suggested everyone in the class and the tutors all together would watch the process. For instance, Student-8 expressed that the performance process would be more efficient if they watched each other’s

performance, or each team member was present during the performance. Student-5 said she would prefer if the tutors would accompany the performance process since when not being mentored at all, they had confusion about the exercise.

In terms of reflection, the students suggested the tutors give written feedback rather than verbal feedback on their reflection reports. Student-11 said they felt as if they could not receive enough feedback from their tutor regarding their report. If their report feedback were given as a written report, it would be more useful for them.

The students were suggested to experience four phases: writing the scenarios, preparing the setting, acting out, and reflecting on their performance for this exercise. The results of the interviews indicate that although the students wrote the scenario by considering the project dimension they defined before, the performance did not sometimes go as expected. Some teams were expressed to be too focused on their problem frames, and during acting out, the teams whose design ideas were used as a prop of the performance indicated that this process was not efficient for them. On the other hand, other teams found it very helpful to surpass narrow sightedness, as they expressed the guest members helped them to question several issues regarding their design solution that they had not considered before. To facilitate it properly by the tutors, to help everyone act and for all the class to watch each other were suggested to make this exercise more efficient to let them receive more and proper feedback. Therefore, all teams need to be ready for acting out with all their tools, props, mock-ups, and puppets, otherwise waiting for other teams to be ready makes those who were already ready make them bored and tired. Pre-planning and giving extra exercise regarding the performance would keep them busy; however, this challenge was unforeseeable as this was a three-day homework for teams of 5 that was considered to be enough time. Finally, the reflection and feedback were seen as an essential phase of PS exercise; therefore, this exercise's tools and guidelines need to consider this need.

7.2.3 Evaluation of Study-II

The findings of the study show that the students framed their design problem based on literature review, UGVA, and expert meetings where role-playing took place. The project dimensions and themes point to the design insights, while the solutions in the idea generation matrix point to the design ideas. For instance, to eliminate the uncertainty felt by the child for the examination process, the students proposed several solutions such as, changing the focus of the child to provide a gradual transition to the examination process, directing the child in the venue without the direct intervention of the doctor or the attendant, providing personalization opportunities to encourage the child, keeping the stakeholders in the field of view of the child, and generating design ideas.

Table 7.20 The tools and techniques and the outputs they provided (Team B3 as an example)

	Exploratory research	**Idea generation**	
The tools and techniques	Literature Review, UGV Analysis and meeting with experts (RP)	Project themes and dimensions	Idea Generation Matrix, Puppet Scenarios
The outputs	**Framing the design problem:** Uncertainty and anxiety that the child feels in the examination room (child's mood)	**Design insights:** Changing the child's focus for providing a gradual transition to the examination process	**Design ideas:** The use of sensory stimuli

This study showed the phases, sequences, tools, and techniques needed for this method, which involved UGVA and RP. The phases of UGVA were framing, searching, and browsing videos, deciding and selecting the videos, sequences, and frames, and conducting the video analysis. The students experienced this process as teamwork, where the tutors were not involved directly. The samples from the previous studies were provided to the students as it was without being edited, and

they used them as examples and prepared their presentation posters. Poster homework was followed by presentations and table discussions. After these discussions, the students posed their questions to the expert. During the expert meeting, the doctor answered the questions, and as he answered, he acted out certain parts of the practice. He provided a shortcut to the design insights. This process helped the questions from the students as a designer's perspective to overlap with the answers from the expert of the practice. The design ideas were evaluated through another RP session, which was PS consisting of four phases, which were writing the scenario, setting the stage, the performance, and reflections. PS was a peer-review session where the students received feedback from their peers, reported it, and the tutors provided feedback regarding their experience on these performances further.

CHAPTER 8

STUDY-III: REVISING AND IMPLEMENTING THE METHOD

The previous studies illustrated that the UGVs provide a quick introduction to the subject and visual information spread over a period of time, while the expert enables the kinaesthetic experience and the procedures of practice (such as the actions and roles of all the stakeholders involved in child examination), and this can provide more in-depth details and inferences when the expert is involved. Therefore, the workshop process, which lasted 4 hours, pursued these roles of the research material and stakeholders of the project subject. While it involved analysis of videos by the participants regarding pediatric examination as found data, it also considered the confirmation of the reliability of the content by the expert of the subject. Study-III is based on the findings from the Study-I and II. Table 8.1 shows how the study proceeded. A guideline and toolkit were prepared for this study to be employed for the workshop (Appendix G).

This section presents the development of the toolkit aimed at repurposing UGVs for exploratory research in the early phases of the design process for utilizing them in a reliable and structured way. The toolkit developed based on several educational projects, was revised and implemented in a half-day crash workshop involving a small number of participants. The workshop involved three participants: a senior industrial design academic, a junior interior architecture academic, and a senior year industrial design student. There was also an expert regarding the design problem who was a doctor, and the design problem was “designing a pediatric medical examination table and its environment.” A guideline was prepared before the workshop for the researcher as the workshop convener to follow. The process proceeded as;

• Delivering a short presentation on conducting a video search and employing video-sharing platform YouTube for exploratory research in the early phases of the design process and how to form a playlist /video pool.

• Delivering the related literature review regarding the design problem, which was decided as a "pediatric examination table and its environment" and the workshop toolkit, which were video analysis samples and templates.

• Sharing the playlist (video pool) with the participants consisting of 20 videos regarding pediatric examination covering diverse subjects uploaded by users from different countries.

• Conducting the video analysis with the participants as a team accompanied by the expert

It was explained to the participants that YouTube would be our main source for UGVs. Among 200 videos that have been reached, 80 were used in the previous study, while 20 of them were selected for this study considering the time limitations. When selecting videos, the criteria that were taken into consideration are that the videos contain a variety of topics that prevailed in the previous study, such as interaction, circulation, mood-attitude-behavior of the stakeholders of the examination process. A pool of 20 videos consisting of various and diverse videos was created for the participants. The total duration of the videos was approximately 2.5 hours. Participants were also asked to expand the pool by adding videos they found. They were also told to skip some parts of the video if they wanted so.

For the workshop, a toolkit and guideline were reorganized based on Study-I and II. Study-I provided the analysis modes for video analysis posters; the tools of the toolkit and Study-II provided insights about the phases and steps, in other words, a guideline to follow as well as which analysis modes and coding techniques were more commonly employed. As mentioned earlier, the students used these posters as proof, as a discussion material or speculating on what people in the video say, act, behave or expect, want, believe. To discuss the data in videos short descriptions were involved in recalling them later in the form of behavioral data such as actions, environments, objects, posture, head movement; and attitudinal data as interactions

between users (stakeholders) and modes such as proxemics, gesture, gaze, spoken language. For that reason, the participants were informed that their observations notes could be like “in the 11th second of the video, the child starts to cry as the doctor checks his chest with the stethoscope, while he was sitting on the examination table and mother seems to be nervous”.

8.1 Revising the Toolkit

In Study-I, typically, the video analysis posters prepared by the students were observed to be a compilation of screenshots from the videos or a sequential organization of them. There were also rare cases where students attempted a more quantified approach and visualized the data quantified by themselves. The significant modes of analysis identified were thematic collage making, quoting, storyboarding, and quantifying the video content. The coding techniques identified were diverse and rich, and included labeling, marking, figure outlining, commenting, diagramming, etc.

Video analysis modes and coding techniques were determined and reorganized by considering the criteria that the participants would comprehend more easily. Participants were advised to use the proposed video analysis modes, coding methods, or self-determined methods to make project-related case studies, which was “the process of pediatric examination practice.”

Thematic Collage Making. One of the samples and templates provided to the participants was thematic collage making. Bringing similar or related images from separate videos together is an analysis mode that may help the designer explore variations or diversity concerning a specific issue such as body posture while carrying out a specific task. Figure 8.1 shows the video analysis board sample from the toolkit illustrating thematic collage making, which was reorganized version of a poster submitted by the student, who was designing boots for firemen for her graduation project stated that she used YouTube videos to get familiar with the problem domain and the user group. This reorganized sample shows a collage from

the screenshots from various videos documenting different ways of handling the hose in different contexts.

Quoting the Video Content. Another sample and template provided to the participants involved the mode of analysis, which was video quotation. In the reorganized example provided in Figure 8.2, the student "quoted" a video section where a design contribution would make sense by taking screenshots from the video and making a video line with specific keyframes in which she marked the key areas and elements to analyze the event.

Storyboarding the Video Content. The last sample and template provided to the participants were storyboarding the video content. By taking screenshots from the video, organizing them into a storyboard with sequential keyframes, and writing down the observations by indicating the time it took place in the video, the video content can be presented in the form of a storyboard. Figure 8.3 shows the video analysis board sample from the toolkit, illustrating storyboarding the video content. Concerning the project, the student reported that she reframed her design problem as "feeding babies in restaurants, creating a hygienic surface on feeding chairs, and letting the baby feed himself/herself." She watched YouTube videos and documented essential issues that might help generate design ideas. She took screenshots from the videos that she found relevant and significant, wrote captions and annotations under them, and used color-coded marks. She stated that she tried to document hand functions concerning the actions of the caretaker and the baby while considering the range of baby's reach on the feeding chair.

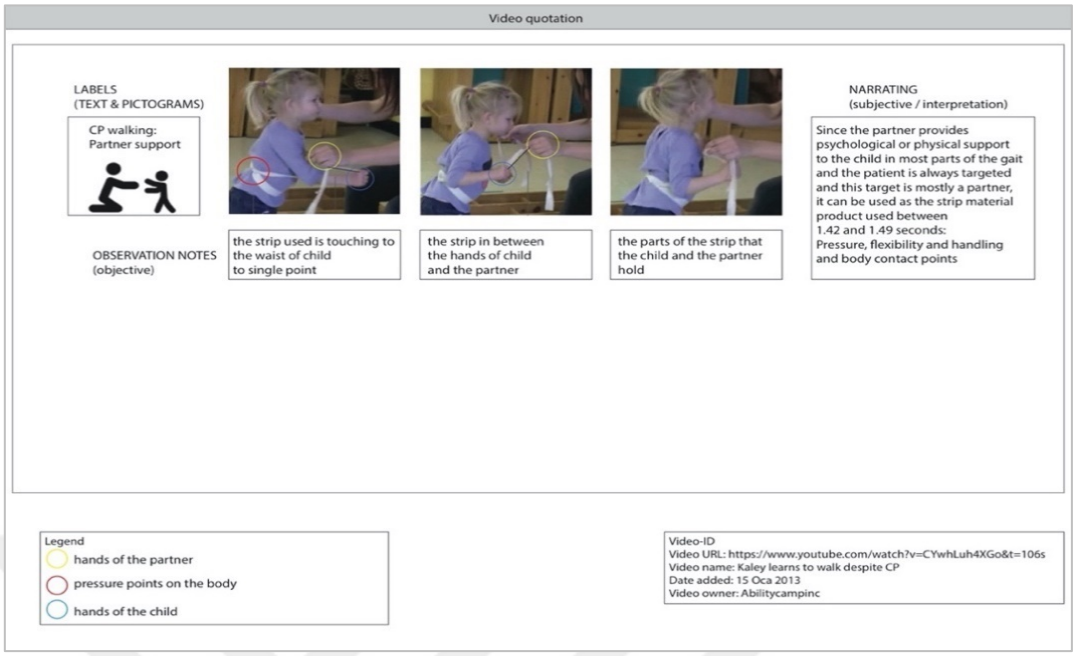


Figure 8.1 The video analysis poster sample from the toolkit illustrating video quotation. The example is from "walking support for people with cerebral palsy" project

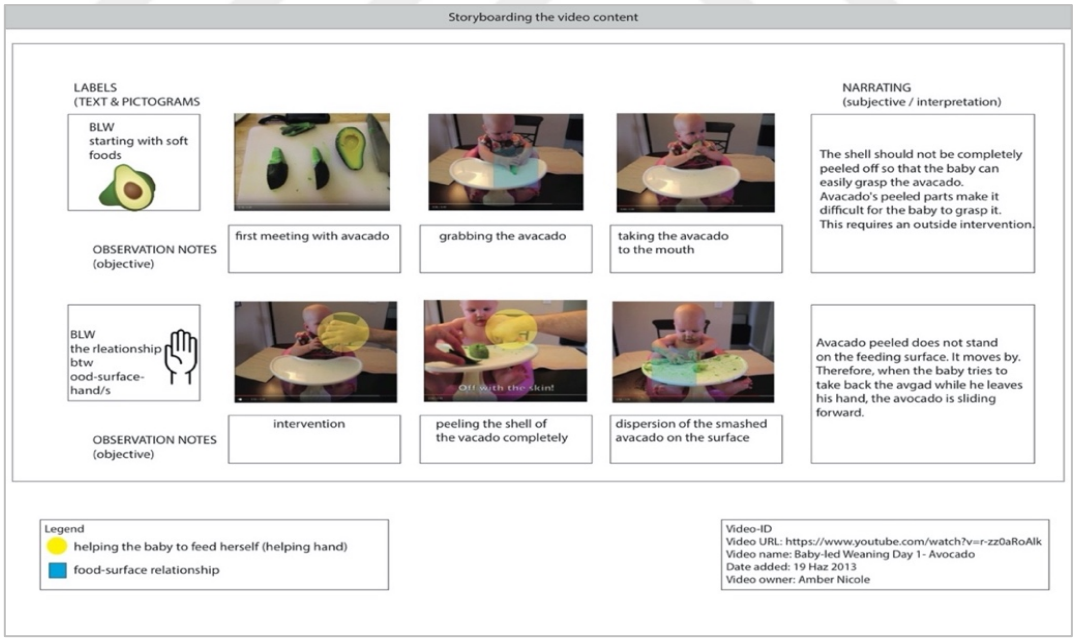


Figure 8.2 The video analysis poster sample from the toolkit illustrating storyboarding the video content

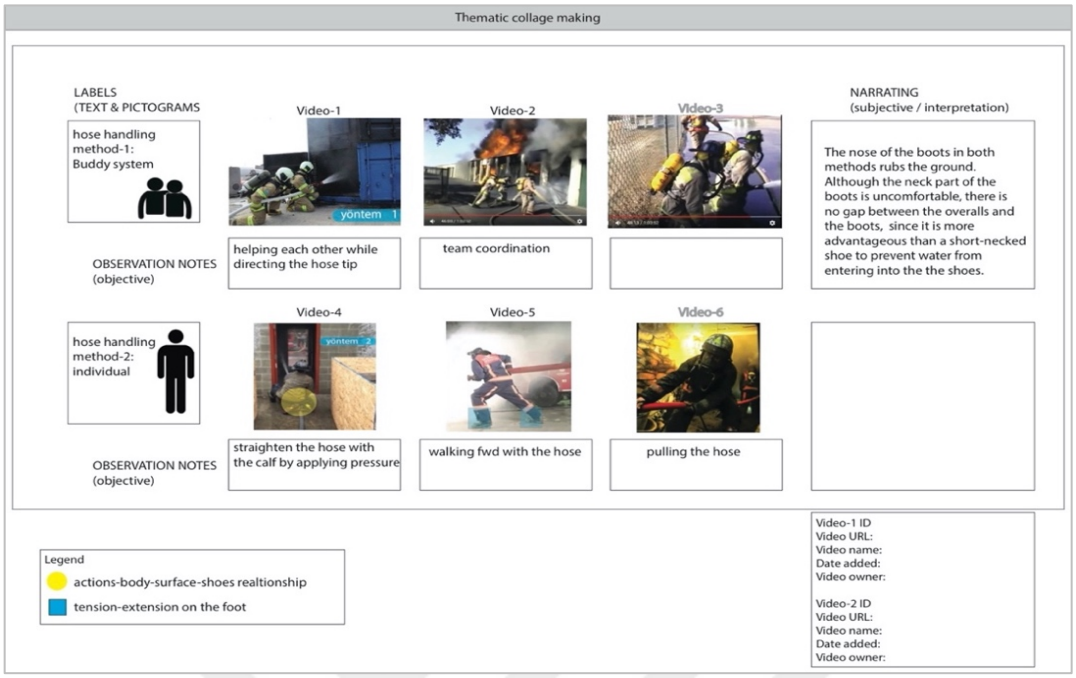


Figure 8.3 The video analysis poster sample from the toolkit illustrating thematic collage making

8.2 Implementing the Revised Toolkit Through a Workshop

During the workshop, the participants were provided with a concise literature review regarding the specific project topic given, pediatric examination table and its surroundings, a YouTube playlist of related videos, the video analysis poster samples compiled from the previous studies, and the video analysis board templates for different modes of analysis. The participants were also informed that the literature review findings drew attention to the examination position, the equipment used, the frequency of an observed problem, the attitude and behavior of the medical personnel, and the examination environment. The participants were free to use the proposed video analysis modes and coding techniques or approaches of their own choice to explore the project topic. Since the toolkit puts a special emphasis on unfamiliar domains and challenging user groups, the workshop also involved the assistance of an external expert during the video reviewing and analysis phase.

In Study-II, the student teams had watched and analyzed the videos, prepared their video analysis posters, and then discussed their analyses and insights with an expert.

The sequence followed throughout this study was used as a guideline for the workshop. Considering the time limitations and the small number of participants involved, we adopted a different approach for the workshop; the videos were viewed by the participants and the expert together, allowing the expert's direct involvement in the video analysis process (Fig 8.4). Thus, the observations, questions, or insights voiced by the participants were commented on by the expert during the video monitoring and analysis. It was observed that when the participants focused on a subject and searched for insight, the expert provided specific and just-in-time feedback on the subject verbally or by acting out bodily. For example, while viewing a video content, the participants noticed that the butterfly figures on the wall were not actually decorative; the expert commented on it and drew their attention to guiding the child indirectly during the examination, and the discussion led to design insights related to the pediatric examination table and its surroundings.



Figure 8.4 Snapshots from the workshop: The video analysis process involving participants accompanied by an expert

The participants were able to conduct the video analysis quickly and benefit from the video analysis board templates. While watching the videos, they used these documents as guidelines rather than templates to fill in. The direct involvement of the expert accelerated the process significantly. While it might be challenging to involve an expert directly in such a process for large groups, it was observed to be

beneficial for a small group. The final stage of the workshop was idea generation, and it was concluded with a concept map (Fig. 7.5). The idea of building a concept map emerged in response to the time limitation, and the participants were observed to favor a format that allowed a more open-ended group work. The concept map was suitable both for documenting the observations and interpretations from the videos and for relating them to the emerging design ideas as a complex set of interconnected propositions. The design ideas were expressed in the form of product requirements and descriptions. The participants prepared the concept map and linked the color-coded areas with arrows (Fig. 8.5).

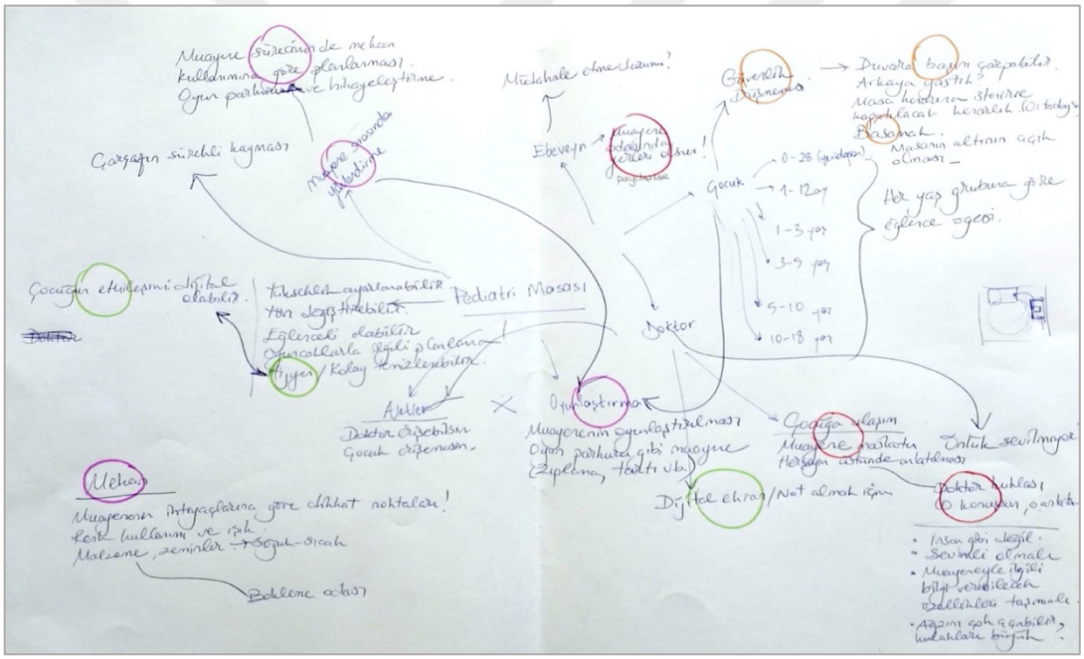


Figure 8.5 The concept map prepared by the participants collectively during the workshop

The subjects circled in orange referred to accessibility, safety, ergonomics, and circulation, such as circulation patterns around the examination table. The issues circled in green referred to the interaction with the stakeholders and the distribution of tasks during the examination process, such as the location of the attendant. The issues circled in red referred to the proposed interaction between doctor, patient, and attendant, such as keeping the stakeholders within the child's visual field and at

his/her eye level. The design ideas that emerged because of the concept map study implied gamified experiences: a thematic path concerning the stages of the examination and an examination mascot concerning the child's mood. The participants proposed several thematic paths, including adventure island, forest, and space. An examination mascot that would accompany the child throughout the process was considered useful to reduce the feeling of uncertainty.

8.3 Evaluation of Study-III

This study focused on UGVs mostly and discussed the development stages of the toolkit, which aims at supporting design students to browse, select, and analyze UGVs for generating insights and ideas for unfamiliar problem domains. This workshop was conducted with a small number of participants to test and develop the latest version of the toolkit and its guideline. During the workshop, UGVs were viewed and interpreted together with an expert, and it was observed that the templates provided were not used directly but only as guidelines; the participants discussed and diagrammatically visualized their findings, design insights, and ideas in the form of a concept map. The workshop results drew our attention to the impact of the expert's presence on the UGV analysis process. In our previous studies, on the other hand, the video analysis posters prepared by the students had served to document and visualize the findings and insights from the UGVs in detail and facilitated a thorough discussion of these with the experts and the tutors. In a condensed and small-group study where an expert accompanied the participants during the analysis, on the other hand, a format that enabled quick note-taking turned out to be a more practical alternative. An important outcome of the workshop is the need to diversify the tools provided to the participants for UGV analysis in accordance with the mode of analysis and the level of expertise available. The workshop results also indicated that the toolkit needs to address UGV analysis at different resolutions such as pre-screening or in-depth analysis.

CHAPTER 9

CONCLUSION

9.1 The UGVARP Method: The Toolkit and Its Guideline

Throughout the research, it was decided that the outcomes of the study would be developed into a method with a toolkit and a guideline. The toolkit involved the tools employed for utilizing UGVs and role-playing while the accompanying guideline presented the steps to follow. The name of the method is derived from the first letters of the techniques by the sequence: UGV Analysis and Role-playing as UGVARP method.

After introducing the design students to an unfamiliar problem domain, the sequence to be followed by the students is the literature search, UGV analysis, and role-playing. A literature search conducted before UGV analysis and/or instructions given by the experts provides the students' background knowledge to evaluate the credibility of UGVs. What students learn from the literature search and UGVs form a structured-base for role-playing. Instructions provided by the experts as facilitators enriched the experiences the students gain from the role-playing process. The literature search also provides critical information concerning the user and the context. The UGVs provide descriptive representations of real users' experiences through visual materials, and experts' instructions influence the students' experience and provide background knowledge for role-playing sessions to some extent. The three stakeholders of the design project are the tutors, the students and the experts of the subject who can be various stakeholders such as user advocacy groups or a representative from the user group (Fig 9.1).

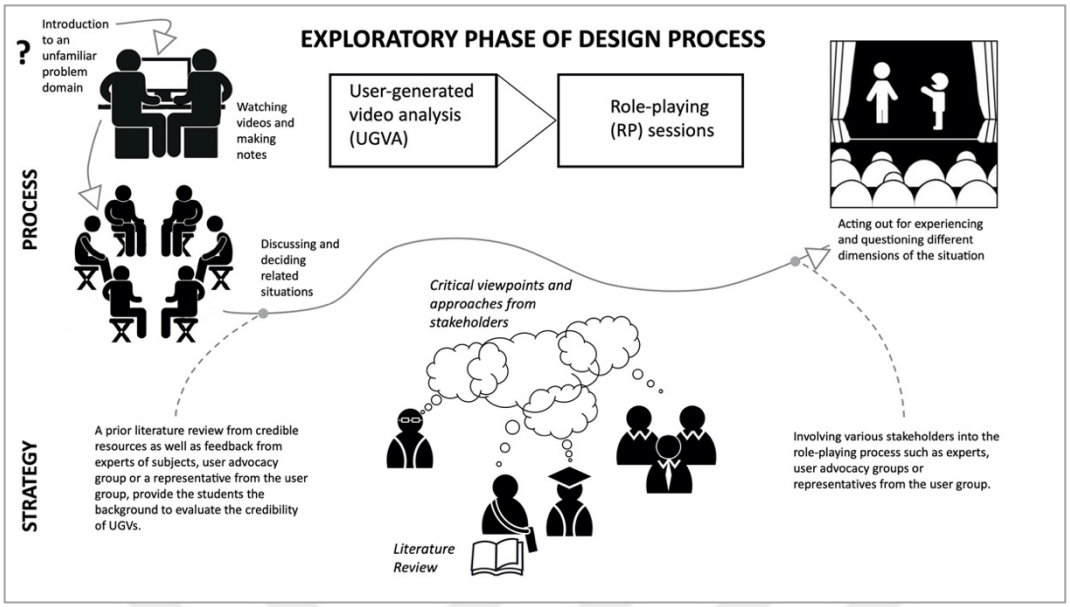


Figure 9.1 A representative image of using the UGVARP method in design education

UGVA covered four phases (Phases 1, 2, 3, 4), 2 while RP involved two phases (Phases 5, 6) and PS included three phases (Phases 7,8 and 9).

Table 9.1 The process of the UGVARP method

	PHASES	ACTIVITIES
UGVA	PHASE-1	Browsing and selecting videos
	STEP-1	Conducting a video search by utilizing the video sharing platform YouTube
	STEP-2	Forming a playlist or video pool of videos
	PHASE-2	Pre-screening (oTranscribe and google form are the tools)
	PHASE 3	In-depth analysis (UGVA samples and templates are the tools)
	PHASE 4	UGV Analysis discussion sessions
RP	PHASE 5	Role-playing sessions: partial role-playing for experiencing a section of the practice
	PHASE 6	In-depth analysis (RP samples and templates are the tools)
PS	PHASE 7	Writing the scenarios, preparing the stage and dummies
	PHASE 8	Acting out with puppets
	PHASE 9	Reporting the outcomes

The first templates were organized and implemented in Study-III, which was a half-day workshop. The toolkit involved sections, such as observation notes and interpretations. After the study, it was observed that the toolkit observed to needed addressing UGV analysis at different resolutions such as pre-screening, enabling quick note-taking, or in-depth analysis.

For organizing the analysis tools further, such as pre-screening or in-depth analysis templates, several sources were considered that are employed for organizing the data.

There were three critical points revealed throughout the thesis study:

- The video analysis in this method is generally based on qualitative analysis.
- The designers need to follow analysis steps for revealing an argumentation from the videos.
- The toolkit needs to allow the data in the video to go through the layers of analysis forward as findings, conclusions, or insights.

One of the most prominent approaches in qualitative video analysis is conversation analysis thus, the "AEIOU" framework developed for conversation analysis in terms of interpreting data under a guiding taxonomy of "activities, environments, interactions, objects, and users," was chosen to be integrated into the toolkit. It categorizes or codes observational notes as they occur; thus, it is suitable to involve all the relevant critical information observed or sensed in a video. For this toolkit revision, it was not used as a strict taxonomy of data since this was a part of the pre-screening phase which needed to be quick, but as a reminder of them and the interrelation of them.

The critical information in the AEIOU framework was used as input and integrated into the pre-screening phase of video analysis, as in Fig. 9.2.

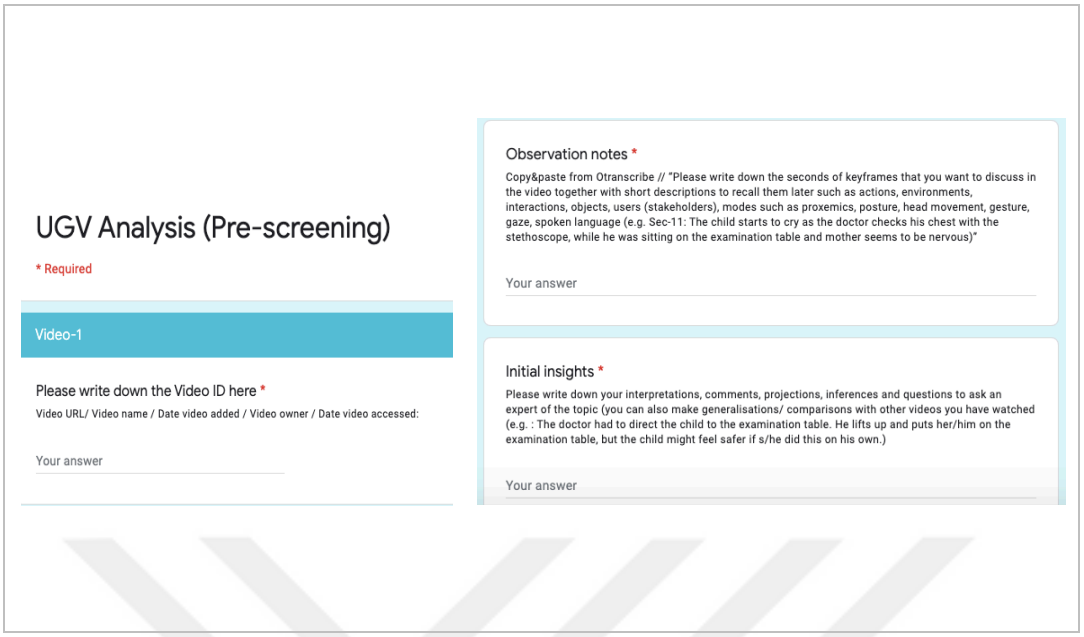


Figure 9.2 Pre-screening videos

For the required information, the AEIOU formed a basis; however, as a layout, considering other tools was necessary. The documentation of videos is multimodal transcriptions of videos that contain more than one mode including an image as well as writing, as a means of transcription depicting the meanings and relations as the researcher organized, while providing certain information at a glance, such as features of the setting, objects and what people look like. As a layout, the tool that was found more suitable when the students' works were also considered as the "storyboard." The storyboard was a useful tool to rely on for its narrative qualities to represent a recorded video on an analysis poster. As mentioned earlier, the video analysis posters prepared by the students were typically observed to be a compilation of screenshots from the videos or a sequential organization of them. This organization encountered in the video analysis posters of the students indicated the storyboarding as an essential tool to consider for developing the toolkit. Therefore, the analysis modes are developed by considering the storyboard tool, which aimed at decomposing the video information into visual and textual pieces.

The analysis poster templates do not need to involve details used in the pre-screening phase, thus the information in the storyboard template. The phase of preparing the

UGV analysis posters involves the in-depth analysis step; therefore, the students need to be free to choose what information to involve from the previous step. This analysis posters do not need to involve or demand intensive information since they are more appropriate to be involved in the pre-screening phase. These posters need to keep the information simple and to the point in order not the distract the attention.

The toolkit of the method involves the UGV analysis samples and templates of the three modes of analysis consisting of six pages and one page for a sample of the quantifying mode. Role-playing analysis samples and templates of the three modes of analysis are composed of six pages, and downloadable templates for writing the scenario and reflection report for puppet scenarios. The UGVARP method guide is 40 pages A5 size booklet, with the analysis samples and templates as tools with accompanying guidelines. Its pages are organized as an A5 size booklet, downloadable pdf, and can be printed out. The method's guidelines involve the directives regarding the activities to take part in each phase of the method (for the UGVARP Guide, see Appendix I).

9.2 Concluding Remarks

Although dealing with diverse and unfamiliar problem domains help design students develop new knowledge and skills, coping with challenging user groups or use environments in educational projects involves serious difficulties for design educators and students. Despite having several ethical and technical concerns covered in the thesis, user-generated online video content, convenient, accessible, and massive in quantity, has become an outstanding teaching, learning, and research medium for various professions and practices. Utilizing this medium to empower design students and tutors for exploring unfamiliar or challenging problem domains in the early phases of the design process requires the development of novel approaches and methods tuned to the qualities of the medium and the needs of the stakeholders involved. YouTube came into prominence for certain features such as being easy-to-use, easy-to-access, and easy-to-upload. Involving UGVs to exploratory design phase facilitated the (novice) designers to quickly access the

problem domain in which the expert provides the shortcut to important issues. UGVs themselves are not "pure data" or primary source, but a medium for discussions, triggering questions regarding problem domain and getting familiar with it. UGV platforms like YouTube enable reaching videos from diverse backgrounds, geographies, or cultures when searches in diverse languages are conducted. In this study, UGVs were used as a medium for teamwork; however, individual usage examples were also provided as a retrospective study. The guidelines and templates in this thesis are developed for teamwork, as it was important to employ UGVs as a medium for discussion.

While doing this, it pursued answers to questions regarding the benefits and limitations of UGVs and the ways of employing them as a source for exploratory research in the early phases of the design process, the benefits and limitations of role-playing as a complementary technique, and the ways to employ them together. To explore the answers to the research questions, diverse examples from senior year industrial design students' works of students employed UGVs, works of students who employed role-playing, and both are collected and addressed. These cases provided the key insight that the UGVs coupled with role-playing would be a promising approach for exploratory research in the early phases of the design process for unfamiliar problem domains; which brings together three actors –students, tutors, and experts, and utilizes literature review, UGV analysis, and role-playing.

9.2.1 Revisiting Research Questions 1 and 2: The Benefits and Limitations of UGVs and Role-playing

Ethical and technical considerations when employing UGVs and role-playing are broadly discussed in Section 3.9.3 and 4.11 respectively. These considerations form the basis of the limitations of them as well. The benefits of them were identified through both thesis study and the related literature. Benefits and limitations of user-generated videos and role-playing that are covered throughout the thesis study are listed below.

The benefits of user-generated videos:

- UGVs provides rich data for diverse user groups, usage contexts, geographies, or cultures
- UGVs are convenient, accessible, and massive in quantity
- UGVs are easy-to-upload for the users, easy-to-access and easy-to-use

The limitations of user-generated videos:

- Issues concerning privacy, credibility, documentation, and limited representation of some user groups

The benefits of role-playing:

- Personalized and first-hand experiences
- Subjective and embodied experiences

The limitations of role-playing:

- Role-playing may remain insufficient for exploring the problem domain thoroughly when not used in combination with other methods
- Recording and documenting a role-playing session may require special permission.

9.2.2 Revisiting Research Questions 3: Way of Employing UGVs and Role-playing Together

For employing UGVs for exploratory research in the early phases of the design process, role-playing was the most convenient complementary technique with its various features. The UGVs provide descriptive representations of real users' experiences through visual materials, and role-playing provides subjective embodied experiences that may help to sense and feel.

The following common and complementary features of UGVs and role-playing, when employed for design purposes, make them an appropriate couple for exploratory research in the early phases of the design process.

Characteristic features of UGVs and role-playing:

- Both can be utilized when users are difficult to access.
- Both are affordable, accessible, and flexible.
- They do not require sophisticated procedures or special training.
- Both serve as a supplementary technique and require clarification to be credible and reliable.

UGVs cannot be accepted as "pure data" or primary source, but they serve as a medium for triggering questions and discussions regarding the problem domain, where role-playing provides a convenient environment to search answers to these questions.

- UGVs and role-playing work together well for modelling users in complementary ways and for generating design insights:
- UGVs enable the students to observe, interpret, and discuss the user from behavioral, attitudinal, and contextual perspectives.
- Role-playing provides personalized, first-hand, subjective, and embodied experiences.

Developing a taxonomy of analysis modes and coding techniques for both UGVs and role-playing, employed by these students, formed a basis for putting them into action with a systematic and sequential manner throughout the early phases of the design process and utilizing them in a reliable and structured way for various types of design projects.

The presented method is hybrid in terms of involving stakeholders and information sources to make use of the UGVs. The three information sources of this method are "literature," the UGVs, and role-playing.

Involving an expert in exploratory research in the early phases of the design process helps students bridge the gap between observations, findings, and design insights obtained through the UGV analysis and role-playing. Expert is the catalyst that helps students' synthesizing the insights from UGVs and role-playing. The expert is the

key actor and a live-support agent who helps interpret the specific literature, the credibility of the UGVs, the priorities, and who facilitates personalized and first-hand experience through role-playing. The levels and phases at which the expert is involved in the process may differ in accordance with the project context, the number of students, and time constraints. Therefore, this thesis aimed to develop a method for bringing together three stakeholders for design studio education: the students, tutors, and the expert on the topic to utilize UGVs and role-playing in a more credible way (Fig 9.3).



Figure 9.3 The relationship between UGV, role-playing and the expert

In each study of the thesis, the expert undertook different roles. The expert's roles were dependent on the number of participants or the individuals who are in contact with the expert before or during browsing and watching videos (Table 9.2).

9.3 A Final Summary

To give a snapshot of the cumulative experience throughout the thesis study, how the outputs of the previous studies provided inputs to the following ones are

summarized in this section. Table 9.2 illustrates the expert's diverse roles, who is the key actor in the UGVARP method.

Table 9.2 Diverse roles of experts in Study-I, II and III

	STUDY-I	**STUDY-II**	**STUDY-III**
The participants of the study	Individual and Self-directed Expert-led	Mass education	A small group of participants
The way UGVs are employed	The UGV analysis posters prepared by the students had served to document and visualize the findings and insights from the UGVs	The UGV analysis posters prepared by the students had served to document and visualize the findings and insights from the UGVs and facilitated a thorough discussion of these with the experts and the tutors	The expert was present in the UGV analysis process
The way Role-playing is employed	the expert himself acted out the practice and facilitated the role-playing sessions	the expert himself acted out the practice	The expert herself acted out the practice

Study-I. Study-I. The study started with some rough observations that were then structured as illustrative case studies. The cases showed that the design students in the design department the researcher worked in as a teaching assistant were employing online videos and role-playing. The three tutors that were interviewed for the first case, which was "walking support for CP" were encouraging them to do so, for enabling the students to explore this unfamiliar problem domain to enlarge their knowledge base. A focus group interview with the student was conducted, and since the tutors emphasized, it was very challenging to access real users due to several reasons discussed before in the introduction chapter. There were three more cases in which students either employed UGVs, role-playing, or both. These cases having similar patterns of employing UGVs and role-playing for exploratory research in the early phases of the design process, implied that "online videos and role-playing would be an advantageous exploratory research tool." One of the most interesting

observations in this study was, among the social sphere channels, the students chose UGVs. Throughout the study, it was observed that certain features like being sensorial, longitudinal, having a beginning and ending, providing different visual angles, etc. made them more advantageous than still images for the students to access the problem domain and sense it. Therefore, online videos became the focus of the study. Among video sharing platforms, YouTube came into prominence. The students I interviewed claimed that it was their primary source of UGVs. Moreover, a literature review made it more clear that YouTube was chosen by many users all over the world for various purposes due to its several features, such as being easy-to-use, easy-to-access and easy-to-upload and providing longitudinal data.

Study-II. After the materials and techniques were decided to be employed through a structured study, an action research study was conducted in which UGVs and role-playing techniques were employed. The design project was decided based on specific criteria by considering the previous cases' qualities. Here the problem domain would be unfamiliar to the student; the user and the context would be difficult to access, and there needed to be experts of the topic who would provide feedback to the students regarding their insights based on the videos. The students were senior year industrial design students. The video analysis posters' primary role was to visualize the found data in the video and enable a discussion with the expert of the subject in the following step of the exploratory research in the early phases of the design process. The whole process was constructed to integrate the method into the design process and was documented through the works handed by the students, voice-recordings, and post-interviews with the volunteer students.

Study-III. The tools and the procedures of the method were set up and were employed within a half/day workshop to see whether it could also work for short/term projects. The tools of the method are developed to make it easy to comprehend and employ. Various qualities of them were transferred from the previous studies, while new qualities were added. In the short/term projects, the expert would directly involve in the video monitoring process and provide feedback just/in/time based on the designers' insights. During the workshop process, the videos

were interpreted with the expert together, and the templates were not used directly but as a guideline. The participants visualized their findings in the form of a concept map, a quick tool to be employed for brainstorming and idea generation. It is observed that in the short-term projects the expert would involve directly to the video monitoring process and provide feedback just-in-time based on the insights of the designers while for mass education or crowded designer groups and long-term projects requires a different process; thus the involvement of the expert comes in the following phases like examining the video posters of the designers. In a short-term and small group studies such as Study-III, a format enabling a pre-screening of the video watched would enough instead of in-depth analysis. This pre-screening form could also be used for long-term projects before in-depth analysis. In this particular study, the qualities of these tools were observed to be providing a quick introduction and dragging the viewer into the topic as expected.

The common points of the projects in Study-I, II, and III is that the design problems were from unfamiliar domains for the participants and that the users and contexts were difficult to access. Since this thesis put special emphasis on unfamiliar problem domains and a lack of direct access to users, it also required involving an expert in the design process to help the design students bridge the gap between findings, observations and design insights obtained through the UGVs and their implications through role-playing and discussions.

In Study-III, the video analysis and role-playing documents of the students were reorganized for the participants. In contrast, in Study-II, the video analysis documents from Study-I were delivered directly by indicating these the analysis modes as quantifying the video content, quoting a video section, storyboarding the video content, and thematic collage making, and the coding elements used. For Study-II, the duration was longer, and the teams analyzed the UGVs, so letting the students make their own decisions for video analysis posters was seen as a valuable input to the thesis, whereas the duration in Study-III was short and made a structured toolkit necessary.

After these, the final phase would be completing the toolkit by integrating the data structuring tools that inform the analysis. Therefore, the critical information in the AEIOU framework and multimodal interaction analysis were used as input and integrated into the pre-screening phase of video analysis. At the same time, for layout, storyboarding was observed t be the most appropriate tool, among others, when the documents handed by the students are considered.

Although role-playing requires more free form in nature compared to video analysis, the criteria to follow and the ways of documenting role-playing sessions involved in the toolkit are based on Study-I and literature, while acknowledging role-playing as a designer's technique for understanding users and context within user-centered design mind-set. The context, duration, and the number of role-playing participants are essential for appropriate bodily experience, recording, and documentation. When the students are crowded during the role-playing session, and there is limited time, the bodily experience, recording, and documentation possibilities are also less. The variations regarding the number of participants can also be observed when we compare the cases in Study-I and the case in Study-II. For Study-I, the students conducted the role-playing process individually whereas, for Study-II, the crowded student groups and the private contexts (the hospital administration would not let taking videos or photos) caused limitations in terms of recording and documenting it. The representatives from each team were able to ask their questions and document by note-taking as the doctor, and their classmates in the examination room acted out the practice. For Study-III, role-playing was not purposefully involved within the structure of the workshop. However, since an expert involved in the UGV watching process, the discussions turned out to be acting out the certain routines actions of the practice that were seen in the video.

It is important to remind that this study does not assert that the sources or techniques are not entirely viable in every situation. By acknowledging their shortcomings or limitations, the thesis surveyed reasons of employing them from an educational perspective, put them into action with a systematic and sequential manner throughout

the early phases of the design process, and explored and presented the ways of utilizing them in a reliable and structured way for various types of design projects.

9.4 Limitations of the Study

First of all, most of the study was carried out with students from the same department in case studies and action research. A research model in which the researcher chose a close and easy-to-reach audience was used in the study.

In Study-I, examples, and cases were collected in a limited time. The examples consisted only of the researchers' encounters, as many as that could be reached in the time determined for Study-I. The examples in Study-I are limited to those that the researcher was able to compile within the time frame. However, the student project examples in Case-1, in particular, were selected out of a high number of projects, and they were quite diverse.

While choosing the project subject in Study-II, the videos on the internet, especially on YouTube, were searched by the researcher, but it was not estimated that there were a limited number of Turkish videos and that the students would use their priorities as their mother tongue. This issue emerged during interviews with students. Students prioritized videos in their mother tongue to understand the context more clearly. However, the lack of different Turkish sources then directed them to search in different languages, enabling them to reach much more diverse and rich data. Although the reliability of videos on the internet is a restriction, it both caused the limitation of the study while revealing the answer to one of the research questions. This constraint could be overcome by the presence and contribution of an expert who became an essential stakeholder of the proposed method. Students were given samples for video analysis. If not given an example, students might have experimented with different modes of analysis. However, in the interviews, the students stated that a structured sample might be better than the raw samples distributed. The restricted video or photo-recording of context and the actions during the expert meetings made it difficult to document this process since it was subject to

permission. At this stage, the necessity of different tools emerged for recording. While some particular contexts contributed to providing a bodily and first-hand experience for role-playing, different documentation tools were required to document and recall this process.

The templates prepared in Study III were not used. Instead, the idea was developed with a concept map, a tool suitable for time constraints. The tool employed means that faster tools can also be preferred for video analysis, and the toolkit was found to be suitable for the exploratory research process span over a more extended period. Then this proposal was discussed in the evaluation part of Study-III, and suggestions were made. While role-playing in Study-II was done in context, it was done in the workshop environment in Study-III. However, while watching a video, an image schemata occurs, and the role-playing has enriched this visual data bodily. The final product of the study, UGVARP toolkit, and guide was revised after Study III but were not tested due to time constraints with the final recommendations.

Finally, the main subject of the study is UGVs and especially YouTube as a suggestion. In this context, legal and ethical issues are inclusive in using YouTube as a research resource, and these need to be known and considered by researchers.

As a service provider, YouTube is subject to laws and regulations, such as the Children's Online Privacy Protection Act (COPPA). YouTube videos are considered publicly available information and not classified as "human subjects research." While YouTube users own the copyright to their videos, the researchers using videos can assert that their work qualifies as "fair use" of copyrighted materials since the result is "transformative" of the original work (YouTube Terms of Service, Fair use Guidelines, 2020). However, being legal does not mean it is necessarily ethical, neither unethical. Based on a comprehensive literature review, Patterson (2018) notes that there is no consensus among researchers on how to ethically assess the use of publicly available information on social media platforms. The extent to which authors problematize the use of YouTube video postings for research dispersed on a continuum: on the one hand, researchers who use such information treat it as a set of non-human documents or quantifiable data; on the other hand, the researchers deal

with the uncertainties that exist when working with social media data and clarify which ethical positions are taken for the research (Patterson, 2018). Engaging with the stories shared through YouTube in humanizing ways in the absence of individuals such as listening to the stories, immersing in them, allowing the data to talk to and then talk back to data and using the term informants rather than participants were the ways Patterson (2018) committed when employing YouTube videos as research material. For this kind of research, Patterson (2018) suggests embracing the messiness that comes along when conducting research within the YouTube realm and seeing the challenges of maintaining ethical commitments within this space as an opportunity to question the internet as a research medium as well as the responsibilities of a researcher.

9.5 Recommendations for Further Research

This thesis provides guidelines for UGVs and role-playing in a complementary way for exploratory research in the early phases of the design process for unfamiliar problem domains in cases where direct observation of, or direct contact with users is difficult in the educational context. For delivering the method to an audience, different media can be used. The UGVARP files can be shared via the internet to inspire educators from existing projects or spread knowledge and experiences. In these ways, the tools and techniques used in the method can be further developed and adapted to diverse design projects with stakeholders' involvement.

The templates also provide a research portfolio for organizing their research findings to the design students. It provides the means for directing the students their research process into a portfolio. The structure of the templates of the toolkit can be further studied from a research portfolio perspective.

Moreover, the use of UGVs for research is a relatively new area where ethical issues are evolving. The enhancing area of social media makes a conflict between public and private spheres. By the voluntary usage of social media platforms, users' personal or private images turned into publicly accessible artifacts. This extending

sphere demands consideration of policymakers and researchers from different fields to deal with meaning-making practices since there is a prosperous and valuable research data out there. In this thesis, the ethical issues are discussed based on several resources such as human-subject research policies of reputable universities, YouTube broadcast policies, and the legal foundations such as COPPA (Children's Online Privacy Protection Rule) and other related studies which employed UGCs as a research data source. There is still a need for studies that provide insights into ethical issues such as privacy or informed consent, which are scarcely available.

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APPENDICES

A. Consent and Interview Forms for Walking Support for Persons with CP Studio Project

Anadolu Üniversitesi
Mimarlık ve Tasarım Fakültesi
Endüstriyel Tasarım Bölümü

Ayakta desteksiz duramayan ve yürüme sorunu olan hastalar için Yürüme Destek Cihazı tasarımı eğitim projesi

Mayıs 2016

Görüşme için katılımcı izin formu:

Bu araştırma, kullanıcı araştırması ve fikir geliştirme süreçlerinde öğrencileri ve eğitimcileri bir arada destekleyen alternatif yaklaşım ve araçların geliştirilmesini amaçlayan bir araştırmanın ilk aşaması olarak yapılmaktadır. Araştımanın ilk aşaması olan bu odak grup görüşmesinde, sizden tasarım araştırmalarından edindiğiniz bilgileri tasarım fikrine çeverirken karşılaştığınız zorluklar ve bu süreçte proje paydaşlarının rolü konusunda deneyim ve görüşlerinizi almaktır. Bu görüşmede "Ayakta desteksiz duramayan ve yürüme sorunu olan hastalar için Yürüme Destek Cihazı tasarımı" ele alınacaktır.

Görüşme sırasında elde edilen veriler yalnızca bilimsel amaçlarla, tasarım sürecinde, tez araştırmalarında, bilimsel yayınlarda ve sunuşlarda kullanılacaktır. Katılımcıların kimlik bilgileri saklı tutulacaktır. Görüşme sırasında fotoğraf makinesi ve video kullanılacaktır. Görüşme yaklaşık iki saat sürecektir.

Bu formu imzalayarak yapılacak araştırma konusunda size verilen bilgiyi anladığınızı ve görüşme yapılmasını onayladığınızı belirtmiş oluyorsunuz. Formu imzalamış olmanız yasal haklarınızdan vazgeçtiğiniz anlamına gelmemektedir; ayrıca öğrencinin, ilgili kişi ve kurumların yasal ve mesleki sorumlulukları devam etmektedir. Çalışmaya katılım gönüllülük esasına dayanır. Araştırma, katılımcılar açısından herhangi bir risk taşımamaktadır. Görüşme sürecinin başlangıcında veya herhangi bir aşamasında açıklama yapılmasını veya bilgi verilmesini isteyebilirsiniz. İstediğiniz zaman gerekçe belirtmeksizin görüşmeden ayrılabilirsiniz. Araştırmaya katkıda bulunduğunuz için çok teşekkür ederiz.

Katılımcının adı soyadı	**İmza**	**Tarih**
Araştırmacının adı soyadı	**İmza**	**Tarih**

Araştırmadan sorumlu öğretim elemanları:

Anadolu Üniversitesi Mimarlık ve Tasarım Fakültesi Endüstriyel Tasarım Bölümü**,** Arş. Gör. Gizem Hediye Eren, Mobil tel: 0554 306 33 21, gheren@anadolu.edu.tr
ODTÜ Mimarlık Fakültesi Endüstri Ürünleri Tasarımı Bölümü, Yard. Doç. Dr. Fatma Korkut, korkut@metu.edu.tr

13 Mayıs 2016

GİRİŞ

Görüşmemize başlamadan önce size yaptığımız araştırmayla ilgili biraz bilgi vermek istiyoruz. Bu araştırmayı tasarım öğrencilerinin tasarım araştırmalarından edindikleri bilgileri tasarım fikrine çevirirken karşılaştıkları zorluklar hakkındaki görüşlerini öğrenmek için yapıyoruz. Görüşme geçen dönem çalıştığınız "Ayakta desteksiz duramayan ve yürüme sorunu olan hastalar için Yürüme Destek Cihazı tasarımı eğitim projesi" ile ilgili tecrübeleriniz üzerinden yapılacaktır.

Bu araştırmanın amacı, sizden tasarım araştırmalarından edindiğiniz bilgileri tasarım fikrine çevirirken karşılaştığınız zorluklar ve bu süreçte proje paydaşlarının rolü konusunda deneyim ve görüşlerinizi almaktır. Bu görüşmede "Ayakta desteksiz duramayan ve yürüme sorunu olan hastalar için Yürüme Destek Cihazı tasarımı" ele alınacaktır.

Yapacağımız görüşmede size araştırma konusuyla ilgili bazı sorular soracağız. Görüşme sırasında anlattıklarınızı yalnızca bilimsel amaçlarla kullanacağız; kimliğinizle ilgili bilgileri saklı tutacağız. Konuştuklarımızı daha sonra tam olarak hatırlayabilmek ve gözden geçirebilmek için görüşmemizi kaydedeceğiz. Görüşmemiz 2 saat kadar zaman alabilir.

Görüşmemize başlamadan önce sormak istediğiniz herhangi bir şey var mı?

1. BÖLÜM: ISINMA- Proje Briefini Gözden Geçirme ve Süreci hatırlama

1.1. Geçen güz döneminde Levent Burgazlı, Ahmet Yalçınkaya, İsmail Hakkı Dut ve Ahmet Başkan hocalarımızla 6 hafta süren bir "Ayakta desteksiz duramayan ve yürüme sorunu olan hastalar için Yürüme Destek Cihazı tasarımı eğitim projesi" gerçekleştirdiniz. Projenin size basılı olarak verilmiş hali burada. İçeriğini hep birlikte gözden geçirelim. Sizden bu proje sürecinde yaşadığınız deneyimlerinizi ve gözlemlerinizi hatırlamanızı ve sonraki bölümlerdeki soruları buna göre yanıtlamanızı rica ediyorum.

2. BÖLÜM: KAYNAKLAR

2.1. Yürüme Destek Cihazı projesine dönelim. Projede sizden proje hakkında birtakım kaynaklar önerilmişti. Bunlardan ilki birincil kaynaklar olan ve serebral palsi hastaları ve yakınları ve fizyoterapi uzmanları ve medikal sektöründe bu kullanıcı grubuna yönelik ürünler üreten bir firma yetkilisiydi. İkincisi ikincil kaynaklar dediğimiz literatür kaynaklarıydı.

> Siz tasarım sürecinde bu kaynaklardan hangilerine başvurdunuz?

> Bu kaynaklardan ne gibi bilgiler edindiniz?

> Bu bilgiler sizce sizin tasarım sürecinize katkıda bulundu mu?

3. BÖLÜM: KULLANICI ARAŞTIRMASI

3.1. Föyde problem tanımında da belirtildiği gibi araştırma ağırlıklı bu projede amaca uygun problem tespitlerinin yapılması, belirlenen problemlerin analiz edilmesi, tasarım probleminizi tanımlamanız için öncelikliydi.

> Sen projede kullanıcı araştırmasına yönelik olarak neler yaptın?

> Kullanıcı araştırması verilerini nasıl topladınız? (web, görüşme, gözlem, YouTube, vb.)

> Neden bu kanalları tercih ettiniz?

> Kullanıcı araştırması sırasında verilerini toplarken ne gibi zorluklarla karşılaştınız? (uygun hasta bulamadım, gözlem yapamadım, veriler tasarıma yönelik değildi, vb.)

4. BÖLÜM: TASARIM FİKRİ GELİŞTİRME

> Kullanıcı araştırması sürecinde tasarım fikri geliştirmeye başladınız mı? Yoksa araştırmalarının tamamlanmasını mı beklediniz? Niçin?

> İlk tasarım fikirleriniz neydi? (Eskiz ve mock-uplar üzerinden konuşabiliriz)

> İlk tasarım fikirlerini geliştirirken kullanıcı araştırması faydalı oldu mu? Ne açıdan?

> Final tasarımına kullanıcı araştırmasından edindiğin hangi bilgiler faydalı oldu? Ne açıdan?

5. BÖLÜM: DEĞERLENDIRME

> Sizce bu projede neler önemliydi?

> Tasarım sürecinizi hangi açılardan başarılı buluyorsunuz?

> Sizce bu proje ile ilgili önemli problemler neydi; süreçte en önemli sorunlar neydi?

> Bu süreçten ne gibi dersler çıkardınız?

> Sizin için “trouble sheet” sunumunda neler önemliydi?

> Bu projenin iyi yanları ve katkıları hakkında neler söylersin?

6. BÖLÜM: ÖNERİLER

> Sizce bu proje nasıl kurgulanmalıydı?

> Bu tasarım süreci, içerik, araştırma ve uzmanların katkısı bakımından sizin için nasıl daha faydalı olurdu?

> Eklemek istedikleriniz:

B. Pediatric Examination Table and Its Environment Studio Project

Project Brief

ENT 439 ÜRÜN TASARIMI V
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Proje konusu: Pediatrik Muayene Masası ve çevresinin tasarımı
Hastane ziyareti süreci, strese neden olan bir deneyimdir. Bunun nedeni, tanıdık bir ortamın olmayışı, gelecekle ilgili güvensizlik, bilinmeyen tıbbi testler ya da ameliyat korkusu, ağrı gibi faktörler olabilir. Bir hastane ziyareti genellikle olumsuz düşüncelerle ilişkilendirilir. Söz konusu çocuklar olduğunda, güvensizlik ve korku duyguları, daha güçlü ve karmaşıktır ve bunların üstesinden gelmek bir hastane ziyareti deneyimi için oldukça önemlidir. Bir çocuk için hastane ziyareti süreci, sağlık tesisinin kalitesine ve verilen tıbbi bakım durumuna bağlı olarak bazen oldukça rahatsız edici veya hatta korkutucu bir deneyim olabilir. Çocuk hastalar, tanıdık olmayan insanlara, belirsiz prosedürlere maruz kalmaya ve ebeveyninden ayrılma durumuna karşın kaygılı olabilirler.

Çocukların fiziksel, psikolojik ve zihinsel güvenliği hastane ortamında oldukça önemli bir konudur. Bu konuda destek sağlayıcı bir ortam, kaygının güçsüzleştirici etkilerine maruz kalma durumu ortadan kaldırır. Çocukluk ve ergenlik yılları sağlıklı yaşam tarzlarının benimsenmesi ve yetişkinlikte ve yaşlılıkta eşlik edecek "baş etme mekanizmaları"nın edinilmesi için özellikle hassas bir yaşam evresidir. Pediatrik hastanelerin rolü, çocukların bugünü ve geleceği açısından önemli bir etkiye sahip olduğundan dikkate alınması gereken önemli bir konudur.

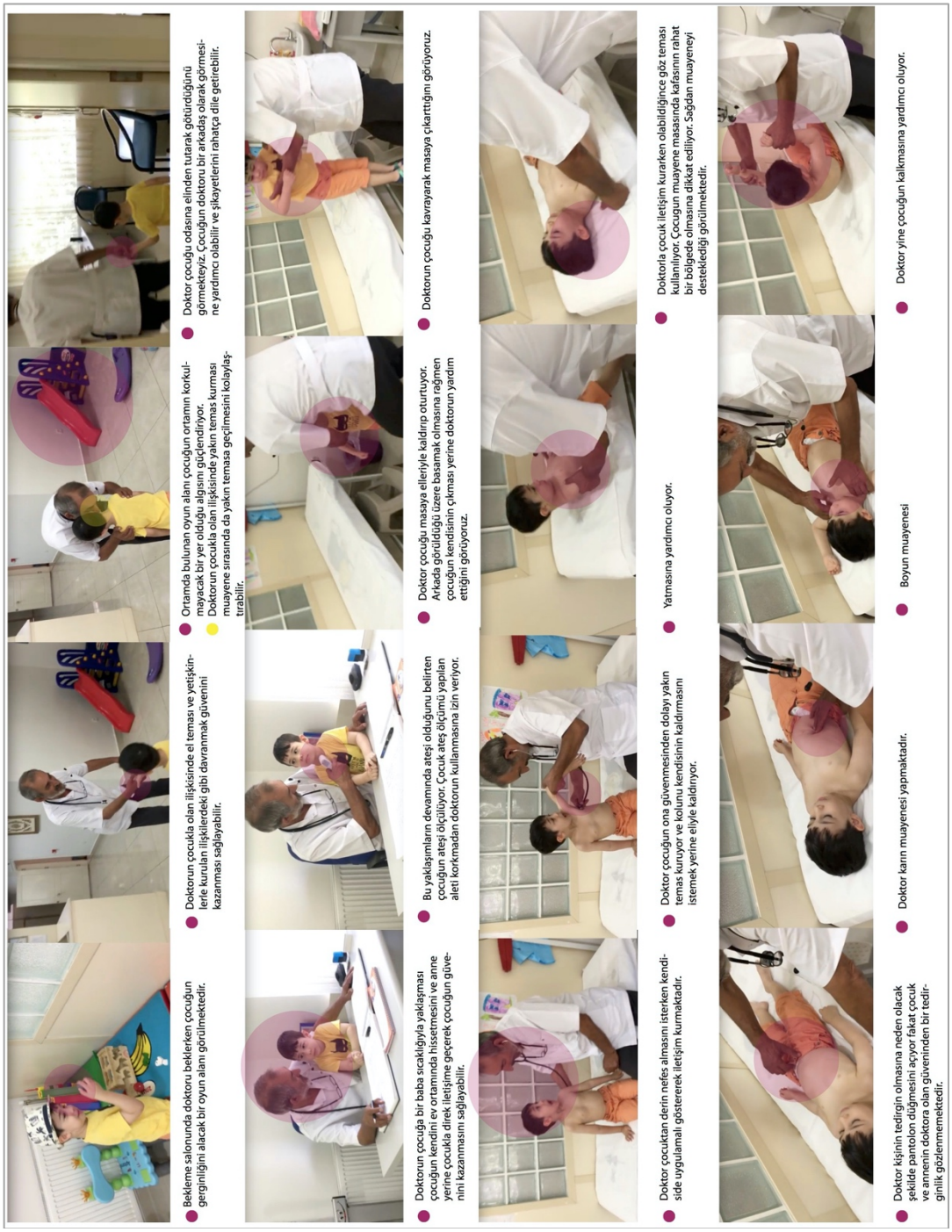
Projenin amacı:
Bu projenin amacı 3-12 yaş arası çocuklar için, doktorun yanında ve muayene sırasında;
• güvende olduğuna ikna edilmesine
• çocuğun kendi rızasıyla muayene sürecine başlanmasına
• çocuğa sakin ve rahat bir muayene ortamı sağlanmasına
• çocuk için yatıştırıcı bir odak sağlamasına
• çocuk ve tıbbi uzmanlar arasındaki mesafeyi azaltmasına
• çocuğa, muayene odasının atmosferi, enjeksiyon veya diğer tıbbi donanımlardan kaynaklı korkular ile baş etmesine yardımcı olacak
• doktorlar için kolay bir muayene sağlayacak, muayene sırasındaki eylemleri kolayla ştıracak

• refakatçiler için rahat bir bekleme sağlayacak
• hijyenik ve temizlenmesi kolay bir ortama katkıda bulunacak

pediatrik muayene masası ve çevresine dair tasarım çözümleri üretmeniz beklenmektedir.

C. UGV Analysis Poster Submitted by the Teams for Pediatric Examination Table and Its Environment Studio Project

Team A1





- Doktorun çocuğu muayene masası üzerinde ayağa kaldırarak göz hizasına getirdiği gözlenmektedir.



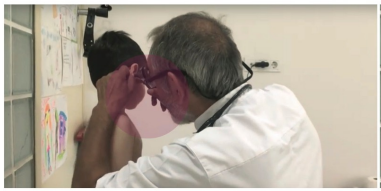
- Göz teması kurabilen çocuk doktorla iletişime geçerek şikayetini dile getirmektedir.



- Doktor, çocuğun boğaz kontrolünü abeslang ile gerçekleştirmektedir. Çocukta herhangi bir korku görülmemektedir.
- Muayene masasının konumlandırıldığı duvarda çocukların yaptığı resimler bulunmaktadır.



- Çocuğun doktor ile tekrardan iletişime geçerek aleti kulağına sokup sokmayacağını sorduğu görülmektedir.



- Doktor, çocuğun kulağını oftalmoskop ile kontrol etmektedir. Çocukta herhangi bir iritasyon görülmemektedir.



- Muayenenin başarıyla tamamlandığı göstergesi olarak 'çak' işareti yapılmaktadır.
- Oftalmoskop duvarda konumlandırılmıştır.
- Oftalmoskobun prize yakınlığı görülmektedir.



- Doktorun, çocuğu kollarından tutarak muayene masasından indirdiği gözlenmektedir.
- Odada lavabo bulunmaktadır.



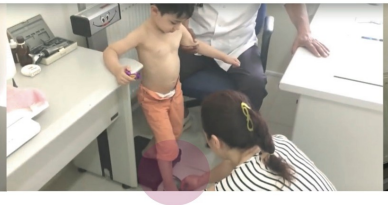
- Doktor, çocuğun kilo ölçümünü gerçekleştirmektedir.



- Çocuğa, doktor tarafından çikolata hediye edilmektedir.



- Doktorun, çocuğun ensesinden nazikçe tutarak boy ölçümünü gerçekleştirdiği görülmektedir.



- Muayenesi sonlanan çocuğun ayakkabıları ebeveyn tarafından giydirilmektedir.



- Kıyafetlerin giydirilmesinin ebeveyn sorumluluğunda olduğu gözlenmektedir.



- Çocuk, doktor ile iletişimi başlatmaktadır.



- İletişim devam etmektedir.



- Reçete ile ebeveynin ilgilendiği görülmektedir.



- Çocuğun, doktor tarafından verilen hediye ile mutlu olduğu gözlenmektedir.



Ebebeyn tarafından çocuğa muayene masasının ve çocuğun hijyeni için kağıt önlük giydiriliyor

Çocuk muayene masasına ebeveyn tarafından çıkartılıyor

Doktor muayenesini oyunlaştırarak çocuğun korkmamasını sağlıyor

Oyun ve muayene için çıkardığı ekipmanlar aynı yerde konumlandırılmış. Böylelikle çocuğun korkusu en aza indiriliyor.

Muayene masası ve kullanılan ekipmanlar bir bölmeyle ayrılmış

Muayene masasının çevresi de muayene alanı olarak kullanılıyor.

Doktor kullanacağı iğneyi çocuğa gösteriyor ve üzerindeki çizgi film karakterleriyle çocuğun korkusunu almaya çalışıyor.

Doktor gösterdiği iğneleri çocuğa seçtiriyor.

Ebeveyn çocuğun üzerindeki kağıt önlüğü çıkarıyor ve çocuk seçtiği iğneyle iğne oluyor.

FARKLILIKLAR

Ekipmanların konumu, Muayene şekli, Çocukların yaşı, Muayene masası hijyeni, Muayene masasına erişim, Odaların çocuklara özelleşmesi, Basamak kullanımı, Ebeveyn desteği , Ekipmanların çocuklara özelleşmesi,Doktorun tutmu

BENZERLİKLER

Basamak bulundurulması, Muayene edilme yönü, Ekipmanların duvarda konumlandırılması, Muayene masasının yönü, Muayene alanının kullanımı, Muayene masasının aynı zamanda depolama birimi olarak kullanılması

Çocuk muayene masasının çevresindeki renkli afişleri inceliyor.

Çocuk muayene masasına basamak sayesinde çıkmaya çalışıyor ve zorlanıyor.

Doktor arkasında konumlandırılan ekipmanlar çocuğa gösterilmeden alınıyor.



Doktor ekipmanla çocuğu muayene ederken çocuğun tedirgin olduğunu farkediyor.

Doktor çocuğun tedirginliğini almak için kendi üzerinde ekipmanı kullanıyor.

Daha sonra çocuğu muayene etmeye devam ediyor.



Doktor çocuğu yatırıyor ve masanın üzerindeki hijyeni sağlamak için örtülmüş peçete katlanıyor.

Doktor çocuğu basamak kullanmadan yere indiriyor.

Muayene masasının etrafında muayeneye devam ediyor.



Team A3



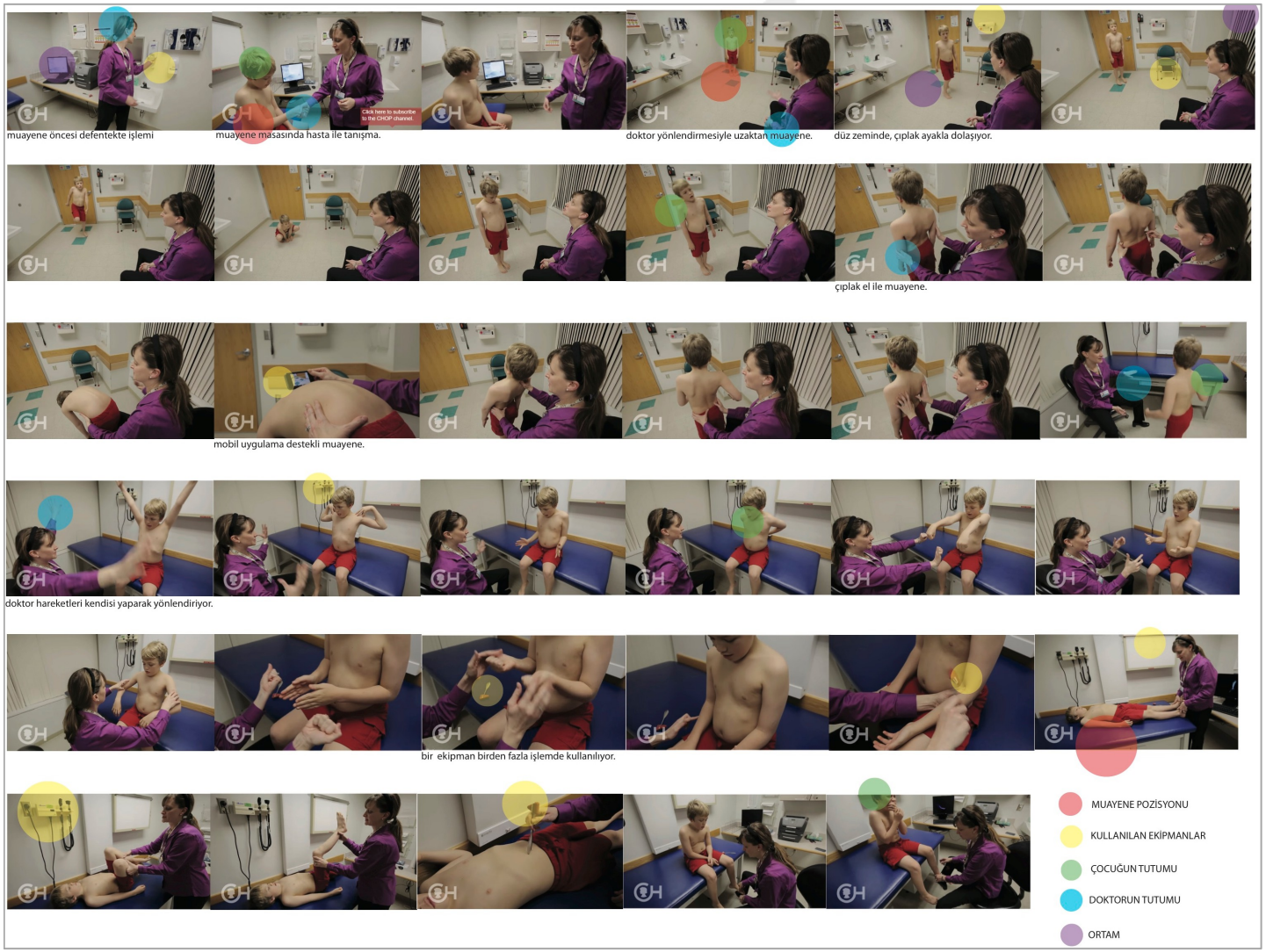
video kaydında muayene ortamı,muayene pozisyonu, tıbbi personelin tutumu ve davranışları, ebeveyn rolü ve davranışları gözlemlenmektedir.

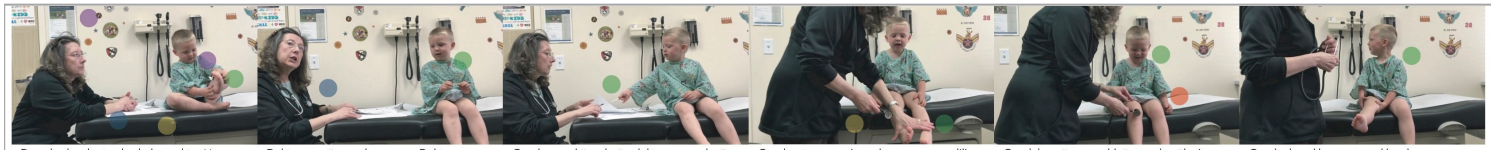
https://www.youtube.com/watch?v=J3O90Ni-JHU



Team A4


Poyraz hastaneye gittiğinin farkında
Şimdilik sakin
Girişteki açık mavi plastik perdeli acil müdahale bölümü
Bekleme bölümü ve sekreter masası
Poyraz oyun bölümünde renkli oyuncaklarla vakit geçiriyor
Poyraz eğleniyor
Doktor Poyraz'a çok samimi davranıyor
Poyraz biraz çekingen davranıyor
Oyun alanında kaydırak da var
Doktor Poyraz'la 1 dk sohbet ediyor
Poyraz doktorun sorularını cevaplıyor
Doktor ebeveynine karşı Poyraz'ı savunan ve destekleyen bir tutum sergiliyor
Poyraz dikkatle doktoru dinliyor
Bekleme bölümündeki sandalyelerin kumaşı renkli meyveli
Muayene odasının genel bölümlerle arasında buzlu cam pencere var
Doktor Poyraz'ın elinden tutarak odaya götürüyor.
Muayene masası sade ve düz, üzerinde defter,kaşe gibi eşyalar var
Doktor Poyraz'ı kucağına oturtuyor
Poyraz sakin
Doktor Poyraz'la yaklaşık 1 dk sohbet ediyor, muayene için izin istiyor
Poyraz sakin bir şekilde muayene olmayı kabul ediyor
Doktor masadaki çekmeceden ateş ölçme aletini çıkarıyor
Aleti görünce Poyraz'da tedirginlik ve merak gözlemleniyor (sürekli sağ el parmaklarını sol dirseğinin orda oynatıyor)
Poyraz biraz korkmuş ve tedirgin
Doktor Poyraz'ın boğazından kucağında oturur pozisyonda ateşini ölçüyor
Doktor ölçüm cihazındaki sonucu Poyraz'a da gösteriyor.
Poyraz doktorun gösterdiği ekrana bakıyor
Doktor Poyraz'ın alnından ölçüm yapmak için okşar gibi saçlarını geri çekiyor
Poyraz'ın korkmuş ve tedirgin hali devam ediyor
Poyraz muhtemelen aletten rahatsız oluyor
Doktor kucağında oturur pozisyonda olan Poyraz'ın alnında ateşini ölçüyor
Doktor ölçüm sonucunu tekrar Poyraz'la paylaşıyor
Poyraz merakla bir ifadeyle cihaza bakıyor
Doktor Poyraz'ı yönlendiriyor
Ortamda yer alan ekipmanlar ; boy-kilo ölçüm tartısı, rulo peçete, pamuk, ağza bakılan ahşap çubuklar, yenidoğan ölçüm tartısı
Poyraz tedirgin
Mekanda ekipmanların yer aldığı bir masa ve lavaboda var
Doktor Poyraz'ı kucaklayarak oturtuyor
Doktor Poyraz'ı steteskopla sırttan muayene ediyor
Ortamda çocuklara ait çizimler var
Poyraz tedirgin
Doktor Poyraz'a ne yapması gerektiğini uygulamalı olarak gösteriyor
Poyraz doktorun gösterdiğini yapıyor
Doktor Poyraz'ın kolunu kaldırarak muayenesine devam ediyor
Poyraz doktorun gösterdiği nefes alış-verişini yapmaya devam ediyor
Doktor Poyraz'ı göğüs bölgesinden steteskopla muayene ederek devam ediyor
Poyraz biraz meraklanıyor


muayene öncesi defentekte işlemi
muayene masasında hasta ile tanışma.
doktor yönlendirmesiyle uzaktan muayene.
düz zeminde, çıplak ayakla dolaşıyor.
çıplak el ile muayene.
mobil uygulama destekli muayene.
doktor hareketleri kendisi yaparak yönlendiriyor.
bir ekipman birden fazla işlemde kullanılıyor.
MUAYENE POZİSYONU
KULLANILAN EKİPMANLAR
ÇOCUĞUN TUTUMU
DOKTORUN TUTUMU
ORTAM



Duvarlarda çıkartmalar bulunmakta. Muayene masası düz ve normal, üzerinde bir örtü ve kağıtlar var. Çocuğun üzerinde önlüğü var ve ayağıyla oynuyor.

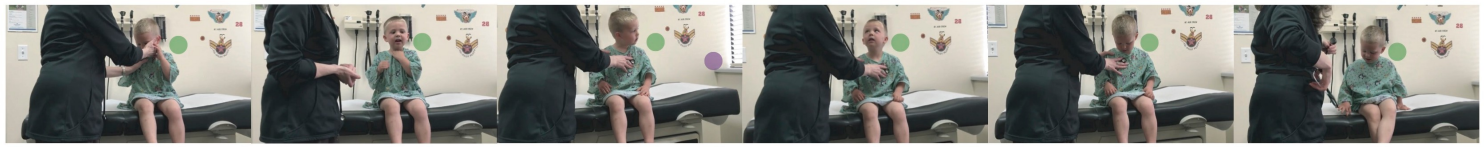
Doktor, çocuğa sorular soruyor.Doktor ara sıra anneyle konuşuyor, ondan bilgi alıyor ve bilgi veriyor. Çocuk önlüğüyle oynuyor.

Çocuk oynadığı çubuğu doktora vererek çöpe atmasını söylüyor.

Çocuk oturur pozisyonda muayene ediliyor. Muayene için stetoskop kullanılıyor. Çocuk ayaklarını sallamaya devam ederken doktor ayaklarını aşağıya indiriyor.

Çocuk bacağına vurulduğu sırada eğleniyor ve bunun iyi hissettirdiğini söylüyor.

Çocuk bacakları ve ayaklarıyla oynamaya devam ediyor. Çocuk ve doktor devamlı konuşma halindeler.



Doktor boğazına dokunurken çocuk doktorun ellerini tutuyor.

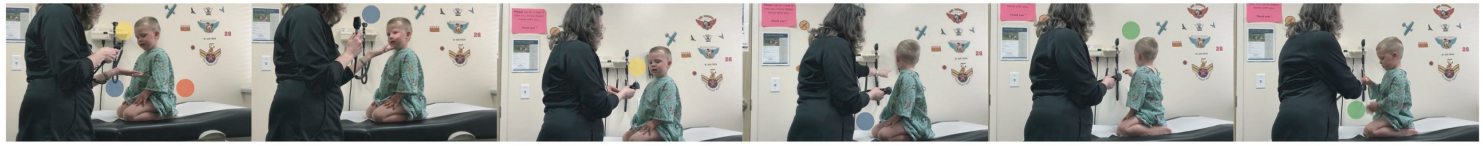
Doktor bıraktıktan sonra kendisi boğazına dokunmaya başlıyor.

Doktor stetoskopla kalbini dinlerken çocuk pencereye bakıyor. Pencereden odaya ışık giriyor.

Kalp dinleme sırasında çocuk etrafa bakmaya devam ediyor. Duvarlara, tavana ve doktora bakıyor.

Sonra da doktorun eline ve stetoskopa bakıyor.

Bir yandan doktorla soru-cevap şeklinde konuşmalara devam ederken bir yandan da muayene masasıyla oynuyor.



Çocuk oturuşunu ve pozisyonunu değiştiriyor. Doktor oftalmoskop aletini çocuğa gösteriyor ve öncelikle eline ışık yansıtıyor.

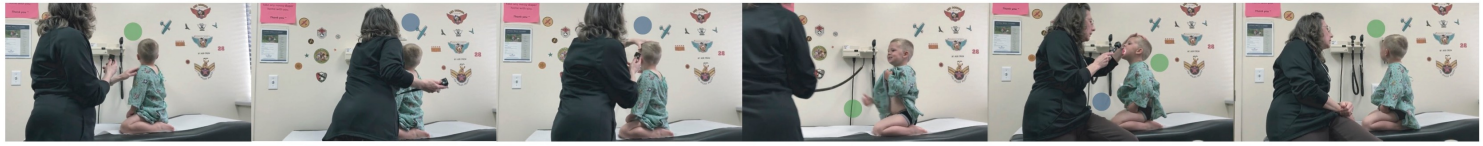
Doktor yavaş bir şekilde ışığı çocuğun gözlerine doğru yükseltiyor.

Doktor otoskop aletini çocuğa gösteriyor.

Otoskop aletinin başlığını çocuktan vermesini istiyor.

Çocuk kutudan başlığı alıyor ve elinde inceliyor.

Çocuk başlık kısmını otoskopa takıyor.



Doktor muayeneye devam etmek isterken çocuğun dikkati otoskop başlık kutusunda kalıyor.

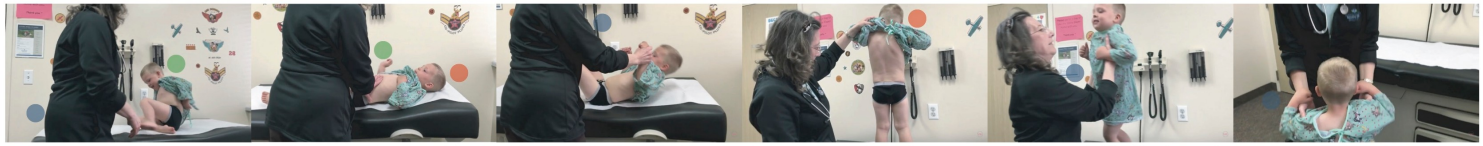
Doktorla birlikte kutuyu ve nasıl açıldığını inceliyorlar.

Doktor dikkati dağınık olan çocuğu muayene etmeye devam ediyor.

Çocuk birçok defa yaptığı gibi önlüğünü çekiştiriyor.

Çocuk itiraz etmeden rahat bir şekilde doktorun isteklerini yerine getiriyor. Doktor yapacağı her işlemi önceden söylüyor ve çocuğa isteyip istemediğini soruyor.

Doktor onunla konuşurken çocuk aletlere bakmaya devam ediyor.



Doktor çocuğa karın muayenesi yapacağını ve yatmasını söylüyor. Çocuk kendisi pozisyon alarak kendisi karnını açıyor.

Yatarak muayene yapılıyor. Bu sırada çocuk elini sallayarak konuşuyor.

Doktor, çocuğu ellerinden tutarak kaldırıyor.

Ayakta muayene yapılıyor. Doktor, çocuğun sırtını inceliyor.

Doktor, çocuğu koltuk altlarından tutarak kaldırıyor.

Ve yere annesinin yanına bırakıyor.

MUAYENE POZİSYONU EKİPMAN DOKTORUN TUTUMU ÇOCUĞUN TUTUMU ORTAM 4. GRUP

Team A5



bekleme



doktor-çocuk-masa



sedyeye ulaşımı



dar sedye



kişiselleşmiş duvarlar



tartı ritüeli



sedye örtüsü/duvar figürleri



ebeveyn/kardeş ilişkisi



bekleme alanı/duvar desteği



muayene masası yüzeyi/boyu



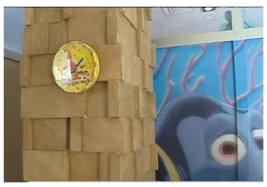
duvar kağıdı, cinsiyet kavramı



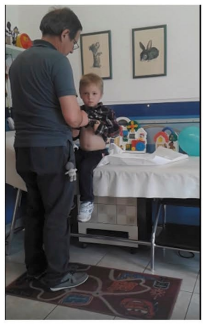
doktor-hemşire, ebeveynler uzakta



duvar'ımsı



kolon kaplaması, ürün yerleştirme



farklı dekorasyon



renk-kumaş seçimleri


fener!?


sırt-duvar ilişkisi, sedye/masa

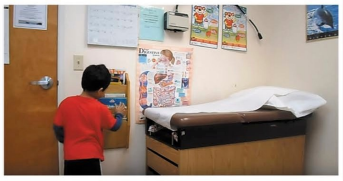

karakterli kimlik bilgi sistemi


muayene masasına uzak aletler

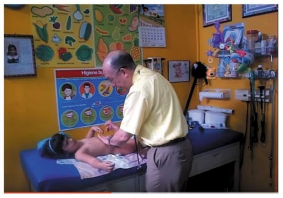

temkinli bir el


acı/korku


muayene masasının kısa kenarı


kitaplar/ilgi


çıplaklık/soğuk


infografikler/oyuncaklar/ilaçlar


muayene masası işlevsel çekmecesi


özel çocuklar-ayna

Team B1


muayene öncesi doktor davranışları
6-9 ay arası bebek
0-3 ay arası bebek
0-3 ay ve 6-9 yaş arası bebek
5- 7 yaş arası çocuk
Anne muayene öncesi çocuğu hazırlıyor. Kıyafetlerini çıkartıyor, kıyafetleri muayene masasının yan tarafına konumlandırıyor ve muayene pozisyonu almasını sağlıyor. Muayene sırasında doktor ile birlikte çocuğun yanında oturmasına destek olup doktorun muayene sürecine katılıyor.
Doktor 0-3 ay aralığındaki bebeği anne kucağında ayakta ve sonrasında yatar pozisyonda muayene ediyor. Doktor oturur pozisyonda muayene ediyor.
Bebek yatar pozisyonda muayeneye geçtiğinde dikkati dağıtması için kullanılan oyuncağın boyutları değişmekte.
Ebeveynsiz muayene gözlemlenmekte ve artık çocuk doktorun yönlenmesine tepki vermekte.
Doktor muayene ekipmanlarını çocuğa tanıtarak çocuğu ortama ve muayene sürecine hazırlıyor.





13 yaş ve üzeri çocuk

Çocuk muayenenin ilk evresinde sandalyede oturarak muayene oluyor, muayene öncesi hazırlıklarda doktor yardımcı oluyor. Diz muayenesi öncesi muayene masasına geçiyor. Çocuğun ayak ile zemin mesafesi dikkat çekmekte.

Doktor muayene sırasında ekipmanlarını önlüğün cebinde konumlandırıyor. Yanında olmayan ekipmanlara arkasındaki çekmeceden ulaşıyor.



model üzerinden muayene

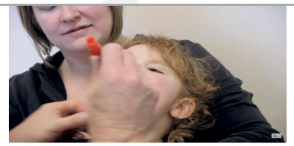
Cerrahi müdahele sırasında ebeveynler yer almıyor doktorun yanında yardımcı teknisyen gözlemlenmekte.

Doktor muayene sırasında , muayene masasının yüzeyine oturarak muayeneyi gerçekleştiriyor.

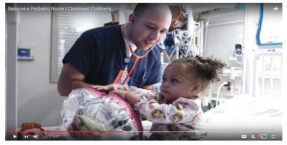




Sağdaki muayanehanede doktor siyah steteskop takıyor. Soldaki doktor ise kırmızı steteskopu ile ilgi çekiyor.









Muayene ekipmanları, çocukların güvenini kazanmak için daha eğlenceli hale getirilmelidir.

MUAYENEDE GİYİLEN ÖNLÜKLER



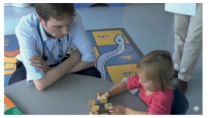




DOKTOR ÇOCUK İLİŞKİSİ

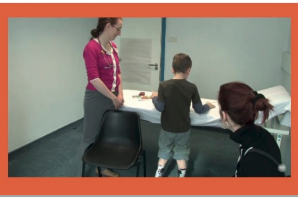






POZİSYONLAR









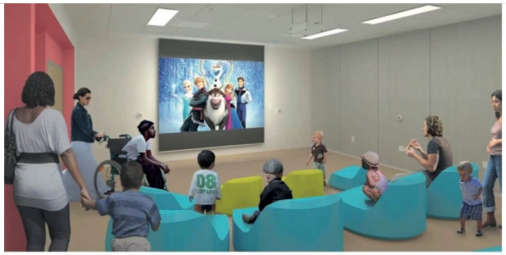
Muayene ortamı özel gereksinimli çocuklar için gereken koşulları sağlayamamaktadır.

MUAYENE ORTAMLARI

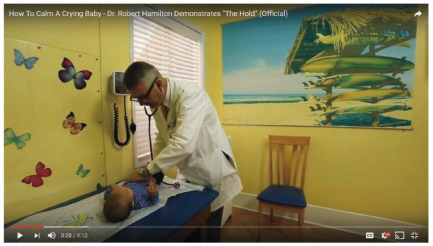




"positive distraction" Peds Exam Room



"multi - generational" Theatre





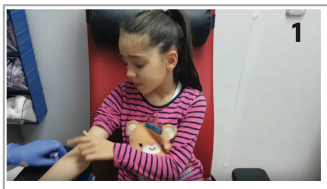
"personalization gives a sense of control" Pediatric Inpatient Room



"activity zones create choices" Peds Playroom

Emre Öner
N. Yaren Karakurt
Sibel Syuleyman
Ülkü Gemalmaz
Yunus Renkligil

Team B3



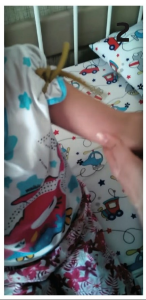


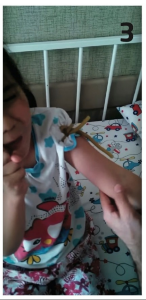
Fiziksel olarak canı yanmadığı halde korktuğu için **aşırı** tepki göstermes

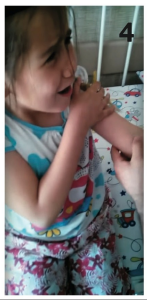


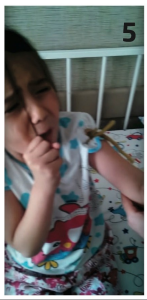


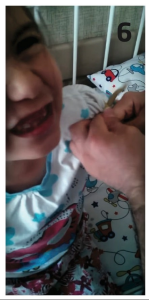












Doktorun muayene masasına çocuğu yönlendirmek zorunda kalması










Muayene masasının, muayene pozisyonlarında yetersiz kalması

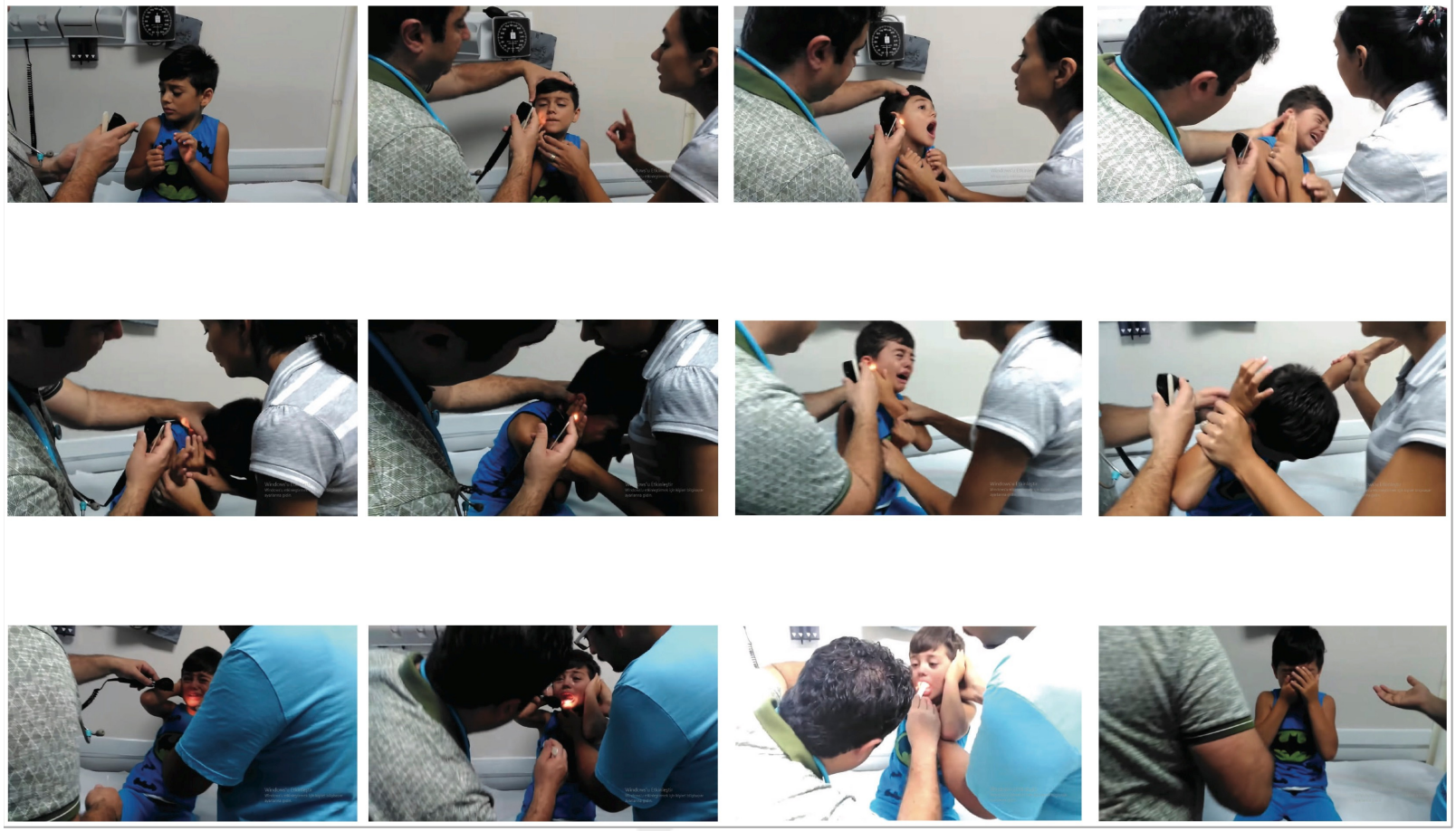









Muayene aletlerinin çocuğu huzursuz ettirmesi



Doktorun Muayene Masası ve Çocuğa Göre Konumu



Oturarak

Çocuğun yan tarafından

Çocuğun arkasında

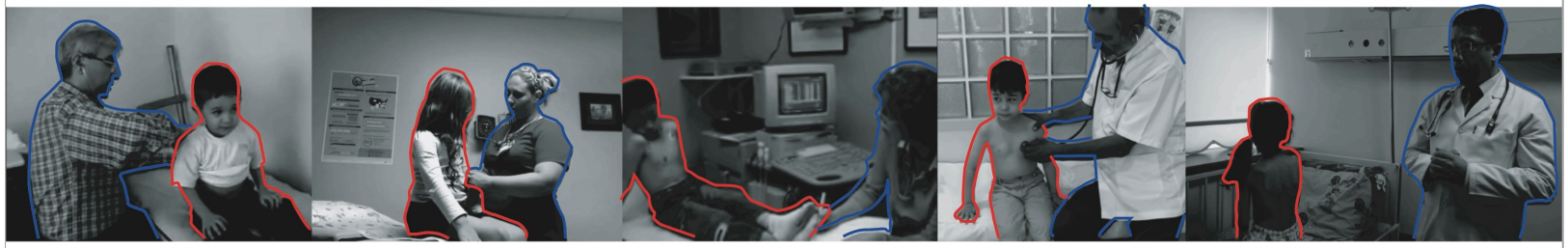


Çocuğun yanında
Yatarak

Çocuğun yan tarafından
Oturarak

*Doktorun çocuğa göre pozisyonu
*Çocuğun muayene masasındaki pozisyonu

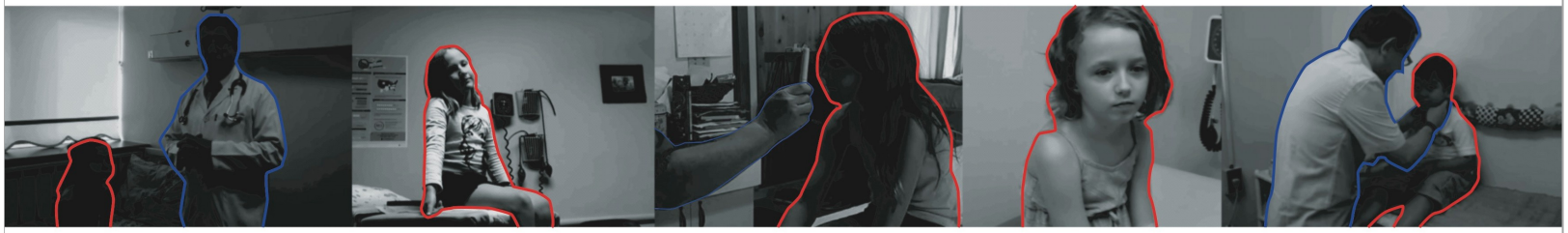
Muayene sırasında doktorun yönlendirmelerine göre çocuğun masadaki pozisyonları değişmektedir.



Muayene sırasında çocuğun ve doktorun duruşundaki farklılıklar gözlemlenmiştir.

Çocukların Muayene Sırasındaki Duruş Bozukluğu





Uzun süren muayenelerde çocuklarda sıkılma gözlemlenmiştir ve bu durumdan kaynaklı duruş bozukları meydana gelmektedir.

Çocuğun Muayene Sırasında Sıkılması



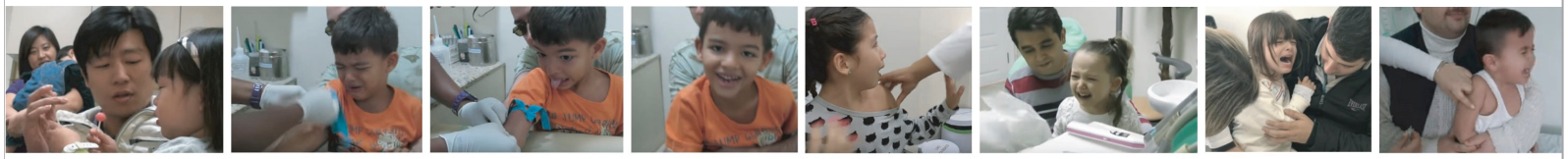
Doktorun Çocuğu Muayeneye Hazırlaması



Çocuğu ikna etmeden direk iğne vurmaya çalışma ve çocuğun korkması

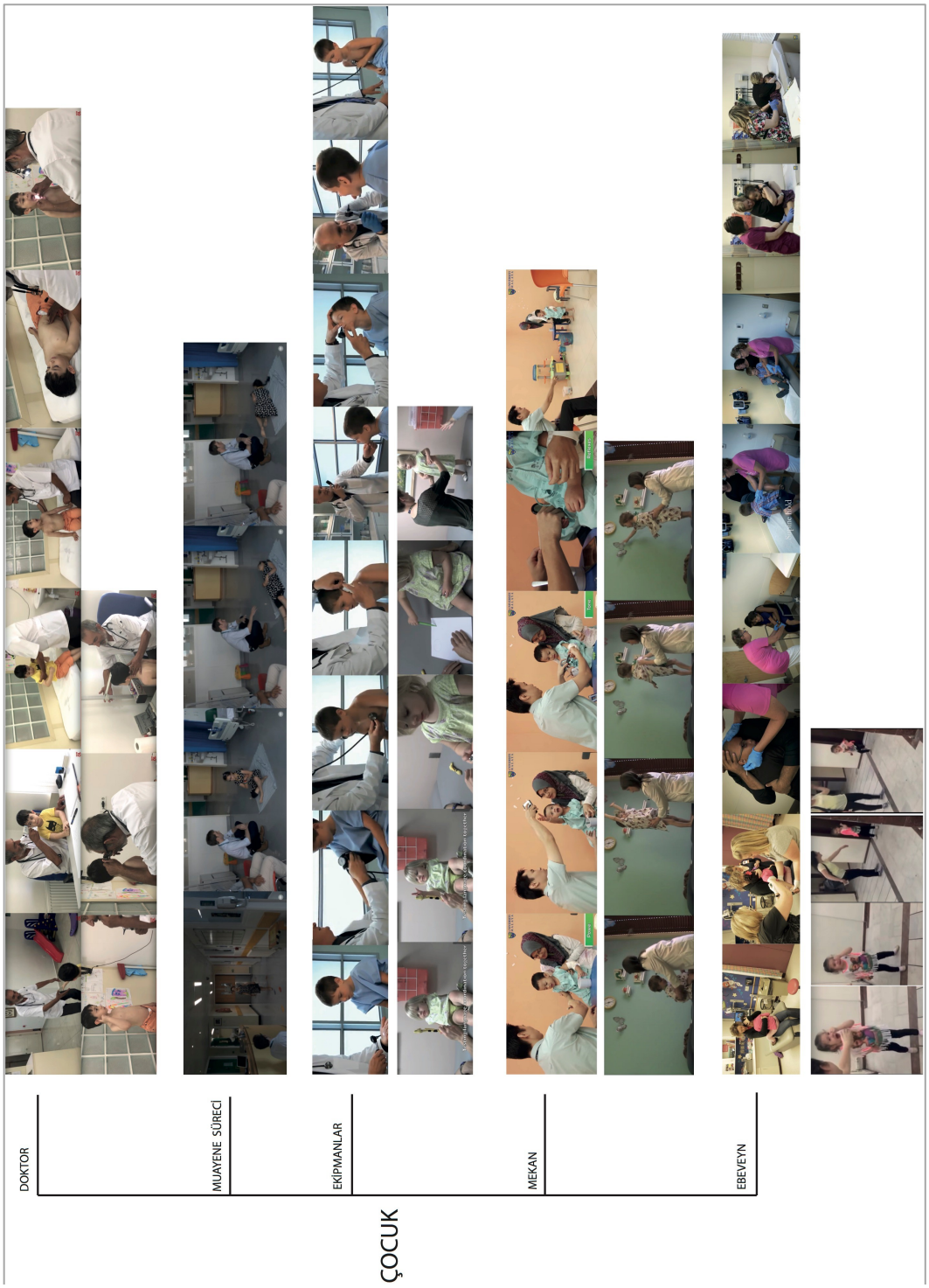


Çocuğa sayı saydırarak ve arkadaşlarına alkışlatarak odağının başka bir yöne kayması ve iğnenin yapılması



Muayenenin rahatlıkla yapılabilmesi çocuğun yaşma ve kişiliğine uygun bir yaklaşımı gerektirir. 0-4 ay arası çocuklarda henüz yabancıyı yadırgama ve muayeneden korku sorunları ile karşılaşılmaz. Bu yaşta çocuklar muayene masasına konularak rahatça muayene edilebilir. Bununla birlikte çocuğu sakin tutmak için çocukla yavaş sesle konuşmak, okşamak ve ellerin sıcak olmasına dikkat etmek işlemi kolaylaştırır. 4 ay ile 2 yaş arası çocukları ürkütmemek için ilgisini çekecek bir oyuncak ya da eşya göstermek veya eline vermek, konuşmak, çocuk fazla tepki gösteriyorsa muayenesinin önemli bir bölümünü annenin kucağında yapmak uygundur. 2-6 yaş arası çocuklarla konuşarak, adını ve ilgisini çekecek basit sorular sorarak, dinleme aleti, dil basacağı gibi aletleri eline verip bunları yadırgamamasını sağlayarak; 6 yaştan büyük çocuklarla ise gururlarını okşayacak biçimde konuşarak, büyük çocuk muamelesi yaparak ilişki kurulmaya çalışılır.

Team B5



EBEVEYNİN ÇOCUĞA YAKLAŞIMI



Alınan oyuncak doktor malzemeleri ile muayene oyunlaştırılabilir, çocuğa bunun korkulmayacak bir şey olduğu bu şekilde anlatılabilir.
Bir çocuğun doktora gitme öyküsü olan bir kitap alınıp çocuğa okunarak/okutularak muayenenin normal bir şey olduğu, korkulacak bir durumun olmadığını anlaması sağlanabilir.



Doktordan korkan bir çocuk için; muayeneden önce çocuğun bir arkadaşıyla doktorculuk oynaması onu rahatlatabilir/bu durumu normalleştirebilir.

DOKTORUN ÇOCUĞA YAKLAŞIMI



muayene odası dışında karşılama/selamlaşma | muayene odasına götürme | muhabbet ederek/arkadaş gibi davranarak güven oluşturma | muayene etmek için izin isteme | muayene başlangıcı | sedyeye çıkmasına yardım etme | yapılası gerekenleri gösterme/anlatma



onaylama/takdir etme | çocuğun korkutuğu bir konu hakkında soru sorması | çocuğun korkusunu giderecek şekilde cevap vermek | onaylama/takdir etme | ödüllendirme | bir daha gelirken korkmaması için ödüllendirme etkisi | veda etme

Doktorun çocuğa bir yetişken gibi ve aynı zamanda sıcak ve ilgili davranması zaten doğası müsait olan çocuğun ortama çok çabuk alışmasını sağlayacaktır. Bu şekilde sohbet edilerek çocuğun kazanılan güveni ile onu muayene etmek kolaylaşacaktır.
Muayene sürecinde onaylama, takdir etme, ödül verme gibi davranışlar, çocuğun bir daha muayene olmaya gelirken korkmaması sağlayacaktır.

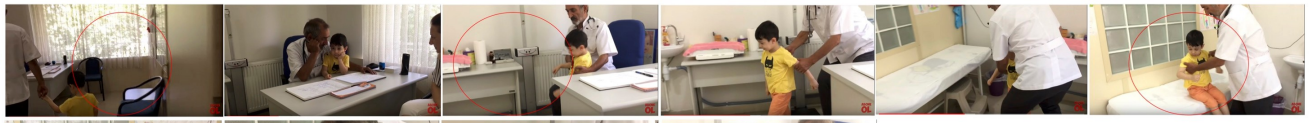
MUAYENE ORTAMI

storyboardlar

1 2 3 4 5 6

Türkiye'de devlet hastanesi pediatri bölümü

a



b



Yurtdışı pediatri bölümü chek-up

c



Yurtdışı diş hekimliği polikliniği

d



Yurtdışı çocuklara özel hastane yatılı pediatri bölümü

e



a1'de belirtilen alanda standart bekleme odalarındaki sandalyeler mevcut.
a3 ve **b3**'te belirtilen alanda kullanılacak aletlerle çocuk direk olarak görsel temasta bulunabiliyor.
a6'da görüldüğü gibi standart beyaz muayene masası ile buluşan çocuk zaten bakış atarak durumdan memnun olmadığını gösterebiliyor.
b4'te boy ölçerken dahi çocuğun iletişim kurduğu cihaz oldukça keskin hatlara sahip ve kontrolün dışında temas (başa) gerçekleşiyor.
c1'de sedyenin üzerine oturan çocukla sohbete başlayan doktor ortamı yumuşatarak sürece başlıyor.
c3'te durumdan memnun olan çocuk kendi başına kalınca dahi tedirgin herhangi bir harek gözlenmiyor.
c5'te etraftaki dekor malzemeleriyle ilgilenen çocuk kendini daha rahat hissedip **c6**'da kendi kendine yatım karnını açıyor doktor için.
d2'de kullanılacak olan metal keskin hatlara sahip aletler dahi ilk anda bebekle buluşturuluyor.
d4'te ise bebek babasının kucağında muayene öncesi eldiven gibi materyaller ile tanıştırılıyor ve zararsız olduğunu kanıtlar nitelikte doktor eldivenli eliyle bebeğe temasta bulunuyor.
d5'te ise baba ve doktorun ortak şekilde dizine yatırılan bebeğe muayene başlatılıyor. Doktor yardımcısı ışık tutarak eşlik ediyor. Baba bebeğin altına serdiği havluyu kullanıyor yatırırken.
e2'de özel hastane olmasıyla beraber bir evin yatak odasına giriyormuş gibi bir ortam oluşturulduğunu gözlemliyoruz.
e3'te çocuk için getirilen kendisine ait özel yatak takımı yatacağı yatağa seriliyor.
e5'te ise annesi bir hemen yanı başında koltuğa oturup kendi nevresiminde yatırılan çocuk evindeymiş hissiyatı oluşturulmuş durumda.

GRUP 1

PEDİATRİK MUAYENE POZİSYONLARI

VİDEO 1



VİDEO 2



VİDEO 3



VİDEO 4



VİDEO 5



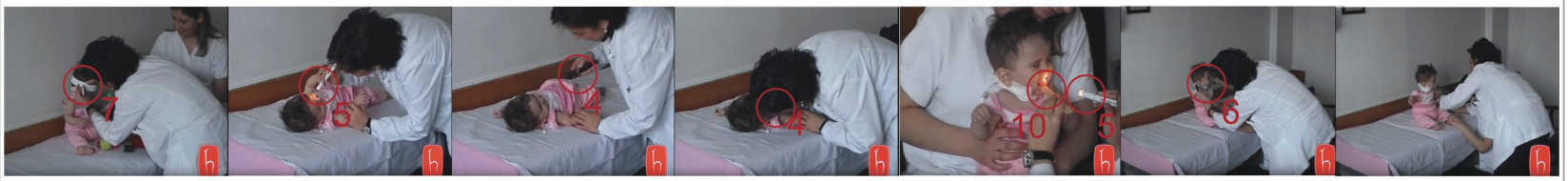
Pediatrik muayenede oturarak, yatarak, kucakta ve ayakta olmak üzere 4 farklı muayene pozisyonu tek tek veya birlikte olarak kullanılmaktadır.

MUAYENE SIRASINDA KULLANILAN EKİPMANLAR

video 1



video 2



video 3



video 4



1 

ateşölçer

2 

steteskop vücut içindeki sesleri dinlemek için kullanılıyor.

3 

otoskop kulak muayenesi için kullanıyor.

4 

oftalmoskop göz küresinin muayene etmede kullanılıyor.

5 

muayene ışık kalemi

6 

refleks çekici refleks ölçmek için kullanılıyor.

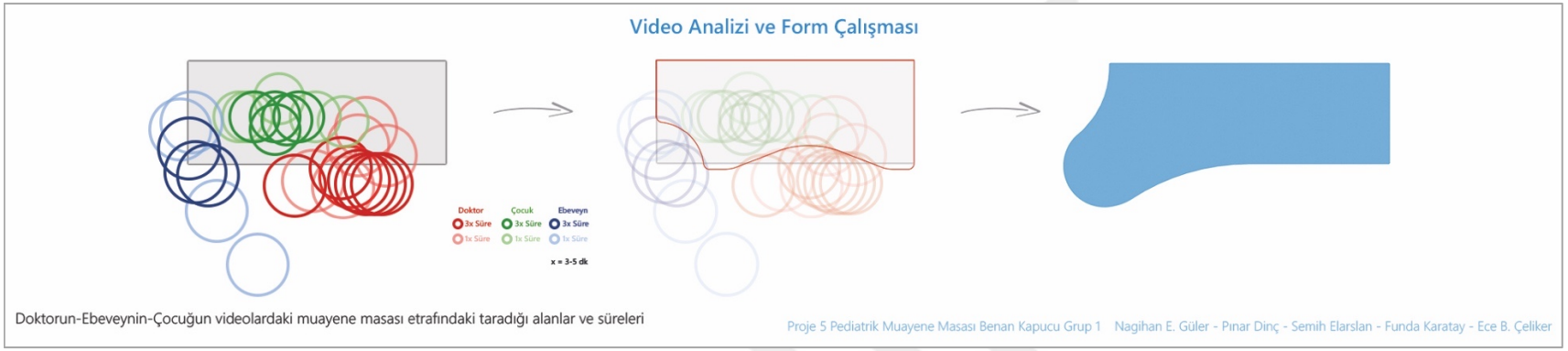
7 baş ve bel ölçme mezurası

8 diş temizleme aparatları

9 boy ve kilo ölçer

10 

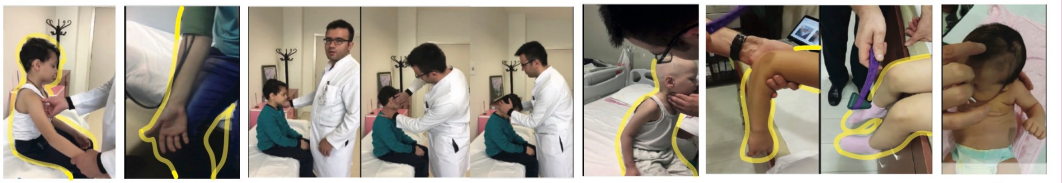
dil baskısı


Video Analizi ve Form Çalışması
Doktor
3x Süre
1x Süre
Çocuk
3x Süre
1x Süre
Ebeveyn
3x Süre
1x Süre
x = 3-5 dk
Doktorun-Ebeveynin-Çocuğun videolardaki muayene masası etrafındaki taradığı alanlar ve süreleri
Proje 5 Pediatrik Muayene Masası Benan Kapucu Grup 1 Nagihan E. Güler - Pınar Dinç - Semih Elarslan - Funda Karatay - Ece B. Çeliker

Team C2

Muayene Çeşitleri

Oturarak Muayene



A B C D E F G

A Aksiller bölge muayenesi B Ekstremite Bölgeler C Lenfadenotapi D Servikal lap E Nöroloji- refleks F Nöroloji- refleks G Fontanel H Ürogenital muayene

Ayakta Muayene

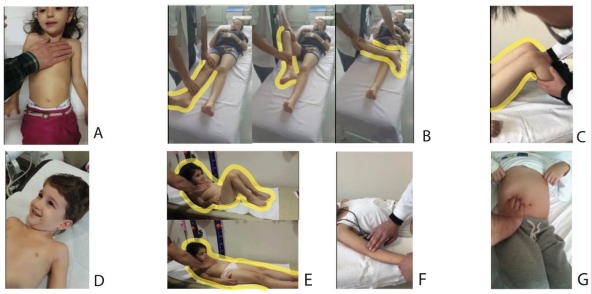


A B

A Nöroloji

B Schober testi

Yatarak Muayene



A B C D E F G

A Prekordiyum palpasyonu (Kalp)
B Faber testi (Kalça)
C lenfo popliteal bölge
D Kornea muayenesi
E Nörolojik ense sertliği
F Epitroklear Bölge Muayenesi
G Karaciğer

Video bir çocuğun muayene aşamasını baştan sonra kadar incelemektedir. Muayenehaneye gelişinden itibaren alınmıştır. Analizde çocuğun rahatlamasını sağlayan ögelerin bulgusu yapılmıştır.



A B C D E

Asansöre bindiği sırada doktora gittiğinin bilincinde olan çocuğun bakışlarında tedirginlik göze çarpar. (A)
Daha sonra arka plandaki manzaranın gösterilmesiyle çocukta bir rahatlama olur.(B)
Onun üstüne karşıdaki aynayı kendisi farkeder, etraftaki diğer uyaranlara dikkat etmeye başlar. (C)

Doktoru beklediği sırada ortamda bulunan oyuncaklarla oynar (D), sonrasında doktorun geldiğini görünce aile bireyinin yanına gider yine aynı tedirgin bakışlar. (E)



1



2



Muayene aşaması doktor ile hastanın fiziksel teması üzerinden ilerleyen bir süreçtir. Dolayısıyla bu aşamanın muayeneye başlamadan önce çözümlenmesi muayene aşamasını olumlu yönde etkiler. 1. sütunda bunun anlatımı bulunur.

Doktor ateş ölçme gibi yapılacak basit müdaheleri, muayene masasına geçmeden sohbet sırasında gerçekleştirir. Bu durum çocuğun tedirginliğini bir nebze azaltır. O sırada doktorla çocuk arasında sohbet gerçekleşmektedir. Çocuk neler olduğunun farkındadır ve dikkat ile doktoru ve aletleri izlemektedir. (2)



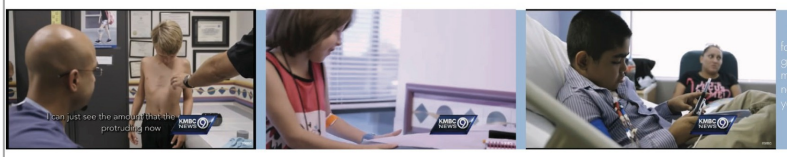
Videolara baktığımızda muayene masasının çocuk ve "diğerleri" arasında bir çeşit iletişim aracı olduğunu görüyoruz.Muayene masasına oturan herhangi bir kişinin çocuk üzerinde oluşturduğu negatif etkiyi de azaltmaktadır.Masayı herkesin oturabileceği, hastalarınca oturulması ya da kullanılması gereken bir nesne olmaktan kurtarır. Özellikle doktorlar için çocukla iletişim kurmayı kolaylaştırır.



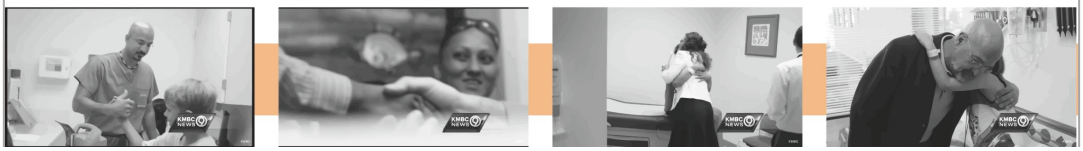
Doktor ve çocuk arasında güçlü bir iletişim kurulması tedavi süreci için önemli bir ayrıntı.Bu görüntülerde de doktorların iletişim kurabilmek için gösterdikleri çabalara tanık oluyoruz.Genellikle aradaki mesafeyi kısaltarak, eğilerek, yaklaşarak iletişime geçiyorlar.Bu da doktor ve çocuk arasındaki iletişimi daha güçlü bir hale getiriyor.

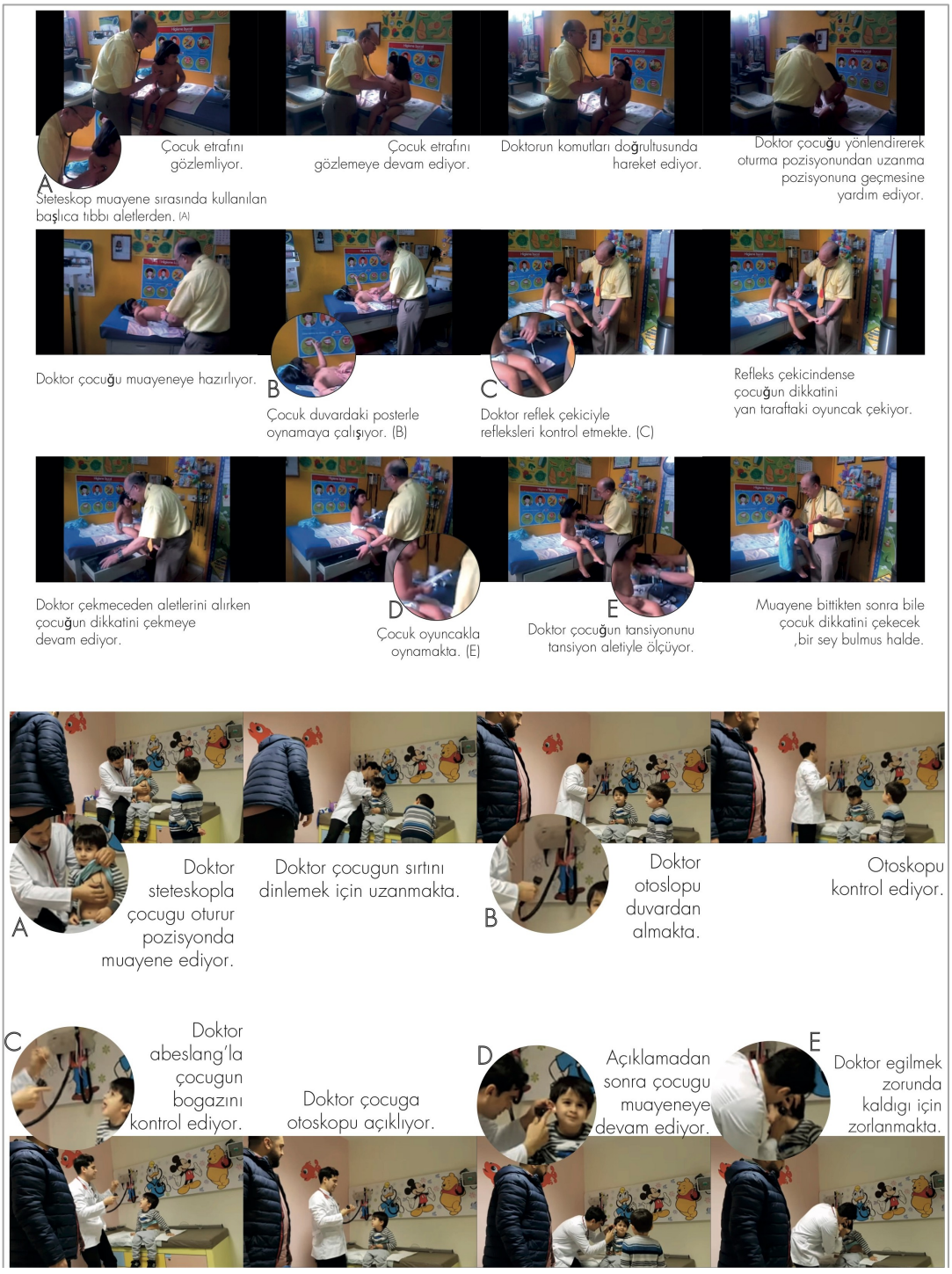


Sözel olarak kurulan iletişimle beraber tedavi için fiziksel bir iletişim gücünden de faydalnılır. Daha önce kurulan iletişim sayesinde tedavi için yapılan kontrollerin çocuk açısından daha normal algılanması sağlanır.



Tedavi esnasındaki pozisyonlar da muayene masasına farklı işlevler yükleyebilir.Çocuğun kaç kere inip çıkması gerektiği hatta bunu yardım alarak mı yoksa kendi başına mı gerçekleştirebileceği, tedavi esnasında aile bireylerinin nerede bulunacağı gibi sorular da çocuğun tedaviye yaklaşımını etkileyebilecek niteliktedir.



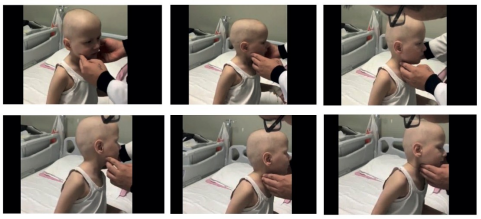

A
Steteskop muayene sırasında kullanılan başlıca tıbbı aletlerden. (A)
Çocuk etrafını gözlemliyor.
Çocuk etrafını gözlemeye devam ediyor.
Doktorun komutları doğrultusunda hareket ediyor.
Doktor çocuğu yönlendirerek oturma pozisyonundan uzanma pozisyonuna geçmesine yardım ediyor.
Doktor çocuğu muayeneye hazırlıyor.
B
Çocuk duvardaki posterle oynamaya çalışıyor. (B)
C
Doktor reflek çekiciyle refleksleri kontrol etmekte. (C)
Refleks çekicindense çocuğun dikkatini yan taraftaki oyuncak çekiyor.
Doktor çekmeceden aletlerini alırken çocuğun dikkatini çekmeye devam ediyor.
D
Çocuk oyuncakla oynamakta. (E)
E
Doktor çocuğun tansiyonunu tansiyon aletiyle ölçüyor.
Muayene bittikten sonra bile çocuk dikkatini çekecek ,bir sey bulmus halde.
A
Doktor steteskopla çocugu oturur pozisyonda muayene ediyor.
Doktor çocugun sırtını dinlemek için uzanmakta.
B
Doktor otoslopu duvardan almakta.
Otoskopu kontrol ediyor.
C
Doktor abeslang'la çocugun bogazını kontrol ediyor.
Doktor çocuga otoskopu açıklıyor.
D
Açıklamadan sonra çocugu muayeneye devam ediyor.
E
Doktor egilmek zorunda kaldıgı için zorlanmakta.

İncelenen Muayeneler Sırasında Tespit Edilen Problem ve Sıklığı

Muayeneler sırasında çocukların onlara tam olarak ne yapıldığını idrak edememesi ve olaya dahil olamadığı için ürktüğü gözlemlenmiştir.

Genel olarak çocukların yüzlerinin ifadesinin net bir şekilde okunabildeceği videolar seçilmiştir. Bu şekilde çocukların hisleriyle ilgili çıkarımlar yapılmıştır.

lenfadenotapi muayenesi
vide adı : 03. SERVİKAL LAP 2.avi



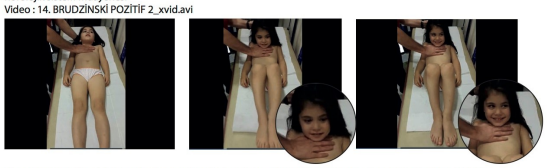
Bu muayene sırasında doktor muyenenin nasıl yapıldığına dair açıklamalarda bulunuyor. Açıklamalar bir çocuğun yada bizim anlayabileceğimiz düzeyde değiller çok fazla tıbbi terim içeriyor. Çocuk rahat bir şekilde oturamıyor oldukça gergin bir durumda.

nörolojik sistem muayenesi
Video : 01. ATAKSİ_xvid.avi



Video da çocuk ondan yapılmasını istenen şeyi yapmak isteniyor. Bunun nedeni olarak şunlar söylebilir; çocuk yapılmak istenen şeyi tam olarak idrak edemediği için yaptırdıkları şeyleri zorla yapmak istemiyor olabilir yada bulunduğu ortam ve insanlar onu tedirgin etmiş olabilir.

nörolojik sistem muayenesi
Video : 14. BRUDZİNSKİ POZİTİF 2_xvid.avi



Çocuk kendisi bu işi oyun haline getirmiş bu durumdan eğlenmeye çalışmaktadır. Kendisiyle konuşan yada iletişim kuran birisi yok.

Çocuklar müdahale kendilerine yapılıyor olmasına rağmen konuya çok yabancılar, ne yapıldığını anlamıyorlar. Kimisi anlamadığı için bu durumdan çok endişeli kimisi de bulunduğu durumla eğlenmeye çalışıyor. Çocukların doktorun müdahalesi sırasında onlarında konunun içinde olacağı belki kendilerine ne yapıldığını neden yapıldığını anlayabilmesi sağlanmalıdır.

nörolojik sistem muayenesi
Video : 27. NİSTAGMUS SPONTAN_xvid.avi



Videonun sonuna doğru doktorun 'nörolojik başka bir şeyi olmasın bu çocuğun' ifadesi çocuğun bulunduğu ortamdaki gerginliğini daha da fazla arttırabilir. Ayrıca doktor çocuğun yanında sürekli tıbbi terimlerle konuşuyor. Çocuk ve doktor arasında bir iletişimsizlik söz konusu.

Aynı zamanda videolar da çocukların bulunduğu ortam çok boş. Çocukların ilgisini çekebilecerek onları oyalayabilecek yada onları olaya dahil edebilecek bir eşya yada durum bulunmamaktadır.

Ekstremite muayenesi
Video : 03. FABER TESTİ_xvid.avi



Videoda doktor çocukla hiçbir iletişim kurmadan bacağını muayene ediyor. Çocuğun doktora karşı endişeli bakışları videoda net bir şekilde okunuyor.

Team C3


Doktorun hastayı izleme açılarının muayene türüne göre farklılaşması (yakın/uzak)
Farklı yüzeylerde gerçekleşen tedavi süreçleri
Muayene masası çevresinin kullanımı
Ayakta
Kucakta
Hastaya güvende olduğu hissinin verilmesi açısından kucakta gerçekleşen tanı koyma işlemi
Doktor, iğne gibi korkuların giderilmesi açısından hastanın görmesini engelleme
Daha küçük hastaların oyuncaklarla ilgisini çekme






Hastanın vücut pozisyonu doktorun yönlendirme ve yardımı ile gerçekleşir.

Hastanın sırtını dönmesinde muayene masasının hareketsizliği





Muayene masasının mekandaki konumu hastanın sırtı dönük pozisyonda ebeveyn arama işlemini zorlaştırmaktadır.











Doktor yönlendirmesiyle hasta pozisyonunun değiştirilmesi hastanın hareketini kolayaştırması açısından muaye masasının yardımıyla gerçekleşebilir.

Hastanın temas ettiği yüzeylerde daha sıcak malzemelerin kul - lanılması

Tek kullanımlık örtülerin hasta hareketiyle toplanması







- Hastayla olan etkileşimin aynı göz hizasında gerçekleşmesi
- Malzemelerin kullanılmama durumunda
- Doktorun vücut pozisyonu - eğilme
- Çıplak gerçekleşen muayenelerde hastanın yüzeyle teması
- Doktorun pozisyonu hastanın görüş alanını kısıtlamaması
- Daha küçük hastaların dikkatinin dağıttılması
- Hastanın muayene koltuğuna kendi oturması
- Hastanın desteğe ihtiyaç duyması





Oturarak











PROJE V video analizi Benan Kapucu 3. Grup



Çocuğu doktor soyuyor ve giydiriyor.



Doktor, çocuğa sağ kolunu kaldırmasını söylüyor. Bu yaştaki çocuklar sağını solunu ayırt edemeyebilir.

Doktor bir ekipmanla göz testi yapıyor, daha sonra çocuktan uzaklaşarak elini görüp görmediğini soruyor.

Doktor dizlerini bükerek çocuğun göz hizasına eğiliyor ve elindeki kalemle göz testi yapıyor. Ardından ışık sağlayıcı ekipmanıyla gözüne bakıyor.



Çocuk otururken doktor çocuğun kollarını muayene ediyor. Çocuğa kollarını kaldırıyor.

Çocuk bacaklarını sarkıtır vaziyetteyken doktor bacaklarını ve ayaklarını muayene ediyor.

Çocuk yatar pozisyondayken doktor ayak muayenesi yapıyor



Doktor, elindeki ekipman ile oturan çocuğu muayene ediyor.

Doktor yatar pozisyondaki çocuğu muayene ediyor.



Doktor oturur vaziyetteki çocuğun el,kol, ayak ve bacaklarını elindeki ekipmanla muayene ediyor.



Doktor yatar pozisyondaki çocuğun bacaklarını muayene ediyor.

Doktor ayakta duran çocuktan kollarını kaldırmasını istiyor. Daha sonra düz bir çizgide yürümesini istiyor.

Doktor yatar pozisyondaki çocuğun başını muayene ediyor, muayene bitince çocuğa teşekkür ediyor.

Doctor and Child

https://www.youtube.com/watch?v=wXf5WKvCjN8



0.02

1) Doktor çocuğa vücudunda herhangi bir problem olup olmadığını soruyor.



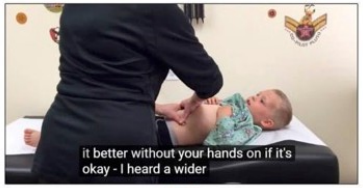
2.12

5)Çocuğu rahatlatmak için muhabbet ediyor.



4.12

9)Göz muayenesine geçiyor.



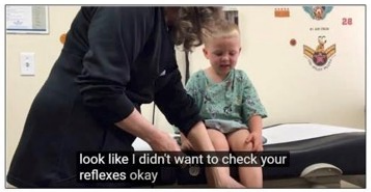
6.07

13)Uzanmasını rica edip karnını muayene ediyor.



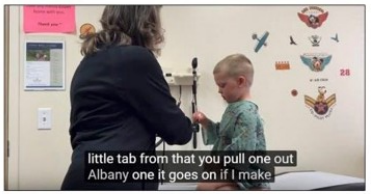
0.08

2)Annesine dönüp Luke'le ilgili bir endişesi olup olmadığını soruyor.



2.17

6)Çocuğun reflekslerini kontrol ediyor.



4.46

10)Çocuktan aletin başlığını takması için yardım istiyor.



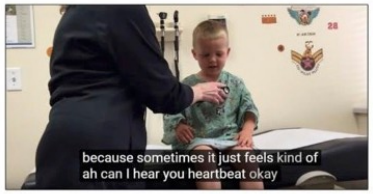
6.37

14)Çocuğu sedyede ayağa kaldırıyor ve elleriyle sırtını açıp sırtına bakıyor.



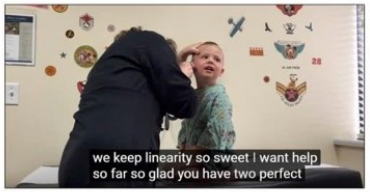
0.10

3)Vücudunu sağlıklı ve zinde tutmak için neler yaptığını soruyor.



3.25

7)Kalbini dinleyebilir miyim diye soruyor.



5.12

11)Sağlıklı iki kulağı olduğu için sevinmesi gerektiğini söylüyor.



6.42

15)Çocuğu elleriyle indirip muayeneyi sonlandırıyor.



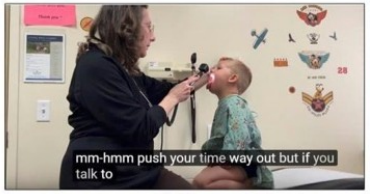
0.47

4)Dişlerinin bakımı için ne yaptığını soruyor.



4.06

8)Arabalar ve bebek koltuğu hakkında konuşuyorlar.



5.33

12)Kadın çocuğun yanına oturarak dilerini kontrol ediyor.

Oturarak,yatarak ve ayakta muayene ediliyor.

Gözlemlediğim problem doktorun muayene sırasında hastayla aynı hizada olamaması ve sürekli pozisyon değiştirmek zorunda kalması.Hastanın da doktora göre kendini ayarlamak zorunda kalması.Sedyenin deri olması da hijyenik olmadığını hissettiriyor.

Doktorun yaklaşımı çok pozitif ve rahatlatıcı. Muayene ortamı çok cıvıl cıvıl değil ve eğlencesiz.

Ferah ve steril bir klinik izlenimi veriyor lakin çocuklara hitap ettiğinini söyleyemem.

DUYGU SERBEST VİDEO ANALİZİ



muayene öncesi çocuk muayene odasının dışındaki oyun alanında vakit geçiriyor.





Doktor ile karşılaşma







doktor bilgilendirme için çocuktan cevabını alabileceği soruları iletişimi kuvvetlendirmek için çocuğa yönlendiriyor. diğer soruları anneye yönlendiriyor





ateş ölçeri doktor masasının çekmecessinden çıkarıyor.



muayeneye doktor masasında başlıyor ve çocuğun ateşini ölçüyor.



muayene masasına hastayı doktor kucaklayarak çıkarıyor.(muayene masasının altında hastanın çıkabileceği basamak var)



muayene için doktor hastanın tişörtünü çıkarıyor.







solunum muayenesinde hasta oturur pozisyonda ve doktor muayene sırasında muayene masasından destek alıyor



çocuk elini kaldır komutunu uygulamakta zorlanıyor.





karın , baş-boyun muayenesi için doktor hastayı muayene masasına yatırıyor





kulak ve ağız muayenesi için doktor hastayı muayene masası üzerinde ayağa kaldırıyor



doktor ışık ile muayene öncesi hastayı bilgilendiriyor. ışık duvarda asılı poisyonda duruyor.muayene esnasında doktor duvardan alıp sonrasında yine duvara asıyor.





kulak muayenesinden önce hasta canının acımasından korkuyor ve doktor ürün ve kullanımı hakkında hastayı bilgilendiriyor.





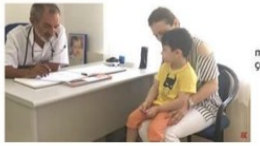
doktor hastayı kucaklayarak tartı ve boy ölçümüne götürüyor











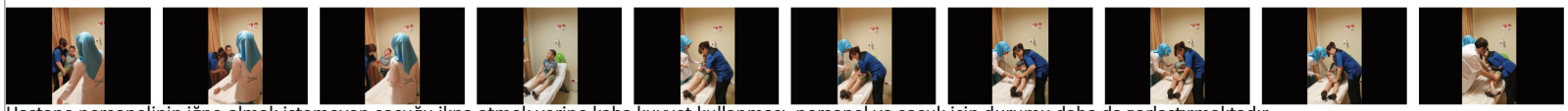
muayene sonrası anne çocuğun ayakkabı ve tişörtlerinin giydiriyor.

ERGONOMİ



Bu videoda el muayenesine gelen çocuk muayene masasına çıkmakta zorlanmaktadır. Masanın yüksek olması, basamak sayısının yetersizliği ve çocuğun boyuna uygun olmaması ayrıca tutamaç detayının bulunmamasından kaynaklanan bir problem vardır.

PERSONEL TUTUMU



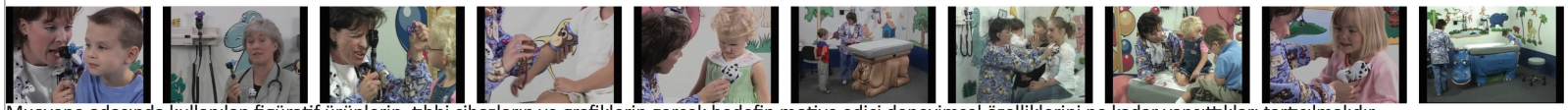
Hastane personelinin iğne olmak istemeyen çocuğu ikna etmek yerine kaba kuvvet kullanması, personel ve çocuk için durumu daha da zorlaştırmaktadır.

MUAYENE ORTAMININ HİJYENİ



Bu videoda muayene alanının hijyen bakımından yetersiz olduğunu gözlemledik. Muayene masasının altında ağzı açık bir şekilde yerleştirilmiş çöp kovası bulunmaktadır. Çocuğa giydirilen önlük yüzeylerle temasını tam olarak engellememektedir. Çocuk yer ile direk temas halindedir. Ve ayrıca ekipmanların bulunduğu çekmece açık durmaktadır.

PEDİATRİK MUAYENE ODASI VE KULLANILAN ALETLER



Muayene odasında kullanılan figüratif ürünlerin, tıbbi cihazların ve grafiklerin gerçek hedefin motive edici deneyimsel özelliklerini ne kadar yansıttıkları tartışılmalıdır.

PEDİATRİK MUAYENE UYGULAMALARI



Analizi yapılan bu videolarda alan kullanımı, çocukların yapılacak işlemler hakkında bilinçli personeller tarafından detaylıca bilgilendirilmesi ve psikolojik olarak hazırlanması, hazırlanan alanlardaki detaylar, ergonomi ve renk kullanımı, hijyen vb. konularda örnek uygulamalar olarak incelenmiştir.

Team C5


Kardiyobasküler Sistem Muayenesi - 8 yaş
Hasta ile tanışılıyor ve öykü alınıyor.
Ekg ve parmakların fiziki kontrolu yapılıyor.
Elle göğüs muayenesi yapılıyor.
Hastanın nabzı kontrol ediliyor.
Steteskop ile hastanın kalbi dinleniyor.
Hasta ileri tanı cilk konuma getiriliyor.
Hasta ileri tanı yatay konuma getiriliyor.
Göğüs Muayenesi 6 ~ 8 yaş
Hastanın hikayesi alınıyor muayeneye doktorun sağ tarafından başlanıyor.
Hastanın göğüs duvarının kontroli için kolları havaya kaldırılıyor.
Hasta sırtı doktora dönük konumlandırılarak muayene ediliyor.
*Doktor bu işlemi çömelerek yapmak zorunda kalıyor.
Hasta yeniden konumlandırılıyor.
Hasta yatay konuma getiriliyor.
Hastanın elleri muayene ediliyor.
Muayene devam ediyor.
*Doktor hastayı muayene etmek için eğilmek zorunda kalıyor.
Doktor hastayı ellerinden tutarak kaldırıyor.
Hasta konumlandırılmak için havaya kaldırılıyor.
Doktor hastayı oturur konuma getiyor.
Genel + KBB Muayenesi - 4 yaş
Hasta bekleme odasında oyuncaklarla oynuyor.
Hasta doktor geldiğinde annesinin yanına kaçıyor.
Doktor hastayı karşılıyor.
Hastanın ateş ölçer ile ateşi ölçülüyor.
*Bu esnada çocuk gerişin hissediyor.
Doktor hastayı kollarından tutup masaya oturtuyor.
Doktor hastayı basamak olmasına rağmen tutarak kaldırıyor.
Doktor hastanın steteskop ile muayenesini yapıyor.
Doktor hasta ile samimiyet kuruyor.
Doktor hastanın kollarını yukarı doğru açıyor.
Doktor hastayı kollarından tutarak ayakta konuma getiriyor.
Hasta muayene sonrası ayakkabılarını tartıda giymek zorunda kalıyor.
Hasta muayene sonrası giysilerini ayakta giyiyor.
Hastanın boyu ve kilosu ölçülüyor.
Hastanın oturabileceği bir yer yok.

Doktor muayene için kullanacak ekipmanı hastanın
alışmak ve incelemesi için önünde konumlandırıyor
Hasta doktorun direktiklerini dinlemiyor. Hasanın dikkatini dağıtacak nesneler sebebiyle doktorun direktiklerine yanıt vermiyor.
CHECK-UP
6 YAŞ
Has-Hasta muayene masasına tırmanıyor.
CHECK-UP
3 YAŞ
Doktor muayene için odanın tamamını kullanıyor.

D. Consent and Interview Forms for Pediatric Examination Table and It Environment Studio Project

FORM 1: [Öğrenci çalışmalarının kullanımı için gönüllü katılım formu]

Anadolu Üniversitesi
Mimarlık ve Tasarım Fakültesi Endüstriyel Tasarım Bölümü
2017-18 Güz Dönemi ENT 439 Ürün Tasarımı V
Pediatrik Muayene Masası Tasarımı Projesi (Dönemin 2. Projesi)

Kasım 2017

Gönüllü katılım formu:

Bu çalışma, internetteki kullanıcı tarafından oluşturulan çevrimiçi video içeriğinin yorumlanması için çeşitli teknikleri ve canlandırma tekniklerini tasarım keşfi aşaması için stratejik bir şekilde bir arada sunmayı amaçlayan bir araştırmanın parçasıdır. Araştırmanın hedefi, tasarım eğitiminde kullanılması için alternatif bir keşifsel tasarım araştırması yöntemi geliştirmektir. Proje tasarım sürecinizde "video yorumlama"yı ve takiben, "konunun uzmanı eşliğinde yapılan canlandırma"yı bir keşif, "proje temaları ve boyutları matrisi"ni fikir geliştirme ve "kukla senaryoları canlandırma atölyesi"ni bir akran değerlendirmesi aracı olarak kullanılmıştır. Çalışmada, "Pediatrik muayene masası tasarımı projesi" ele alınacaktır.
Bu proje kapsamında ürettiğiniz dokumanları, bahsi geçen yöntemi geliştirmek amacıyla, tez araştırmasında, bilimsel yayınlarda ve sunuşlarda kullanmayı istiyoruz.
Bu formu imzalayarak yapılacak araştırma için sunduğunuz dokumanların belirtilen amaçlarla kullanımını onayladığınızı belirtmiş oluyorsunuz. Formu imzalamış olmanız fikri haklarınızdan vazgeçtiğiniz anlamına gelmemektedir, ilgili kişi ve kurumların yasal ve mesleki sorumlulukları devam etmektedir.
Tüm dokumanlar adınız referans verilerek kullanılacaktır.
Çalışmaya katılım gönüllülük esasına dayanır.
Katkılarınız için teşekkür ederiz.

Katılımcının adı soyadı	**İmza**	**Tarih**
Araştırmacının adı soyadı	**İmza**	**Tarih**

Araştırmadan sorumlu öğretim elemanları:

Anadolu Üniversitesi Mimarlık ve Tasarım Fakültesi Endüstriyel Tasarım Bölümü**,** Arş. Gör. Gizem Hediye Eren, Mobil tel: 0554 306 33 21, gheren@anadolu.edu.tr
ODTÜ Mimarlık Fakültesi Endüstri Ürünleri Tasarımı Bölümü, Yard. Doç. Dr. Fatma Korkut, korkut@metu.edu.tr

FORM 2: [Katılımcı Daveti Duyuru Metni]

e-posta konusu: doktora çalışmam için görüşme hk.

Sevgili …….;

2017-18 güz dönemi 4. yıl tasarım stüdyosunda yaptığımız ikinci projenin (Pediatrik Muayene Masası Tasarımı) sürecinde uygulanan tasarım yöntemleri ile ilgili doktora tez çalışmam kapsamında seninle yaklaşık bir saat sürecek bir görüşme yapmak istiyorum. Bu görüşmeyi proje sürecinde uygulanan yöntemler olan "video yorumlama", "konunun uzmanı eşliğinde yapılan canlandırma", "proje temaları ve boyutları matrisi" ve "kukla senaryoları canlandırma atölyesi"
hakkındaki görüşlerini öğrenmek için yapacağım. Yapmayı planladığım görüşmede sana araştırma konusuyla ilgili bazı sorular soracağım.

Çalışmaya katılım gönüllülük esasına dayanmaktadır. Bu çalışmaya gönüllü olarak katılmayı kabul edersen, e-postaya geri dönüş yapmanı rica ederim.

Teşekkürler, sevgiler.

FORM 3: [Görüşme için gönüllü katılım formu]

Anadolu Üniversitesi
Mimarlık ve Tasarım Fakültesi Endüstriyel Tasarım Bölümü
2017-18 Güz Dönemi ENT 439 Ürün Tasarımı V
Pediatrik Muayene Masası Tasarımı Projesi (Dönemin 2. Projesi)

Nisan 2018

Gönüllü katılım formu:

Bu çalışma, internetteki kullanıcı tarafından oluşturulan çevrimiçi video içeriğinin yorumlanması için çeşitli teknikleri ve canlandırma tekniklerini tasarım keşfi aşaması için stratejik bir şekilde bir arada sunmayı amaçlayan bir araştırmanın parçasıdır. Araştırmanın hedefi, tasarım eğitiminde kullanılması için alternatif bir keşifsel tasarım araştırması yöntemi geliştirmektir. Projedeki tasarım sürecinizde "video yorumlama"yı ve takiben, "konunun uzmanı eşliğinde yapılan canlandırma"yı bir keşif, "proje temaları ve boyutları matrisi"ni fikir geliştirme ve "kukla senaryoları canlandırma atölyesi"ni bir akran değerlendirmesi aracı olarak kullanılmıştır. Çalışmada, "Pediatrik muayene masası tasarımı projesi" ele alınacaktır.
Görüşmelerin amacı, önerilen yöntemin tasarım eğitimindeki uygulamalarının araştırılması ve yöntemin uygulaması sırasında öğrenci katılımını güçlendiren yönlerinin incelenmesi ve zayıf yönlerinin revize edilerek iyileştirilmesidir. Bu görüşmeyi proje sürecinde uygulanan yöntemler hakkındaki görüşlerini öğrenmek için yapıyorum. Görüşmede sana araştırma konusuyla ilgili bazı sorular soracağım.
Görüşme sırasında elde edilen veriler yalnızca bilimsel amaçlarla, tez araştırmasında, bilimsel yayınlarda ve sunuşlarda kullanılacaktır. Katılımcıların kimlik bilgileri saklı tutulacaktır. Görüşme sırasında ses kayıt cihazı kullanılması izninize bağlıdır. Görüşme yaklaşık bir saat sürecektir.
Bu formu imzalayarak yapılacak araştırma konusunda size verilen bilgiyi anladığınızı ve görüşme yapılmasını onayladığınızı belirtmiş oluyorsunuz. Formu imzalamış olmanız yasal haklarınızdan vazgeçtiğiniz anlamına gelmemektedir; ayrıca araştırmacının, ilgili kişi ve kurumların yasal ve mesleki sorumlulukları devam etmektedir. Çalışmaya katılım gönüllülük esasına dayanır. Araştırma, katılımcılar açısından herhangi bir risk taşımamaktadır. Görüşme sürecinin başlangıcında veya herhangi bir aşamasında açıklama yapılmasını veya bilgi verilmesini isteyebilirsiniz. İstediğiniz zaman gerekçe belirtmeksizin görüşmenin durdurulmasını talep edebilirsiniz. Araştırmaya katkıda bulunduğunuz için çok teşekkür ederiz.

Katılımcının adı soyadı	**İmza**	**Tarih**
Araştırmacının adı soyadı	**İmza**	**Tarih**

Araştırmadan sorumlu öğretim elemanları:

Anadolu Üniversitesi Mimarlık ve Tasarım Fakültesi Endüstriyel Tasarım Bölümü**,** Arş. Gör. Gizem Hediye Eren, Mobil tel: 0554 306 33 21, gheren@anadolu.edu.tr
ODTÜ Mimarlık Fakültesi Endüstri Ürünleri Tasarımı Bölümü, Yard. Doç. Dr. Fatma Korkut, korkut@metu.edu.tr

FORM 4: [Görüşme Kılavuzu]

Nisan 2018

Anadolu Üniversitesi
Mimarlık ve Tasarım Fakültesi Endüstriyel Tasarım Bölümü
2017-18 Güz Dönemi ENT 439 Ürün Tasarımı V
Pediatrik Muayene Masası Tasarımı Projesi (Dönemin 2. Projesi)

GÖRÜŞME KILAVUZU

Katılımcının adı-soyadı:.....
Tarih / Saat:.....

Giriş: Görüşmemize başlamadan önce sana doktora çalışmamın amacı hakkında tekrar bilgi vermek istiyorum. Bu araştırma, Video Analizi yöntemini bir tasarım keşfi, Proje Temaları ve Boyutları Matrisini fikir geliştirme ve Kukla Senaryoları Atölyesi çalışmasını canlandırma tekniği aracılığıyla bir akran değerlendirmesi aracı olarak bir arada kullanımını alternatif bir tasarım stüdyosu yöntemi olarak geliştirmeyi amaçlayan bir çalışmadır.
Bu görüşmeyi bu dönem yaptığımız ikinci projenin süreçlerinde uygulanan tasarım yöntemleri hakkındaki görüşlerini öğrenmek için yapıyorum.
Yapacağımız görüşmede sana araştırma konusuyla ilgili bazı sorular soracağım. Görüşme sırasında anlattıklarını yalnızca bilimsel amaçlarla kullanacağım; kimliğinle ilgili bilgileri saklı tutacağım. Konuştuklarımızı daha sonra tam olarak hatırlayabilmek ve gözden geçirebilmek için görüşmemizi kaydedeceğim. Görüşmemiz 1 saat kadar zaman alabilir.

Görüşmemize başlamadan önce sormak istediğin herhangi bir şey var mı?

Isınma: Projenin süreci, fazları hakkında genel bir hatırlatma

SORULAR

I. Bölüm: Pediatrik Muayene Masası Projesi süreci ile ilgili genel görüşler:

1) Proje hakkındaki düşüncelerin nelerdir:? Sınıf çalışmaları, ev ödevleri, grup çalışması ve grup üyesi sayısı hakkındaki görüşlerin...
2) Proje süresi (5 hafta) yeterli miydi?
3) Sürecin akışıyla ilgili düşüncelerin nelerdir? Süreçte fikir tıkanması, duraksama süreçleri oldu mu? Ne zaman ve ne için?
4) Proje sürecinde aklınızda olmayan radikal dönüşümler-değişimler tecrübe ettiniz mi? Ani karar değişimleri, başka fikir ve tasarıma dair kararlara sıçrama gibi...

II. Bölüm: Video Analizi

1) Video analizi posterinizde bulduğunuz videolara nasıl eriştiniz?
2) Videolarda aranacak konuları nasıl seçtiniz?
3) Hangi anahtar kelimeleri kullandınız? Kullandığınız anahtar kelimelerin kaynakları nelerdir?
4) Videolara hangi kaynaklardan ulaştınız?
5) Videoları nasıl aradınız ve aradınız?
6) Analiz için kullandığınız videoları kaç video arasından seçtiniz?
7) Neden bu videoları / sekansları / çerçeveleri seçtiniz? Bu seçimi hangi faktörler etkiledi?
8) Video analiz sürecinde nasıl ilerlediniz?
9) Sunum formatına nasıl karar verdiniz?
10) Hangi vurgulama tekniklerini kullandınız? Neden?
11) UGV analiz posterleri hazırlamak için hangi programı kullandınız?
12) UGV analizinden ne şekilde yararlandınız?
13) UGV analizi sırasında karşılaştığınız zorluklar nelerdi?
14) UGV analizi için herhangi bir öneriniz var mı?

III: Bölüm: Fikir Geliştirme Matrisi

1) Bu çalışmayı faydalı buldun mu? Hangi açılardan?
2) Bu çalışmada zorlandığınız anlar oldu mu? Olduysa nelerden kaynaklandı? (Anlaşılmayan noktaları, vb.)
3) Proje tema ve boyutları sizin araştırma süreci bulgularınız ile paralel miydi? Sizin ele almak istediğiniz problemleri kapsıyor muydu?
4) Fikir geliştirme matrisi ile ilgili görüş ve önerileriniz nelerdir?

IV. Bölüm: Kukla Senaryoları Canlandırma Atölyesi

1) "Senaryoların yazılması, sahne ve mankenlerin hazırlanması" ile ilgili görüşleriniz nelerdir?
2) "Kuklalarla canlandırma yapma" hakkındaki görüşleriniz nelerdir?
3) "Sonuçların raporlanması" ile ilgili görüşleriniz nelerdir?
4) KS'den rol yapma tekniği olarak hangi açılardan faydalandınız?
5) Daha önce beklemediğiniz, ancak konuk üyeler sizi düşünmeye ittiği bir durumla karşılaştınız mı?
6) KS'nin zorlukları nelerdi?
7) Genel bir teknik olarak KS hakkında önerileriniz nelerdir?

E. Approvements from Commitee of Ethics (METU and Anadolu University)

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
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Sayı: 28620816/ 176

05 NİSAN 2018

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Dr. Öğretim Üyesi Fatma KORKUT

Danışmanlığını yaptığınız doktora öğrencisi Gizem Hediye EREN'in ***"Endüstriyel Tasarım Eğitiminde Kullanıcı Tarafından Üretilen Çevrimiçi Video İçerikler ve Canlandırma ile Problem Alanlarını Keşif İçin Alternatif Bir Yöntem"*** başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek gerekli onay **2018-FEN-013** protokol numarası ile **06.04.2018 - 30.09.2018** tarihleri arasında geçerli olmak üzere verilmiştir.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Ş. Halil TURAN
Başkan V

Prof. Dr. Ayhan SOL
Üye

Prof. Dr. Ayhan Gürbüz DEMİR
Üye

Doç. Dr. Yaşar KONDAKÇI
Üye

Doç. Dr. Zana ÇITAK
Üye

Doç. Dr. Emre SELÇUK
Üye

Dr. Öğr. Üyesi Pınar KAYGAN
Üye

Ana. Üni. Evrak Tarih ve Sayısı: 08/05/2018-E.45019

T.C.
ANADOLU ÜNİVERSİTESİ REKTÖRLÜĞÜ
Genel Sekreterlik
Yazı İşleri Müdürlüğü

* B E K V 5 N 1 A 3 *

Sayı : 63784619-605.01
Konu : Gizem Hediye EREN'in Doktora Tezi
Uygulama İzin Talebi

MİMARLIK VE TASARIM FAKÜLTESİ DEKANLIĞINA

İlgi : 16/03/2018 tarihli ve 54850036-1409 sayılı yazınız.

İlgi yazınızda belirtilen Üniversiteniz Endüstri Ürünleri Tasarımı Enstitü Anabilim Dalı Doktora Programı öğrencisi Gizem Hediye EREN'in, Dr. Öğr. Üyesi Fatma KORKUT'un danışmanlığında hazırladığı "Endüstriyel Tasarım Eğitiminde Kullanıcı Tarafından Üretilen Çevrimiçi Video İçerikler ve Canlandırma ile Problem Alanlarını Keşif için Alternatif Bir Yöntem" başlıklı Doktora tez çalışmasını, Üniversitemiz Mimarlık ve Tasarım Fakültesi Endüstriyel Tasarım Bölümünde gerçekleştirmesi Rektörlüğümüzce uygun görülmüştür.

Bilgilerinize arz/rica ederim.

e-imzalıdır
Prof. Dr. Aydın AYBAR
Rektör a.
Rektör Yardımcısı

Dağıtım:
Gereği:
Orta Doğu Teknik Üniversitesi Rektörlüğüne

Bilgi:
Mimarlık ve Tasarım Fakültesi Dekanlığına

Evrakı Doğrulamak İçin: http://belgedogrulama.anadolu.edu.tr/enVision-Sorgula/BelgeDogrulama.aspx?V=BEKV5N1A3 Pin Kodu: 01881
Yunus Emre Kampüsü Tepebaşı/Eskişehir
Telefon No: +90 222 335 05 80/1352-1353 Faks No: +90 222 335 36 16
E-Posta: gensek@anadolu.edu.tr İnternet Adresi: www.anadolu.edu.tr
Bilgi İçin: Kerim ÖZTÜRK
Unvan: Memur
Telefon No: 1352

Bu belge, 5070 sayılı Elektronik İmza Kanununa göre Güvenli Elektronik İmza ile imzalanmıştır.

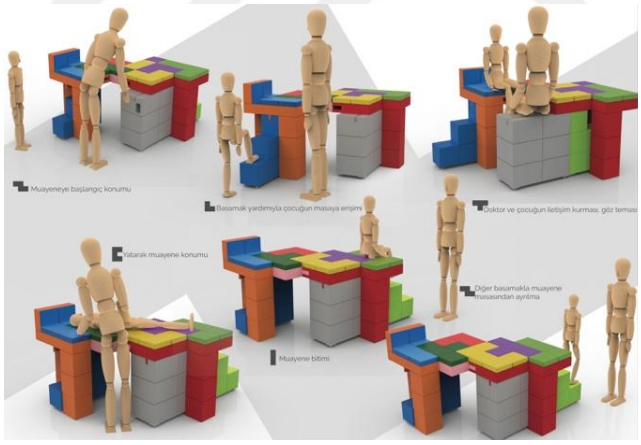
F. Final Design Solutions and Strategies of the teams in Pediatric Examination Table and Its Environment Studio Project

The teams were looking for answers to the concepts included in the intersection of the project dimensions and themes while filling the Matrix. The relationship between design strategies, project dimensions and themes is explained below with examples from the work of the teams.

Use of analogy

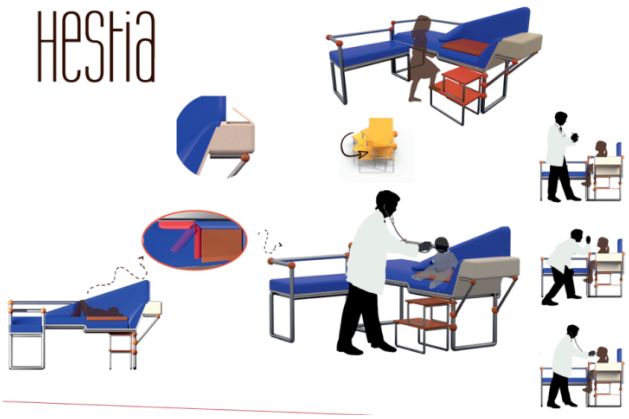
One of the design strategies followed by the teams is the use of analogy. It is important for the child to have an item that is familiar from his own life with the help of analogy, especially when it comes to the child and experience.

Lego analogy: The A2 team has integrated steps on the examination table to create an environment where the child can reach the examination table and communicate with the doctor (Fig. 6.21). The team used a structure and coating similar to those of Lego, a toy familiar to children, that could attract the child's attention; they stated that this structure would be useful in encouraging the child. The organization of the examination table allows the doctor and the child to have a sitting session in which they can be in mutual communication.



Final design of the A2 team

Corner seating set analogy: As the team A3 concentrated on making the child feel at home, they worked on a homestay examining table and surroundings. The team used a corner seating set analogy in their design and strengthened this approach by providing a shared space for the stakeholders on the examination table.



Final design of the A3 team

Playground analogy: The team B5 direct the child to the examination table and takes advantage of floor and wall decorations, color and shape arrangement. In this way, a guiding and stimulating area is created and the child reaches the examination table without any intervention. The path is also used to inform the child about the examination process as they move on this line.

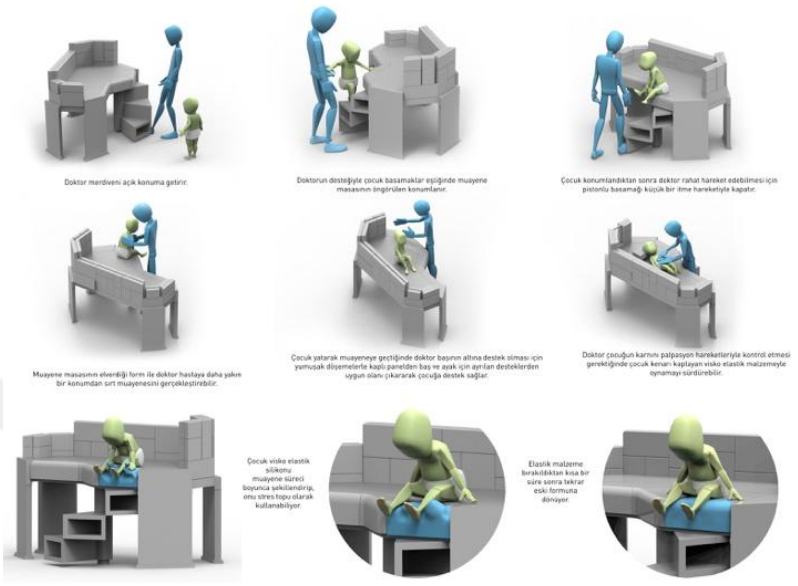


Final design of the B5 team

Use of sensory stimuli

The A5 team changes the child's focus with the viscoelastic material on the contact surface when the child reaches the examination table with the help of the doctor, for providing the acquiring time for getting familiar to the examination process. On the side surfaces, there are pillows in colors that appeal to the child's world and are designed to be used as support in different examination positions during the

examination. The steps were designed as opening and closing of the examination table to provide a comfortable circulation for the physician, and the form of the examination table was designed to allow the physician to approach the child comfortably from various angles.



Final design of the A5 team

Using figurative elements

The cloud turned into the examination surface: The A4 team cares for the child's individuality, and benefit from the cloud figure on the wall is turned into an examination surface when it is opened, giving the child an inviting environment and encouraging her. As she climbs the steps, the child feels as if they are reaching a cloud. This form of the examination table provides a suitable environment for the doctor and attender’s circulation in the room and for the various examination positions of the child.



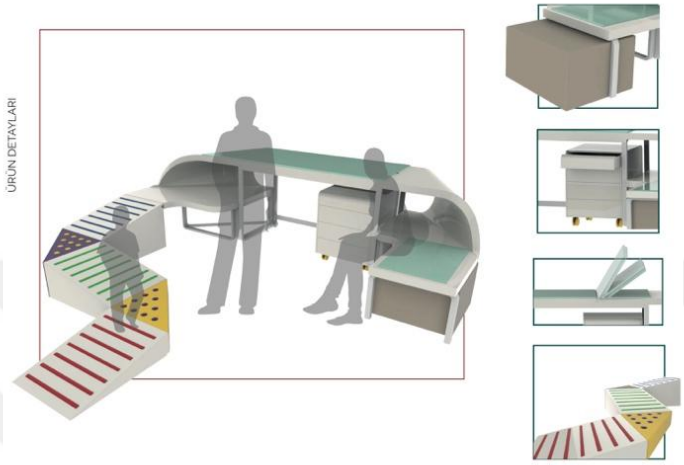
Final design of the A4 team

Folding-opening examination table: The B2 team benefits from surprise and curiosity to strengthen interaction with the child. There are two parts that can be opened on the wall. The first of these is the seating surface and the second is the bed surface which is the complement of this surface. There is an escabo associated with the seat surface and opens with this surface. This conversion process is done by the doctor and the child. This cooperation also creates time for the doctor to inform the child about the examination process. There are various decorative origami structures behind the exposed surfaces; these structures, which serve as play elements, aim to guide the child's focus during the examination and to have a more comfortable examination process.



Final design of the B2 team

Providing a pathway
Ramp: The B1 team uses a pathway consisting of ramps to guide the child to the examination table. The ramp forms a floor for the child to reach the examination table and step onto to support the child to go to the examination position. A separate surface is also provided for the attendant to sit (Fig. 6.27).



Final design of the B1 team

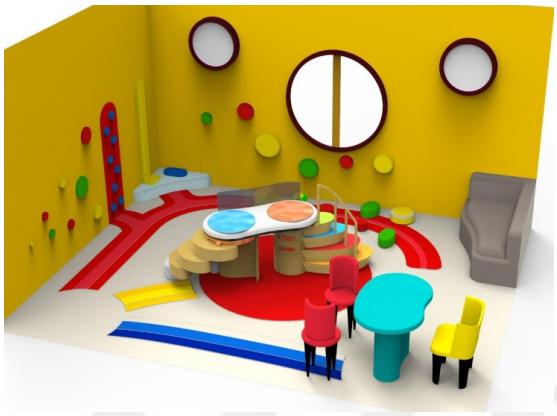
Elements guiding along the path: The design solution of the C2 team allows the child to rotate the bars along the line to complete the figures and to direct the child to the examination table. The child is encouraged to pass the examination table with a feeling of reward and accomplishment by completing the figures. The elements that guide the child along the path are play, figures, completion and rewarding.



Final design of the C2 team

Providing the right to choose by creating alternative paths: The C4 team's design

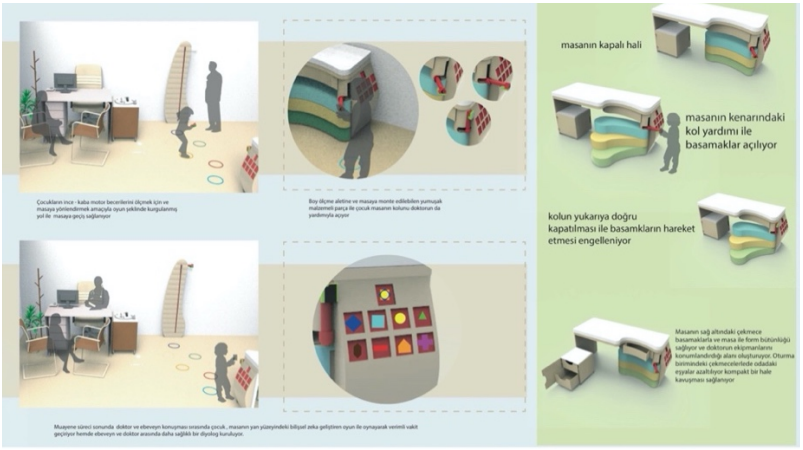
solution suggests lines that provide options for starting and ending the examination process. There are separate steps for exit and descent.



Final design of the C4 team

Gamification

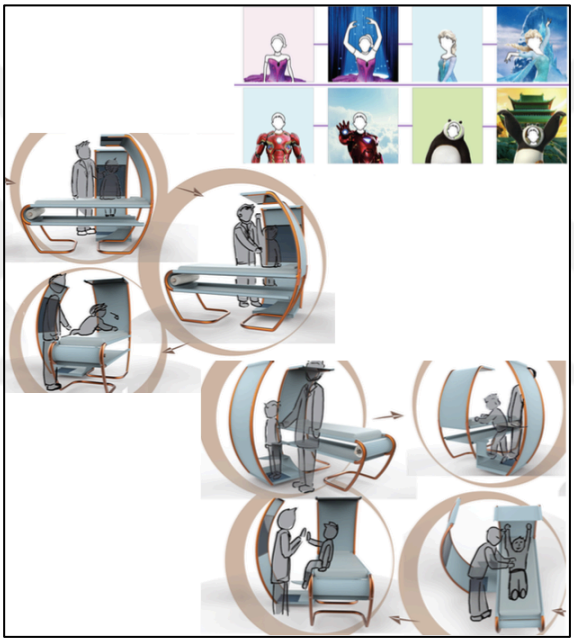
The B4 team aimed to make the entire examination room part of the examination process, and designed basic shape-completion cards to examine small motor and cognitive skills while the walking trail on the ground to control rough motor skills of the child. The child placing these cards in the appropriate places on the examination table makes the steps of the examination table open; the child's consent is encouraged, and the child becomes an active member of the examination process.



Final design of the B4 team

Personalization
Personalization is often seen to be used in conjunction with other strategies. For example, there are mixed strategies such as the choice of the child among the various virtual characters used as figurative elements, or allowing alternative sequences of parts of the ramp in the examination room.

Allowing to choose their own virtual guide: The virtual guide used by the A1 team gives the child the choice through personalization with different characters. The examination position and the position of the character overlap during the examination. For example, the characteristic position of the character in Frozen or the Kung-fu Panda is used when the child needs to lift both arms. The child identifies with the character that appears on the screen which acts as a virtual guide.



Final design of the A1 team

G. "Found Data: User-generated Online Videos for Design Insights and Idea Generation (Buluntu Veri: Fikir Gelişitiriciler Olarak Çevrimiçi Videolar)" Workhop (UTAK, 2018)

Consent form

BULUNTU VERİ: TASARIM ARAŞTIRMASINDA FİKİR GELİŞTİRİCİLER OLARAK ÇEVRİMİÇİ VİDEOLAR (UTAK, 2018)

Gönüllü Katılım Formu

Eylül 2018

Değerli Katılımcı,

Bu çalıştay, tasarım eğitiminde kullanmak üzere alternatif bir keşifsel tasarım araştırması yöntemi geliştirmek amacıyla yapılan lisansüstü bir araştırmanın parçasıdır. Geliştirilen yöntem internet kullanıcıları tarafından oluşturulan çevrimiçi videoların seçilmesi, analizi ve yorumlanması ile canlandırma tekniklerini bir arada kullanmayı amaçlamaktadır. Çalıştay sürecinde çevrimiçi buluntu videoları analiz etme ve yorumlama, uzman eşliğinde canlandırma, alternatif tasarım fikirleri geliştirme ve ölçekli modelleme yoluyla canlandırma (opsiyonel) yöntemleri uygulanacaktır. Çalıştayda ele alınacak konu "pediatrik muayene masası ve çevresi" olarak belirlenmiştir. Çalıştayda elde edilen veriler, sözü edilen keşifsel yöntemi geliştirmek amacıyla, tezde, bilimsel yayınlarda ve sunuşlarda kullanılacaktır. Yapılan yayınlarda kimliğiniz saklı tutulacaktır.

Bu formu imzalayarak yapılacak araştırmada elde edilen verilerin bilimsel amaçlarla kullanımını onayladığınızı belirtmiş oluyorsunuz. Formu imzalamış olmanız yasal haklarınızdan vazgeçtiğiniz anlamına gelmemektedir; ilgili kişi ve kurumların yasal ve mesleki sorumlulukları devam etmektedir. Çalışmaya katılım gönüllülük esasına dayanır. Katılımınız ve katkılarınız için çok teşekkür ederiz.

Katılımcının adı soyadı	**İmza**	**Tarih**
Araştırmacının adı soyadı	**İmza**	**Tarih**

Araştırmadan sorumlu öğretim elemanları:

Anadolu Üniversitesi Mimarlık ve Tasarım Fakültesi Endüstriyel Tasarım Bölümü**,** Arş. Gör. Gizem Hediye Eren, Mobil tel: 0554 306 33 21, gheren@anadolu.edu.tr
ODTÜ Mimarlık Fakültesi Endüstri Ürünleri Tasarımı Bölümü, Yard. Doç. Dr. Fatma Korkut, korkut@metu.edu.tr

The Guideline and Toolkit of the Workshop

"BULUNTU VERİ" NEDİR?

Kullanıcı tarafından oluşturulan İçerik (User-generated Content, UGC)
"Kullanıcı tarafından üretilen içerik", kullanıcı tarafından belli bir miktarda yaratıcı çabayı yansıtan ve internet üzerinden profesyonel olarak kullanılan rutin ve uygulamalar dışında oluşturulmuş içeriktir (Ekonomik İşbirliği ve Kalkınma Örgütü, OECD, 2007).
Daha katılımcı bir internet, kullanıcıların kendilerini ifade etmesini ve içerik üretimi ve tüketiminde daha aktif bir rol üstlenmesini sağlamıştır.
Kullanıcı tarafından oluşturulan çevrimiçi videolar, günlükler, fotoğraflar, blog yazıları bu içeriğe örnek verilebilir.
* Kullanıcı tarafından oluşturulan çevrimiçi videolar: "UGC" olarak anılacaktır.

NİÇİN "BULUNTU VERİ"?

Tasarım Araştırmasında UGC'lerin kullanımı

- Tasarımcılar açısından kullanıcılarla ve kullanım bağlamıyla aşina olmak, kullanıcı ile empati kurmak açısından daha kolaydır.
- Tasarımcılar aşina olunmadıkları kullanıcı grupları için tasarım yaparken,
  - kullanıcıların engelleri veya sağlık koşulları (örn. CPli kullanıcılar),
  - riskli veya güvensiz kullanım ortamları (örneğin madenci, itfaiyeci gibi meslek grupları için tasarım),
  - uzak kültürler (Afrika pazarı için çamaşır makinesi tasarımı)
  - projeye ayrılan zaman kısıtlamaları

  gibi çeşitli sınırlamalarla karşılaşabilirler.
- Bu gibi kısıtlar tasarımcıların kullanıcılara veya kullanım ortamlarına doğrudan erişimini zorlayabilir.
- Bu çalıştay, kullanıcı tarafından oluşturulan çevrimiçi video içerikleri (UGC'ler) gibi buluntu verileri (ikincil kaynakları), canlandırma gibi yardımcı tekniklerle, yukarıda tartışılan sorun alanları için kullanılma potansiyeline sahip olduğunu savunan bir çalışmanın parçasıdır.

Fikir Geliştiriciler olarak *Buluntu Veri*

- UGC'ler buluntu veridir. Yani, doğrudan tasarımcıya hizmet etmesi için çekilmemiştir. Tasarımcı bu veriyi kendisi için önemli olanı içgörü çıkarmak için kullanır. Konunun içine çeker, aşinalık sağlar, davranış, iletişim gibi süreç içine yayılmış bir görsel veri kaynağı olarak kullanılabilir.
- UGC'ler bu içgörüleri sağlamakla birlikte, test edilmesini ve teyidini zorunlu kılmaktadır. Bu sebeple literatür kaynakları gibi birincil kaynaklar ve *konunun uzmanı* gibi çeşitli birden fazla modalite ile teyit edilmesi gerekir. Konunun uzmanı, konu hakkında tecrübesi veya eğitimi olan birisi (doktor, servis yetkilisi gibi), kullanıcının kendisi, bir yakını ya da savunucu grupları gibi kişiler olabilir.
- UGC'ler konuya hızlı bir giriş ve belli bir zamana yayılmış görsel bir bilgi sunarken, *canlandırma* tasarımcı tarafından konuya bedensel-uzamsal (kinestetik) bir hakimiyet ve pratiğin prosedürleri hakkında (örneğin çocuk muayenesinde rol alan tüm paydaşların edimleri ve rolleri gibi konular) tecrübe sağlama amaçlı yapılırken, uzman eşliğinde daha derinlemesine detaylar ve çıkarımlar sağlayabilir.

UGC+Canlandırma

- UGC'ler ve takibinde canlandırma (uzman eşliğinde) teknikleri bir tasarım araştırması yöntemi olarak kullanıldığında, çeşitli keşifsel özellikleriyle birbirlerini tamamlarlar.
- Videolar betimleyici tarafı oluşturur: insanlar ve bağlamlarla ilgili dolaylı bir deneyim kaynağıdır;
- Canlandırma, somut ve doğrudan bir deneyim kaynağı olduğundan deneyimsel tarafı oluşturur.
- Kullanıcının deneyimlerini betimleyici temsiller ile sağlayan araçlar ve somutlaştırılmış (embodied) deneyimler sağlayan teknikleri birbirinin tamamlayıcısı olarak birleştirmek, aşina olunmayan problem alanlarındaki tasarım araştırması için önemli bir potansiyele sahiptir.
- Bu yaklaşım, kullanıcılar ile doğrudan temasın zor olduğu durumlarda önemli bir rol üstlenebilir.
- UGC'ler ve canlandırma, tasarım fikirleri üretmek için keşifsel tasarım araştırması yürütmenin alternatif bir yolu olarak kullanılabilir.

* Bu çalıştayda sizinle "pediatrik muayene masası" tasarımı konusunu ele alacağız. Youtube UGC'ler için temel kaynağımız olacak. Konu ile ilgili 200ün üzerinde videoya ulaştık, 80 tanesini bir önceki çalışmada kullandık, bu çalışma için de süre kısıtımızı göz önüne alarak 20 tanesini seçtik. Seçerken şu kriterleri göz önünde bulundurduk:

Tasarım Araştırmasında UGC kullanımında dikkat edilecek teknik ve etik konular

Öncelikle, Kullanıcı tarafından oluşturulan çevrimiçi videolar bir araştırma materyali olarak bazı kriterleri yerine getirmelidirler:

- Araştırma için kullanılabilecek bir video, bir olayın özünü yakalamalı, izleyiciye orada olma duygusunu sağlamalı, olayların anlamını anlaşılır kılmak ve videoyu kaydeden kişinin izlenimini netleştirmek için olayların akış sırasını göstermelidir.

Ayrıca, mevcut videoların araştırma için yeniden kullanımı

- videonun kaydedilme amacını, arka planını, bağlamını ve bunların videoya nasıl yansıtıldığını anlamayı,
- kişisel gizlilik konusu için etik konuları gözetmeyi ve gerekirse video sahibi kimliğini anonim tutmayı,
- videodaki bilginin güvenilirliği için içeriğinin doğruluğunun ve içeriği oluşturanın uzmanlığının teyidini,
- belgeleme ve koruma için arşivlemeyi
- dar gelirliler veya yaşlılar gibi bu platformlarda temsiliyeti az olan kullanıcı gruplarının da varlığının farkındalığını gerektirir.

Çalıştay süreci

Ekiplerin tasarım problemlerini çerçevelemek için izleyecekleri süreçte kendilerine sunulan konu ile ilgili bir literatür derlemesinden faydalanarak, çocukların muayene süreçleri ile ilgili çalıştay yürütücü tarafından önerilen çeşitli çevrimiçi videolara başvuracak, aynı zamanda da bir hekiminin uzmanlığından faydalanacaklardır. Bunun için izlenecek süreç şöyledir:

1. Literatür Taraması

Literatür derlemesinde yer alan konu başlıkları şu şekildedir:

1. Pediatri nedir? Muayene, tanı ve tedavinin farkları nelerdir? Pediatrik muayene nedir, ne gibi süreçlerden oluşur? Pediatrik muayene öncesi, sırası ve sonrasında hastanedeki tıbbi

personelin ve ebeveynin sorumlulukları nelerdir? Pediatrik muayene odası donanım ve ekipmanları nelerdir? (muayene sürecini bütüncül olarak düşünmek tıbbi personelin adını biliyor olmak, hastanenin aileyi bilgilendirmesi, bekleme ortamı)
2. Çocukluk dönemlerine dair antropometrik ölçüler (ağırlık, boy), fiziksel, bilişsel, sosyal ve duygusal gelişim, yaşlara göre oyunda görülen gelişim
3. Çocuk hastalıkları ve sağlığı tarihsel süreç – gelişmeler, yasal mevzuatlar (örn: Dünya Sağlık Örgütü: Çocuk sağlığı ve refahı), güvenlik standartları
4. Mevcut muayene odaları örnekleri (MRI, PET, CAT görüntüleme odaları da örneklere dahil olabilir).
5. Çocuklar için tasarlanmış dünyadan iyi fiziksel çevre örnekleri (okullar, parklar, vb.)

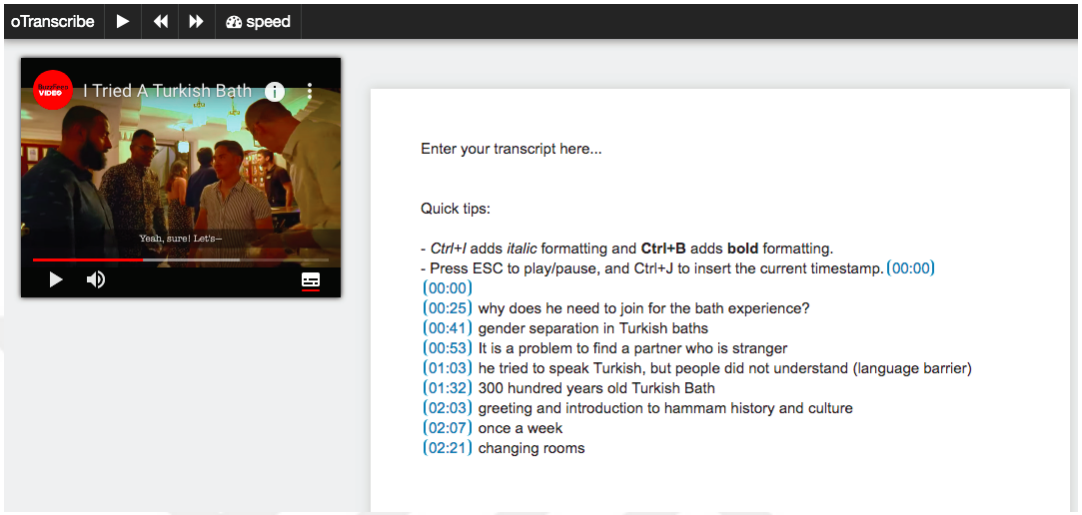
2. Çevrimiçi videoların analizi ve yorumlanması:
Katılımcılar, çalıştay yürütücüsü tarafından oluşturulmuş bir video havuzuna dilerlerse kendi buldukları videoları da ekleyerek oluşturulan Youtube kanalından faydalanacaklardır. Katılımcılara çeşitli video analizi posterleri hazırlama yöntemleri sunulacaktır. Bunlar arasında benzerlikleri, farklılıkları karşılaştırma, video alıntısı (video quotation), hikaye panosu hazırlama gibi çeşitli yöntemler bulunmaktadır. Önerilen video analizi yöntemlerinden biri / birkaçı ya da kendi istedikleri bir yöntemle videolardan muayene sürecine dair tasarım açısından dikkat edilmesi gereken konuları belirleyeceklerdir.

3. Tespitlerin uzman eşliğinde canlandırma ve mülakat yollarıyla tartışılması (ebeveyn ve hekim görüşmeleri
Bu süreçte katılımcılar video analizlerini konuk hekim ile paylaşacak ve videolardan belirlenen tespitleri soru-cevap eşliğinde değerlendireceklerdir, hekimleri belirlenen durumlarla ilişkili deneyimlerini bazı noktalarda canlandırarak aktaracaktır.

Videolar için oynatma listesi linki:
https://www.youtube.com/playlist?list=PLtlHshFhy1Px4WzyVraP_4Bot7pggKgp4

H. Most Common Video Analysis Tools

Otranscribe: basic (online) free web app for transcribing recorded interviews.



https://otranscribe.com/

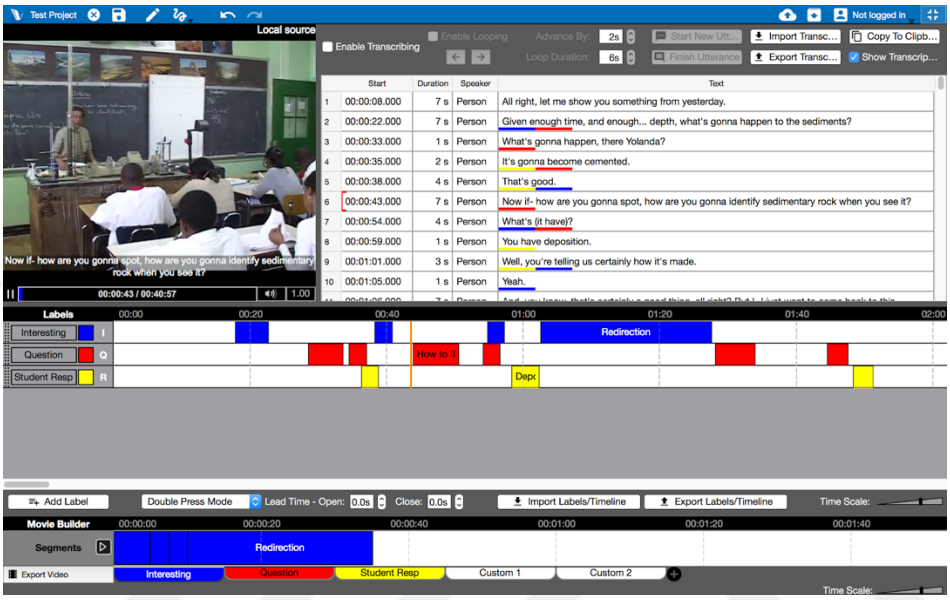
Inqscribe: basic (downloadable software) digital media transcription software
Insert timecodes anywhere in your transcript, then click on a timecode to jump to that point in the movie.



https://www.inqscribe.com/

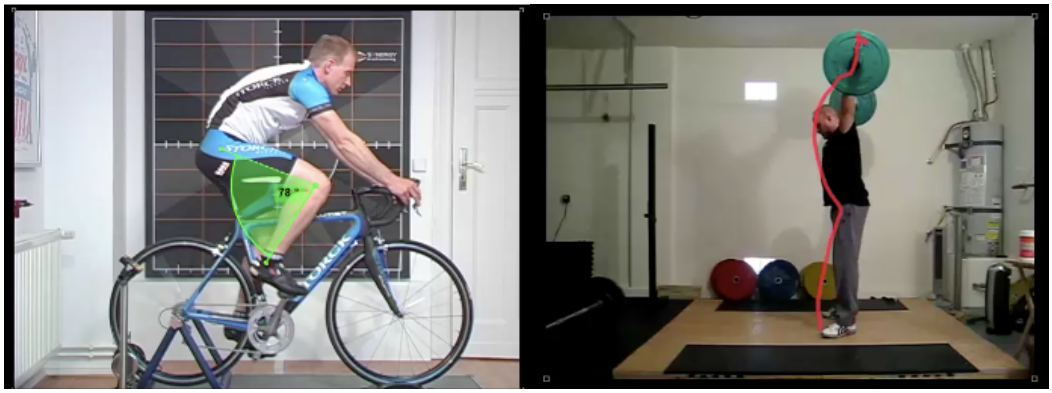
Nvivo: (not a free resource) transcribing recorded interviews, videos, etc.

V-Note is Video Analysis Software
V-Note Video Analysis Software helps you get more from your videos through analysis and easy collaboration. V-Note is used by researchers, students, athletes, coaches, doctors, and consumer researchers around the world.

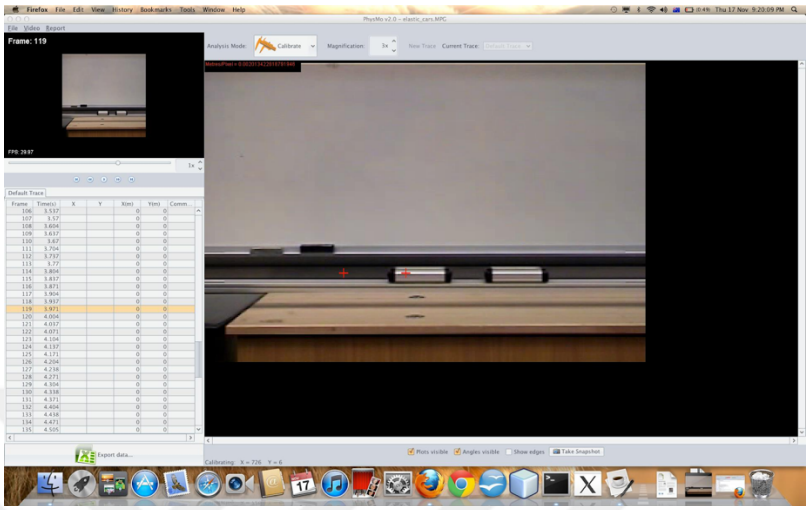


https://v-note.org/

Kinovea: Kinovea is a video player for sport analysis
Kinovea is organized around four core missions related to studying human motion: capture, observation, annotation and measurement.

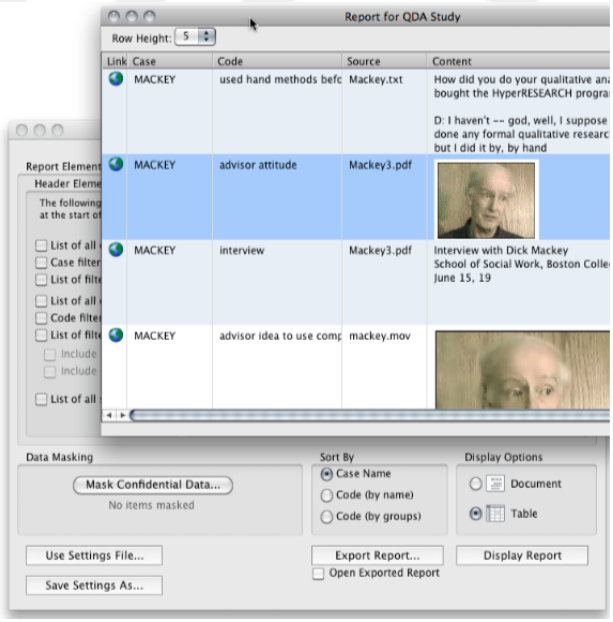

https://www.kinovea.org

PysMo: open-source (free) video motion analysis program, primarily designed as a learning tool for teachers and students of high school physics. PhysMo interactively demonstrates the fundamental principles of motion.



http://physmo.sourceforge.net/

Hypertranscribe: a transcription tool that to transcribe audio or video data from its source to a text file.



http://www.researchware.com/

I. The UGVARP Guide

The guide of the UGVARP method is 40 pages together with the toolkit samples, templates and guidelines. Its pages are organized as a A5 size booklet, downloadable pdf, and can be printed out. The guidelines of the method involves the directives regarding the activities to be take part for each phase of the method.

THE UGVARP GUIDE

A GUIDE
FOR USING
USER-GENERATED ONLINE VIDEOS
AND
ROLE-PLAYING
FOR EXPLORATORY PHASE OF DESIGN PROCESS

For online version of the guide scan here:
https://erengzm.wixsite.com/ugvarp

ABOUT THIS GUIDE

This guide provides the information of a method that utilizes online user-generated video content (UGV) analysis and role-playing as complimentary and consecutive techniques in the exploratory phase of the design process. It aims to be used for repurposing UGVs as exploratory design research medium and reflect on them through role-playing. It provides alternative ways of utilizing UGVs and role-playing in a reliable and structured way. UGV platforms like YouTube; provide a fruitful environment for research and learning for the designers who have limited professional experience and resources. Role-playing provides subjective embodied experiences that may help to sense and feel.

WHAT IS UGV?

User-generated content (UGC) is the content made publicly available by the user over the internet, which reflects a certain amount of creative effort, and is created outside of professional routines and practices.

Personal diaries, professional portfolios, travel journals are some examples of UGCs.

UGVs are video UGCs.

WHY UGVs AMONG UGCs?

UGVs are longitudinal, has a start & end, shows actions-interactions-conversations at the same time (multimodal).

There are many free video sharing sites (Vimeo, Dailymotion, Vine, etc.) among which YouTube is the leading.

WHY IS THE UGVARP GUIDE DEVELOPED?

This guide is grounded from the pedagogic approach of the authors that considers employing UGVs and role-playing in the exploratory phase of the design process may provide accessible and immersive resources when the design students' direct access to users or use environments is difficult.
These various conditions might be users' health conditions or disabilities, risky or unsafe use environments, remote areas or cultures or time constraints.
Despite a number of ethical and scientific concerns, user-generated online video content has been becoming noticeable teaching, learning and research medium for various professions and practices which are convenient, accessible and in a massive quantity.
Utilizing this medium to empower design students and tutors for exploring unfamiliar or challenging problem domains formed the basis of the development of this guide which tuned the qualities of the medium to the needs of the stakeholders involved in the exploratory phase of the design process.

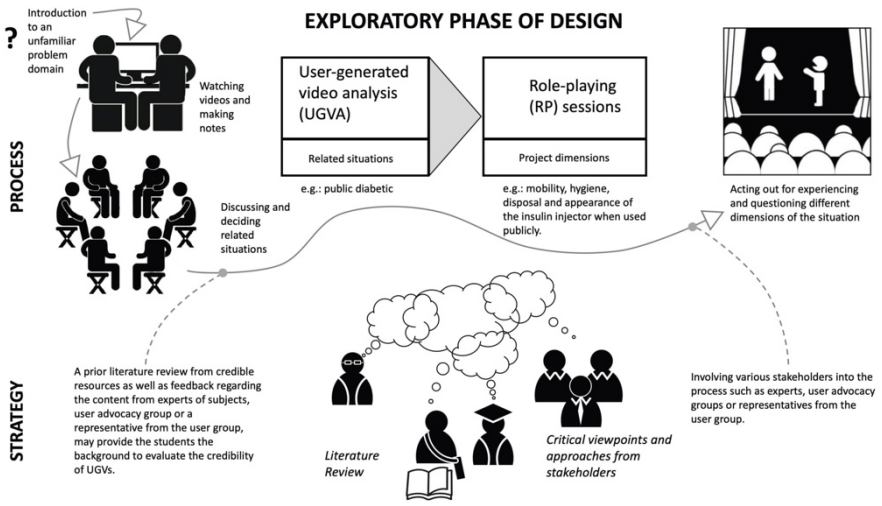
HOW DOES THE UGVARP GUIDE WORK?

Utilizing UGVs together with role-playing requires bringing together three actors: students, tutors and experts.

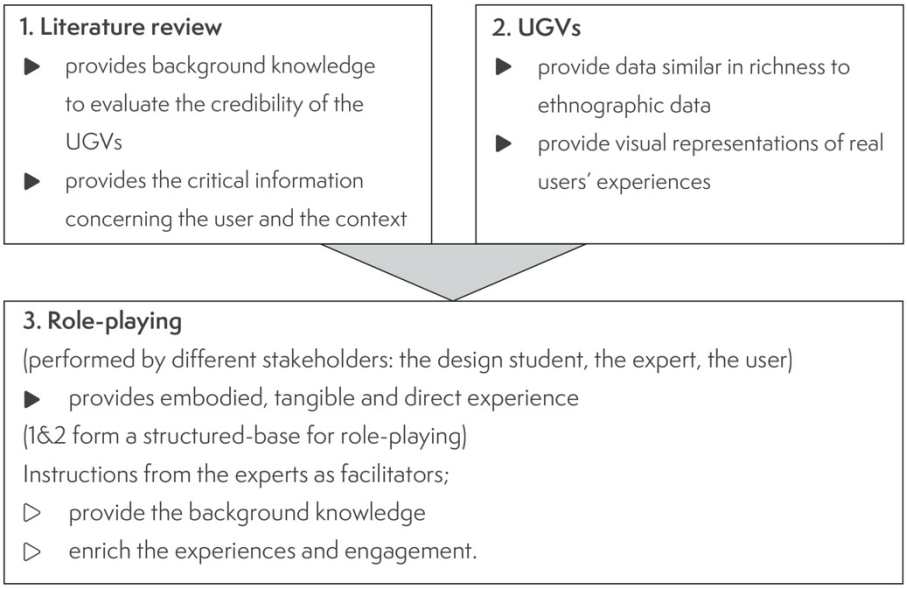
The expert is the key actor, a live support agent, who can provide help for interpreting the specific literature, discussing and providing feedback about the credibility of the UGVs, sorting out the priorities, and may facilitate personalized and first-hand experience through role-playing.

Throughout the guide, the role of the expert and what should be expected from him/her will be explained.

HOW DOES THE UGVARP GUIDE WORK?



HOW DOES THE UGVARP GUIDE WORK?



WHAT SHOULD I EXPECT FROM UGVS?

UGVs themselves are not "pure data" or primary source, but a medium for discussions, triggering questions regarding problem domain and getting familiar with it.

It is recommended to make searches in diverse languages so as to reach videos from diverse geographies and cultures.

They can be used as a medium for teamwork or group discussions.

The involvement of an expert on the topic would be beneficial in terms of enriching these discussions with his/her experience and knowledge.

PHASES AND THE ACTIVITIES OF THE UGVARP METHOD

PHASES	ACTIVITIES
UGVA (User-generated Video Analysis)	
PHASE 1	Browsing and selecting videos
STEP 1	Conducting a video search by utilizing the video sharing platform YouTube
STEP 2	Forming a playlist or video pool of videos
PHASE 2	Pre-screening (oTranscribe and google form are the tools)
PHASE 3	In-depth analysis (UGVA samples and templates are the tools)
PHASE 4	UGV Analysis discussion sessions
RP (Role-playing)	
PHASE 5	Partial role-playing for experiencing a section of the practice
PHASE 6	In-depth analysis (RP samples and templates are the tools)
PS (Puppet Scenarios)	
PHASE 7	Writing the scenarios, preparing the stage and dummies
PHASE 8	Acting out with puppets
PHASE 9	Reporting the outcomes

UGVA
User-generated Video Analysis

Scientific and Ethical Considerations in Using UGVs

PHASE 1: Browsing and selecting videos

STEP 1: Conducting a video search by utilizing the video sharing platform YouTube
STEP 2: Forming a playlist or video pool of videos

PHASE 2: Prescreening

PHASE 3: In-depth analysis

PHASE 4: UGV Analysis discussion sessions

Scientific and Ethical Considerations in Using UGVs

All of the UGVs might not be suitable to be utilized as research material and be approached cautiously. UGVs need to satisfy the following criteria as research:. material:

Scientific issues

- capturing the essence of an event
- providing the viewer with the feeling of being there
- making the events and actions understandable
- showing the sequence of events
- clarifying the intent of the person recording the video.

Ethical issues

- respecting privacy
- confirming the accuracy of the content for the reliability
- confirming the expertise of the content creator from reliable sources
- taking into consideration the fact that there are groups of users such as low-income groups or elderly who have little representation on these platforms.

PHASE 1
Browsing and selecting videos



STEP 1
Conducting a video search by utilizing the video sharing

Before browsing and selecting videos it is a good start to direct the students to determine 3-5 keywords from their previous study, such as from a literature review regarding the project topic. This helps to frame their search.

- **Identifying the keywords for video search**

  Various techniques can be used for identifying keywords
  - ▷ brainstorming
  - ▷ mind-mapping

- **Browsing YouTube with these keywords**

  The keywords can be diversified by considering the video tags

* Plug-ins you may need

Tags for Youtube
Screenshot YouTube

PHASE 1
Browsing and selecting videos

STEP 2
Forming a playlist or video pool of videos

Form a playlist and share the link with the students, so that everyone who has the link can add videos to the playlist

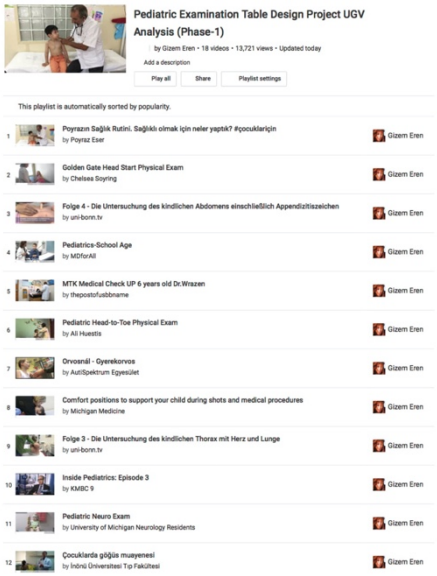
You can find the instructions on how to form and share a playlist in Youtube ▽

https://drive.google.com/file/d/1Ib5GoERQT-panSj-mR5nmjif2jVTHfdbc/view

Here is an example from an educational project "designing pediatric examination table and its environment" ▷

You can reach to the Youtube Playlist ▽

https://www.youtube.com/playlist?list=PLtlHshF-hy1Px4WzyVraP_4-Bot7pggKgp4&jct=Nx83wYDEDI95h5Tf3lOFm_SDrhVJWA

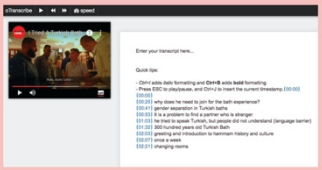


PHASE 2
Pre-screening

The pre-screening notes are based on the observations and initial insights.

Share an **online video analysis tool** with the students to take quick prescreening observation notes
https://otranscribe.com/ is recommended

Then,
Share a **google form** with the students of the project to take initial insights notes.
* The number of videos can be more than one according to the project duration or the design problem, therefore you may increase or decrease the numer of the videos in the form.



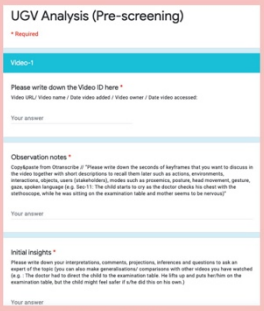
OTranscribe

For observation notes ask them to:

"Please write down the seconds of keyframes that you want to discuss in the video together with short descriptions to recall them later such as actions, environments, interactions, objects, users (stakeholders), modes such as proxemics, posture, head movement, gesture, gaze, spoken language (e.g. Sec-11: The child starts to cry as the doctor checks his chest with the stethoscope, while he was sitting on the examination table and mother seems to be nervous)"

For initial insights ask them to:

"Please write down your interpretations, comments, projections, inferences and questions to ask an expert of the topic (you can also make generalisations/ comparisons with other videos you have watched (e.g.: The doctor had to direct the child to the examination table. He lifts up and puts her/him on the examination table, but the child might feel safer if s/he did this on his own.)"



Google form

PHASE 3
In-depth analysis

UGVA MODES

Video quotation
"quoting" a video section where a design contribution would make sense by taking screenshots from the video and making a video line with specific keyframes.

Storyboarding the video content
By taking screenshots from the video, organizing them into a storyboard with sequential keyframes, and writing down the observations by indicating the time it took place in the video, the video content can be presented in the form of a storyboard.

Thematic collage making
Bringing similar or related images from separate videos together is an analysis mode which may help the designer to explore variations or diversity concerning a specific issue such as body posture while carrying out a specific task.

Quantifying the video content
The video content can be used to measure the frequency of activities and sub-activities to understand how many times these actions were performed and how effective a particular action was in the process.

PHASE 3
In-depth analysis

UGVA TEMPLATES & SAMPLES

Video quotation

Storyboarding the video content

Thematic collage making

Quantifying the video content

The templates provided in the link below are in PDF format. These templates can be fiilled on computer with programs such as Adobe Photoshop or Illustrator. The templates prove a limited area with limited information such as "6 frames for storyboarding the video content template". Each line has 3 visuals which are going to be screenshots from the UGVs. This aimed at directing the students to think and decide carefully which frame to choose, and not to put a random screenshot. They are expected to write down their observation notes and insights such as their personal or team interpretations. You may also provide the students UGVA samples that are compiled from different design education projects.

You can dowload the templates and samples from here:
https://drive.google.com/drive/folders/1ZMlDudyH-pJJlpq74S4Sj5AAQpTdtSJ3F

VIDEO QUOTATION
(SAMPLE)

LABELS
(TEXT & PICTOGRAMS)

CP walking exercise:
Partner support



OBSERVATIONS

the strip used is in contact with the waist of child to a single point	the strip provide a balanced body posture for a proper exercise	the strip is grasped by the child and the partner both tightly

INSIGHTS

The partner provides psychological or physical support to the child in most parts of the walking exercise process.

The strip material that provides the physical support to the child needs to be reconsidered regarding the and body contact points.

HIGHLIGHTS

- hands of the partner in contact with
- pressure points on the body
- hands of the child in contact with

Project title: Walking support for CP

The designer / Design Team: Elif Kurt

Date video accessed: 17.10.2017

Video-ID
Video URL: https://www.youtube.com/watch?v=-CYwhLuh4XGo&t=106s
Video name: Kaley learns to walk despite CP
Date added: 15 Jan 2013
Video owner: Abilitycampinc

VIDEO QUOTATION
(TEMPLATE)

LABELS
(TEXT & PICTOGRAMS)

KEYFRAME 1	KEYFRAME 2	KEYFRAME 2

OBSERVATIONS

INSIGHTS

HIGHLIGHTS

- _____
- _____
- _____

Project title: _____

The designer / Design Team: _____

Date video accessed: _____

Video-ID
Video URL: _____
Video name: _____
Date added: _____
Video owner: _____

STORYBOARDING THE VIDEO CONTENT
(SAMPLE)

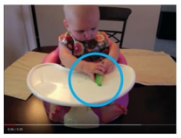
LABELS
(TEXT & PICTOGRAMS)

INSIGHTS

BLW (baby-led weaning) starting with soft foods









The shell should not be completely peeled off so that the baby can easily grasp the avacado.
Avacado's naked parts make it difficult for the baby to grasp it. This requires an intervention from a caretaker/ parent/ etc..

OBSERVATIONS

first meeting with avacado

grabbing the avacado

putting the avacado into the mouth

BLW the rleationship btw food, surface & hand/s









The peeled avacado slides, since it is soft and the surface is slippery. Therefore, the baby is unble to grasp it properly.

OBSERVATIONS

an intervention: the father helps the baby to grasp the peeled off avacado

peeling the shell of the vacado completely

dispersion of the smashed avacado on the surface

HIGHLIGHTS

- helping the baby to feed herself (helping hand)
- food-surface relationship

Project title: Baby feeding set

The designer / Design Team: Melis Konez

Date video accessed: 21.02.2018

Video-ID
Video URL: https://www.youtube.com/watch?v=r-zz0aRoAlk
Video name: Baby-led Weaning Day 1- Avocado
Date added: 119 June 2013
Video owner: Abilitycampinc

STORYBOARDING THE VIDEO CONTENT
(TEMPLATE)

LABELS
(TEXT & PICTOGRAMS)

INSIGHTS

KEYFRAME 1

KEYFRAME 2

KEYFRAME 3

OBSERVATIONS

KEYFRAME 4

KEYFRAME 5

KEYFRAME 6

OBSERVATIONS

HIGHLIGHTS

- _____
- _____
- _____

Project title: _____

The designer / Design Team: _____

Date video accessed: _____

Video-ID
Video URL: _____
Video name: _____
Date added: _____
Video owner: _____

THEMATIC COLLAGE MAKING
(SAMPLE)

LABELS
(TEXT & PICTOGRAMS)

INSIGHTS

hose handling method-1:
Buddy system







The firemen uses different methods to control the hose during they are on a fire zone.
These methods require different body postures in which the joints of the ankles be able to move comfortably.

OBSERVATIONS

helping each other while directing the hose tip	team coordination	directing the hose

hose handling method-2:
individual







Long-necked boots are more advantageous than a short-necked shoe to prevent water from entering into the the shoes, because as the fireman walks he the joints of ankles go through a dramatic tension-extension movements.

OBSERVATIONS

straighten the hose wit the calf by applying pressure	walking forward with the hose	pulling the hose

HIGHLIGHTS

- actions-body-surface-shoes realtionship
- tension-extension areas on the foot

Project title: oots for firemen

The designer / Design Team: iray Hamarat

Date video accessed: 14.04.2018

Video-1 ID
Video URL: https://www.youtube.com/watch?v=oDdtqZXwnks&t=1170s
Video name: FDNY SOC UNIT'S POST 911
Date added: 15 Nov 2015
Video owner: TomsRiver FireAcademy

Video-2 ID
Video URL: https://www.youtube.com/watch?v=_LMkYFg5vlw
Video name: Itfaiye Erlerinden Yangın Söndürme ve Yaralı Kurtarma Tatbikatı
Date added: 12 Dec 2010
Video owner: lenayul

THEMATIC COLLAGE MAKING
(TEMPLATE)

LABELS
(TEXT & PICTOGRAMS)

INSIGHTS

	KEYFRAME 1	KEYFRAME 2	KEYFRAME 3	
OBSERVATIONS				
	KEYFRAME 4	KEYFRAME 5	KEYFRAME 6	
OBSERVATIONS				

HIGHLIGHTS

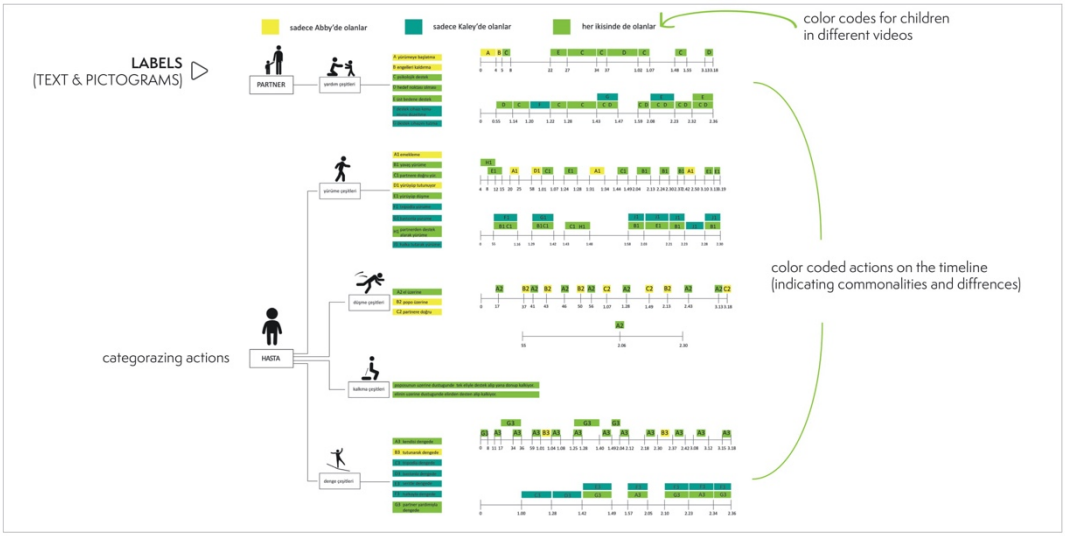
Project title: _____

The designer / Design Team: _____

Date video accessed: _____

Video-ID
Video URL: _____
Video name: _____
Date added: _____
Video owner: _____

QUANTIFYING THE VIDEO CONTENT
(SAMPLE)



HIGHLIGHTS
- only Abby
- only Kaley
- both

Project title: Walking support for CP

The designer / Design Team: Elif Kurt

Date video accessed: 17.10.2017

Video-ID
Video URL: https://www.youtube.com/watch?v=-CYwhLuh4XGo&t=106s
Video name: Kaley learns to walk despite CP
Date added: 15 Jan 2013
Video owner: Abilitycampinc

PHASE 4
UGV Analysis discussion sessions

The presentations of video analysis posters need to be held as a table or wall critics for a discussion, making speculations, it is recommended to avoid to claim exact judgments, instead, an atmosphere of negotiation on how to handle the problematic situations would be better.

At this step, the students are expected to note the problems that they observed to reframe their design problems.

Through these videos, they are needed to be encouraged to understand the relationship models and form image schemata regarding the practice under question.

They observe actions, interactions between stakeholders, behaviors, gestures, and the context: the atmosphere, the items, and their places.

The experts of the practice can either be directly involved in the video analysis process and make clarifications and remarks concerning the participants' questions and comments (for this, only PHASE 2 would be enough).

or

The video analysis posters prepared by the students can serve to document and visualize the findings and insights from the UGVs in detail to later facilitate a thorough discussion with the experts and the tutors (PHASE 3 included)

RP
Role-playing

Scientific and Ethical Considerations in Using RP

PHASE 5: Role-playing sessions
Partial role-playing for experiencing a section of the practice

PHASE 6: In-depth analysis

Scientific and Ethical Considerations in Using RP

Role-playing in design helps for exploring current practices, envisioning and evaluating future products and scenarios by adding a tangible and embodied dimension to the design process.

Role-playing needs to be used in combination with other methods or with prior user research studies or resources for several reasons like

- comprehending diverse perspectives
- acting with prior considerations in mind
- preventing designers' overwhelming sense of becoming someone else.

Employing role-playing techniques as a supplementary technique with other materials and methods

- enables developing a clear understanding of what these performances may provide

and

- where they may fall short in exploring the problem domain.

PHASE 5
Role-playing sessions

Partial role-playing for experiencing a section of the practice

Role-playing adds embodied experience dimension to the design process.

These performances can either be self-directed or expert-driven such as being facilitated by an expert. The expert may act out him/herself or help the students to act out scenario fragments of the practice that are derived from or triggered by the questions that students are curious about.

RP can be used to perform partially e.g. to experience a section of inferences from videos, rather than to encompass an entire scenario.

For example;

- How and how long should a firefighter be prepared before leaving the station in an emergency call?
- What should be the volumes of food containers to meet the daily diet of a 3-month-old baby, how should they be prepared and stored?

While searching for answers to those questions the performances can be carried out by the students on their own or accompanied by an expert.

After the video analysis, students can list the questions that those videos evoked before going to the expert interview.

In this way, instead of the whole of practice, it is ensured that the design student concentrates on the subjects that are of professional interest.

Observations and inferences from the videos will be effective in the intersecting of two areas of expertise during the role-playing session.

Different media and tools can be used depending on the context when the scenario fragments are performed: video camera, camera, notepad...

PHASE 6
In-depth analysis

RP MODES

Storyboarding the role-playing content
Making a storyboard from sequential video frames

Modelling and employing rrops
Making a rough documentation of important issues are done by taking photos while employing props, documenting body motions with marks on props such as the cloth worn, supporting and verifying embodied experience with literature through the employed props (e.g. pressures and flexion-tensions areas on the foot, cup measures to feed a baby)

Identifying and specifying
Performing by considering a prior knowledge regarding the topic, for documenting observations, externalizing the knowledge from literature as props: measures and volumes of baby food

RP
TEMPLATES & SAMPLES

Storyboarding the role-playing process

Modelling and employing props

Identifying and specifying

The templates provided in the link below are in PDF format. These templates can be fiilled on computer with programs such as Adobe Photoshop or Illustrator. The templates prove a limited area with limited information such as "6 frames for storyboarding the role-playing process template". Each line has 3 visuals which are going to be screenshots / photos taken in the RP sessions. This aimed at directing the students to think and decide carefully which frame to choose, and not to put a random screenshot. They are expected to write down their observation notes and insights such as their personal or team interpretations. You may also provide the students RP samples that are compiled from different design education projects.

You can dowload the templates and samples from here:
https://drive.google.com/file/d/1yKjp4PA5XzVYNMEarM-wJ26BJCxKWY_7c/view

STORYBOARDING THE ROLE-PLAYING PROCESS (THE EXPERT ACTS OUT) (SAMPLE)

LABELS (TEXT & PICTOGRAMS)				INSIGHTS
walking therapy 				"weak floor perceptions of people with CP"
OBSERVATIONS ▷	heel kick exercise	balance-weight transfer exercise	lack of floor-ground perception	
walking therapy 				Problems encountered in walking exercises: walking patterns and difficulties due to weak ground perception
OBSERVATIONS ▷	apparatus used for ground perception in balance exercises	does not know how much distance to the ground	can't predict when to set foot on the ground	

HIGHLIGHTS
- the distance to the ground
- apparatus

Project title: Walking support for CP

The designer / Design Team: Şansın Tütengil

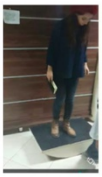
Date video recorded: 21.10.2017

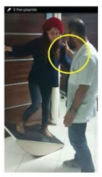
STORYBOARDING THE ROLE-PLAYING PROCESS (THE EXPERT FACILITATES) (SAMPLE)

LABELS (TEXT & PICTOGRAMS)

Balance exercise









INSIGHTS

3 basic balance exercises:
Oscillation
Right-to-left weight transfer
Forward-backward weight transfer

OBSERVATIONS

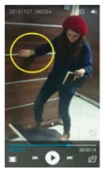
exercise start feet open, weight transfer from left to the right, then vice-versa

getting on the product, external support, and af eeling of insecurity

danger of falling down







How can ground perception be reated?
Can be provided with a walking apparatus?
How can I explain when to put the foot on the floor?

OBSERVATIONS

securing position with support for ultimate stability

balance in side posture, experience of weight transfer when taking a step

efforts to maintain balance using the arms against the wall during weight transfer

HIGHLIGHTS

actions providing support for balance

Project title: Walking support for CP

The designer / Design Team: Şansın Tütengil

Date video recorded: 21.10.2017

MODELLING AND EMPLOYING PROPS (CAPTURING JUST_IN_TIME / MOTIONLESS STILLS) (SAMPLE)

LABELS (TEXT & PICTOGRAMS)

Feeding chair









INSIGHTS

Food remaining on the lid of the food container may cause contamination.

OBSERVATIONS

serving the baby food

contamination on the lid of the cup

contamination on the cloth

Serving the food with cups and spoon









Sometimes both hands of the user can be full.
The spoon may need cleaning for hygene.

OBSERVATIONS

attracting the baby's attention

using the spoon for serving the food

cleaning and storing the spoon

HIGHLIGHTS

possible unpleasant situations

Project title: Baby feeding set

The designer / Design Team: Fatmanur Önal

Date photos taken: 18.02.2018

MODELLING AND EMPLOYING PROPS (MARKING THE UNSPECIFIED PROPS) (SAMPLE)

LABELS (TEXT & PICTOGRAMS)

tension-compression pressure areas on the foot



OBSERVATIONS



tension-compression areas on the foot

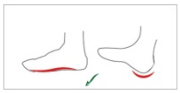


tension-compression areas on the foot

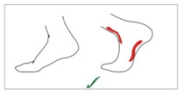


pressure areas on the foot

TECHNICAL KNOWLEDGE



Posterior tibial tendon foot merges with the middle bone, extends to the wrist



The region of the foot arch must be supported.



Stretching of the Achilles tendon may cause lumbar pain

TECHNICAL KNOWLEDGE



To avoid damage ankle should be supported



Most of the body weight is concentrated on the heel area.



The wrist may be injured in the reverse movements and may be sprained

INSIGHTS

Tension-compression areas marked pressure areas marked on the cloth work on the body during role-playing

the cloth is worn onto a plaster foot model

verifying the embodied experience from the literature:

referring to the orthopaedic literature concerning pressure and flexion-tension areas on the foot

The red areas are the important areas to focus on

HIGHLIGHTS

- tension-compression
- pressure

Project title: Boots for miners

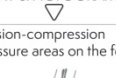
The designer / Design Team: Seda Yetkiner

Date photos taken: 16.04.2018

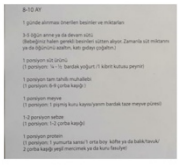
IDENTIFYING AND SPECIFYING (DOCUMENTING THE OUTPUTS) (SAMPLE)

LABELS (TEXT & PICTOGRAMS)

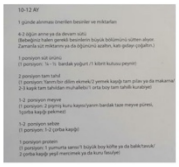
measures & volumes



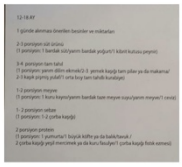
RETRIEVING THE DATA FROM LITARATURE



daily food for babies 8-10 months old



daily food for babies 10-12 months old



daily food for babies 12-18 months old

OBSERVATIONS



daily food for babies 8-10 months old



daily food for babies 10-12 months old



daily food for babies 12-18 months old

INSIGHTS

the measures of the required food and amount to feed a baby for a day and the volumes of the containers,
comparing the amounts of meal as the baby grows up

(8-10, 10-12, 12-18 months respectively)

HIGHLIGHTS
(print out & handwiritten notes)

Project title: Baby feeding set

The designer / Design Team: Hilal Özoğul

Date photos taken: 26.02.2018

PS
Puppet Scenarios

An alternative genertive phase peer-review session

PHASE 7: Writing the scenarios,
preparing the stage and dummies

PHASE 8: Acting out with puppets

PHASE 9: Reporting the outcomes

Role-playing can also be employed for generating ideas.

Since the users are inaccessible due to several reasons, it can be employed through a peer-review session.

PS are one of the methods used for role-playing. Its qualities enable to observe the complex interactions and relationship between stakeholders within the context.

There is little focus on precise interaction with the product; rather, the participants work with overall social relations and general functions.

PS can be employed for thinking the ways of "how the design concept meets the predefined qualities". The students build their scaled dummy human models and environments by considering several standards, put necessary stuff inside (1/10 preferably). They will write a scenario that elaborates on "how their design concept would contribute to the practice".

How does it work?
The students who are not designers of the concept to be employed for PS, can be the one protagonists in the scenario to be improvised. The remaining students can own the roles of other stakeholders of the practice that is subject of the performance, one student who is/are (one of) the designer/team, can be the observer to take notes and the other can undertake the video recording duty. They act out a routine of the practice in which their design concepts were integrated. After experiencing the context and relationships through role-playing as peer-review session, the team members come together to watch the video recorded and scan the observation notes. After that, they write a report of project directions that are based on the critics from their peers involving the features needed to be revised and then discuss these with their tutors.

*(Since this guide particularly addresses unfamiliar problem domains, it is not recommended to use PS in the exploratory phase. The problem is ambiguous in nature, but PS requires preparation and props to act out with.)

The Scenario
(Before the Puppet Scenarios Workshop Session):

The PS workshop is expected to help the students for understanding how their product concept will affect and change the experience of stakeholders of the practice. They will create a scenario for using their product concept. For the scenario ask them to:

- Describe
  the actors of this scenario, give each one a name. Provide information about: age, gender, the reasons why these particular stakeholders are together, etc.
- Give information about
  the space, behaviours, expectations, roles of stakeholders and the design idea.
- Prepare
  the props to be used.

You can dowload the template from here:
https://drive.google.com/file/d/1rF6p_1E0lgcy8g7-Clh7Oza8ogef192QZ/view

The props and tools to be employed for an exemplary educational project "pediatric examination table and its environment":

• Cardboard model of the examination room (1/10) with hardware and equipment: volumes expressing these objects, with their scale dimensions
• Examination table model (1/10)
• Dummy models made of clay and wire (1/10) - all the stakeholders in your room and their models
• Video camera
• A notebook /piece of paper to write down observation notes



The teams generate design ideas considering their project dimensions such as "personalized, informative, encouraging" that they have defined through UGVA and RP sessions.

This exercise is a process in which the teams understands how their design concept works and how it can contribute to a routine of the practice.

The performance will help them to discover the strong and weak points of their design ideas in meeting these dimensions, and how to revise and develop these ideas.

For PS session each team member will be assigned with different roles such as stakeholders of the practice, the observer or the video-recorder. Team members assigned with certain roles will join other teams for performing PS.



You can find a sample role assignment document of an exemplary case "pediatric examination table design project" here:
https://drive.google.com/file/d/1e_oT-0HFYz74DXiEnAs__-KPx-qxEqrE0/view

You can find an exemplary spreadsheet of the assigned role here:
https://docs.google.com/spreadsheets/d/1axR2t1cMSKkg6M-qQskSj4-HohRKvKiOvpRlKncHnKMk/edit#gid=0

You can find videos of an exemplary case "pediatric examination table design project" here:
https://www.youtube.com/watch?v=28Pe-vXfisQ&list=PLtlHshF-hy1PzzKkMmCc7GRCGFONqhAV6X&index=63&t=0s

The Reflection Report (After the Puppet Scenarios Workshop Session):

Each member will share their reflections regarding the workshop, the strengths and weaknesses of the product, and how they will change and improve product concepts.

An A4 report will be prepared that describes the critics they have received from other teams, and how to intervene in line with these critics. A photo from the puppet scenarios workshop will be attached along with the report.

The name of the report will be the Puppet Scenarios Workshop Reflection Report and the scenarios will be included in the report.



You can find an exemplary report from one of the student teams (After the Puppet Scenarios Workshop Session) here: https://drive.google.com/file/d/1weZDYr7FeKcOkj7haCP0qJkX-16ajmqXl/view

EXEMPLARY CASES

- **Walking support for CP**
  - download brief: https://drive.google.com/file/d/1mNPwNAJG9wc6THD0q72G5J-ksS349hyl/view
  - download samples: https://drive.google.com/file/d/1yOd2URRQmLpLqZBYEESbpE3tBpLtmF09/view
- **Baby feeding set**
  - download brief: https://drive.google.com/open?id=1wBTtkWKgL1CfWTS4FYO9vumnFj_fTlrr
  - download samples: https://drive.google.com/open?id=12W4cHAEb74gM927QE-EFEe6DM_BEI5Zb
- **Educational game design**
  - download brief: https://drive.google.com/open?id=12swA5ekiBLrblbKfEaC-FpucglFZqCyG
  - download samples: https://drive.google.com/file/d/1Mo30wt3jBy5udBTbLdlbLeXR_VG2-tWr/view
- **Urban farming**
  - download brief: https://drive.google.com/file/d/18_sjRT8B-y0YfJ0jotJD1me3G2DFpdZx/view
  - download samples: https://drive.google.com/file/d/1yiYelfyrCuPiZ5t4M62kKq8LhwPEZk-7/view

CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Eren, Gizem Hediye
Nationality: Turkish (TC)
Date and Place of Birth: 21 Jan 1986, Aydın
Phone: +90 554 306 33 21
E-mail : erengzm@gmail.com

EDUCATION

Degree	Institution	Year of Graduation
MS	Anadolu University Industrial Design	2014
BS	METU Industrial Design	2010
High School	Adnan Menderes High School, Aydın	2004

WORK EXPERIENCE

Year	Place	Enrollment
2010-Present	ESTÜ Industrial Design	Research Assistant

FOREIGN LANGUAGES

Advanced English, Basic German

PUBLICATIONS

1. Eren, G. H., Korkut, F. and Burgazlı L. (2016). Collaboration between educators and students in integrating design research with idea generation in design education projects [in Turkish]. G. Hasdoğan, N.A.G. Z. Börekçi, D. Ö. Koçyıldırım and A. Günay (Eds.), *Proceedings of 2nd UTAK National Design Research Conference* (pp. 177-187). Ankara, Turkey.

2. Eren, G. H. and Korkut, F. (2017). Combining the Digital and the Analog: Exploring Unfamiliar Problem Domains through Video Blogs and Role-Playing in Industrial Design Education. G. Pritchard, ve N. Lambert (Ed.), *Proceedings of LearnXDesign London 2017 Conference* (pp. 18-25).

Ravensbourne Publications, North Greenwich, 2017.

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