

GUIDING PRINCIPLES FOR
UNIVERSITY AND NONPROFIT ORGANIZATION COLLABORATION
IN INDUSTRIAL DESIGN EDUCATION

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IN INDUSTRIAL DESIGN EDUCATION**

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ABSTRACT

GUIDING PRINCIPLES FOR UNIVERSITY AND NONPROFIT ORGANIZATION COLLABORATION IN INDUSTRIAL DESIGN EDUCATION

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There is a transformation towards collaboration at the local and global levels to attain social innovation and sustainable development. Examples of these collaborations are university–NPO collaborations that take place in industrial design education between tutors, students, and nonprofit organizations. These initiatives aim to contribute to the education of future industrial designers and society’s welfare, simultaneously. However, as in every type of collaboration, there are many challenges associated with university–NPO collaborations in industrial design education that should be explored and addressed. This thesis aims to understand the current nature of university–NPO collaboration in the industrial design education context in a developing country, Turkey. To fulfill this aim, this study first reveals the collaborations that took place between 2010 and 2020 through a survey and then conducts semi-structured interviews with 71 participants involving all three stakeholders (i.e., tutors, students, and NPOs) in the research design. This thesis contributes to knowledge by dividing university-NPO collaborations into three according to a driver-based modeling approach based on their initiation and

motivations of the initiating stakeholder. These models are, namely, tutor-driven, NPO-driven, and student-driven collaboration models. Furthermore, it explores these collaborations comprehensively, the motivations, expectations, contributions, benefits, and challenges of each actor. This thesis offers i) seven guiding principles (protocol) and ii) eight nice-to-have key dimensions as ways to improve these collaborations which are presented as the main practical contributions of the thesis.

Keywords: Design Collaboration, University-Nonprofit Collaboration, Industrial Design Education, Design for Nonprofit Organizations, Collaboration Models

ÖZ

ENDÜSTRİYEL TASARIM EĞİTİMİNDE ÜNİVERSİTE VE KÂR AMACI GÜTMİYEN KURULUŞ İŞ BİRLİĞİ İÇİN REHBER İLKELER

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Dünya, belirli bir disiplinin veya kurumun uzmanlığıyla sınırlandırılmayacak kadar radikal çözümler gerektiren, küresel sosyal sorunların karmaşıklığının farkına vardı. Bu nedenle ve sürdürülebilir kalkınma ve sosyal inovasyona ulaşmak amacıyla yerel ve küresel düzeyde işbirliğine doğru bir dönüşüm yaşanıyor. Bu işbirliklerine örnek olarak endüstriyel tasarım eğitiminde eğitmenler, öğrenciler ve kâr amacı gütmeyen kuruluşlar (KAGK) arasında gerçekleşen üniversite–KAGK işbirlikleri verilebilir. Bu girişimler, geleceğin endüstriyel tasarımcılarının eğitimine ve toplumun refahına aynı anda katkıda bulunmayı amaçlamaktadır. Diğer yandan, her tür işbirliğinde olduğu gibi, endüstriyel tasarım eğitiminde üniversite–KAGK işbirlikleriyle ilgili araştırılması ve ele alınması gereken birçok zorluk bulunmaktadır. Bu doktora çalışması, gelişmekte olan bir ülke olan Türkiye’de endüstriyel tasarım eğitimi bağlamında üniversite–KAGK işbirliğinin mevcut doğasını anlamayı amaçlamaktadır. Bu amacı gerçekleştirmek için, bu çalışma öncelikle 2010-2020 yılları arasında gerçekleşen işbirliklerini bir anket aracılığıyla ortaya koymakta ve araştırma tasarımındaki üç paydaşın (yani eğitmenler, öğrenciler ve KAGK’lar) tümünü içeren 71 katılımcı ile yarı yapılandırılmış görüşmeler yapmaktadır. Bu tez,

üniversite–KAGK işbirliklerini, başlatılmalarına ve başlatan paydaşın motivasyonlarına dayalı olarak paydaş tabanlı bir modelleme yaklaşımına göre üçe ayırarak literatüre katkıda bulunmaktadır. Bu modeller, eğitimci-tabanlı, KAGK-tabanlı ve öğrenci-tabanlı işbirliği modelleridir. Ayrıca, bu işbirliklerindeki her bir aktörün motivasyonlarını, beklentilerini, katkılarını, faydalarını ve zorluklarını kapsamlı bir şekilde araştırmaktadır. Bu tez, söz konusu işbirliklerini geliştirmenin yolları olarak 1) yedi başlıklı bir protokol ve 2) sahip olunması gereken sekiz temel boyutu pratiğe katkı olarak sunmaktadır.

Anahtar Kelimeler: Tasarım İş Birliği, Üniversite-KAGK İş Birliği, Endüstriyel Tasarım Eğitimi, KAGK için Tasarım, İş Birliği Modelleri

to Asuman Nasuhođlu,

Nefise, Saime and Baki

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LIST OF ABBREVIATIONS

ABBREVIATIONS

3D	Three-dimensional
AFH	Architecture for Humanity
CBO	Community-based Organization
CSO	Civil Society Organization
ÇEKÜL	the Foundation for the Protection and Promotion of the Environment and Cultural Heritage
DESIS	Design for Social Innovation and Sustainability
DFA	Design for America
DIY	Do-it-yourself
DKM	the Nature Conservation Centre
FSC	the Federation of Southern Cooperatives
HERO	Hale Empowerment and Revitalization Organization
HFH	Habitat for Humanity
IMPACT	International Management Projects in Architectural Construction Technology
IP	Intellectual Property
ITAP	The Institute of Theoretical and Applied Physics
ITU	Istanbul Technical University
LASDER	Lastik Sanayicileri Derneği
METU	Middle East Technical University
MSFAU	Mimar Sinan Fine Arts University

NCO	Non-commercial Organization
NGO	Non-governmental Organization
NPO	Non-profit Organization
NTEE	National Taxonomy of Exempt Entities
ODTU	Orta Doğu Teknik Üniversitesi
PBL	Project Based Learning
PhD	Doctor of Philosophy
SRD	Socially Responsible Design
STK	Sivil Toplum Kuruluşu
TAK	Tasarım Atölyesi Kadıköy
TEMA	the Turkish Foundation for Combating Soil Erosion, for Deforestation and the Protection of Natural Habitats
TED	Türk Eğitim Derneği
TOBB	Türkiye Odalar ve Borsalar Birliği
TÜBİTAK	The Scientific and Technological Research Council of Turkey
UCD	User-Centered Design
UI	User Interface
UK	the United Kingdom
UNESCO	the United Nations Educational, Scientific and Cultural Organization
UNICEF	the United Nations Children's Fund
USA	the United States of America
WWF	World Wildlife Fund

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Over the past years, the world has realized the complexity of global issues which require radical solutions that cannot be limited to the expertise of a specific discipline or institution. Collaboration does not only ease the transfer of existing knowledge but also supports the production of new ones. New ideas emerge from a variety of stakeholders directly involved in the addressed problem. For this reason, the world is also in a transformation towards collaboration at the local and global levels for solving these complex problems. This transformation demands social initiatives (nonprofits), universities, professionals, and students who are willing to collaboratively change the world.

Until recently, the scope of industrial design was known to serve for profit, and industrial designers were known to design for profit. However, an awareness has been raised of the necessity of the social aspect of design. The social and nonprofit aspects of design have been needed and prioritized.

Considering the expectations from 21st century designers and the industrial design definition of the World Design Organization (WDO), design practice is currently improving itself through new areas, skills, approaches, and methods. So, industrial designers have also started to engage in collaborative teams to find solutions to complex problems (Thackara, 2006; Meroni, 2007). For designers, nonprofit organizations (NPOs) have become preferable to private sector firms. The main reason for that is the pressure of monetary expectation of the private sector, whereas, NPOs do not seek profit but seek social benefit instead. Moreover, the academics get an opportunity to apply their expertise in a practical setting, test theories, and collect

case materials for broader intellectual projects (Roper, 2002). Indeed, there is a globally growing interest in building and strengthening such collaborations both from the academic and practitioner perspectives (Chernikova et al., 2017).

However, especially in developing countries, such as Turkey, the collaboration between NPOs and industrial designers are recently being developed. Furthermore, the number of empirical studies focusing on collaborations between NPOs and research institutions is scarce (Chernikova et al., 2017). That is why at the beginning, the area of interest was to conduct research to investigate the roles, responsibilities, relations, and experiences of professional industrial designers in NPOs in Turkey. They claim that they are multi-disciplinary, inter-disciplinary associations that are concerned with social issues such as human rights, education, healthcare, public policy, and the environment and are organized on the local and national levels. Yet, as with the rest of the world (see Roper, 2002; Yang, 2015; Calefato et al., 2016; Chernikova et al., 2017), they are facing daily challenges with limited staff and funds (Fışgın & Bağlı, 2016). Moreover, designers in NPOs in Turkey are not generally involved in decision-making processes (Çatalyürekli & Kaya, 2014), presenting an opportunity to show NPOs how design and designers can contribute to their processes and products and services they offer.

On their websites, some NPOs (e.g., ÇEKÜL, DKM, TEMA) have stated that they are conducting inter-disciplinary and collaborative processes, in order to understand whether working with a designer is beneficial in the context of Turkey or not. NPOs can benefit from the academic's unique perspective and analytical skills, which may not be readily available within the organization (Roper, 2002). Therefore, emails have been sent to several well-known national NPOs such as ÇEKÜL (the Foundation for the Protection and Promotion of the Environment and Cultural Heritage), TEMA (the Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats) and DKM (the Nature Conservation Centre) and international NPOs like UNICEF (the United Nations Children's Fund), UNESCO (the United Nations Educational, Scientific and Cultural

Organization) and WWF (World Wildlife Fund) asking them about their design and innovation activities. However, none of the NPOs responded to the email.

The only person was G ng r Gen, who was working as an industrial designer for an NGO. An interview was organized with her. As a result, it is understood that; on the professional side, design activities are not involved as much as expected. There are not many in-house designers in NGOs and the roles of designers are not that significant or clearly defined to motivate an investigation. Still, the topic itself is meaningful to research using a different perspective because it was also learned from the interview that NGOs are open to sharing knowledge and creating solutions through collaborative work. The outcome of this preliminary exploration of the area acted as a basis for the background of the study and the motivation towards this study.

1.2 Motivation for and Importance of the Study

In order to collect information about university–non-profit organization collaboration in industrial design education in Turkey, emails have been sent to academic members from 24 universities’ industrial design departments. Within 17 universities, who have replied, six of them approved that they have been conducting educational projects in collaboration with nonprofit organizations either in the scope of studio courses or graduation projects.

As the preliminary exploration suggests, there are not many designers working in-house or freelance for non-profit organizations. Yet, there has been a rise in university-NPO collaboration projects in industrial design departments over the years, especially after 2012.

In Turkey, industrial design departments put emphasis on collaboration with external stakeholders to provide the students with privileged experience and keep up with the pace of practice (Hasdođan et al., 2006). In fact, some of the industrial design departments collaborate with various civil initiatives such as neighborhood

associations, local governments (municipalities), environmental non-governmental organizations (NGOs), and patient and caregiver associations. These collaborations are already highlighted by several studies (e.g., Kaygan et al., 2017; Ateş Akdeniz & Öz, 2018; Hough et al., 2018; Cifter et al., 2023) which generally emphasize the contributions of transdisciplinary and inter-organizational collaborations to future industrial designers and design education. There is less focus on the benefits of industrial design, design research, and design education for NPOs and society's welfare (public good) through these collaborations. Yet, being capable of producing an impact on the world, design has a huge role through the assistance and support of multiple and diverse stakeholders such as nonprofit organizations. It is obvious that the industrial design department–NPO collaboration has many potentials for solving real-world issues (Yang, 2015; Sanchez-Ramos et al., 2016; Kaygan et al., 2017). During this collaboration, there can be many added value apart from design thinking and theoretical approach from the design department that could offer a wide variety of socially innovative solutions. Both the process and the result are integral parts of a collaboration for stakeholders. While parties (e.g., design students, design education, and NPO practitioners) could benefit from the process by learning from each other, society could benefit from the innovative, productive, and sustainable outcomes (Manzini, 2015; Von Busch & Palmås, 2016; Ferreira et al., 2020; Corsini & Moultrie, 2021; Peng et al., 2022). Yet, it should be explored if university-NPO collaborations are truly producing the required knowledge and solving societal problems (Appel & Barragán, 2017). The contribution of industrial design to NPO partners for accomplishing their missions through collaborative educational projects also needs to be discovered.

Overall, the rising number of university-NPO collaborations in Turkey has indicated the efficiency and success of their processes and results. Further, we also see that these collaborations offer many opportunities for society such as new products and/or services. Yet, there is a significant chance that these collaborations could go wrong, creating adverse consequences, despite the presence of good intentions and high hopes from the stakeholders (Roper, 2002). As Souleles et al. (2020) state, there

is a need to evaluate the learners' experience in a practice-based learning process through long-term studies. That is why a study on the current situation of collaborations between industrial design departments and nonprofit organizations needs to be deeply investigated and better ways of building these collaborations should be explored.

When existing university-NPO collaboration project examples are examined, it can be easily recognized that these studies generally take an insider point of view as the researchers (academics) narrate their self-observations and self-reflections (Yang, 2015; Sanchez-Ramos et al., 2016; Kaygan et al., 2017; Ateş Akdeniz & Öz, 2018; Hough et al., 2018). Since an unbiased and neutral stand is missing, an outsider perspective could be a more objective attitude and help to make inferences yet unknown. As the researchers are approaching these collaborations mostly from their viewpoints, they may not cover other stakeholders' experiences and opinions. For example, we know little about how students and NPOs see these collaborations. For a holistic perspective and comparative analysis, a study involving multiple collaborations and all stakeholders' thoughts is needed. Table 1.1 compiles the gaps this study addresses.

Table 1.1 Gaps This Study Addresses

1	covering perspectives of all stakeholders (tutors, students and NPOs)
2	involving multiple collaborations rather than being case-specific
3	taking a neutral and unbiased outsider perspective rather than an insider perspective
4	gathering and analyzing the scope of university-NPO collaboration in industrial design education in Turkey
5	exploring the roles and responsibilities of each stakeholder and their contributions in collaborations in a developing country
6	revealing and explaining the benefits and challenges of collaborations for all stakeholders and society

1.3 Aim, Scope, and Research Questions

Combining the building blocks, my thesis aims to explore the collaborations between industrial design departments of universities and nonprofit organizations (NPOs) including civil society (CSOs), community-based (CBOs), non-commercial (NCOs), and non-governmental (NGOs) organizations, in the context of industrial design education. The term NPO will be used as an umbrella term within the context of this thesis.

This doctoral study aims to understand the current nature of university-NPO collaboration in the industrial design education context using a holistic approach. To fulfill this aim, this study is going to explore the types of these collaborations in detail, the motivations and expectations of each actor, address the influences and contributions of each stakeholder, evaluate the benefits and the challenges of these collaborations and how to cope with these challenges with the guidance of findings. Finally, it is going to offer ways to improve these collaborations.

The main question and its sub-questions to be answered through this research are:

How can university-NPO collaboration in the industrial design education context be enhanced considering students, tutors, and NPOs?

- a. What are the subjects of university-NPO collaborations?
- b. How are university-NPO collaborations established?
- c. How do university-NPO collaborations and NPOs influence industrial design education, students (future industrial designers)?
- d. How do university-NPO collaborations and industrial design education (tutors and students) influence NPOs to achieve their goals?
- e. How can university-NPO collaborations be improved?

1.4 Structure of the Thesis

This doctoral thesis consists of nine chapters. The first chapter introduces the background of the study and emphasizes the motivation and importance of the study. Then it continues with the aim, scope, and research questions, and finally, it explains the structure of the thesis.

After the introduction, Chapter 2 covers a comprehensive literature review on two topics: (i) expectations from 21st century designer and current nature of design education and (ii) university-NPO collaboration considering the stakeholders of these collaborations. This study focuses on university-NPO collaboration in design education, the intersection of these two broad literature, including the scope and influences. The chapter starts with defining the 21st century designer and the expected knowledge and skill-set they need to develop. Those sections are followed by the university-NPO collaboration literature by explaining the frameworks of design collaboration and theories of university-NPO collaboration. Among the theories to model these collaborations, this study builds on the initiation logic as a theoretical basis and further develops it into driver-based models. It continues with the description of stakeholders and actors involved in these collaborations and their roles and responsibilities. Then, the benefits and challenges are reviewed.

The methodology of the research is presented in Chapter 3. The chapter begins by explaining the research approach and design of the two-staged research. The first stage is a survey to explore the current situation of university-NPO collaboration in industrial design education. The second stage is semi-structured interviews to understand the nature of collaboration from the perspectives of three stakeholders (students, tutors, and NPOs). 71 semi-structured interviews were conducted with 20 tutors and 22 students from ten universities and 29 representatives from 25 diverse NPOs. The design, population and sampling, conducting, and analysis processes and methods are explained within their respective stages. The data gathered from the interviews were analyzed through template analysis and the emerging themes are discussed in detail in the following chapters.

Following the Methodology chapter; Chapter 4, Chapter 5, Chapter 6, and Chapter 7 focus on the findings of the study. Chapter 4 presents the scope of university-NPO collaboration in industrial design education. The topics highlighted in these collaborations are special groups, local development, and environment. Since the thesis modeled university-NPO collaborations in the design education context as tutor-driven, NPO-driven, and student-driven; the following chapters concentrate on each model separately. Tutor-driven (Chapter 5), NPO-driven (Chapter 6), and student-driven (Chapter 7) models of collaboration are presented including the motivations of stakeholders for collaboration, initiation stories, benefits, and challenges of the model as well as the contributions of these stakeholders.

Chapter 8, Discussion, synthesizes and summarizes the prominent findings of the driver-based collaboration models. Then, the findings of the thesis are evaluated and discussed through the relevant literature. Finally, to enhance these collaborations, this thesis suggests protocol (i.e., guideline) and key dimensions. The content of the protocol and nice-to-have key dimensions of collaboration are discussed in detail.

Chapter 9, Conclusion, starts with a summary of the thesis, which is followed by subsections for revisiting research questions, the contribution of the thesis, the limitations of the study, and future research directions.

CHAPTER 2

LITERATURE REVIEW

This literature review aims to explore how design practice and education have evolved to meet the needs of the 21st century. It, then, explains the structure of university-NPO collaboration to develop a basis for the study.

Section 2.1 focuses on the expectations from 21st century designers through (i) the most emphasized professional and social skills they need to learn, (ii) design-related approaches and methods they should be skillful and knowledgeable about, and (iii) new areas in design that they can utilize these knowledge and skill sets. These sections will also present how these skills, approaches and methods, and new areas are being addressed in industrial design education.

This thesis focuses on university-NPO collaboration in design education. University-NPO collaboration in industrial design education context could address the changing definition of industrial design and expectations from 21st century designers. It also provides opportunities to teach and apply many design methods and approaches and offers substantial benefits not only to the stakeholders of the collaboration, but also to the society. Therefore, Section 2.2 focuses on the nature of these collaborations including (i) frameworks, (ii) theories, (iii) stakeholders involved, (iv) roles, responsibilities, and contributions of stakeholders, (v) challenges, (vi) criteria for successful collaborations, and (vii) influences to different stakeholders and the society.

2.1 Expectations from 21st Century Designer and the Current Nature of Industrial Design Education

The interrelated complex challenges posed by environmental, societal, and economic issues in the 21st century forced the field of design practice to transform significantly in recent decades (Irwin, 2015; Sanders, 2017). Correspondingly, design has evolved from focusing on tangible objects to encompassing more intangible concepts such as relationships, services, and interfaces as noted by Findeli (2001), Thackara (2006), and Krippendorff (2007). This transformation has broadened the design discipline, its processes and application and has led to the emergence of numerous new design disciplines, including interaction design, product-service-system design, systemic design. New approaches and methods (e.g., human-centered design, participatory design, design for all, design for sustainability, project-based learning, and so on) in design have also been emerging from the early 2000s (Beucker, 2004; Kolko, 2005). Consequently, the World Design Organization (WDO), formerly known as the International Council of Societies of Industrial Design (ICSID), renewed and extended the definition of industrial design in 2015. This renewed definition revealed that industrial design has integrated product design with many design-related fields, such as system, service, and experience design (WDO, 2015).

This renewed definition has also reshaped the skill and knowledge set expectations placed on future designers, emphasizing the need for them to be more holistic, socially conscious, and environmentally responsible in their approach to design. According to Majithia (2017), there is “a shift from disciplinary to multidisciplinary and interdisciplinary, specialist to generalist, product based to system based” (p. 1525). Moreover, complex societal problems require a sophisticated and complex skill set, and expertise that mirrors the complex nature of the problems designers strive to tackle (Van der Bijl-Brouwer, 2019). For this reason, many skills and capabilities are expected from the industrial designer of the future. The 21st century designer is required to be qualified in these fields, approaches, and methods and be skillful to address complex environmental and social issues (Frascara, 2020; Meyer

& Norman, 2020; Weil & Mayfields, 2020). In the rapidly changing world, the future demands a distinct skill set (Majithia, 2017), thus it is crucial to explore and analyze the potential skill and knowledge sets expected from the future designer and adapt design education accordingly to prepare students. As a result, in the light of a literature review, the expected and strongly emphasized knowledge and skill sets from a 21st century industrial designer is examined in under three categories, namely, (i) professional and social skills, (ii) approaches, and methods (that a designer should be skillful and knowledgeable about), and (iii) knowledge sets (Table 2.1).

Table 2.1 21st Century Knowledge and Skill Set

	SKILLS & KNOWLEDGE	REFERENCES
Professional & Social Skills	collaboration and teamwork	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2011; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Frascara, 2020; Meyer & Norman, 2020; Pontis & Van der Waarde, 2020; Souleles et al., 2020; Weil & Mayfield, 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020; Yenilmez, 2021
	working on complex real-world issues	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Frascara, 2020; Meyer & Norman, 2020; Pontis & Van der Waarde, 2020; Souleles et al., 2020; Weil & Mayfield, 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020
	empathy	Kiernan & Ledwith, 2014; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Souleles et al., 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020
	communication	Yang et al., 2005; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Frascara, 2020; Souleles et al., 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020
	networking	Yang et al., 2005; Majithia, 2017; Novoa, 2018; Meyer & Norman, 2020; Souleles et al., 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020
	research	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Frascara, 2020; Meyer & Norman, 2020; Pontis & Van der Waarde, 2020; Souleles et al., 2020; Weil & Mayfield, 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020
	presentation	Kolko, 2005; Yang et al., 2005; Novoa, 2018; Meyer & Norman, 2020
	creativity and innovation	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2011; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Frascara, 2020; Meyer & Norman, 2020; Souleles et al., 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020
	analytical/critical thinking and problem solving	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Souleles et al., 2020; Weil & Mayfield, 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020

Table 2.1 (continued)

	sketching and model making	Yang et al., 2005; Kiernan & Ledwith, 2014; McMahon & Bhamra, 2017; Novoa, 2018; Meyer & Norman, 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020
	flexibility/adaptability/transferability of skills	Yang et al., 2005; Kiernan & Ledwith, 2014; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Souleles et al., 2020
Concepts & Approaches & Methods	project-based learning	Kolko, 2005; Kiernan & Ledwith, 2011; Kiernan & Ledwith, 2014; Majithia, 2017; Novoa, 2018; Frascara, 2020; Meyer & Norman, 2020; Pontis & Van der Waarde, 2020; Souleles et al., 2020; Yenilmez, 2021
	design thinking	Yang et al., 2005; Kiernan & Ledwith, 2014; Majithia, 2017; Novoa, 2018; Frascara, 2020; Meyer & Norman, 2020; Souleles et al., 2020; Yenilmez, 2021
	human-centered design user-centered design	Kolko, 2005; Kiernan & Ledwith, 2011; Kiernan & Ledwith, 2014; Majithia, 2017; Novoa, 2018; Ferreira et al., 2020; Meyer & Norman, 2020
	participatory design co-design	Kiernan & Ledwith, 2011; WDO, 2015; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Frascara, 2020; Meyer & Norman, 2020; Pontis & Van der Waarde, 2020; Souleles et al., 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020; Yenilmez, 2021
	design for all inclusive design universal design	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2011
	sustainable design design for sustainability	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2011; Kiernan & Ledwith, 2014; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020; Yenilmez, 2021
	social design	Novoa, 2018; Ferreira et al., 2020; Souleles et al., 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020; Yenilmez, 2021
	human factors and ergonomics	Kolko, 2005; Yang et al., 2005; Novoa, 2018; Ferreira et al., 2020; Meyer & Norman, 2020
	material and manufacturing knowledge	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2014; Novoa, 2018; Meyer & Norman, 2020; Weil & Mayfield, 2020
Knowledge	technology knowledge	Yang et al., 2005; WDO, 2015; Novoa, 2018; Meyer & Norman, 2020; Souleles et al., 2020
	business	Yang et al., 2005; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; Novoa, 2018; Ferreira et al., 2020; Meyer & Norman, 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020
	strategic thinking and planning	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2011; Kiernan & Ledwith, 2014; Majithia, 2017; Novoa, 2018; Ferreira et al., 2020; Pontis & Van der Waarde, 2020
	leadership and management	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2014; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Meyer & Norman, 2020; Souleles et al., 2020; Weil & Mayfield, 2020; Press & Cooper, 2003-Fişgin Korkmaz, 2020

Undoubtedly, design education is the most significant factor that shapes future industrial designers in accordance with this dynamic situation (Majithia, 2017). The scope of design practice has advanced, broadened, and also blurred its borders. With the expanding scope of industrial design, apparently, the skill and knowledge sets needed for future designers is far-reaching and design education should be suited correspondingly. To train industrial design students in parallel with up-to-date global trends, design education should respond to these requirements by revising and adapting itself (Hasdoğan et al., 2006). By doing so, design education needs to reshape the upcoming designers in navigating their paths and roles within the uncertainty of complex 21st century challenges and fulfilling their responsibilities towards fostering sustainable change (Duman, 2021).

The concern about design education is that it cannot keep up with the current/evolving requirements of the 21st century (Meyer & Norman, 2020). Sanders (2017) mentions that designers often lack practical skills upon graduation according to practitioners, and she suggests that educators may be unaware of or indifferent to the evolving needs of the real-world practice. Even though practice is driving the changes in the field rather than education, design graduates find themselves unprepared for the demands of their fields (Sanders, 2017). Consequently, design education is criticized by not supporting design practice (Kiernan & Ledwith, 2011) and a gap occurs between education and practice (Gajendar, 2003; Roald, 2006). There are concerns that design education lags behind current practice by up to ten years, with many courses still focused on traditional craft-based studio courses emphasizing aesthetics and form (Kiernan & Ledwith, 2014). It has been argued that in order to respond to the gap between practice and education, design departments and educators should take a different approach to raise better students equipped with the necessary skills (Augsten & Gekeler, 2017). Design education requires a redesign that has more rigor, is more scientific, and focuses on social and behavioral sciences, modern technology, and business (Meyer & Norman, 2020). Moreover, fields like interaction design, interface design, user experience design, and sustainable design are not extensively integrated into the curriculum of design institutions (Yang et al,

2005). In addition, other researchers argue that interdisciplinary collaboration (Yang et al., 2005; Frascara, 2020; Pontis & Van der Waarde, 2020) and research approach (Frascara, 2020) are missing elements in design education.

Design education is undergoing a transformation, emphasizing multidisciplinary and interdisciplinary collaboration and teamwork (Weil & Mayfield, 2020), user-centered design (Frascara, 2020), strategic planning (Pontis & Van der Waarde, 2020), innovative (Meyer & Norman, 2020) and sustainable (Kiernan & Ledwith, 2014) product development. This transformation reflects the need to equip students with diverse skills for various roles. Recommendations include incorporating complementary skills, connecting education with professional practice, and adopting student-centered, activity-based learning approaches (Yang et al, 2005; Pontis & Van der Waarde, 2020; Meyer & Norman, 2020).

In parallel to this transformation, leading design institutions worldwide that offer industrial design and product design education such as the Carnegie Mellon University, Pratt Institute, Copenhagen Institute of Interaction Design, Stanford Design School, Service Design program at Politecnico Milano, and Aalto Design Department are reorganizing their curricula to reflect contemporary needs and introducing alternative specialization routes in undergraduate programs (Duman, 2021). This alteration allows students to focus on their areas of interest and explore various design sub-disciplines within a broad framework.

2.1.1 Professional and Social Skills and Knowledge

According to the literature review, the professional and social skills and knowledge expected from 21st century designers are illustrated in Table 2.1. It is comprehended that there is a strong emphasis on two aspects of future designers: (1) collaboration and teamwork (Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2011; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; Frascara, 2020; Meyer & Norman, 2020; Pontis & Van der Waarde, 2020; Weil & Mayfields, 2020; Yenilmez, 2021)

and (2) working on complex real-world problems (Kolko, 2005; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; Frascara, 2020; Meyer & Norman, 2020; Pontis & Van der Waarde, 2020; Weil & Mayfield, 2020). Therefore, the next sections will elaborate on these two aspects with further details.

2.1.1.1 Collaboration and Teamwork

Product and service development is becoming more complex and difficult, so multidisciplinary and interdisciplinary teams (See 2.2.1 for definitions), including designers, are being formed in organizations (Stempfle & Badke-Schaub, 2002). Besides being capable of handling concrete components, having a wide variety of knowledge from multiple disciplines and areas is a requirement of every designer (Majithia, 2017). The complex societal issues of the 21st century have broadened the design discipline, its processes and application. The industrial design definition of WDO (2015) also emphasizes on the transdisciplinary (See Section 2.2.1 for definition) nature of the design profession that supports and encourages co-creation, and therefore, collaboration. Designers now collaborate in interdisciplinary teams to tackle multifaceted issues like transportation, healthcare, policymaking, and social innovation (Jones, 2014; Manzini, 2009; Joore & Brezet, 2015).

During collaboration, designers can benefit from other's abilities and know-how while bringing them a designerly way of thinking. This knowledge transfer helps designers to gather experience from other disciplines, and non-designers obtain knowledge of design processes. Thus, the aim of these collaborations is not only establishing broader strategic goals but also acquiring the capacity to adopt fresh perspectives, mastering unfamiliar 'disciplinary languages', and crossing disciplinary boundaries to cope with novel essential tasks and address emerging challenges (Baldassare et al., 2019). These collaborations provide more creative, innovative, and comprehensive design solutions, and solve complicated problems altogether (Tezel, 2014; Kiernan & Ledwith, 2014).

To become innovative and explore new opportunities; disciplines, other than design, make use of the design thinking process in collaborations. Hence, design methods become widespread with design thinking. However, designers are required to be trained to have expertise on the subject (Kiernan & Ledwith, 2014).

Presently, problems are getting more and more complicated so the role of designers is always in a transformation and an improvement. Professional life (both industry and social studies) greatly requires the ability of collaborative design (Augsten & Gekeler, 2017). Thus, there is an increasing quest for future designers with communication skills via shared vocabulary and information bases from relevant, complementary spheres (Nae, 2017) collaborating in trans-disciplinary teams without leaving personal professional duties (Majithia, 2017). End users also started to participate in the collaborative design process through new design approaches and methods (Suri, 2003; Sanders, 2006). Consequently, complex design problems are solved faster by the collaboration of multidisciplinary specialists and users through the processes (Seidel & Godfrey, 2005; Meyer & Norman, 2020).

Since the globe has turned into an interdisciplinary habitat, in order to make students qualified for interdisciplinary collaboration, industrial design education should train undergraduates according to changing dynamics and new trends. In addition, researchers argue that interdisciplinary collaboration is the missing element of design education (Yang et al, 2005; Frascara, 2020; Pontis & Van der Waarde, 2020). Design education should support students to work on complex real-life issues (e.g., current social challenges - See 2.1.1.2) that force them to collaborate within specific contexts and to be adjustable to face various kinds of design problems (Kiernan & Ledwith, 2014; Pontis & Van der Waarde, 2020). Current discussions and modifications in design curricula, aimed at fostering a deeper appreciation of design's societal role, coincide with a growing recognition of the importance of interdisciplinary collaboration and the potential positive impact of design on society and the environment (Vodeb, 2015).

In order to adapt itself to future higher education trends, design education needs to face the challenges of gathering people and disciplines together. Indeed, students can encounter limitations (such as unfamiliarity with roles, failure to listen to each other's ideas, lacking common understanding) during the collaborations, as they may not be accustomed to collaborate (Tezel, 2014; Santos et al., 2017). For example, in d.school, more than seven hundred students experience taking part in multidisciplinary teams. Even though they face differing viewpoints, often contradictory, they engage in hands-on learning, addressing real-world issues (Kelley & Kelley, 2013). While facing these challenges, among varied skills, communication is essential to turn these limitations into skills through collaborative learning processes. Students need to be encouraged to inquire, understand, make judgments, debate, and reach an agreement while collaborating (Niederhelman, 2001; Meyer & Norman, 2020).

Universities put emphasis on co-creation and change their undergraduate studies accordingly by including more team and collaboration projects with other practices or associations (Meyer & Norman, 2020). Supporting inter-organizational projects among universities or associations is a way to create collaboration. For example, the entire curriculum of The Myron E. Ullman, Jr. School of Design, located within the University of Cincinnati in the United States, is based on industry collaboration projects (Muratowski, 2020). In those kinds of projects, undergraduates have the chance to bond research and practice, gather experience, and improve their ability to work in an interdisciplinary team (Augsten & Gekeler, 2017). In an Australian university and Malaysian government collaboration example, the goal was to develop a variety of furniture designs for Malaysian dormitories, aiming to empower the local manufacturing industry and create valuable product opportunities utilizing Malaysia's abundant timber resources (Kuys et al., 2021).

Parallel to these efforts worldwide, a range of collaborative projects involving multiple stakeholders has been undertaken in Turkey, involving industrial and/or (more recently) non-profit collaborators as partners from the early 2000s (see examples in Çatalyürekli & Kaya, 2014; Börekçi & Korkut, 2017; Ateş Akdeniz &

Öz, 2018; Cifter et al., 2023). Some examples are studio projects (e.g., METU, Bilgi University, Bahçeşehir University, Mimar Sinan Fine Arts University, and so on), and more specifically, graduation projects (e.g., METU, TOBB ETU, ITU, ETU, and so on). An example is the third year studio in METU which focuses on design for sustainability, participatory design, and development of product families through collaboration with external partners since 2009 (Börekçi & Korkut, 2017). Another example is the ‘Social Responsibility Practices’ course that was initiated in 2018 in Mimar Sinan Fine Arts University. Groups of students from industrial design, architecture, city and regional planning, and interior architecture collaborate with NPOs in some cases to find solutions to complex social issues (Cifter et al., 2023). A similar example is the ‘Interdisciplinary Design Studio’ course, first established within the METU Design Factory in 2015, aims to provide students from various departments such as engineering, business, architecture, and industrial design with the opportunity to gain experience in developing innovative products within interdisciplinary teams (Demir, 2016). Final example is the ‘Virtual Design Studio’, an elective course at METU in which students develop design projects by matching with students from different international universities (Duman, 2021).

There is also transdisciplinary collaboration that is a more difficult version compared to multidisciplinary and interdisciplinary collaborations. What distinguishes transdisciplinarity from other disciplinary collaborations and ensures its relevance in 21st century education is its acknowledgment and emphasis on the inherent complexity of reality (Bernstein, 2015). This complexity becomes apparent when investigating a problem or phenomenon from various perspectives and dimensions, aiming to reveal hidden connections between different disciplines (Bernstein, 2015). Design scholars have formulated and utilized a transdisciplinary research approach to tackle complex, multi-stakeholder real-world problems (Gaziulusoy, 2015; da Costa Junior et al., 2018a). Working on complex real-world problems is going to be explained in the following section.

2.1.1.2 Working on Complex Real-World Problems

Dealing with environmental, commercial, network-communicational and especially societal problems is a sign of being an active citizen which is an important title for 21st century designers along with being an innovator, a knowledge worker, and a sustainable entrepreneur (Press & Cooper, 2003). Hence, today's designers have the crucial task of comprehending genuine societal needs and crafting practical, suitable solutions for the well-being of both society and humanity, and even extending to all living beings/things (Çetin & Aryana, 2015).

Parallel to the aforementioned task of designers, industrial designers are hoped to serve nonprofit goals and to touch real-life social matters by reducing the difficulties that handicapped people face who are physically disabled, elderly, homeless, unemployed, or societies living in third-world countries (Diehl, 2009; Ramirez, 2011). This expectation is being mentioned in the literature as 'complex real-world problems' (Pontis & Van der Waarde, 2020; Majithia, 2017, Weil & Mayfield, 2020; Kiernan & Ledwith, 2014). These real-world problems involve unique, ill-defined challenges (i.e., wicked problems - see Buchanan, 1992) and move at various speeds, requiring a different set of skills from the designer (Easterday et al., 2018) (e.g., transdisciplinary collaboration).

Consequently, industrial design education needs to raise the 21st century designers who know how to approach complex problems. Ezio Manzini explains his expectation of design education institutions as "developing a greater sense of and sensitivity towards social and environmental issues" (Frascara, 2020). These expectations could be realized through merging education with real-life issues. Pontis and van der Waarde (2020) recommend the academics to use the world as their classroom and work on real-life issues to gain a better understanding of the problem and the synergy between knowing, doing, and being. As a reflection of this approach, d.school provides opportunity to hundreds of students from diverse disciplines to form teams and engage in real-world problems (Kelley & Kelley, 2013).

Design education can also work on real-life issues through collaborating with industry or non-profit organizations. Considering NPOs are working on complex social issues, their design-related problems are real-world problems that design can address. Thus, design students can develop the necessary (21st century) skill-set and knowledge through NPO collaborations in the educational context.

As many complex real-world problems are social problems, we often see practices in the literature such as social design. This thesis emphasizes the significance of ‘working on real-world problems’ as a skill required by 21st century designers and explains a way to approach these problems through ‘social design’ practice in Section 2.1.2.7.

2.1.2 New Approaches and Methods in Design

Due to newly growing areas of design and new roles and responsibilities of designers, new approaches and methods are being developed by the designers. Based on the literature, it is deemed that several approaches and methods are being emphasized more than the others. Next sections explain these approaches and methods (project-based learning, design thinking, user-centered/human-centered design, participatory design, co-design, design for all, sustainable design, and social design) and their application in industrial design education.

2.1.2.1 Project Based Learning (PBL)

Problem-based learning (PBL) is an ‘instructional (and curricular) learner-centered approach that empowers learners to conduct research, integrate theory and practice and apply knowledge and skills to develop a viable solution to a defined problem’ (Savery, 2015). However, learning through fictional projects is not sufficient to get ready for real life situations (Pontis & Van der Waarde, 2020). Therefore, PBL is turning into a method that is student-centered and in which the tutors take a step back and enable students to work collaboratively on a real-world problem with external

stakeholders (Hansen & Lehmann, 2006; Lucas et al., 2013). PBL, also called ‘experiential learning’ (Kolb, 1984; Gronski & Pigg, 2000; Majithia, 2017) and ‘real-world learning’ (Pontis & Van der Waarde, 2020), is one of the preferred approaches in higher education. Indeed, Ezio Manzini considers it as one of the most important dimensions in education (Frascara, 2020). PBL facilitates students to spend more time evaluating and proposing solutions to specific complex questions resulting in learning knowledge and skills. It significantly influences student motivation to learn and is recognized for enabling critical thinking, complex problem-solving, self-learning, collaboration, and communication skills (Acharya et al., 2021). Therefore, graduates become better prepared for the demanding professional life. That is why PBL has been a vital method in university education (Augsten & Gekeler, 2017).

As a result, numerous institutions and programs started to provide project-based learning centered on authentic real-world challenges, fostering greater interaction between students and tutors. The value of PBL in education (Knoll, 1997; Lehmann et al., 2008) is understood even more when students collaborate on social issues in real-life projects (Billet, 2009; Lucas et al., 2013; Appe & Barragán, 2017). To be able to work on real-life projects, collaboration with industry or nonprofit (especially for social issues) is an essential component of the PBL tradition in industrial design education (Börekçi & Korkut, 2017).

This new learning pattern is a problem-focused and student-oriented teaching and learning model that students obtain information through experiencing the implementation of complex real-world problems from either industry or nonprofit in interdisciplinary environments (De Graaf & Kolmos, 2003; Hansen & Lehmann, 2006). In the interdisciplinary collaboration environment, the project-based classes are sometimes co-taught by faculty from various universities and industry professionals to maximize the learning outcomes of students (Kelley & Kelley, 2013).

Design is a discipline of making and of doing, that makes projects an important part of the education curriculum (Meyer & Norman, 2020). Design students should be

encouraged to gain thoughts about their abilities in collaborative design by letting them learn through experimentation with guidance, mentoring, and critiquing (Lloyd et al., 1995; Meyer & Norman, 2020). Yet, initially, even experienced educators encounter challenges in facilitating PBL (Easterday et al., 2018). PBL instructors often find themselves dedicating substantial time to assisting and providing feedback to students, facing difficulty in accurately evaluating individual performance, struggling to monitor team advancement, and investing significant effort in preparing and collecting curriculum materials and activities (Easterday et al., 2018). Thus, facilitating PBL requires patience, time, and experience not only for students but also for design educators.

As it is used to be done in design studio courses, design education should be built on a project-based learning system that engages students in “responsible design, collaborative methods, social involvement in a perspective of giving priority to humanity and culture” (Vasconcelos, 2017, p. 855). Moreover, design students should also be self-learners rather than expecting someone to teach them in order to experience and show their potential in real-world problems after graduation (Lee, 2006; Yenilmez, 2021).

2.1.2.2 Design Thinking

Design thinking is considerably significant, especially in collaborative projects and processes with non-designer partners in social areas (Meyer & Norman, 2020). Designers are increasingly considered as planners due to their ability to design thinking (Augsten & Gekeler, 2017). Organizations started to hope that designers would alter the organization's culture and working style through design thinking and imposing design thinking to the workers from other disciplines. They expect designers to enhance communication within the organization and provide leadership by inspiring and training others about their approaches to complicated problems (Augsten & Gekeler, 2017; Meyer & Norman, 2020). This is making co-creation and

collaboration even more crucial. That also makes universities spend more time on interdisciplinary and transdisciplinary design (Augsten & Gekeler, 2017).

In strategic design, designers are not only fixing predetermined problems of organizations but also creating design problems that need to be solved (Parker, 2009; Maciver & O’Driscoll, 2010). Designers are also responsible for design leadership as business professionals by taking advantage of design thinking methods and applying them to other business processes and cases (Roald, 2006). Embedded design and design thinking in other disciplines, like engineering and business, become widespread in order to develop and implement strategic and analytical thinking (Majithia, 2017). Therefore, certain large corporations, from the business sector, are acquiring design firms to promptly integrate competent/qualified/trained skillful and knowledgeable designers into their organizations (Sanders, 2017).

Design education is experiencing a shift influenced by the growing interest of students in design thinking and innovation. Buchanan believes that design thinking is increasingly and effectively being taught in numerous universities worldwide, demonstrating a higher level of sophistication in its implementation (Frascara, 2020). At the same time, utilizing design thinking enabled the faculty course designers to spot/notice various issues from diverse viewpoints, brainstorm and ideate numerous solutions, merge them into feasible alternatives, and choose the most viable one for further elaboration (Acharya et al., 2021). Established within Stanford University in 2005, the D.School is one of the leading institutions contributing to the literature and practice of design thinking in design education from various perspectives. The institute's aim is to teach design thinking methods and processes to graduate students, emphasizing design thinking as a means of innovation (Kelley & Kelley, 2013).

Even though all design programmes focus on design thinking by nature, in Turkey, educational practices based on the design thinking approach are addressed to teach design thinking, generally, to non-designers through collaboration. For example, at the undergraduate level, METU Design Factory offers an interdisciplinary design studio based on design thinking, since Fall 2016-17 (Demir, 2016). At the graduate

level, an exemplary course is offered at ITU where industrial design students intervene in new initiatives with the design thinking approach within the scope of collaboration with entrepreneurs (Soyupak, 2019). In these processes where both entrepreneurs and students gained various gains, graduate students with a bachelor's degree in industrial design stated that although they had knowledge about design thinking, they had the opportunity to use design thinking methods in the field and gained experience in how the methods were used (Soyupak, 2019).

Design thinking has the potential to generate a large number of ideas and, in the end, produce practical real-life solutions that improve outcomes for both organizations and the individuals they deliver/provide (Brown & Wyatt, 2010). Therefore, enabling industrial design department-NPO collaboration creates a positive outcome for all stakeholders involved in the collaboration. It helps students to gain a critical and holistic approach as well as design thinking towards design problems and be prepared for real-life problems while collaborating across diverse disciplines and institutions (Kane et al., 2014). Therefore, it is inevitable for design education to engage students in collaborative projects and processes with nonprofit partners. Furthermore, increased ability to solve real-life problems and enhanced relationships between stakeholders could also provide employment opportunities for design graduates. Especially to aid NPOs, free guides to apply design thinking are being developed such as the Human-Centered Design Toolkit, which has been prepared and opened to use by IDEO (Brown & Wyatt, 2010). According to Lou and Ma (2015), merging design thinking with scientific and technological thinking, lets us seek and examine novelty in design and innovation that combines attractiveness, probability, and sustainability of the future. Since some team members in NPOs are non-designers who participate in interdisciplinary collaboration processes and projects, they have to embrace design thinking and follow design methods for social innovation (Yang & Sung, 2016). To achieve this aim, events are being organised globally to promote design thinking and its benefits to governmental organizations. An example is GGOVJAM that is being organized in a different city every year around the world with the help of the Social Innovation Community. In 2018, it was

organized in Istanbul and a variety of design methods and approaches were explained to people working in NPOs (Fışgın et al., 2018).

2.1.2.3 User-centered Design, Human-centered Design

User-Centered Design (UCD) is an approach to product and service development that prioritizes the needs, preferences, behaviors, and culture of end-users throughout the design process (Meyer & Norman, 2020). Users are directly contacted and involved from the beginning of product or service development in user-centered design for a better understanding of them (Black, 2008). This relationship governs the design process. The fundamental principle of UCD is to involve users in every stage, from initial concept to final implementation, ensuring that the resulting product or system is intuitive, efficient, and satisfying for its intended audience.

This iterative design approach relies on continuous feedback and usability testing to refine and enhance the user experience, ultimately leading to more successful and user-friendly outcomes (Saco & Goncalves, 2008). By placing users at the forefront of design considerations, UCD aims to create products that align with user expectations and improve overall satisfaction and usability. Designers should have high emotional intelligence and be full of empathy in order to be successful with this approach (Kiernan & Ledwith, 2011; Majithia, 2017). User-centered design approach and user collaboration aid designers in public services, systems, and product design processes (Saco & Goncalves, 2008). In 2011, IDEO developed their user-centered design methodologies to address obstacles within the nonprofit sector. Their Human-Centered Design Toolkit (IDEO, 2011) is tailored for Non-Governmental Organizations (NGOs) and social enterprises engaged with underserved communities. This toolkit guides users through the human-centered design approach and process and assists their design activities (Clarkson & Coleman, 2015).

The primary focus of design education in schools and design departments nowadays lies in human-centered design approaches and principles (Meyer & Norman, 2020). Indeed, as a more modern version, design and design education are now focusing on participatory design and co-design with collaborations (Steen, 2013; Fıŝgın et al., 2018; Meyer & Norman, 2020; Yenilmez, 2021). This shift also enables community-driven processes, relieving designers by reducing the emphasis on their designer skills (Meyer & Norman, 2020).

2.1.2.4 Participatory Design, Co-Design

Participatory design, as both a theory and practice, started and evolved from “the simple standpoint that those affected by a design should have a say in the design process” in the early 1970s (Ehn, 2008; Björgvinsson et al., 2010). In user-centered design, designers focus on the needs of users. Whereas in participatory design, the improved version of user-centered design, not only users but also other stakeholders collaborate with designers. This means, in participatory design, users are increasingly engaged not just as informants, but as active participants and decision makers (Kaygan et al., 2017). Hence, users participate in projects from the initial steps and planning, decision-making, and implementing phases of the design process (Del Gaudio et al., 2016).

The role of the design researcher involves setting up spaces where diverse people (participants) can come together, including those who are often overlooked/ignored. They help maintain connections between different groups and leave behind ways to organize things when making changes (Björgvinsson et al., 2010). Users as well as other partners have key roles in design activities since their needs are driving the product or service development (Sanders & Stappers, 2008; Meyer & Norman, 2020).

With the correct interpretation of design participation and taking into account the same approaches of designing with participants unlocks the opportunity for

collaborative design thinking for designers and other related people on specific occasions (Lee, 2008). Participatory design and co-creation are common methods for gathering original knowledge, developing design ideas through social empathy and inclusivity, and achieving successful and sustainable community outreach (Wang et al., 2016; Börekçi & Korkut, 2017; Souleles et al., 2020). Sanders and Stappers (2008) have advocated the idea of equal and active involvement of stakeholders and state that co-creation has become as trendy as participatory design.

Incorporating participatory practices into design education necessitates integrating a variety of approaches, such as field observations, interviews, structured group discussions, generative workshops, participatory scenario building sessions, and interactive public exhibitions (Kaygan et al., 2017). Participatory design has an interdisciplinary nature because the process includes contributions from diverse fields that exceed the limits of one discipline (Del Gaudio et al., 2016; Meyer & Norman, 2020). Therefore, Manzini points out that design education should clearly define the role of industrial designers in co-design processes to students (Frascara, 2020). The issue of placing the user from a passive position in the design process to an active position has also gained importance within the framework of design education research and practice (Yenilmez, 2021). Participatory design with community, allows design students to combine their know-how, ability, and competence with local resources.

In parallel with the world, participatory design and co-design approaches have also started being implemented in industrial design education in Turkey. As an example, Since 2009, a third-year studio course at METU has been focusing on design methods (Kaygan et al., 2017; Duman, 2021). In another example, within the scope of a studio project carried out at Gazi University, industrial design students utilized the experiences of real users in the problem definition and idea generation phases of the design process and the users turned into co-designers (Yalman & Yavuzcan, 2015). Moreover, tools (e.g., experience reflection modeling) were started to be developed to aid students to reveal the needs, experiences, expectations and

preferences of the users and enriches design students' participatory design knowledge (Turhan & Doğan, 2016).

2.1.2.5 Inclusive Design, Universal Design, Design for All

Design for all people, including disabled and elderly people, was first introduced by Papanek (1985). In inclusive design, which was called design for social inclusion by Coleman (1994), not only elderly or disabled people but also other minors are involved in design approaches. Under the roof of universal design, as known in the USA, and inclusive design in the United Kingdom (UK), usage of this approach in product and service design is increasing. This notion presents design solutions to the entire humanity instead of applying gender, age, ethnicity, class, education, wealth, and ability-dependent specific solutions, ensuring products and services address the needs of the wider population (Davey et al., 2005; Kiernan & Ledwith, 2011). While inclusive design is crucial for promoting social equality, it also offers a commercial benefit, presenting opportunities for business expansion through the development of new products and services and targeting a wider audience (Kiernan & Ledwith, 2011).

Design for all approach has a distinctive place from other human-centered and user-centered design research approaches, it aims to make products, services or interfaces better for everyone, not just for users with special needs or limitations (Clarkson & Coleman, 2015). Hence, as a comprehensive approach, inclusive design establishes shared vision and values among collaborators, thereby encouraging equal participation, aligned expectations, and enhanced learning outcomes (Cifter et al., 2023).

Wilson et al. (2019) recommend that incorporating inclusive design into early grades of education can be prioritized through a dedicated module by adopting a basic inclusive design framework to structure the semester, such as the one proposed by Wilson (2017), to promote the application of suitable tools and methods at

appropriate stages of the design process. On the other hand, upper grades could integrate inclusive design into industrial design projects, considering it as an essential aspect of effective design practice (Wilson et al., 2019). Program content should concentrate on the enablers, barriers, and fundamentals of inclusive design either independently or methods and tools integrated within a broader user-centered design curriculum aiming to deepen students' comprehension and recognition of inclusive design while distinguishing it from other user-centered methodologies (Wilson et al., 2019). Moreover, academics investigate ways to embed inclusive design approaches in social design education as they are already interrelated concepts. For example, in a course in Mimar Sinan Fine Arts University in an interdisciplinary context, tutors use co-design, inclusive design, and normative inquiry (Cifter et al., 2023). By addressing social issues and collaborating with NGOs in their education processes, they aim to implement socially responsible practices and solve real-world problems of the society (Cifter et al., 2023).

2.1.2.6 Sustainable Design, Design for Sustainability

Industrial design is blamed for leading consumption which is one of the sources of environmental and social problems. Therefore, industrial designers were suggested to focus more on environmental and social responsibilities (Papanek, 1971; Papanek, 1995). Furthermore, it has been criticized that industrial design treats the environment as a separate component and therefore the environmental impact of design processes as a separate dimension (ICSID, 2001; Ramirez, 2006). However, the design of the product or service should be considered together with its environment and the impact it has on that environment. This would lead to sustainable design and development (ICSID, 2001; Ramirez, 2006).

The development stages of sustainable design from past to present were explained through a variety of concepts, including green design and eco-design. Green design focuses on minimizing environmental impact by using materials and processes that are environmentally friendly, energy-efficient (Bhamra & Lofthouse, 2016).

Ramirez (2006) added the environmental dimension to the economic, functional, aesthetic, and safety dimensions that are considered as the basic components of product design and determined the scope of eco-design approach. Similar to green design, eco-design emphasizes reducing environmental impact but also considers the entire lifecycle of a product, including its manufacturing, use, and disposal phases (Bhamra & Lofthouse, 2016). With the eco-design approach, which focuses on the environmental impact of the product, and the designers shaping the design process by considering the social and ethical dimensions, the foundation of sustainable design approach was formed (Ramirez, 2006).

Sustainable design (design for sustainability), the broadest of the three, aims to create products, systems, and processes that meet present needs without compromising the ability of future generations to meet their own needs (Brundtland, 1987). It involves both environmental and social considerations, seeking to balance economic viability, environmental responsibility, and social equity (Bhamra & Lofthouse, 2016) through design to raise public awareness (Boks & Diehl, 2006). To attain sustainable development through sustainable design, in addition to social and environmental aspects, ICSID (2001) included economics, politics, culture, and technology (Ramirez, 2007).

The role of the designers has evolved from being individual authors of objects to being facilitators, connectors, visualizers and visionaries of sustainable change (Manzini, 2009; 2015). Designing sustainable and socially responsible products and serving society are expected from current industrial designers instead of working only for companies with a goal of profit generation (Ramirez, 2011). To make future designers familiar with concepts like sustainability, introducing and urging them about such concepts, and encouraging them to design for an economically and socially sustainable world, in other words; designing for the community's happiness and welfare, through practice are the roles and responsibilities of today's design educators (Nunes, 2017). These ambitions can only be reached by dealing with real challenges and constraints and by learning from faults with the aid of learning-by-doing projects (Vezzani & Gonzana, 2017).

Sustainable design education is interested in understanding and addressing sustainability issues as they affect the design and development of both concrete and intangible products, services, and systems (McMahon & Bhamra, 2017). Moreover, students require a wide variety of skills (e.g., analyzing data, planning, decision-making) to be able to design for sustainability (McMahon & Bhamra, 2017). To equip design students with sustainable design skills, it is essential to educate them about the various levels of complexity and the corresponding competencies and concepts associated with each level (Duman, 2021). These levels include four systems: product-technology, product-service, socio-technical, and societal systems (Joore & Brezet, 2015). For example, the innovation through sustainable product service systems proved to be a major design approach and method for all students. Their reflections revealed that the experience not only enhanced their professional skills, making them more responsible and sustainable designers, but also had a profound influence on their personal attitudes and behaviors, inspiring them to live with dramatically reduced environmental impact (Ramirez, 2018).

Education for sustainable development principles suggest that the most effective learning is maintained when the process is equally stressed as the outcomes (McMahon & Bhamra, 2017). Therefore, tools to aid designing for sustainability at these systems have been developed by designers. An example is the framework developed by Ceschin and Gaziulusoy (2016) which could serve as a valuable tool in design courses to convey the depth and intricacy of sustainable design to students. Another example is the visual timeline method of McMahon and Bhamra (2017) to aid the process of sustainable development education. These tools can also be useful in business contexts. However, Vezzoli et al. (2015) complains that these tools are not used and mention the dilemma if the tools that are developed in academia are not sufficient enough for the business context or not.

Addressing sustainability within studio courses is found practical and recommended as an education model (Giard & Schneiderman, 2013). Parallel to this suggestion, some industrial design departments in Turkey prioritize sustainability in education through dedicated studio courses. For instance, METU's third-year studio has been

tailored to teach sustainability principles and methods to students where different stakeholders out of the university also contribute since 2009 (Doğan, 2017; Duman, 2021). In the studio, students experience a variety of methods such as participatory design, open design, biomimicry, and scenario building. Another sustainability-oriented course is Studio Sustain series at Bilgi University, started in 2017, concentrates on sustainable design approach and processes. Its main aim is to cultivate an educational setting for design students to acknowledge, contemplate, and debate their obligations toward the environment, society, and resources (Duman, 2021). Among the sustainability-themed education practices in Turkey, there are projects carried out within the scope of design for sustainable development such as local sourcing, local production, local and regional development, and slow cities (Hough et al., 2018; Göksoy & Kıyak İngin, 2019).

Ramirez (2007) examined the integration of sustainability into education through the concepts (sustainability, sustainable design, eco-design and green design) identified under the scope of international sustainability. As a result, it was observed that the majority of the topics were focused on eco-design and green design (Ramirez, 2007). This result is also in line with the findings of Yılmaz (2015) for the industrial design departments in Turkey. His research conducted with six universities providing undergraduate education in Turkey revealed that the criteria related to sustainable design are not comprehensively incorporated into the curricula and course contents (Yılmaz, 2015; Yenilmez, 2021). Therefore, even though there is an increasing focus on design for sustainability and sustainable development education worldwide, the process of implementing these concepts should receive more attention.

2.1.2.7 Socially Responsible Design, Social Design, Design for Social Innovation

In the literature, social design is claimed to cover a wide range of practices with a focus on dealing with social issues via using varied strategies and taking different perspectives. Similar terms to social design are ‘socially responsible design’,

‘public-interest design’, ‘social impact design’, ‘socially responsive design’, ‘social entrepreneurship’, ‘transformation design’, ‘design for social innovation’, ‘design activism’, and ‘humanitarian design’ (Armstrong et al., 2014; Souleles et al., 2020; Corsini & Moultrie, 2021). For example, design for social innovation is an emerging term that is mentioned to aim at creating behavioral changes that support societal change towards sustainability and generate innovative social structures (Manzini, 2015; Yenilmez, 2021). Yet, Manzini (2015) mentions that the distinction between social design and design for social innovation is becoming less clear. He states that social design is shifting its focus towards social innovation, acknowledging that this presents the best opportunity for addressing the issues it typically addresses. Conversely, design for social innovation is increasingly engaged in initiatives that tackle socially sensitive issues.

This complicated typology indicates a lack of precision in the literature and underscores that current knowledge is fragmented (Markussen, 2017; Corsini & Moultrie, 2021). Moreover, some researchers argue that there is not an explicit definition of social design (Chen et al., 2015; Ferreira et al., 2020). Therefore, this thesis merges all these practices under ‘social design’ as an umbrella term, but uses the other practices interchangeably whenever it is necessary.

While all design inherently involves social aspects, the term ‘social design’ specifically emphasizes the concepts and practices aimed at researching, generating, and implementing new methods for driving collective and social change, prioritizing societal goals over predominantly commercial objectives (Armstrong et al., 2014; Manzini, 2014; Ateş Akdeniz & Öz, 2018). The most significant and enduring challenges that are encountered today, such as eradicating poverty, ensuring access to healthcare, and mitigating climate change, are issues belonging to social design (Easterday et al., 2018). Social design practices primarily utilize participatory and co-design methods in the exploration, creation, and implementation of a wide range of diverse outcomes (Armstrong et al., 2014; Souleles et al., 2020). It comprises a range of principles and practices found in various domains, including both local and central government sectors (Armstrong et al., 2014).

More than two decades ago, Margolin and Margolin (2002) have suggested a ‘social model’ instead of a ‘market model’ for design education and design research. They proposed: “students of social design will have to learn more about social needs and how they are currently addressed. (...) They would also need a stronger background in sociology, psychology, and public policy” (p. 29). However, Yang (2015) has stated that the discussion among educators is still ongoing that designers should not only focus on increasing the profits of companies they work in but also be socially responsible.

As a result of persistent call to actions globally (Souleles et al., 2020), design schools started to offer ‘social’ lectures and practices; however, social design is still not offered as a main discipline by most universities’ design schools (Wang et al., 2016). Indeed, there are even criticisms about the lack of application of social design education in design curricula (Armstrong et al., 2014; Rocha et al., 2017; Souleles et al., 2020; Cifter et al., 2023). Furthermore, a recent study by Rocha et al. (2017) indicated that, the competencies associated with design for social change are not sufficiently integrated into most of the higher education curricula. Wang et al. (2016) stress the importance of ‘on the ground’ learning along with classroom-based education. Moreover, creating social designers necessitates novel educational approaches. Yet, there has been minimal effort directed towards formulating a formal theory of social design education (Easterday et al., 2018). Current methods of social design education often fail to expand effective learning and seldom offer the necessary leadership training essential for becoming proficient social designers (Easterday et al., 2018; Rocha et al., 2017).

Some institutions now prioritize educating designers with a focus on social and humanitarian concerns over commercial interests. For instance, some universities are aware of the United Nations Decade of Education for Sustainable Development principles and are reconsidering their curricula to construct an environmentally and socially sustainable world (Ramirez, 2011). This reconsideration entails incorporating issues such as poverty alleviation, gender equality, human rights, universal education, health, human security, and intercultural dialogue (Ramirez,

2011). Thus, it is vital to introduce the social responsibility of designers and the necessary skills needed to address societal issues should be integrated into design education across more institutions (Çetin & Aryana, 2015). A deeper understanding of the necessary skill set for each aspect will enhance the positioning of educational programs aimed at teaching social design (Tromp & Vial, 2023). Ultimately, even a fundamental theoretical understanding of design activism (Manzini, 2014) and socially responsible design approaches has the potential to drive significant change in the long term (Çetin & Aryana, 2015).

Buchanan mentions that the improvement of government policy and services would result in improvements in community living and he claims that it is a pathway towards social innovation (Frascara, 2020). He also argues that design education should be engaging with professional practice to help improve our lives in that sense. The ongoing discussions and revisions in design curricula towards a more comprehensive recognition of design's social role coincide with a growing acknowledgment of the necessity for interdisciplinary collaboration and the potential positive societal and environmental impact of design (Vodeb, 2015; Wang et al., 2016). For example, education institutions (e.g., Art Center College of Design in the USA and the Design Academy Eindhoven in The Netherlands) provide design for social change and innovation programs that could be taken as single or as a group of students because it has grown into a very crucial topic of service for nonprofit design organizations (Amatullo et al., 2021; Agid, 2012). They also incorporate not-for-profit entities such as laboratories and research centers (e.g., DESIS - see Section 2.2.7.3) into their structure, which are independent of but related to their educational programs, to find solutions to the problems of communities (Social Impact Design Summit, 2013; Yenilmez, 2021).

Although the number of schools providing social design education is growing, many designers face difficulties explaining what social design can offer (Tromp & Vial, 2023). Hence, it can be concluded that social design and similar terms need more acknowledgement among the practice through design education.

2.1.3 New Areas in Design

With the changing definition of industrial design, the scope of industrial design is enlarging. This deviation in design discipline results in diversified design-related fields (interaction design, user experience design, service design, and system design), other than product design, in which designers can take roles and responsibilities. Next sections explain these emerging areas in design.

2.1.3.1 Interaction Design, User Experience (UX) Design

Interaction design is the process of creating communication between the user and a product, system or service (Kolko, 2007). Interaction design has its origins in Human-Computer Interaction (HCI) and involves the design of all products that are digital and interactive (Löwgren, 2014). The focus of interaction design is on how the product, service, or system behaves and interacts with users (Cooper et al., 2007; Moggridge, 2007). Due to the emergence, development and integration of information and communication technologies into all kinds of products, interaction design has gained importance. Despite its difference with industrial design (which traditionally focuses on physical products), these disciplines share a common goal of enhancing user experiences and creating innovative solutions.

In the beginning of the 21st century, when user's digital experiences gained importance, interaction design was included in the field of industrial design. (Löwgren, 2014). Therefore, industrial design also includes the experiences of users during these interactions.

There was an opportunity to create a new design discipline, dedicated to creating imaginative and attractive solutions in a virtual world, where one could design behaviors, animations, and sounds as well as shapes. This would be the equivalent of industrial design but in software rather than three-dimensional objects. Like industrial design, the discipline would start from the needs and desires of the people who use a product or service, and strive

to create designs that would give aesthetic pleasure as well as lasting satisfaction and enjoyment. (Moggridge, 2007, p. 14)

Experience is another frequently used concept in the field of design. Thus, the term user experience (UX) refers to the entire experience of the user during their interaction with the design (Norman et al., 1995). User experience is defined as a subset of all other experiences that encompass the experiences of products, systems, and services that people interact with through a user interface (Law et al., 2009). The concept of user experience has been used as the creation of meaningful experiences through design of interactive products (Hassenzahl, 2013). User experience concept also reflects the quality of user's experience while interacting with a particular design (Knemeyer & Svoboda, 2015).

Within the scope of the experience economy, which is presented as a competitive factor and marketing tool in the business world, the importance of transitioning from a product-oriented to an experience-oriented society has been emphasized and companies have been encouraged to focus on providing different and unique experiences to their customers within the framework of the services they offer (Pine & Gilmore, 1998).

Interaction design that has been defined as the end-user's experience of a product, system, or service and is also called user experience design (MacDonald, 2006). Since products, systems, and services are highly supported by digital and information technologies (Kiernan & Ledwith, 2011), interaction design and user experience design, which deal with the design of user interfaces and user's experiences, can be counted as two of the most preferred proficiencies of 21st century (MacDonald, 2006).

As the internet and product systems diffuse to the world more and more, interaction design usage is enhanced. Interaction design and user experience design are preferred over product design and designers are expected to handle structuring, organizing, and designing information systems (Stillion, 2000). A designer should be able to perceive human cognition, emotion, user experience, context of use, and task

analysis. It is suggested that to survive, product designers should change their design processes into a user-centered method and analyze user interaction on products in a period, cultural relationships between products, and social and environmental results of their design acts (Kiernan & Ledwith, 2014).

In the early 2000s, design education was criticized because interaction design was a neglected subject in the curricula of design schools. Therefore, universities started to develop their curricula in this direction to prepare industrial designers for the future computer-oriented devices (Kolko, 2004). For example, the new curriculum of Georgia Institute of Technology merges interactive technologies with user-centered design methods, human factors and studio education (Budd & Wang, 2017). When the industrial design curricula in Turkey were examined, it was observed that some universities (e.g., METU, TOBB ETU, Özyeğin University, Izmir University of Economics) offer required or elective courses focusing on interaction design and user experience at the undergraduate level and some universities (e.g., Kadir Has University and Yeditepe University) provide user experience and interaction design master's programs for those who want to specialize in human-computer interaction, user experience, interface design, and communication design (Yenilmez, 2021). Another example is the joint master's programme of METU-TU Delft named as MSc Design for Interaction.

2.1.3.2 Service Design

Service design lacks a universally agreed-upon definition due to differing interpretations of 'design' and 'service' across various disciplines. 'Design' holds diverse meanings for different individuals, ranging from tangible product creation to intangible experiences, while 'service' varies from non-tangible deliverables in traditional sectors to software infrastructure in information technology (IT) and after-sale components in product areas (Visser & Stappers, 2012). Despite this, it is generally understood as a holistic approach focused on fulfilling people's needs over time (Visser & Stappers, 2012).

This approach builds upon earlier concepts such as user-centered design, experience design, and interaction design, and is characterized by its focus on the interaction between the service provider and the service user in the service sector, meeting users' needs and the experiences of them as a result of this interaction (Visser & Stappers, 2012). However, several key aspects distinguish service design from other design disciplines. These aspects emphasize human-centricity (Kimbell, 2009), multidisciplinary, collaboration and co-creation among diverse stakeholders, delivering value, and addressing complex, broad projects (King & Mager, 2009). Service design is described as occupying a space between design, marketing, management consultancy, and research agencies (King & Mager, 2009).

Service design incorporates innovative elements and approaches including visualizing intangible aspects and borrowing tools from other design fields such as customer journeys, touchpoints, role-playing, and storyboarding (Visser & Stappers, 2012). Service design area combined with the design for sustainability approach is getting more and more significant among areas of design (Findeli, 2001). For example, social systems can be supported or formed via service design which is called transformation design. Transformation design is concerned with the economic or societal dimensions of design issues and deals with them considering user-centered approach and participatory methods (Burns et al., 2006; Saco & Goncalves, 2008). Since service design emphasizes comprehensive, multi-disciplinary, and integrative characteristics; it can also be combined with participatory design to promote social innovation (Yang & Sung, 2016).

In the fields of education, health, leisure, and food there is a designing tendency to services rather than products (Findeli, 2001). This is parallel to the idea that service design points out more intangible experiences and strategies than tangible products (Yang & Sung, 2016). Emotional intelligence and empathy in addition to competence in design are required skills by the designer in service design (Parker, 2009). Moreover, designers should do their academic research, form an insight, and have the desire to change the design in that particular service design process (Parker, 2009).

The responsibility of education and educators is to learn more about the production of products and services, as product solutions now include significantly more service components, and service solutions cannot exist almost without a physical structure (Visser, 2013). The development of service design in the context of academic and practical studies accelerated in the 2000s. The Service Design Network (SDN), founded in 2004, is a prominent non-profit organization. It aims to strengthen the influence of service design among public and private sectors and academic institutions through national and international events and publications (SDN, n.d.). These developments were also supported by academics such as Parker (2009) who suggests that industrial design education should try to focus on and benefit promising design topics like service design. Since then, many educational institutions have added service design to their new curriculum and many design consulting firms (e.g., IDEO, Live-work, Spirit of Creation) have also started to include service design in their work in connection with interaction design (Yenilmez, 2021). The feedback from industrial designers working in the service sector about how the education they received at the undergraduate level contributes to professional service design processes, and their feedback on areas where they feel advantageous or lacking, also contributed to how the education should be shaped (Fışgın, 2014).

On the other hand, there is still criticism about the limited recognition of the significance of service design across various universities and design programs. According to Oygur Ilhan et al. (2023) design schools are lagging in responding to sector-specific requirements. In addition to prioritizing business and user needs, a key aspect of service design is its emphasis on societal well-being and the public interest (Oygur Ilhan et al., 2023). This suggests a necessity to incorporate more theoretical courses addressing social issues in design education (Oygur Ilhan et al., 2023).

In Turkey, it is observed that courses offered by industrial design departments to their students in the field of service design are mostly offered at the elective course level (e.g., METU, Izmir University of Economics, Yasar University) (Yenilmez, 2021). For example, two courses, named ‘Service Design Studio’ and ‘Graduation

Service Design Studio' aim to provide industrial design students with basic knowledge and skills in service design and to enable them to apply them through projects (Yenilmez, 2021). Apart from elective courses, Izmir University of Economics offers an undergraduate design education program that is specialized in service design (Duman, 2021).

2.1.3.3 System Design

Over time, the focus of design has evolved from creating physical objects to developing integrated product-services and, eventually, to tackling complex systems (Joore & Brezet, 2015; Ceschin & Gaziulusoy, 2016; da Costa Junior et al., 2018a). Systems (da Costa Junior et al., 2018a; da Costa Junior et al., 2018b; Peng et al., 2022) or systemic (Gaziulusoy, 2015; Ceschin & Gaziulusoy, 2016) approach/thinking is a powerful problem-solving way capable of dealing with complexity in societal problems accommodating diverse worldviews (DeTombe, 2015; da Costa Junior et al., 2018a). Indeed, Ceschin and Gaziulusoy (2016) relate systems approach to sustainability and state that this approach is a prerequisite to sustainable design. Systems thinking also enables designers to embrace a comprehensive viewpoint based on particular assumptions (da Costa Junior et al., 2018a).

Designing through systemic thinking is referred to as systemic design. The connection between systems thinking and design is further evident in contemporary transdisciplinary research, indicating the emergence of a systems-oriented design practice, termed here as a systems design approach (da Costa Junior et al., 2018a). Ceschin and Gaziulusoy (2016) define the systemic design as creating locally-based productive systems where the waste generated from one process serves as input for other processes. Therefore, systemic design addresses systems that involve numerous subsystems from a macro perspective (Peng et al., 2022). It stands apart from service or experience design due to its focus on scale, social intricacy, and integration (Peng et al., 2022).

As Buchanan (2001) states and Peng et al., (2022) agree, the complexity of problems and the role of design (therefore designers) is higher in systemic design compared to product or service design. By incorporating systems thinking and its methodologies, designers apply human-centered design principles to complex and multi-stakeholder service systems, such as transportation, medicine, and healthcare (Peng et al., 2022; Wang et al., 2016). Peng et al., (2022) report Design Council's systemic design principles as; people- and planet-centered, zooming in and out, testing and growing ideas, inclusive and welcoming difference, collaborating and connecting, circular and regenerative.

There are models positioned as supportive tools for systemic design. By merging the Multi-Level Model from transition studies with an iterative design cycle, Joore and Brezet (2015) devised a framework known as the Multilevel Design Model (MDM) in 2015. MDM aims to (1) offer insights for the creation of new products, product-service systems, and societal developments as a whole. The product-service system involves tangible objects, intangible services, and organizations (Joore & Brezet, 2015). Facilitating individuals and the organizations they belong to is essential for attaining the systemic transformation necessary in order to tackle complex societal challenges (Van der Bijl-Brouwer, 2019).

In comparison to service or user experience (UX) design, systemic design as a discipline or design framework in creative higher education has not been widely established (Peng et al., 2022). To inspire design students and academics to contribute to the transformation of existing social paradigms; a more systemic design approach, using new design approaches and methods together with systemic design principles, is necessary in creative higher education (Peng et al., 2022). Systems-oriented design education appears in the literature as a comprehensive method which was cultivated within project-based education, aiming to raise a new breed of designers equipped to deal with increased complexity (da Costa Junior et al., 2018a). Incorporating systems thinking into a conventional PSS design approach can strengthen students' fundamental design skills, increasing their preparedness to

address challenges associated with complex societal issues (da Costa Junior et al., 2018b).

For example, in design courses in Delft University of Technology, tutors introduce systems design approaches which build on systems thinking. They focus specifically on providing an understanding regarding capacity building for a systems design approach in educating design students for the development of sustainable PSS (da Costa Junior et al., 2018b). Consequently, they think that integrating systems thinking into a conventional PSS design methodology can support students' fundamental design skills, thus increasing the likelihood that these professionals will be well-prepared to address challenges posed by complex societal problems (da Costa Junior et al., 2018b).

In another example, in the University of South Australia, a project-based studio focuses on systemic design where academics employ the systemic design principles to ensure students' systems thinking and designs are comprehensive with an understanding of complex problem scenarios (Peng et al., 2022). These principles are also utilized in evaluating the effectiveness of the teaching approach and measuring students' responses through their design work. In design practices, students engage and observe stakeholders throughout projects integrating diverse viewpoints through various design methods (Peng et al., 2022).

As designers learn to approach design challenges with a systemic perspective, they stand a higher potential to address the root causes of issues and implement changes that lead to long-term sustainability and positive societal impact. Therefore, systemic design and systems-oriented design education play crucial roles in fostering the development and implementation of more sustainable systems and, consequently, contributing to the improvement of society.

2.2 University-NPO Collaboration

There are many reasons that make the implications of collaboration between university and NPO in industrial design education so essential. These collaborations help students to gain a critical and holistic approach as well as design thinking towards design problems and be prepared for real-life problems while collaborating across diverse disciplines and institutions (Kane et al., 2014). Therefore, design education should encourage students to engage in collaborative projects and processes with nonprofit partners. Furthermore, increased ability to solve real-life problems and enhanced relationships between stakeholders could also provide employment opportunities for design graduates. To provide the current nature of these collaborations, next sections will present the literature on different aspects of university-NPO design collaborations; including describing frameworks and theories, defining stakeholders and their roles & responsibilities, and challenges, success criteria, and influences of these collaborations.

2.2.1 Frameworks of Design Collaboration

To set out which frameworks describe university-NPO design collaboration, this section takes a broad view to first define design collaboration and then explain disciplinary and organizational frameworks.

Chiu (2002) has defined design collaboration as “a team within a collaborative framework for sharing the same goals” (p. 188). Collaborative design is an action of establishing design duties and capabilities in addition to having people engage in this action and contribute with their knowledge (Chiu, 2002). In collaborative design, design team members could be composed of either merely designers or members from diverse disciplines. People from distinctive disciplines contribute with their insights and abilities about design practice and content to serve a common goal (Kleinsmann & Valkenburg, 2008) such as raising public awareness in university-NPO design collaboration.

The world has also moved in a direction where people work and create together within a team from different disciplines, each using its own background and diverse proficiencies, especially for the solutions of fuzzy, wicked social problems. Design as a discipline should be prepared for solving worthwhile real-life problems based on collaborative processes and techniques. Forming teams made up of collaboratively working professionals and specialists from different disciplines and institutions, is a common strategy to solve complex real-world problems. In the related literature, there are two main classifications of terms related to collaboration depending on disciplinary and organizational frameworks.

The disciplinary perspective depends on relations of disciplines such as multidisciplinary, crossdisciplinarity, interdisciplinarity, and transdisciplinarity, which are often confused, misunderstood, and used for mentioning one another. The term multidisciplinary is generally used to imply all circumstances that members from diverse backgrounds, professions, or expertise are combined in a team (Rogers et al., 2005).

Multidisciplinarity is explained as people from different disciplines work individually and coordinately but on the same task (D'Amour et al., 2005). Compared to multidisciplinary, interdisciplinarity implies more integrated knowledge and shared proficiency of team members, to deal with complicated topics that require more than one specialty in order to be solved (Fuchsman & Henry, 2009). Klein and Newell (1997) have described interdisciplinarity as “the process of answering a question, solving a problem, or addressing a subject that is too broad or complex to be dealt with adequately by a single discipline or profession and drawing on disciplinary perspectives and integrating their insights by constructing more comprehensive understanding” (p. 393-394).

Dykes et al. (2009), have discussed the basis for disciplinary framework and their hierarchical positions to another. Discipline is defined as an academic and professional title given after completing undergraduate education. Multidisciplinary, crossdisciplinarity, interdisciplinarity, and transdisciplinarity are the types of

disciplinary collaboration. Meanings differ due to the degree of cooperation, integration, and complexity of teamwork among individual disciplines. At the lowest hierarchical level, multidisciplinary, “the simplest form of work proceeding the single discipline”, is described as individuals from diverse disciplines working independently from each other (p. 103). In crossdisciplinarity, various disciplines integrate and collaborate to solve problems and one discipline has dominance over others. Compared to multidisciplinary collaboration, in crossdisciplinarity, the level of collaboration goes beyond communication. Interdisciplinary collaboration, which often ends up with the emergence of a new discipline, is defined as the teamwork of, at least two related disciplines that are codominant in processes that exceed the boundaries of a single discipline. In interdisciplinarity, boundary-crossing causes the integration of ideas and knowledge that leads to innovation (Glatte et al., 2017). Transdisciplinary model is “the most complex form of collaboration, it is project-focused and commonly concerned with a real-world problem or inquiry, such as sustainability. These problems cannot be solved by any one discipline alone and require multiple disciplines with a shared theoretical understanding” (p. 105). At the end of the transdisciplinary collaboration process, a totally new discipline might arise (Dykes et al., 2009).

From the organizational point of view, as individuals’ departments and organizations differ; the type of design collaboration also differs. Wang and Oygur (2010) have identified four types of design collaboration basing the categorization of relations between departments/institutions: (1) mono-departmental, (2) intra-organizational, (3) inter-organizational, and (4) extra-organizational.

They describe mono-departmental collaboration as cumulative teamwork, more than a collaboration, of a team that is formed by people that are coming from the same discipline or department having design background. Architects and interior designers collectively cooperating to accomplish a specific design task is a good example of the term.

They identify intra-organizational collaboration as a more complicated version of mono-organizational collaboration. This type of collaboration needs a diverse collection of designers, engineers, suppliers, and other disciplines since the project topic is intricate such as manufacturing an airplane in an institution. Integration of teamwork and interaction among people whose backgrounds and prospects are distinct is called intra-organizational collaboration. For instance, IDEO applies brainstorming within the intra-organizational team. In brainstorming, as a method for intra-organizational projects, teammates blend their know-how from their mindsets. The know-how adds up to form a creative design solution for a complex project.

In inter-organizational collaboration, it is assumed that collaboration exchanges skills and proficiency between multiple institutions on a certain design task. This brings not only improved performance but also brand-new applications (Pisano & Verganti, 2008; Li & Williams, 1999). Inter-organizational collaborations, in which a more holistic approach is necessary, provide meaningful outcomes for collaborating organizations (Hardy et al., 2003). For example, the Microelectronics Joint Development Alliance is an outcome of IBM, Samsung, Siemens, Infineon, and STMicroelectronics collaboration (Pisano & Verganti, 2008). Collaborations between university-industry that focus on industrial and technological innovation through knowledge exchange between each other resulting in publications and patents (Bekkers & Freitas, 2008) where mutual benefits and innovation are key drivers of successful collaboration (Dooley & Kirk, 2007), can be counted as inter-organizational collaboration. Likewise, university-NPO collaborations that focus on social innovation are also examples of inter-organizational collaboration.

It is lately demonstrated that consultation from final users of the products or services has become an important asset for design practices; that is extra-organizational design (Redström, 2006). Architecture, interior, and environmental design also benefit from the participation and inputs of end-users which proves the emphasis on end-users on designed products and services. Co-creation (co-design) and design ethnography could also be counted under the roof of extra-organizational design

because both of them are aided by the end-users' direct requirements and experiences (Sanders & Stappers, 2008). For instance, healthcare personnel and patients need to be engaged in the design processes of medical equipment and hospitals. According to Del Gaudio et al. (2016), designer, NPO, and local people collaboration in participatory design projects can also be defined as extra-organizational (extra-institutional) partnership because they involve themselves in a project with the same expectations and intentions. An example to extra-organizational and transdisciplinary collaboration could be the collaboration of designers, textile specialists, and local craftswomen to create traditional cloth and fabric material and to expand the product range in ethnic weaving (Wang et al., 2016). Therefore, it can be claimed that extra-organizational approach for social innovation aims connecting academic disciplines with critical and radical social issues or movements (Vodeb, 2015) to support local and sustainable development.

Under these disciplinary and organizational frameworks of collaboration, this thesis builds on the collaboration between universities (industrial design departments) and NPOs in the design context. According to the aforementioned frameworks of collaboration, from the disciplinary point of view, university-NPO collaboration in design education could be (a) crossdisciplinary as in some cases one discipline has dominance over others, (b) interdisciplinary as in some cases teamwork of codominant disciplines, and (c) transdisciplinary as it is concerned with real-world problems. From the organizational perspective, it could also be (d) inter-organizational as it occurs between multiple institutions, and (e) extra-organizational as it sometimes engages users in the process.

2.2.2 Theories of University-NPO Collaboration

To define a theoretical framework for this study, previous literature on models of collaboration that could relate to this research has been reviewed. In the related literature, the models of collaboration are classified into various categories based on several determinants of collaboration such as collaboration initiation (Roper, 2002),

level of involvement (Ross et al., 2003), collaboration perspective, and organizational relationship (Sullivan & Skelcher, 2003).

Regarding how collaborations are initiated, Roper (2002), describes five types of collaboration between academics and NGOs according to their scopes. In the expert-consultant model, the academic is seen as an expert and a consultant while the NGO is a counselee (i.e., client). In the expert-trainer model, the role of the academic is the trainer while the NGO is the trainee. In these models, usually, the NGO is the establisher who asks for help with its problems. The joint-learning model bases on skills, proficiency, know-how, and vision that partners bring to develop solutions for a particular need. In the best practice model, the academic is responsible for information dissemination to improve practice. In the theory-development model, the aim is to contribute to knowledge rather than practice. In these two models, generally the academic is the establisher of their research.

Ross et al. (2003) identify three typologies of collaboration according to the level of involvement of public policymakers in the research process. These are, from low to high, formal supporter, responsive audience, and integral partner. In formal supporter, there is not an active involvement of non-academics as decision-makers in the research process. In responsive audience, non-academics are involved through ideas, information, or tactical advice. In integral partner, there is an active involvement of decision-makers in the research process.

Regarding the perspectives of collaboration, Challis et al. (1988) define optimistic and pessimistic viewpoints of collaboration. The optimist perspective assumes that collaboration will bring positive results and contribute to all with a shared vision of potential outcomes and the same degree of commitment of partners. In contrast, the pessimist perspective depends on conserving and/or strengthening partners' power and resources over others by giving priority to their individual and/or institutional benefits. This approach takes collaboration as an opportunity.

Sullivan and Skelcher (2003), adapt and extend the theoretical framework of Challis et al. (1988) by adding a third perspective to better understand the motivations for

collaboration from also “realistic” perspective. The realist perspective is similar to the optimistic perspective, but it has a pragmatic view. It focuses on building and maintaining collaborations considering the changing environment that may influence the collaborators’ perspectives. This approach sees collaboration as a dynamic process and getting positive results depend upon other contextual factors.

Sullivan and Skelcher (2003) describe three forms of organizational relationships for collaboration. Contract is a ‘principal-agent’ relationship which is the simplest form based on a legal, formal document about the specifications of collaboration. This is similar to Roper’s expert models. Network, on the other hand, is found in informal and individual relationships that go beyond institutional borders. It is shaped by trust, reciprocity, and continuity. Partnership, however, is related to joint decision-making and co-production with common responsibility for an action. It is akin to Roper’s joint-learning model.

When the related literature was searched, the theoretical frameworks of academic-NPO collaboration are categorized according to collaboration initiation (Roper, 2002), level of involvement (Ross et al., 2003), collaboration perspective, and organizational relationship (Sullivan & Skelcher, 2003). However, there are not any NPO-university-tailored collaboration models or frameworks that also include students as a stakeholder (see Table 2.2).

This thesis takes Roper’s (2002) typologies of initiating academic-practitioner research collaboration as a theoretical basis. Another reason for using the initiation model logic is that it is also common in university-industry collaboration (Korkut & Börekçi, 2005) which is a more developed type of collaboration. Furthermore, this thesis extends the initiation model as driver-based models of educational collaborations between universities and nonprofit organizations which are tutor-driven, NPO-driven, and student-driven. The rationale behind the word ‘driven’ is to express the motivations and expectations brought by the initiator or the driver into the collaboration. Therefore, the driver “in a way” leads the collaboration.

Table 2.2 Overview of Theories

	Determinant	Roles	Motivation	Challenge	Benefit	Criteria for Successful Collaboration
Roper (2002)	Initiation: NPO or academic	If NPO initiates, academic focuses on NPO to recommend solutions If academic initiates, academic develops theory or best practice In both cases, NPO is just providing information about their processes	Academic- test theory in practice NPO - limited staffing NPO - limited financial resources Long-term relationships to enrich the benefits and contributions	Academic's results are not consistent with NPO experience Academic people cannot convey their methods and results NPO is sceptical towards university knowledge and sometimes call it 'book learning' which is not the thing they prefer NPO sometimes thinks university academics are too young and inexperienced to solve something for them Different intellectual approaches combined with different characteristics and culture can lead to misunderstandings	NPO - new perspective, knowledge, and capabilities Academic - use theory in practice	Being clear about the goals of the collaboration Understanding what is at stake for each of the participants regarding the outcomes of the collaboration Calibrating the engagement to match the needs, capacities, and interests of the NGO partner
Ross et al. (2003)	Level of involvement: formal supporter, responsive audience, integral partner	NPO is decision-maker	NPO - to add value deeper research knowledge	Academic - aligning NPO expertise with collaboration needs Time and effort commitment Academic - level of emphasis on NPO issues/focus on NPO or academy? NPO - financial investment in research NPO - communicating with colleagues about the partnership details	Academic - academic recognition Academic - personal satisfaction Academic - better understanding of practice Academic - focusing on a more meaningful research subject NPO - original ideas and expert advice NPO - enhanced research skills, informed about current research New contacts for new collaborations	-
Sullivan and Skelcher (2003)	Organizational relationships: partnerships, network, principal agent Perspective: realistic, optimistic, pragmatic	Joint decision-making and production	NPO - limited staffing NPO - limited financial resources Solving a common problem / achieving a shared vision Finding actors with complementary perspectives, expertise, and resources Long-term relationships to enrich the benefits and contributions	Scope and scale complexity Slow progress towards the goal Lack of inclusiveness Setting the level of resources (what are you going to need? or how many people?)	NPO - new capabilities Improvement of the existing system for both parties	-

2.2.3 Stakeholders Involved in University-NPO Collaboration

Dille and Söderlund (2011) have defined a stakeholder as any actor who can affect an institution or who is affected by it. A partnership is a commitment and an agreement between all actors to cooperate for common interests and objectives (Del Gaudio et al., 2016).

University-NPO collaboration is a form of crossdisciplinary, interdisciplinary, transdisciplinary, inter-organizational, and extra-organizational collaboration. It occurs in several ways such as research collaboration between researchers and NPO practitioners, project-based collaboration in educational contexts between students and NPOs and three-stakeholder collaboration between students, tutors, and NPO practitioners. Three-stakeholder collaboration is the combined version of the two aforementioned collaborations.

Design and research (that is required for design) collaboration between industrial design departments and NPOs in the educational context have three main stakeholders: tutors and students from universities, and practitioners from NPOs. This section briefly defines the stakeholders involved in collaborative projects.

2.2.3.1 University

Universities (i.e., higher education institutions) are sources of information. The university is seen as an objective institution with skills and expertise in teaching and research missions (De Sousa, 2015). While the university can be defined as a knowledge-generating institution (Galvao et al., 2019), departments are specific units of universities. Tutors and students are the two main actors to be considered as university stakeholders.

As of 2019, the number of industrial design departments in Turkey which have started education has reached 30. Some of the universities (i.e., industrial design

departments) that have been already collaborating with nonprofit organizations in the educational context are subjects of this thesis (see Section 3.3). Roles and responsibilities of tutors and students in industrial design departments in university-NPO collaborations will be explained in Section 2.2.4 in detail.

2.2.3.2 Nonprofit Organization

In this section, a summary of the emergence and development of civil movements, definitions of them, and existing categorizations for them is presented.

2.2.3.2.1 Historical background of civil movements

The history of civil initiatives in Europe dates back to the Magna Carta in 1215 when citizens were seen as potential power against the state. The fight against slave trading is regarded to be the first civil movement leading to fights for women's suffrage and against child labor in the 19th and early 20th centuries. These actions were followed by new laws and regulations on education and health. New types of civil initiatives like trade unions, mutual societies, and cooperatives were also formed (Pratt & Popplewell, 2013).

Afterwards, the growth of civil society occurred as a consequence of social and economic traumas caused by the First World War in Europe and North America. For example, Save the Children Fund was formed in 1919 after the First World War (Lewis, 2010). Thereby, civil initiatives started to gain strength while the role of government (state) was becoming weakened. Similarly, the financial crisis in 2008 enabled the re-emergence and growth of civil society organizations in many European countries. This economic downswing gave rise to continuous and ingenious acts of civil society in terms of popularizing and publicizing economic and social welfare (Pratt & Popplewell, 2013).

2.2.3.2.2 Definitions for civil society, third sector, and non-governmental organization

There is not a clear definition for civil society and civil society organizations. It could be either voluntary activities combined with local participation or nonprofit service supplying or both in order to bring social transformation (Pratt, 2016). It is a very broad term that refers to different kinds of organizations such as goods and service providers for disadvantaged people to improve their life quality, professional associations, chambers of commerce, trade and peasant unions, social movements, and advocacy groups (Centre for Civil Society, 2009).

According to Salamon et al. (2003), civil society organization is:

A broad array of organizations that are essentially private, i.e., outside the institutional structures of government; that are not primarily commercial and do not exist primarily to distribute profits to their directors or ‘owners’; that are self-governing; and that people are free to join or support voluntarily. (p. 3)

Civil society organizations are concerned with social issues such as human rights, education, healthcare, public policy, and the environment.

The third sector, one of the most generally used terms for civil society, is also related to voluntary organizations. Ridley-Duff and Seanor (2008) define the third sector as “organizations established by people on a voluntary basis to pursue social or community goals” (p. 1). According to Salamon and Anheier (1997), the third sector has five main attributes: it is ‘organized’ at an institutional level, ‘private’, ‘non for profit’, ‘self-governing’ (i.e., responsible for its own management), and ‘voluntary’ in participation.

American and European variations are two fundamental attitudes towards the concept of the third sector. In the United States of America (USA), the third sector implies separate sector institutions that fit neither government (state) nor private (market) sectors involving charities, nongovernmental organizations (NGOs), community groups, women’s organizations, professional and business associations,

and social enterprises. (Centre for Civil Society, 2009). On the contrary, in European meaning, the third sector does not have to be separate from government and business, it is a hybrid model composed of these two sectors. For instance, in Europe, non-governmental organizations, some of which are funded by the government, take their profit as an investment for future social and environmental actions (Corry, 2010).

Under the far-reaching roof of the third sector, non-governmental organizations could be explained as one of the leading actors of public acts advocating development, human rights, the environment, and healthcare. Vakil (1997) has described NGOs as “self-governing, private, not-for-profit organizations that are geared to improving the quality of life for disadvantaged people” (p. 2060).

Although the term NGO was rooted in the foundation of the United Nations in 1954, the USA preferred to use nonprofit organizations while Europe preferred to call voluntary organizations as synonyms. Hence, the concepts of civil society, nonprofit, and voluntary organizations are also used interrelatedly and interchangeably with NGOs. NGOs differ from other third sector actors like trade unions and professional associations in providing wealth for communities in need. NGOs might vary from small to large or informal to formal. Both the number of NGOs and their roles in development raised during the 1980s and 1990s in Europe due to the inefficiency of government since they are seen as interdisciplinary and transdisciplinary fields of development studies (Lewis, 2010). By concentrating on social and political issues and trying to solve them, nonprofit organizations were appreciated by the community. However, earning respect from the community brought formalization and professionalization which then resulted in decreased creativity in their actions (Pratt & Popplewell, 2013).

2.2.3.2.3 Classifications of nonprofit organizations

Since NPOs include civil society, third sector, community-based organizations (CBO), civil society organizations (CSO), noncommercial organizations (NCO), and nongovernmental (NGO) organizations, these terms could be used interchangeably within the context of this thesis.

A categorization for international nonprofit organizations proposed by the International Classification of Nonprofit Organizations is one of the most refined examples. For this reason, mostly this classification is used in international studies in Europe. There are 12 major categories and they usually depend on the field of activities of NPOs.

Table 2.3 International Classification of NPOs (reproduced from Salamon and Anheier, 1996)

Culture and recreation
Education and research
Health
Social services
Environment
Development and housing
Law, advocacy, and politics
Philanthropic
International
Religion
Business and professional associations and unions
Not elsewhere classified

However, in the USA, the National Taxonomy of Exempt Entities (NTEE) approaches with a different classification depending on the purpose of NPOs. As

Lewis (2010) emphasizes one of the most critical aspects of NPOs is the distinct roles and places they take across diverse contexts, cultures, and politics.

Table 2.4 NTEE Classification of Nonprofits by the National Center for Charitable Statistics (2018)

Arts, Culture and Humanity
Education
Environment and Animals
Health
Human services
International, foreign affairs
Public societal benefit
Religion-related
Mutual/membership benefit
Unknown, unclassified

In Turkey, Sivil Toplum Kuruluşu (STK) is the most common interpretation for NGO which includes associations, foundations, unions, chambers, commodity exchanges, and cooperatives. STKs exist in a wide range of forms; from thought groups to voluntary organizations with people from different professions, from social acts to citizenship initiatives, from non-governmental organizations to unions and professional chambers.

Even though Turkish history of civil society movements, on the basis of professional chambers and countryman organizations, dates back to the Late-Ottoman and Early-Republic periods; when its organizational structure and culture are considered, it is quite new. Nevertheless, it could be thought that NGOs in Turkey have been developing and spreading since the modernization and democratization period of Turkey. NGOs gain importance by trying to solve social problems, being organizational structures outside of political and economic relationships, and being

public places that contribute to regulations of state-society and individual relationships (Keyman, 2006).

The increasing number of STKs acting from local to global concerning social, political, economic, and environmental problems, and they generally aim to propose a fair and peaceful world. STKs can cooperate with the government and other political actors when solving those problems. They are active, efficient, transparent, and responsible. They play a substantial role in society.

STKs in Turkey have recently become prevalent both in quantity and quality. The transformative power of civil organizations results from the co-occurrence of democratic society and organizational life. It approaches to solve diverse and various social problems with activities; however, this effort is limited in terms of value creation, social transformation, and impacts on community management (Keyman, 2006).

According to the Turkish Ministry of Interior (2018), associations, the main focus of this study, are active in 21 different areas based on their fields of activity (Appendix A).

This thesis will use the term NPO as an umbrella term. NPO covers STK, NGO, civil initiative, along with other nonprofit and governmental organizations such as municipalities and local governments.

2.2.4 Roles, Responsibilities, and Contributions of Stakeholders

Each actor or institution involved in the design process has some roles and responsibilities towards each other that should be determined beforehand (Jann & Platt, 2009). Establishing the roles of the collaborating stakeholders clearly is essential (Vezzani & Gonzaga, 2017) in order to achieve mutual benefit from transdisciplinary and extra-institutional collaborations. These roles and relationships can be settled in an official way. Every participant in a team is responsible for

planning design tasks and scheduling activities and assignments along with individual responsibilities (Cross & Cross, 1995).

In this thesis, industrial design students and tutors from universities and partners from NPOs are actors of collaboration. Generally, the university is theoretically-oriented in brain-storming and idea generation whereas NPO is practically-oriented and responsible for introducing the current status of the topic, writing and detailing directions and proposals (e.g., funding), and mentoring during the process (Bailey et al., 2004; Yang & Sung, 2016). The key common role, expected from both sides, is having an advanced level of values and social ethics on development projects (Jann & Platt, 2009). Actors of university and NPOs should also be communicative in sharing their ideas and open to listen to each other's ideas (Vezzani & Gonzaga, 2017).

Zolezzi (2014) stated that the involvement and participation of NPO and its staff in academic programs bring students practical experience in related fields. They also allow design students to boost their social aspects through collaborations (Yang, 2015). One of the first roles of NPO is setting the brief with the tutor (Cifter et al., 2023). While students take part in hands-on, concrete projects, NPO is responsible for the logistics of students where the project is applied (Sanchez-Ramos et al., 2016) and assigning or finding correct stakeholders (e.g., NPO employees or local people) to promote understanding and empathy (Cifter et al., 2023). Finally, they are expected to provide feedback during and upon completion of the project (Cifter et al., 2023). One of the main contributions NPOs make is giving the university an opportunity to put created alternative solutions into practice with real-life experience (Nunes, 2017)

When the literature is reviewed, there is much more emphasis on the designer's role than on other partner's (e.g., NPO's) in design collaboration. Designers have key roles in collaboration: design leadership roles through strategic design thinking along with designing are core responsibilities of designers.

The role of universities is to collect and analyze data and thus produce knowledge. According to Bodorkós and Pataki (2009), academics in universities should be reconsidering their traditional roles in research and education to be able to contribute to sustainability initiatives. Therefore, while producing knowledge, the academic designers are responsible for maximizing the participation of his/her partners while minimizing the obstacles in their contribution, especially by applying participatory and inclusive design approaches and methods (Kane et al., 2014; Börekçi & Korkut, 2017). To Merkel et al. (2004) a designer could turn his/her status into a communicator, consultant, facilitator, or planner via interacting and cooperating with others.

A key role for academic institutions in regional sustainability efforts is to empower local communities and create a platform for diverse voices from various local and regional stakeholders (Bodorkós & Pataki, 2009) to address societal issues. Similarly, Manzini sees designers for social innovation as “triggers that start new social conversations” and also as design activists that are “proactively launching socially meaningful design initiatives” (Manzini 2014, p. 66). Hence, the role of the designer in social design projects is the leadership skill at a satisfactory level to manage and enhance the co-creation process along with planning and communication competencies which can be earned through real-world experiences (Wang et al., 2016). Furthermore, in some cases, participants might also be actors of university-NPO collaborations in the educational context when participatory and inclusive approaches are applied especially in social design projects. For instance, in collaborative projects between designers, NPOs, and local people; the mediating, organizing the social relationships, and applying design thinking roles of designers gives them great power in the design process in public participation activities (Lee, 2008; Del Gaudio et al., 2016). With the help of universities, NPO takes advantage of making community outreach done (Nunes, 2017).

Tutors are responsible for the education and training of students (Sanchez-Ramos et al., 2016) which is why they have extra duties in this collaboration. It is claimed that, in collaborations with design schools, the priority is on the benefits of design students

(Fışgın Korkmaz, 2020). Therefore, to begin with, course instructors must properly manage the expectations of the NPO (Fışgın Korkmaz, 2020). This expectation management can be reflected in project briefs that are prepared with NPOs (Cifter et al., 2023). Moreover, in the feedback sessions that the NPO is present, they need to act as a facilitator (Cifter et al., 2023). Finally they need to be in contact with the NPO throughout the collaboration and evaluate the process together with them once the project is completed (Cifter et al., 2023).

Turkey is a developing country, so such collaborations are not yet widespread and roles and responsibilities are not yet well-established. This thesis aims at filling the lack of knowledge in the area by considering the roles and responsibilities of all stakeholders, and their benefits, especially for NPOs (e.g., design contribution).

2.2.5 Challenges of Collaboration

Knowledge of design activities and design processes are used to be obtained from separate designers researching and designing alone (Cross & Roozenburg, 1992). While collaborating within a team, designers might face various challenges and potentials that they have never come across when they are working individually (Cross & Cross, 1995). Each collaboration has its own unique challenges. Difficulties often occur during the collaboration process due to either dissensus on goals, expectations, priorities, and constraints of stakeholders from diverse backgrounds and viewpoints or miscommunication despite joint ambition (Wodehouse & Mendibil, 2013; Zolezzi, 2014).

Design problems are not easy to describe and understand because of their ill-defined nature in some cases. Especially, societal (public sector) design problems continue to expand in complexity and scope (da Costa et al., 2018a) and they are rather new problems for designers (Fışgın Korkmaz, 2020). Therefore, young designers may find it difficult to handle these problems, even though they are quite capable and competent in creating products and services in traditional contexts (da Costa et al.,

2018a). This is why finding out and evaluating the source of the problem and having shared objectives (Fricke, 1993) are significant in the design process of wicked problems. Having a common goal does not prevent misunderstandings within the design collaboration. Yet, the partners need to be aware of their common objective and inhibit or settle any conflicts that may arise (Cross & Cross, 1995). In a collaboration, it is almost unavoidable that disagreements will appear among stakeholders. There might be discrete perceptions and analyses of issues or disagreements may arise about the valuation of design concepts. That is why; determining, inhibiting, and dealing with those disagreements is a must to manage a design collaboration (Klein & Lu, 1989).

Even though the knowledge and perceptions are clearly gathered and transferred through communication, there will still be misinterpretations and conflicts between parties hence there cannot be pure and common comprehension in collaboration (Cross & Cross, 1995). Communication, coordination, and arrangement of tasks and time, that affect the success of a design project, could turn into negative aspects of design collaboration if mismanaged (Rounce, 1998).

In university-NPO collaboration, existing studies show that financial constraint is the most crucial challenge while implementing these projects (Ross et al., 2003; Bailey et al., 2004; Yang, 2015; Chernikova et al., 2017). The lack of funding is particularly problematic for running the development projects of products, systems, and assistive technologies (Calefato et al., 2016; Nunes, 2017). Another challenge that might be faced while collaborating with nonprofit organizations is that small nonprofit organizations might also remain inadequate to supply enough participants that are necessary for participatory research and co-design (Kane et al., 2014). Related to this challenge, some collaborations are criticized for not being inclusive (Sullivan & Skelcher, 2003). Furthermore, academics and NPOs, who are using participatory approaches in social design projects, are often criticized for being interested in their own benefits and collecting data from the community, without clear and tangible outcomes for the local people (Bailey et al., 2004). The reason is that local people have high expectations of concrete public goods and applications

(i.e., the realization of results) rather than research, fieldwork, and reports on them (Wang et al., 2016). This challenge is boosted by the inconsistency of academics' research results with the NPO experience (Roper, 2002), making the realization of results a significant challenge to overcome for all stakeholders. Moreover, the time and effort requirement for these collaborations is a challenge that is mentioned in the literature (Ross et al., 2003; Chernikova et al., 2017).

There are also student project-related challenges. From the tutor's perspective, even experienced tutors may find it challenging to facilitate project-based learning, provide feedback, and evaluate students' performance in these collaborations (Easterday et al., 2018). It appears that they lose a considerable amount of time to prepare course materials and keep track of the entire process (Easterday et al., 2018). It is also challenging for them to find meaningful topics for students as they have less experience in the field, and sometimes convince NPOs to accept intangible solutions rather than concrete outcomes (Ordóñez et al., 2017).

NPOs sometimes tend to think that academics are too inexperienced in practice to solve their complex problems (Roper, 2002). This belief decreases their commitment to such collaborations. Some of the collaborating NPOs may become resentful against the criticisms of academia (Chernikova et al., 2017).

There are also reasons that decrease students' motivation. In some cases (e.g., dealing with children), students do not feel they have what it takes to cope with the design task (Kaygan et al., 2017). Moreover, some students are not familiar with being part of a multidisciplinary team in a collaboration project (Ordóñez et al., 2017). Another reason that decreases students' motivation can be noticed, especially in post-semester activities. As the semester is already finished, students tend to disengage themselves from the project (Fışgın Korkmaz, 2020).

Even if the student project is realized with concrete outcomes, bureaucratic obstacles can be challenging for some collaborations. Examples of those challenges are copyright (IP) issues or the procurement of design services through a tender process (Fışgın Korkmaz, 2020).

In the literature, the challenges stakeholders encounter in university-NPO collaboration in design education are fragmented. This study is going to comprehensively reveal the challenges for each stakeholder (tutor, student, and NPO) in such collaborations and offer suggestions to overcome these challenges. If these challenges are overcome, they may turn into different advantages and this thesis also aims to explore this transition.

2.2.6 Criteria for Successful Collaboration

(1) Enhanced skills (social skills and expertise in the topic) and (2) good organization of the collaboration process including being committed and supportive are fundamentals to succeed in collaboration.

Chiu (2002) has suggested that expertise in design is a critical factor in design collaboration, especially in social design collaborations. However, being an expert in the topic or having a high design expertise are not sufficient and there should also be social skills to have successful collaborations. For example, design expertise and collaboration competency are not directly proportionate because being experienced and skillful in design individually should be supported with skills of collaboration.

In order to prevail successful collaboration, communication, positive interpersonal attitudes, holistic thinking, open and clear knowledge creating and sharing are fundamentals (McMahon & Bhamra, 2017; Vezzani & Gonzaga, 2017). Glatte et al. (2017) have also confirmed that empathy, emotional intelligence, and communication skills are key drivers for the success of collaboration. Designers with collaboration skills usually help distinctive disciplines communicate which enhances design projects (Kleinsmann & Valkenburg, 2008). Dykes et al. (2009) have argued that design collaboration should first consider the individual's ability to work across disciplines and institutions before focusing on the team.

Collaboration lets people learn from others and see things from diverse viewpoints, it requires acceptance of different disciplines, backgrounds, and cultures.

Collaboration requires handling differences in opinions, exchanging perspectives, collective decision-making, and interdependence among stakeholders to reach a common goal. Successful learning in collaboration depends on both individual factors and group dynamics (Hartman et al., 1999; Vezzani & Gonzaga, 2017). In their article, Chiochio et al. (2011) tried to understand the effects of trust, conflict, and collaboration on performance through five interdisciplinary teams formed by architects, mechanical engineers, and structural engineers who graduated from design schools, architecture, and engineering departments who voluntarily took part in the project. Their study has revealed that more integrated team members cause more efficient collaboration which means improved and reciprocal communication and feedback between team members.

One of the most important criteria that facilitates and contributes to the success of collaboration is being clear about the goals of the collaboration (Roper, 2002) which is called “framing” by Cross and Cross (1995) and “structuring” by Chiu (2002). Interpersonal ties could play an essential role in the structuring and success of a collaboration (McMahon & Bhamra, 2017). The first actions of a collaborative design team should be defining the problem and developing an understanding of it, and then analyzing and refining it. (Cross & Cross, 1995). This can be followed by defining the roles of individuals (McMahon & Bhamra 2017). Especially if there is an NPO partner with limited design capabilities, understanding the needs, capacities, and interests of that partner and calibrating the engagement accordingly is crucial. For constructing productive collaborations, for each partner it is suggested to be committed to the aims and outcomes of the collaboration (Roper, 2002). Institutional support is also necessary to organize a successful collaborative process (Schoen et al., 2017).

Design collaboration capabilities are affected by the degree of knowledge integration and the success rate of this integration. Professionals who are proven to have design collaboration competency proposed that this competency is gained in ongoing projects. However, the rate of gaining and quality of the competency could be improved (Kleinsmann et al., 2012). Knowledge integration could be possible

through communication. During collaborative design, knowledge should be both exchanged and combined in a way to create new knowledge in order to be efficient in the design process (Kleinsmann et al., 2010). Once an individual shares his or her idea, others orient around that idea and improve it adding their own knowledge. This communicative debating cycle turns out to be a useful method in design collaboration and lets each expert contribute and integrate their information (McDonnell, 2009).

2.2.7 Influences of University-NPO Collaboration

University-NPO collaborations frequently offer mutual benefits for all stakeholders which have become the main reason and motivation for stakeholders to increasingly collaborate in recent years.

NPOs need a professional and theoretical grasp of the field in order to stay up-to-date with relevant new theories, whereas design education utilizes practical field experiences that are based on real case applications of civil society for their educational and research studies (Zolezzi, 2014). While university and NPO stakeholders benefit from the collaborative process, society benefits from the outcomes of these collaborations.

In this part, influences of collaborative projects between universities and NPOs on (i) design education, (ii) nonprofit organizations and (iii) society will be covered.

2.2.7.1 Influences on Design Education

Collaborating with NPOs brings many benefits to industrial design education. These collaborations enhance the overall project's learning outcomes by bringing a variety of tools and methods, and, more significantly, by offering the flexibility to adopt and even improvise the appropriate approach for each context (Kaygan et al., 2017). NPOs contribute their own expertise through collaborations, expanding and deepening academic researchers' understanding of global issues while offering

complementary skills and experience (Chernikova et al., 2017). For students, these benefits could broadly be explained by learning the skill set and knowledge to become a 21st century designer. Parallely, tutors of design education would get the opportunity of providing an enriched experience to raise 21st century designers.

Rather than a passive learner role, the students' role has shifted to mediators and reflectors, as they use design representations to reflect on their learning from project participants and further refine their design ideas based on the feedback from their tutors (Cifter et al., 2023). This also means leaving their comfort zones for students and engaging with stakeholders and environments that they might have not engaged otherwise (Peng et al., 2022). It is also significant to expose students to these stakeholders in order to plant openness and flexibility into their self-perception as designers (Kaygan et al., 2017).

Through these collaborations, students not only understand their professional responsibilities (Cifter et al., 2023) and experience working with other stakeholders, but also they gain specific skills and learn about a variety of topics that are mainly based on dealing with societal problems. Examples of skills that are mentioned in different studies are empathy, ethics, experiential learning, and working on complex and real problems whereas examples of topics that are mentioned in different studies are inclusive design, socially responsible design, co-design, and systemic design (Yang, 2015; Chernikova et al., 2017; Peng et al., 2022; Cifter et al., 2023).

From tutors and university perspective, apart from the learning outcomes they provide for the current students, these collaborations allow them to make connections to experts from the field for future opportunities (Chernikova et al., 2017). Moreover, NPOs enhance the expertise of tutors, providing them with knowledge, sometimes at the international level (Chernikova et al., 2017). Finally, they would have an increased visibility in terms of prestige, financial rewards, and awards (Vodeb, 2015).

2.2.7.2 Influences on NPOs

University-NPO collaboration has considerable positive effects on nonprofit organizations. While NPOs can enable practical knowledge for education with a limited budget (Yang, 2015), universities can present up-to-date theoretical and analytical trends for NPO partners (Chernikova et al., 2017; Yang, 2015). This perspective is significant for NPOs as they do not generally have a relaxed budget to hire professional designers (Yang, 2015; Fıŝgın & Bađlı, 2016). They also sometimes suffer from having a limited time to complete their projects and these collaborations can address this limitation as well (Fıŝgın & Bađlı, 2016)

Through these collaborations NPOs gain original ideas, expert advice, and new capabilities (Roper, 2002; Sullivan & Skelcher 2003; Ross et al., 2003; Vezzoni & Gonzaga, 2017; Fıŝgın et al., 2018; Hough et al., 2018; Fıŝgın & Bađlı, 2016). They also get aid in strategic planning and decision-making (Chernikova et al., 2017). These contributions are supported by advanced research integrated with technology which enhance NPOs' missions (Ross et al., 2003; Appe & Barragán, 2017; Chernikova et al., 2017). In parallel to these design outputs and design thinking implementation, design awareness of NPO is increased as a result of the collaboration (Ordóñez et al., 2017). Moreover, NPOs get the opportunity to evaluate their work through academic perspective and rigor, increasing their products' and services' potential to get funding (Chernikova et al., 2017).

Furthermore, establishing collaborations with universities offers new contacts for new collaborations (Ross et al., 2003; Chernikova et al., 2017; Trebil-Smith & Shields, 2019) which creates new opportunities for NPOs to gain more advocates for their work and bring prestige to them and their field of activity (Appe & Barragán, 2017). They also increase their human resources base and a potential to access specialists in their fields (Chernikova et al., 2017).

However, in related literature, there is less emphasis on the contributions of universities to NPOs for accomplishing their missions within the relevant context.

As aforementioned, further study is needed focusing more on benefits for NPOs as there are no studies about the influences of industrial design education on NPOs.

2.2.7.3 Influences on Society (Social Innovation and Sustainable Development)

Aside from the learning opportunities and contributions to NPOs university-NPO collaboration offers, and the fact that these collaborations are being organized under a design education context, there is a potential to achieve sustainable development through social innovation as an outcome of these collaborations.

It is recognized that the old version of the economic model based on manufacturing is not sufficient for the new world. The world is moving towards a transformation economy where stakeholders work collaboratively to find solutions for local problems that stem from global problems (Brand & Rocchi, 2011). Moreover, there is a movement away from centralized and globalized production and consumption trends towards distributed and specialized local production and consumption trends (Manzini & M'Rithaa, 2016). According to Wang et al. (2016), the design process can be communal, involving people in envisioning and crafting their own futures, utilizing their creativity and resources accessible within their local context. This means, there is a renewed appreciation for traditional craftsmanship and local agriculture (Manzini & M'Rithaa, 2016). Moreover, indications of these trends show itself also in the exploration of small-scale, high-tech fabrication and production methods (as advocated by fab labs and the maker movement) (Manzini & M'Rithaa, 2016).

Embracing the mentality of distributed production, the concept of localization can be realized by blending various design and fabrication approaches, from traditional industrial practices to fostering networks of small to medium-sized enterprises (Manzini & M'Rithaa, 2016) leading social innovation. Social innovation surpasses the boundaries of academia, business, and the public sector (Von Busch & Palmås,

2016). It involves “social means” that is collaborative co-creation among stakeholders who operate collectively and, more importantly, “social ends” that aim for socially beneficial outcomes (Manzini, 2015; Von Busch & Palmås, 2016; Ferreira et al., 2020; Murray et al., 2010; Corsini & Moultrie, 2021; Peng et al., 2022). Yang and Sung (2016) have defined social innovation as “new solutions, to address major social issues and challenges, that are more efficient, effective, and sustainable than the existing ones, for the long-term benefit of society” (p. 22). According to Björgvinsson et al. (2012), social innovations could be “products or services just like any innovation, but they can also be a principle, an idea, a piece of legislation, a social movement, or an intervention—or some combination of these innovative possibilities” (p. 110).

Social innovation can help sustain local development, create job opportunities, and establish economic growth. The aim of social innovation is to create solutions that benefit various stakeholders and empower communities across public, private, and voluntary sectors, fostering alternative economic models and substantial positive social transformations (Peng et al., 2022). Yet, social innovation encounters numerous challenges stemming from the complexity of stakeholders and ecological systems involved. Concerns related to these concepts involve complicated and wicked problems (see Buchanan, 1992). In order to be accomplished, social innovation must implement appropriate models, approaches, and methods for the fulfillment of social needs and welfare.

Therefore, new models, approaches, and methods are being offered to sustain social innovation with design playing the key role. The SLOC model is an example, denoting Small, Local, Open, and Connected aspects (Manzini, 2011; Manzini & M’Rithaa, 2016) chasing long-term local self-development rather than genuine one-off solutions. Efforts in design for social innovation are characterized by their multi-stakeholder approach, intensive collaboration, and being social in nature (Amatullo et al., 2021). Essentially, social innovation can be approached as a collaborative design process, where designers serve as facilitators and catalysts within diverse multidisciplinary teams (Peng et al., 2022). The approaches and methods mentioned

in the previous sections can be implemented by the designers to support or lead social innovation. Some examples are mentioned as follows; collaboration (Van der Bijl-Brouwer, 2019; Easterday et al., 2018; Vodeb, 2015), service design (Yang & Sung, 2016), participatory design (Corsini & Moultrie, 2021; Wang et al., 2016; Börekçi & Korkut, 2017; Hillgren et al., 2011), design thinking (Peng et al., 2022; Souleles et al., 2020; Docherty, 2017; Brown & Wyatt, 2010), and inclusive design (Corsini & Moultrie, 2021). For social innovations to succeed, they should be scaling and bringing systemic change eventually (Ferreira et al., 2020) which is also explained in the spiral of social innovation prepared by the European Commission (Figure 2.1).

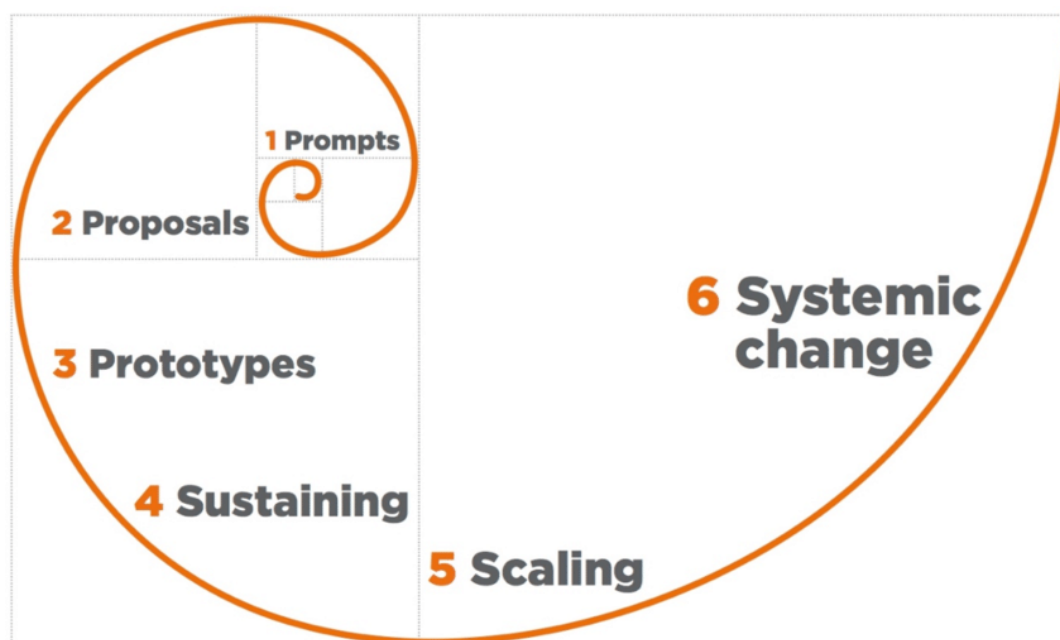


Figure 2.1 Spiral of Social Innovation. (Adapted from: Murray et al., 2010)

It has been widely acknowledged for quite some time that the prerequisite for any conceivable sustainable society is its resilience. Resilience is “intended as the system’s capacity to cope with stress and local failures without collapsing” (Manzini & M’Rithaa, 2016, p.276). Social innovation is the key in realizing resilient systems (Manzini & M’Rithaa, 2016), as it involves fostering significant changes that help existing systems adapt to emerging needs, and thereby, preventing systems to fail due to complex and rapidly evolving circumstances (Ferreira et al., 2020).

Apart from resilience, there is a growing interest in the role of social innovation as a catalyst for sustainable development, with many approaching the topic through discussions on conceptual frameworks and implementations (Peng et al., 2022). In 1987, the concept of sustainable development was defined by the Brundtland Commission Report as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. In that direction, the United Nations specified 17 sustainable development goals to reach until 2030 to address major societal issues such as poverty, and designers should address those societal issues (Meyer & Norman, 2020). Manzini and M’Rithaa (2016) also define ‘development’ as the enhancement of physical and cultural diversity, and the learning capacity of the systems we live and help in building them. Hence, helping people to solve their problems instead of solving the problems for them and making them self-sufficient are the main goals of sustainable development projects (Bailey et al., 2004) that can be done through social innovation.

The intentions of sustainable development could be listed as economic maintenance, environmental conservancy, and social advancement through collaborations (Nunes, 2017). Still, societies have concerns in terms of the quality of people’s lives and sustainability. The public is aware that to resolve and eliminate these concerns, a collaborative approach is needed in the era of blurred borders across disciplines (Majithia, 2017). Collaborative processes, where actors are highly involved and learn from each other’s experiences, boost sustainable development by enabling issues to be handled from multiple dimensions (Lukman et al., 2009; Nunes, 2017) making collaboration essential in solving these wicked problems.

At this point, the presence of design (creative industries composed of creative people - Hocaoglu, 2016) and NPOs could play a pivotal role in easing these concerns. NPOs can be key contributors to social innovation (Yang & Sung, 2016), and hence, sustainable development; possessing perspectives such as distributed production and localization while having the aim of utilizing resources accessible within their local context.

Design is grounded in human-centered principles and the meaningful satisfaction of both individual and societal needs in a creative and self-directed way (Baldassare et al., 2019; Brand & Rocchi, 2011) which can lead to social innovation. Therefore, it is well-suited to address the challenges of sustainable development and resilience. This fact brings out the term ‘design for sustainable development’ which refers to the implementation of a design process to solve complex and complicated sustainability problems (Baldassare et al., 2019).

Designing for sustainable development consists of four levels: 1) product design, 2) product service system design, 3) business model design, and 4) ecosystem design (Baldassare et al., 2019). Achieving sustainable development requires collaboration, prompting designers to unite individuals across various levels and meet the needs outlined across the four mentioned levels (Manzini 2017, Baldassare et al., 2019). In practice, NPO and design can collaborate in projects that seek social inclusion and social innovation.

Articulating social innovation and sustaining local development also extended to the creative Higher Education (e.g., university) settings as an emerging concept (Peng et al., 2022). The notion of utilizing collective and collaborative techniques to achieve sustainable and creative solutions for ill-defined sophisticated and multi-dimensional problems such as climate change, access to clean water, sanitation, poverty, women empowerment, and crime, drew the attention of design academia (Soda et al., 2012).

If designers can overcome the challenge of developing too many ideas but failing to implement them (Mulgan, 2014), creative higher educational institutions can have great contributions to making people’s lives easier and more interesting through collaborating with nonprofit institutions (Wang et al., 2016; Ekman et al., 2011). In other words, to increase the effectiveness of their proposed solutions, NPOs can merge their expertise with universities on a collaborative platform to create a clear path towards social innovation.

Consequently, there is an ongoing effort to establish networks aimed at sustaining collaborations through NPOs and higher education institutions. Enhancing the training of social impact design can be achieved through social innovation networks (NPOs) like Design for America (DFA) and DESIS. The 'Design for Social Innovation towards Sustainability (DESIS) Network' is one such initiative, endorsing social innovation and sustainability (DESIS Network, n.d.; Easterday et al., 2018). Founded by Ezio Manzini in 2009, DESIS is a non-profit organization aiming to promote the introduction of design for social innovation and sustainability in educational institutions, alongside the design discipline (DESIS Network, n.d.). This effort seeks to create accessible design knowledge within an international network and foster meaningful societal change in collaboration with other stakeholders (Yenilmez, 2021). Examples within this network include Hunan University's 'New Channel' program in China and the University of the Arts London's 'Green Camden Public and Collaborative Project' (Cifter et al., 2023). Similarly, in the USA, the 'Social Innovation Networks (SINs)' foster social innovation through network hubs linking higher education institutions and other organizations (Easterday et al., 2018). These networks can organize designers, coaches, and community stakeholders into distributed studios, which undertake local, genuine design projects in collaboration with clients (Easterday et al., 2018). Supported by these networks, studios can collectively promote social innovation, teach a comprehensive range of social design skills, and strive to create tangible real-life impacts (Easterday et al., 2018).

At the university level, creative disciplines and educational programs are started to be offered at the university level globally, with the aim of fostering positive social change and facilitating sustainable societal transformation (Peng et al., 2022). For example, the University of Canberra and Monash University have integrated the United Nations' 17 Sustainable Development Goals (SDGs) into their research agendas, aiming to leverage their academic and research capabilities to advance sustainable social innovation (Peng et al., 2022). Some of the approaches and methods described in the previous sections are already in use in universities (e.g., project based learning, participatory design, user-centered design) to achieve

successful and sustainable community outreach through co-creation methods (Wang et al., 2016; Börekçi & Korkut, 2017). For example, through a collaborative and participatory design process with a local community, users participate in projects from the initial steps and planning, decision-making, and implementing phases of the design process (Del Gaudio et al., 2016; Börekçi & Korkut, 2017).

However, without the disciplinary and organizational collaborations and contributions of various, especially social benefit-oriented stakeholders (like NPOs), universities might remain insufficient for solving problems and creating significant change. Therefore, globally, universities are increasing their interaction with non-commercial and nonprofit organizations. In order to achieve social innovation and raise social, economic, and ecological well-being, university outreach and university-NPO collaboration are essential key factors (Lukman et al., 2009). The roles of NPOs may involve presenting the current state of issues, steering the course of innovation, and disseminating the outcomes of social innovation efforts (Yang & Sung, 2016). Existing examples mainly show that university-NPO collaboration projects, focusing on specific design problems in rural regions and solving problems of developing communities are rising in both academic and educational contexts. The projects focus on social innovations that are the results of social design projects (Phills et al., 2008), emphasizing the impacts of NPOs in design, and design education and how this partnership provides mutual benefits to all partners and creates something for someone in need (Calefato et al., 2016).

In the related literature, several inter-organizational, extra-organizational, and trans-disciplinary university-NPO collaboration projects have been presented as case studies. Some of these projects make use of participatory and co-design methodologies. Several examples are mentioned below.

Cifter et al. (2023) explain their design collaboration involving two universities and two NPOs (Six Dots Foundation for the Blinds and the Spinal Cord Paralytics Association of Turkey) for inclusive design. They used the Cambridge EDC's 'Concept Design Process Model' (inclusivedesigntoolkit.com) and followed three

main steps during their collaboration: 'Explore', 'Create', and 'Evaluate'. In the 'Explore' step, tutors and NPOs prepared design briefs and students, in multidisciplinary teams, and NPOs worked on exploring and understanding the problem. In the 'Create' step, students prepared a solution to the problem in collaboration with NPOs and they received feedback from tutors. In the 'Evaluate' step, they presented their solution for further reflections.

Hough et al. (2018) also explain their project experience. One of their studio (Studio Sustain) projects took place in Barbaros Village, Urla. Students focused on sustainable design and system design, trying to find solutions at a larger scale. Their process included: first visits to the area, meeting and exploration visit, developing solution, and testing and developing the solution in the area. Working in the field using sustainable design methods, the students identified the intersections between sustainability and local knowledge and developed region-specific visions for the future.

Kaygan et al. (2017) mention multiple collaboration projects with the same neighborhood association in a third year design studio project. These projects focus on design for sustainability through participatory design and future sustainability scenarios. Their projects generally followed the same steps starting with a brief preparation and introduction meeting. Then, they made field trips to the neighborhood to get familiar with the area and problem and conduct short interviews. Following these trips, students analyzed the data they had collected using how-might-we questions and prepared scenarios. Also using the feedback, they finalized scenarios and system diagrams as their solutions. Finally, they made presentations to the stakeholders.

In the example of Yang (2015), design students cooperated with Taiwan Yuan-li Handiwork Association in order to boost rush weaving, a traditional Taiwanese handy craft, using socially responsible design. During the project, the student team interviewed local craftsmen and community members, such as grandmothers, involved them in the design process and designed a variety of hand-craft rush-woven

products. They also proposed a brand, logo, and packaging design for these products. The results demonstrated that innovative and diverse rush-woven handicrafts are achieved through the expertise of industrial design students and co-creation and co-design with elder local people. Besides, this project has social and cultural impacts like female empowerment.

Kjøllestad et al. (2014) drew students' attention to social sustainability especially in development situations by arranging a project in Port-au-Prince, capital of Haiti. Students from Norwegian University of Science and Technology collaborated with a Norwegian-Haitian NPO. They initiated and managed the project under the supervision of their tutors. Generating income for parents of children from a local school was the core of the project, resulting in setting and constructing up a bakery business. Students had theoretical knowledge of sustainable design and social sustainability in design and they were also experienced in user-centered and participatory design methods. During the project, they utilized IDEO's human-centred design toolkit. The project had a six months of preparation step before it started and the steps included: initiating contact with the collaborating NPO, working on a joint project brief, applications for grants, deciding on academic outlines for the university's approval, internal structuring of the group, and preparatory research.

There are also other relevant projects with different subjects. These projects include: local production for the prosperity of local community (Ateş Akdeniz & Öz, 2018), user interface design of applications for underprivileged people (Calefato et al., 2016), public space design for community (Del Gaudio et al., 2016), helping rural population to access clean water (Sanchez-Ramos et al., 2016), urban restoration and redevelopment of river valley (De Sousa, 2015), and three-wheel, multipurpose transportation vehicle and agricultural mechanization (Wilson & Lumkes, 2015).

These projects foster collaboration and cooperation between design students, tutors, and non-profit organizations and emphasize how designers can contribute to society. As a result of the collaborations with non-profit partners, we can even expect to see startups as there are examples such as SwipeSense (Easterday et al., 2018), which

supports hand hygiene technology to fight against hospital-acquired infections. Moreover, to teach the full range of social innovation and sustainability and make a real-world impact; we can expect to see more of the social innovation networks, such as DFA and DESIS, in the near future as a result of university-NPO collaboration.

2.3 Summary of Literature Review

The literature review highlighted two issues about 21st-century industrial designers and their education. Firstly, designers should not only focus on the financial aspects but also on other dimensions of sustainability (social and environmental). Secondly, they should focus on real-life problems both during their education and career which require a variety of skills (e.g., teamwork and communication) and utilizing new approaches and methods (e.g., inclusive design, sustainable design, and socially responsible design) in an expanded scope of products, services, systems, and experience. On the other hand, the world is moving towards a point where real-life problems are getting more complex and intricate. This also means more challenging design problems which might be too difficult to be addressed only by designers. Societal issues especially require collaborating with other disciplines and stakeholders affected by the issue. Thus, collaboration with these stakeholders (e.g., NPOs and society) is key to solving societal issues.

Building on these arguments, the collaboration of industrial design education and NPO requires particular attention as it offers three-way benefits; including design education, NPOs, and society. These collaborations promise benefits to students in terms of providing a real-life context and a diversified portfolio of skills, knowledge, approaches, and methods. They also offer benefits to tutors both academically and practically. Tutors get the opportunity to provide better learning outcomes to their students. They also learn about new fields or enhance their expertise as a result of these collaborations. At the same time, they increase their visibility. Finally, these collaborations offer benefits to NPOs such as new products and services through academic theoretical know-how in a rather easy and budget-friendly way. They gain

original ideas and receive expert advice and new capabilities. As an ultimate goal; these collaborations can trigger social innovation, which might result in society's sustainable development.

However, there are not many studies centered around university-NPO collaborations in the industrial design context. To identify the current nature of these collaborations through different perspectives, this thesis will evaluate the examples in Turkey by reaching out to the stakeholders involved in these collaborations.

CHAPTER 3

METHODOLOGY

This chapter explains the adopted methodology of the study and presents a detailed overview of the research design. Starting from the research approach of the study, which is a qualitative research approach with a social constructivist (interpretivist) perspective, the design of the research that includes the survey and semi-structured interviews will be explained in detail.

To attain the goals of the study, two research methods, survey and semi-structured interviews, are used together in two stages. In this chapter, two stages of the research process including data collection and data analysis methods will be described in order. First, the survey will be explained in detail including the design of the questionnaire, sampling, conduct of the survey, and the analysis process of data collected through the questionnaire. Second, the semi-structured interviews will be presented step by step by explaining the design of the interviews and the interview guide, the selection of the interviewees, data collection, and data analysis process of the interviews.

3.1 Research Approach

Qualitative research is a research approach to exploring and understanding the meaning behind everyday knowledge and practices for the social construction of realities and is interested in texts as empirical material, instead of numbers, derived from participants (Creswell, 2017; Flick, 2007). By making use of interviews, conversations, recordings, and memos; qualitative research interprets the meanings people bring to these materials (Denzin & Lincoln, 2005).

Most qualitative research deals with meaning-making and interpretation by using texts, instead of numbers as subjects, which is one of the characteristics of qualitative research. Qualitative research is based on the production and the construction of social realities, and is interested in the everyday practices of participants under study, from their point of view. Within the several research perspectives in qualitative research, the interpretive approach is an approach to understanding the world and producing knowledge about it. For this reason, most social research typically has an interpretivist viewpoint (Flick, 2007).

This thesis aims to explore the nature of industrial design department-NPO collaboration in the educational context from tutors', NPO practitioners', and students' perspectives by collecting qualitative data through interviews. In order to reach this aim, the study focuses on the motivations and expectations of these three actors involved in these collaborations, the roles and responsibilities of each actor, the scopes and topics of the projects, and the benefits of these collaborations for each actor. Since this research is based on actors' viewpoints and experiences, it adopts a qualitative research approach with a social constructivist (interpretivist) perspective.

3.2 Research Design

The aim of this study is to investigate the current nature of university-NPO collaboration in industrial design departments, including the role and contributions of design education (i.e., design research and design) for NPOs to achieve their goals through collaborations with industrial design departments, and the role and contributions of NPOs for students' design education.

Considering the main objectives of the research, combining two qualitative research methods, questionnaire and semi-structured interview, is considered to be effective in achieving deeper insights related to this study. First, survey research aims to find out collaborations in the educational context and the actors of these collaborations. Second, semi-structured interviews are used for an in-depth investigation of the three

actors' viewpoints who participated in these collaborations. The content of data is audio-recorded interviews which were then transcribed into textual format. The nature of the data gathered from interviews is qualitative.

Like many other research designs whose subject is human, surveys and semi-structured interviews also have to pursue ethical considerations. In this respect, first, I applied for ethical approval with the consent form (Appendix B and Appendix C), a sample of the questionnaire (Appendix D and Appendix E), and the interview questions attached (Appendix F and Appendix G). Ethical approval for this study has been obtained from the METU Human Research Ethics Committee, with protocol number 121-ODTÜ-2019.

3.3 Stage I: Exploring the Current Nature of Industrial Design Department-NPO Collaboration

As one of the concerns of my doctoral study is to examine the current status of industrial design department–nonprofit organization (NPO) collaboration, to explore the problem area generally, the first stage of the research aims to identify the universities and NPOs that are involved in such collaborations.

This examination includes; the universities and NPOs cooperatively involved in collaboration processes, the scope and topics of completed, and ongoing collaborations. In addition, the distribution of projects by years, grades, and academic courses that projects were carried out is another significant aspect of this stage. As this stage reveals the educational collaborations and collaborators, it provides a population for the interviewing stage. Considering the particular aim of the study, survey research is also helpful for identifying the potential interviewees for Stage II.

The educational collaborations in which students took part within the curriculum of undergraduate and/or graduate programs are the focus of this study. The collaborations conducted by student clubs, design societies, workshops, and research

collaborations that only the academicians engaged in, are not in the scope of this study.

The following sections present the research plan for the first stage in detail including adopted research methodology, sampling, conduct of the survey, complementary tools and techniques, and data analysis methods along with discussing their challenges and limitations.

3.3.1 Survey

Survey study is a research method that generally uses standardized questionnaires to collect data in a systematic manner. Along with the interview, the questionnaire is one of the fundamental data gathering means containing a set of questions to collect data that are filled by respondents through writing and/or answering in the survey method (Hanington & Martin, 2012).

Questions might be either unstructured in which participants provide answers in their own words, or structured in which they choose a response in a set of predetermined choices (Bhattacharjee, 2012).

Compared to other research methods, survey study has several strengths such as remotely collecting data via electronic mail from a country-wide population. Survey research is also inexpensive considering the time, effort, and cost spent (Bhattacharjee, 2012; Robson & McCartan, 2016; Hanington & Martin, 2012). Using online software services also provides functional and practical solutions to develop and deliver questionnaires.

Although questionnaires seem to be easy to prepare and conduct, they require deliberate consideration such as the use of language, forming sentences, the length, quantity, and order of questions as well as the response options (Robson & McCartan, 2016; Hanington & Martin, 2012).

The way a questionnaire is arranged is significant for both respondents in terms of legibility and appearance, and the researcher for analysis.

Within the particular aim of the first stage of the study, briefly revealing the current situation of collaboration between industrial design departments and NPOs in Turkey, choosing the questionnaire as a data-collecting tool is highly appropriate due to its several advantages. First of all, there are not any comprehensive sources in the literature, presenting the stakeholders and the topics collaborations carried out in Turkey. As a second advantage, through the results of survey findings, the required representative sampling from the population of interest for the next stages (i.e., semi-structured interviews) is determined. Third, the researcher can benefit from the questionnaire and its results while interviewing as probes to remind and guide the interviewees about their answers. Finally, using an online software service for the questionnaire is convenient to provide accessibility to a large audience group without directly knowing the respondents in a time-effective way.

The questionnaire survey study contains preparation, implementation, and analysis steps, which are described below.

3.3.2 Design of the Questionnaire

The questionnaire is prepared for the academic actors of the collaborations to investigate the NPO collaborations in industrial design departments. The questionnaire consists of two parts which are the explanation and the questions. It starts with the explanation part that informs participants about the intent of the study and assures that collected data will be used for academic purposes only by anonymizing from this questionnaire and without sharing their personal information. It also emphasizes the significance and the contribution of the participation to the research. Following the first part, as providing an opportunity for depth of response, the questionnaire is composed of six open-ended, short-answer questions (Appendix D and Appendix E).

The first question asks the names of the academic coordinators of university-NPO collaborations. Then, participants were respectively asked to answer collaborative partners (e.g., Lösemili Çocuklar Vakfı, Türkiye Sakatlar Derneği, Çankaya Belediyesi, Tasarım Atölyesi Kadıköy, etc.), the subject and scope of the collaboration, the university, the course name and code with specifying also the grade (e.g., 2nd-year industrial design studio course, graduation project or service design elective course, etc.) and finally the academic year and term that the project conducted (Table 3.1).

Table 3.1 Questions in the Questionnaire

Names of the coordinators
Partners/stakeholders of collaboration
Title and topic of the project
University where the collaboration is carried out
Course name and code that the collaboration is carried out
The academic year and term that the collaboration is carried out

At first, the respondents were allowed to fill in up to three collaborations. One of the first respondents indicated that they collaborated more than three times. Then, the necessity of space for more collaborations was realized and the number of parts assigned to the collaborations was raised to five from three, according to their feedback. Following this adjustment, the respondents who already filled in were notified.

In order to reach its purposes, the questionnaire is prepared with an easy-to-use, secure, and free online survey tool, Google Forms.

3.3.3 Population and Sampling

Sampling typically refers to choosing appropriate data to be used from the data sources that best address the objectives of the qualitative study (Gentles et al., 2015). Within the specific aim of the first phase of this study, the plan for sampling is based on a clearly defined purpose which pursues a goal to reach the universities engaged in collaborations in their undergraduate or graduate industrial design education.

The sampling procedure of this study consists of several steps. The first step is listing all 30 universities that have industrial design departments in Turkey shown on the website of Yükseköğretim Kurulu, <http://yokatlas.yok.gov.tr>. Out of 30 industrial design departments; 17 are located in Istanbul, five are in Ankara, three are in Izmir, one is in Bilecik, one is in Eskişehir, one is in Karabük, one of them is in Samsun, and one of them is in Konya. Along with the city distribution, Table 3.2 also shows the industrial design departments' initiation year of education.

Even though the population is 30 industrial design departments, the exact number of collaborative projects and the universities' industrial design departments that are in such collaborations is unexplored at the beginning of the study. Therefore, the sample is derived from the ones who responded, after conducting the questionnaire.

Table 3.2 List of Universities with Industrial Design Departments in Turkey in 2019

	University	City	Initiation Year of Education
1	Atılım University	Ankara	2009-2010 Fall
2	Bahçeşehir University	Istanbul	2008-2009 Fall
3	Beykent University	Istanbul	2012-2013 Fall
4	Bilecik Şeyh Edebali University	Bilecik	2013-2014 Fall
5	Doğuş University	Istanbul	2005-2006 Fall
6	Eskişehir Technical University	Eskişehir	2000-2001 Fall
7	Gazi University	Ankara	2012-2013 Fall
8	Haliç University	Istanbul	2005-2006 Fall

Table 3.2 (continued)

9	Istanbul Aydın University	Istanbul	2013-2014 Fall
10	Istanbul Bilgi University	Istanbul	2011-2012 Fall
11	Istanbul Medipol University	Istanbul	2015-2016 Fall
12	Istanbul Okan University	Istanbul	2007-2008 Fall
13	Istanbul Şehir University	Istanbul	2018-2019 Fall
14	Istanbul Technical University	Istanbul	1993-1994 Fall
15	Istanbul Ticaret University	Istanbul	2014-2015 Fall
16	Işık University	Istanbul	2007-2008 Fall
17	Izmir University of Economics	Izmir	2004-2005 Fall
18	Izmir Institute of Technology	Izmir	2019-2020 Fall
19	Kadir Has University	Istanbul	2004-2005 Fall
20	Karabük University	Karabük	2012-2013 Fall
21	Marmara University	Istanbul	1985-1986 Fall
22	Middle East Technical University	Ankara	1979-1980 Fall
23	Mimar Sinan Fine Arts University	Istanbul	1971
24	Ondokuz Mayıs University	Samsun	2018-2019 Fall
25	Özyeğin University	Istanbul	2013-2014 Fall
26	Selçuk University	Konya	2013-2014 Fall
27	TED University	Ankara	2018-2019 Fall
28	TOBB University of Economics and Technology	Ankara	2009-2010 Fall
29	Yaşar University	Izmir	2010-2011 Fall
30	Yeditepe University	Istanbul	1997-1998 Fall

3.3.4 Conduct of the Questionnaire

In an online survey, which is a more recent type of questionnaire survey, participants are requested to complete a survey via electronic mail with a link to the survey. As previously mentioned, online surveys are highly time and cost effective, and practical in terms of preparation, distribution and implementation. Carrying out an

online questionnaire is efficient as it is easy to modify and its results can be documented in an online database.

After preparing the questionnaire, the participants were requested to complete the questionnaire via electronic mail with a link to the survey. The online survey allowed me to remotely gather data from a large number of participants from different cities in Turkey, modify the questions when needed, and store the results in an online database. For example; once I realized that one of the questions was misunderstood, I was easily able to edit it without changing the link of the questionnaire.

As one of the goals of this phase of the study is to find the participants for the second phase and to find out as many industrial design department-NPO collaborations as possible, it is important to get access to all universities in Turkey and to receive a reply for a holistic perspective.

In order to reach the potential participants at different universities and different cities, the questionnaire was first sent to the heads of industrial design departments of 30 universities in Turkey in May 2019 via email. Emails briefly explained the area of interest, the aim of the research, and the data collection method. Heads of departments were asked for their help either filling out the form by themselves or sharing it with the relevant tutors at the department.

Some heads of the departments fulfilled my request by filling out the form since they were the coordinators of the collaborations. Some of them contributed to the research by forwarding my email to other tutors who might be relevant to such collaborations.

After sending the first set of emails, I waited for a month. As not getting any or getting a few replies, which might affect the success of the study, are the risks of online questionnaires; sometimes I could not get any responses to my emails. When this was the case, I wrote secondary emails to the contact persons and tried to access vice-heads of departments and other academic members of the departments that I was able to find information on the department's website or I know in person.

After the first and second rounds of emails were sent, the total number of respondent departments was 26 out of 30 in June 2019. 11 out of 26 universities filled out the form. Among them, four universities (Istanbul Okan University, Ondokuz Mayıs University, Özyeğin University, and Yeditepe University) were excluded because the collaborations they mentioned were carried out either in workshops or in competitions, which are out of the scope of this study. In Yaşar University case, the head of the department said that they had conducted many collaborative projects and they did not have time to fill out the form. Therefore, one of the faculty members sent me a written document containing a list of collaborations. I completed the form by myself by using relevant information.

Overall, 12 departments (Atılım University, Doğu University, Gazi University, TED University, Karabük University, Selçuk University, Marmara University, Işık University, Istanbul Aydın University, Istanbul Sehir University, Istanbul Ticaret University, and Izmir Institute of Technology) indicated that they have never carried out such collaborations.

Four departments (Bahçeşehir University, Beykent University, Bilecik Şeyh Edebali University, and Haliç University) replied to the emails as they were willing to help by sharing the link of the form. However, I did not receive any further response. The reason that some of them did not respond might be because they did not collaborate or the departments were recently opened. Despite the efforts that have been made, the question of whether they carry out collaborations with NPO stakeholders or not, remained unanswered by two departments (Eskişehir Technical University, and Izmir University of Economics). Therefore, I personally called these departments in order to receive answers via telephone. I was informed that both of the departments have carried out such collaborations.

3.3.5 Analysis

As one of the goals of this phase of the study is to find out industrial design department-NPO collaborations, the total number of industrial design departments that have collaborated with NPO partners is 10 different universities (Eskişehir Technical University, Istanbul Bilgi University, Istanbul Medipol University, Istanbul Technical University, Izmir University of Economics, Kadir Has University, Middle East Technical University, Mimar Sinan Fine Arts University, TOBB University of Economics and Technology, Yaşar University, and Yeditepe University) from four different cities (Ankara, Eskişehir, Istanbul, Izmir). In total, more than 40 collaborations were accessed through this phase of the study.

As a further step, the scopes of collaborative projects conducted within these collaborations and the field of activities of NPOs mentioned were categorized combining with the analysis of the second stage of the study.

3.4 Stage II: Understanding the Influences of Collaboration Processes and Outcomes through Semi-Structured Interviews

In the second stage of the study, I conducted three sets of semi-structured interviews as a data-gathering method to comprehensively access the perspectives of all actors; tutors, NPO representatives, and students, involved in university–NPO collaboration projects.

3.4.1 Semi-structured Interviews

In qualitative research, one of the major methods of gathering and eliciting verbal data is interviewing. In most cases, the core of the interview method is producing knowledge through understanding and interpreting the personal experiences of participants as they reflect (Kvale, 2007; Flick, 2007). Research perspectives in qualitative research alter depending on the research objectives and methods they

apply. From the interpretivist point of view, interviewing for data collection and coding for analysis are the most common qualitative methods (Hitzler & Eberle, 2004). For approaching subjective experiences, opinions, and perceptions by contacting directly with the individuals (semi-structured) interviews are widely preferred as methods of data gathering to understand similar situations (Flick, 2007; Hanington & Martin, 2012).

Interviews can be in the form of structured or unstructured in terms of a fixed set of questions or a more flexible dialogue format. Semi-structured interviews are often called in-depth interviews because, with the help of an interview guide, the researcher can encourage and probe the interviewee to tell in-depth about the topic under discussion. In semi-structured interviews, the interview guide allows the researcher to have control over the conversation without interrupting the participant (Given, 2008). Semi-structured interviews take the advantage of structured interviews as being formal, guided, controllable, time-efficient, and simple to analyze; and unstructured interviews as being flexible, warmer, and more relaxed communication between the interviewer and the interviewees (Hanington & Martin, 2012).

Rubin and Rubin (1995) suggest a 'flexible, iterative and continuous' interview plan that allows the researcher to revise some of the questions and replace them at several phases during the process for the following interviews according to what is found reachable and impressive in the field.

Considering the research questions, choosing interviewing as a data-collection method is highly applicable to this study. Furthermore, after carrying out a few interviews, I revisited and revised the wording of some interview questions and added probes to the interview guides.

3.4.2 Design of the Interviews

Even though there is no objective 'truth' or 'reality' that qualitative researchers can ever capture, there are a number of strategies that might be implemented by qualitative researchers to improve the 'credibility' of the findings or the "correspondence between research and the real world." (Wolcott, 2005, p. 160). Interpretive research can be considered credible if the inferences drawn are believable, similar to internal validity. Demonstrating data triangulation across subjects or data collection methods can increase the credibility of interpretive research (Bhattacharjee, 2012). Triangulation, the most well-known strategy for ensuring the internal validity of a study, uses multiple investigators, sources of data, or data collection methods to confirm emerging findings (Merriam & Tisdell, 2015).

The stability of results is referred to as reliability. For instance, a reliable observation is one that any investigator in a similar situation could have made. By triangulation reliability can be achieved for most qualitative approaches (Denzin, 1978; Gray, 2021). The concerns about the trustworthiness (reliability) of data from qualitative research and the challenges to validity can be overcome with the aid of triangulation. Triangulation, combining and using a variety of data or methods, is an effective and often utilized approach for improving the rigor of the research and enhancing confidence in results (Patton, 2014; Robson & McCartan, 2016).

Triangulation was proposed as a strategy to raise the validity or improve the credibility of the study by comparing the outcomes of various approaches to a single unit of research. In qualitative inquiry, researchers frequently employ triangulation as a tactic to help them recognize, investigate, and comprehend many aspects of the units of study. Thereby, the findings are strengthened, interpretations are enriched, and bold conclusions are drawn (Given, 2008; Saunders et al., 2009; Gray, 2021).

Denzin (1989) proposes four basic kinds of triangulation: (1) data triangulation; the use of multiple sources of data in a study, (2) investigator triangulation; the use of several different researchers or evaluators in the study, (3) methodological

triangulation; the use of multiple investigation methods to study a single problem or program, (4) theory triangulation; utilizing of several theories or perspectives to interpret a single set of data to confirm emerging findings (Given, 2008; Patton, 2014; Robson & McCartan, 2016; Gray, 2021).

Triangulation of data sources is the procedure of gathering data from various samples or over separate times. This might involve time, location, and person triangulation (Creswell, 2017; Gray, 2021). Data triangulation refers to the comparison and cross-checking of data obtained at various times or locations, or from interviews with individuals who may have diverse perspectives or follow-up interviews with the same individuals (Merriam & Tisdell, 2015). Patton (2014) identifies triangulation of qualitative sources as controlling the consistency of various data sources within the same method (i.e., consistency across interviewees). Qualitative investigators might raise the credibility of the research findings with the aid of multiple sources of data (Given, 2008).

To accurately identify University-NPO collaboration in the industrial design education context, the data were obtained from three stakeholders (tutors, students, and NPOs) who have separate points of view. Hence triangulation of data sources is applied to achieve validity (generalizability), reliability, and credibility of the study.

Before the interviews, three interview guides for each actor (Appendix F and Appendix G), composed of the central questions that needed to be covered during the interviews, were prepared. The core objective of interviewing is to grasp a holistic perspective towards participants' motivations, expectations, roles and responsibilities, contributions, evaluation of other partners within these collaborations, and thoughts about the future.

3.4.3 Selection of the Interviewees

In qualitative sampling, the reasoning behind the sampling decisions can vary but it should always be based on a purpose (Miles & Huberman, 1994; Charmaz, 2006;

Flick, 2007). The logic in the background of sampling is to reach as many cases as possible to look for similarities and differences in examples with the aim of understanding the actors' perspectives in detail.

While doing an interview study, sometimes it can be difficult to find the right people to interview at the beginning of the research. The researcher ideally seeks the right people to ask questions about a specific subject in order to receive knowledge from different viewpoints (Kvale, 2007; Flick, 2007).

Purposive sampling (Chen, 1981) or purposeful sampling (Patton, 2014), sometimes called criterion sampling, is frequently used in qualitative studies (Miles & Huberman, 1994; Symon & Cassell, 2012; Merriam & Tisdell, 2015). The criteria established for sampling reflect the information-rich cases (Gray, 2021). Often the researcher seeks participants using their judgment to particularly select the ones who will best meet the objectives (Saunders et al., 2009; Robson & McCartan, 2016). This is also known as judgemental sampling (Given, 2008).

The population of this study is the tutors, students, and NPO representatives who took part in NPO-university collaborations in industrial design education in Turkey. The population for the first set of interviews consists of tutors of industrial design departments at 10 diverse universities who coordinated educational collaborative projects. The sample size of tutors (i.e., the number of interviewees) is defined among the ones who responded to the questionnaire in the first stage of the study. Judgemental sampling was applied to reach and select the information-rich tutor interviewees. In case there is more than one project coordinator in academic partners either the main project coordinator or the one who conducted more collaborations was preferred. For example, some tutors were in the position of the leading coordinator, and they coordinated up to six projects in different universities. These people were prioritized to be interviewed.

Snowball sampling, also known as chain sampling, also pursues the goals of purposive sampling. In snowball sampling, the researcher starts by identifying and interviewing a few well-situated individuals from the population of interest (i.e., key

informants about not only the research topic but also other potential participants). These respondents are likely to know others who share similar characteristics and meet the eligibility criteria for the research. After they have been interviewed, they are asked to nominate others to talk with. These people should be eligible for the study and can provide critical insights into the investigation as they know a lot about it. In this way, the snowball grows in size while it is rolling downhill. As the name reflects the analogy, the sampling frame gets bigger in each interview. Eventually, the sampling frame becomes saturated (Patton, 2014; Bhattacharjee, 2012; Symon & Cassell, 2012; Gray, 2021). Snowball sampling is commonly used either when it is hard to identify samples of the desired population or where samples are easily identifiable but hard to reach. It is a useful strategy to access difficult-to-reach samples (Browne, 2005; Given, 2008; Saunders et al., 2009).

In my case, although I knew the NPOs that are involved in collaborations, I did not know specifically whom to speak with from that particular NPO. Snowball sampling was used via the tutors' referrals to reach NPO representatives and students. Moreover, the same strategy was implemented to reach more NPOs via other NPOs and more students via other students. Snowball sampling allowed me to access the potential participants (i.e., related members of the NPOs and students). Tutor interviewees led me to many different sources, accordingly, information-rich interviewees of interest for the study were identified. All interviews (with tutors, NPOs, and students) were conducted between June 2019 and February 2021.

3.4.4 Conduct of Interviews with Tutors

The classical form of the interview includes a face-to-face meeting with one interviewee, a set of questions to be answered in an open conversation based on an interview guide (Kvale, 2007; Flick 2007). However, lately, interviews have started to be carried out remotely also by telephone and internet (i.e., social media) to be able to ask questions to people in distant places (Hanington & Martin, 2012).

After the determination of collaborations, the first set of interviews was conducted with the academic stakeholders of the collaborations. Two main reasons behind this strategy are; relatively easy access to the tutor interviewees since they filled the online questionnaire in the first stage of the study, and to reach NPO partners and students through tutors' connections.

Before the interviews, I contacted the participants via email to arrange a meeting date and time. After they accepted participating, I attached the consent form to the next email. At the beginning of the process, the interviews could preferably be either face-to-face or online, as I mentioned in the emails. In terms of time management, I preferred and proposed online interviewing with the participants who live outside of Ankara, unless otherwise requested. However, due to the COVID-19 pandemic, the following interviews had to be done via online platforms such as Skype, WhatsApp, and Zoom.

At the beginning of each interview, I introduced myself and the participants were briefly informed about the aim and the significance of the study, confidentiality, and anonymity issues. I thanked the interviewees for their time and contribution in advance and asked for the consent of voice-recording. All interviews were audio-recorded. The interview guide helped me to cover the main topics to be discovered and obtain the necessary data during the interviews. At the end of each interview, I thanked the participants again for accepting my invitation to participate and for their support. I received their approval to contact them again if I have any further questions. The duration of interviews lasted between an hour to three hours.

As it is shown in Table 3.3, the first interview was face-to-face in June 2019. Only two face-to-face interviews were carried out at the offices of the participants. For 15 interviews, online applications such as Skype, WhatsApp, and Zoom were used. When internet connection-related problems occurred or the participants requested, the video camera turned off. Three of the interviews were conducted via telephone depending on the participants' preferences. I interviewed 20 tutors from 10 different universities in 23 sessions between June 2019 and November 2020.

To identify interviewees for the second and third set of interviews, I asked the tutors for the personal information and contact details of collaborators from NPOs, and the students/graduates who were active in the design processes and would be willing to participate in the study, during the interviews. Some of the tutors refused to share contact information due to privacy issues. In that case, I directly sent an email to the institution or called them, as I knew the name of NPO. When I knew the personal information of a student, I made a Google search to find their email address or tried to reach them via LinkedIn. When I did not have any information, I could not access that person.

A major part of qualitative research is based on recorded verbal data which is then transcribed into textual format. As suggested, an interview requires four times more hours, six times more hours if controlling the finished transcript is also included, than the duration of the interview (Morse, 1994). All the recorded interviews were tried to be transcribed right after the interviews to avoid accumulation. To get used to data derived from interviews, transcriptions were manually done by myself using Microsoft Word.

Table 3.3 Distribution of the tutor interviewees and details of the interview schedule

University Of Tutor	Date of Interview	Type of Interview	Duration of Interview
Eskişehir Technical University	January 2020	Online / WhatsApp Video Call	1 hour 10 minutes
	April 2020	Online / Zoom	1 hour 22 minutes
	May 2020	Online / WhatsApp Video Call	58 minutes
	May 2020	Online / Zoom	52 minutes
	September 2020	Online / Zoom	1 hour 15 minutes
Istanbul Bilgi University	July 2019	Online / Skype	57 minutes
	November 2019	Telephone	1 hour 12 minutes
	February 2020	Online / WhatsApp Voice Call	50 minutes
	March 2020	Online / WhatsApp Video Call	2 hours 40 minutes
Istanbul Medipol University	February 2020	Online / WhatsApp Video Call	43 minutes
Istanbul Technical University	July 2019	Telephone	1 hour 4 minutes
Izmir University of Economics	February 2020	Online / WhatsApp Video Call	1 hour 50 minutes
Kadir Has University	January 2020	Telephone	48 minutes
Middle East Technical University	October 2019	Face-to-face / Ankara	2 hours 25 minutes
	April 2020	Online / Skype	2 hours 38 minutes
Mimar Sinan Fine Arts University	November 2019	Online / WhatsApp Voice Call	1 hour 53 minutes
TOBB University of Economics and Technology	June 2019	Face-to-face / Ankara	40 minutes
Yaşar University	July 2019	Online / Skype	1 hour 18 minutes
	October 2019	Online / WhatsApp Video Call	2 hours 3 minutes
	October 2019	Online / Skype	3 hours 7 minutes

3.4.5 Conduct of Interviews with NPO practitioners

While interviews with tutors were proceeding, I started to get in touch with the NPOs who participated in educational collaborative projects to carry out the second set of interviews with the practitioners from NPOs.

Before the interviews, I contacted some of the participants via email (Appendix H and Appendix I) to which I attached the consent form. I reached some of the interviewees by directly calling them as I received their phone numbers from the tutors I interviewed before or from an internet search. As I just knew their names and institutions, I needed to access some of them through LinkedIn. In two of the cases (Immigration Removal Center and Provincial Directorate of Ministry of Environment, Urbanization, and Climate Change), the governmental institutions, I had to apply for permission with a written petition (Appendix J and Appendix K). After I received the authorization, I could interview.

After they accepted participating, we set a meeting medium and date. I shared the meeting link via email or WhatsApp message by reminding the meeting time. I followed similar strategies and procedures to the ones I followed while interviewing tutors. I was able to conduct three face-to-face interviews at participants' offices. The rest of the interviews were remotely carried out due to COVID-19 pandemic situations and the participants living in different cities. Online tools were determined according to the preferences of the participants. The first interview was in December 2019. From two institutions (Bornova Municipality and Tepebaşı Municipality), I interviewed two participants from the same institution at the same session. From two institutions (Immigration Removal Center and Tire Manufacturers Association), I interviewed two diverse participants from the same institution at different sessions. In total, I interviewed 29 participants from 25 diverse institutions in 27 sessions between December 2019 and February 2021. The duration of interviews lasted between half an hour to two hours. I completed the transcriptions making use of the voice typing tool in Google Docs. To utilize that feature, the sound has to be clean, clear, and fluent during the interviews. Otherwise, I manually transcribed recordings

with Microsoft Word. In all cases, I needed proofreading to make necessary corrections and add punctuation.

Table 3.4 Distribution of the NPO interviewees and details of the interview schedule

Institution of Participant	Date of Interview	Type of Interview	Duration of Interview
(Bilgi Üniversitesi) Çocuk Çalışmaları Birimi	December 2019	Online / Skype	1 hour 18 minutes
Çöp(m)adam	January 2020	Online / WhatsApp Video Call	38 minutes
Robot El Türkiye	March 2020	Face-to-face / Ankara	1 hour 8 minutes
Bombalara Karşı Sofralar	April 2020	Online / Zoom	49 minutes
Yeşil Valiz Sorumlu Turizm Derneği	April 2020	Online / Zoom	53 minutes
ITAP Bilim ve Toplum Merkezi	May 2020	Online / Skype	1 hour 28 minutes
Batı Urla Köyleri Derneği	November 2020	Online / Zoom	1 hour 3 minutes
Uluumay Vakfı	November 2020	Online / Zoom	1 hour 55 minutes
Menemen Çömlekçiler Derneği	November 2020	Online / WhatsApp Video Call	1 hour 28 minutes
Altı Nokta Körler Vakfı	November 2020	Online / Zoom	1 hour 25 minutes
Romatizma Hastaları Bilgilendirme ve Destekleme Derneği	November 2020	Face-to-face / Ankara	51 minutes
Türkiye Romatoloji Derneği	November 2020	Online / WhatsApp Video Call	36 minutes
Bornova Belediyesi (two participants)	November 2020	Online / WhatsApp Video Call	55 minutes
Göçmen Geri Gönderme Merkezi	November 2020	Online / Skype	1 hour 33 minutes
Bursa Alan Yönetimi Başkanlığı	December 2020	Online / Zoom	1 hour 12 minutes
Yapı Biyolojisi ve Ekolojisi Enstitüsü	December 2020	Online / Zoom	1 hour 37 minutes
Lastik Sanayicileri Derneği	December 2020	Online / Zoom	36 minutes
Çevre ve Şehircilik İstanbul İl Müdürlüğü	December 2020	Online / Zoom	1 hour
Çığdemim Derneği	December 2020	Face-to-face / Ankara	44 minutes

Table 3.4 (continued)

Engelli Farkındalık Merkezi	December 2020	Online / WhatsApp Video Call	32 minutes
Karabağlar Belediyesi	December 2020	Online / Zoom	1 hour 45 minutes
Seferihisar Belediyesi	December 2020	Online / Zoom	40 minutes
Göçmen Geri Gönderme Merkezi	December 2020	Online / WhatsApp Video Call	32 minutes
Bursa Tarihi Çarşı Ve Hanlar Birliği Derneği	February 2021	Telephone	46 minutes
(Başkent Üniversitesi) Özel Ayşeabla Okulları	February 2021	Online / Zoom	1 hour 13 minutes
Tepebaşı Belediyesi (two participants)	February 2021	Online / Zoom	46 minutes
Lastik Sanayicileri Derneği	February 2021	Online / Zoom	33 minutes

3.4.6 Conduct of Interviews with Students

While interviews with tutors were proceeding, I also started to get in touch with the students who actively participated in design projects in collaboration with NPOs. I decided the student interviewees were in line with the tutors' suggestions. As tutors shared students' personal information and contact details, I accessed them through email or mobile phone.

I followed the same procedures and strategies that I followed in the previous set of interviews (interview processes). The first interview was in December 2019. I interviewed 22 participants from nine universities between December 2019 and June 2021. All of the interviews were remotely conducted via online tools (e.g., Skype, WhatsApp, and Zoom) due to the participants living in different cities and COVID-19 pandemic situations. Online tools were determined according to the preferences of the participants. The duration of interviews lasted between half an hour to an hour and a half.

Table 3.5 Distribution of the student interviewees and details of the interview schedule

University Of Student	Date of Interview	Type of Interview	Duration of Interview
Istanbul Bilgi University	December 2019	Online / WhatsApp Video Call	1 hour
	February 2020	Online / WhatsApp Video Call	40 minutes
	May 2020	Online / Skype	1 hour 30 minutes
Istanbul Medipol University	November 2020	Online / Zoom	40 minutes
Istanbul Technical University	April 2020	Online / Skype	42 minutes
Mimar Sinan Fine Arts University	April 2020	Online / WhatsApp Video Call	34 minutes
	November 2020	Online / WhatsApp Video Call	1 hour 9 minutes
Yaşar University	April 2020	Online / Skype	1 hour 8 minutes
	February 2021	Online / Zoom	57 minutes
	February 2021	Online / Zoom	33 minutes
	February 2021	Online / Zoom	1 hour 20 minutes
Kadir Has University	April 2020	Online / Skype	1 hour 36 minutes
	March 2021	Online / Zoom	32 minutes
Eskişehir Technical University	January 2021	Online / Zoom	1 hour 32 minutes
	February 2021	Online / Zoom	1 hour
	February 2021	Online / Zoom	56 minutes
TOBB University of Economics and Technology	February 2021	Online / Zoom	46 minutes
Middle East Technical University	June 2021	Online / Zoom	38 minutes
	June 2021	Online / Zoom	53 minutes
	June 2021	Online / Zoom	1 hour 20 minutes
	June 2021	Online / Zoom	48 minutes
	June 2021	Online / Zoom	36 minutes

3.5 Analysis Process

In this section, data analysis methods, descriptive coding, and template analysis, are described in detail.

3.5.1 Descriptive Coding

To start responding to the first sub-research question, I applied descriptive coding (Saldaña, 2009) to analyze the survey and the interview data gathered from samples. The descriptive coding method, which is also called topic coding, can be used to basically summarize what is talked or written about (i.e., topic) for a detailed inventory of contents of qualitative data forms like interview transcripts. Descriptive coding is an essential approach for analyzing the basics of the data that provides a categorized index of the collected data (Saldaña, 2009).

To reveal the themes and the subjects of the collaborative projects between industrial design departments and various NPOs, I adopted the descriptive coding method. The collected data is categorized according to the topics. In other words, the subjects of the collaborative projects in the educational context are classified in accordance with the key issues they address as projects related to (i) special groups, (ii) local development, and (iii) environmental projects (see Chapter 4). The boundaries between categories are not so clear, since some projects address multiple issues. The analysis also includes design approaches and methods they adopt and apply, the movements and concepts they highlight, and the course, grade, and year they were carried out if mentioned.

One of the main objectives is to document these industrial design-NPO collaborations and collaborative student projects conducted in Turkey from 2010 to 2020 which were reached within the scope of this study. The reason to include only the projects from 2010 onwards is that it becomes hard for the interviewees to remember the collaborations made more than ten years ago. Over 40 educational

projects in collaboration with NPOs, which were conducted between 2010-2020 in Turkey, are compiled and presented in Chapter 4.

3.5.2 Template Analysis

Template analysis “is a style of thematic analysis that balances a relatively high degree of structure in the process of analyzing textual data with the flexibility to adapt it to the needs of particular study” (King, 2012, p.427). Textual data mostly refers to individual interviews. The core of the method is developing a priori coding template with fewer initial themes (specified requirements) that are flexible to be revised and reapplied according to the researcher’s own specifications.

For the analysis process, audio-recorded interviews were transcribed verbatim into Word documents, and I utilized the template analysis (King, 2012) technique for thematic analysis due to its flexibility to allow revision and reapplication, and systematic structure.

Before the first cycle of coding, I read the transcripts to familiarize myself and to correct the transcription errors. At the beginning of the preparation of the coding template, I listed some preliminary codes related to the research questions of the study, such as roles and responsibilities of involved actors, motivations and reasons of actors to collaborate, initiation (establishment) of collaborations, benefits of collaboration for each actor and challenges faced during these collaborations. Then, I applied the first template to the printed interview transcripts by coding manually.

Yok. Hiç kullanıma yönelik bir şeyimiz olmadı. Fakat şöyle oldu: şöyle bir anlaşılmamız vardı aramızda. Çocukları serbest bırakalım. Ne istiyorlarsa, ne anlıyorlarsa bizim anlattıklarımızdan kendileri yorumlasınlar. Biz onlara demeyelim şöyle bir sorun var, bize bu sorunu çözümler demeyelim. Ama sorunlar da bunlar. Olay da bu, kültürel miras da bu. Bir de sizin gördüğünüz, gözlemlediğiniz var. Onun üzerine ne yapmak istiyorsanız. Ben takdir ediyorum Bilgi üniversitesi'nin o yaklaşımını da. Her konuda bir şey çıktı. Her soruna dair ve bizim belki göremediğimiz bazı sorunlara dair bazı şeyler çıkardılar ortaya. Çok güzel. Çocuklar çok iyiydi gerçekten. Her zaman da böyle denk gelmiyor. Hepsi pırl pırl elbette çocukların da. Bazen böyle sinerjisi çok yüksek gruplar denk geliyor. Çok böyle örnek bir grup denk geldi. Çok güzeldi, güzel şeyler çıkardılar ortaya. Son aşamada, sonuca bağlama problem oldu. Sonuca bağlama problem olunca da sürdürülebilirliği de havada kaldı açıkçası. Atölyenin adı sürdürülebilir tasarım ama projenin sürdürülebilirliği havada kaldı. Biz de bunun dersini almış olduk. Çünkü önceden satın alınacak gibi bir şey olmadı. Grubun iyiliğinden iş oraya geldi. Çünkü genelde biliyorsunuz projelerde çok nadirdir aa bunu muhakkak ben uygulayayım demez teorik olur biraz daha ama öyle olmadı. Burada neredeyse hepsi uygulanabilecek projeler çıktı.

Projeye başlarkenki amaçlarınızdan motivasyonlarınızdan bahsettiniz, beklentileriniz nelerdi? Sizin bu işbirliğinden, süreçten, projelerden, paydaşlardan beklentileriniz nelerdi?

Beklenti şeydu aslında: bizim elde etmek istediğimiz sonuç, özellikle cumalıkızık'ta ama bütün alanlarda aslında. Yeni bir bakış açısı kazanması herkesin. Alan başkanlığının da, belediyenin de yani katılan herkesin de genç beyinlerle yeni bir bakış açısı kazanmalarını istiyorduk. Yeni şeyler. O da yapılabilir desinler. Özellikle yerel halk için cumalıkızıktaki. Ben bunu defalarca da dile getirdim. Dedim ya cumalıkızık akademik olarak böyle bir kum torbası haline geldi. Orada bir yılgınlık var. İstemiyorlar akademisyenleri artık. Hoşlanmıyorlar. Ama mesela bu proje ile biz onu yendik cumalıkızıkta çünkü çocuklar çok tatlıydı. Önceden çocukları tembilledik. Lütfen yargılayıcı olmayın, köylülerle konuşurken. Çünkü herkesin belli ön yargıları var şimdi.

Beklentileriniz?

Beklenti, oradaki yerel halka da bir umut olmasıydı. Çocukların gelip onlara yapıcı bir şeyler vermeleri, böyle bir şeyler yapabilecekleri. Onlar hep oldu. Hep gerçekleşti bizim beklentilerimiz de. Tabii beklentilerimiz bu çocukların, bu kurumlarla daha sürdürülebilir, daha uzun vadeli ilişkiler geliştirmesiydi ama dediğim gibi bu protokolden ötürü bence bu olmadı. Tek gerçekleşmeyen beklentimiz bu. Onun dışında bizim beklentilerimiz karşılandı.

Benefits for NPO.

motivation? &
contribution.
epitome katkı destek.

Challenges?

Realizability of Project.

Expectations
Reasons
Motivations

Yeni GENİ
Bakış Açısı

Bilimsel
bilgiden
beklenmek

Sözüm:

KAZANIM

Contributions of UNI
ACADEMIA.

Challenge:
protocol & issues
Realizability
of Projects

Figure 3.1 Example of Manual Coding Process

King (2012) suggested two main versions to display the template as it has a significant communication feature; lists and mind-maps. Mind-map style has some advantages over list style like using arrows that enable to show hierarchical levels and links between themes.

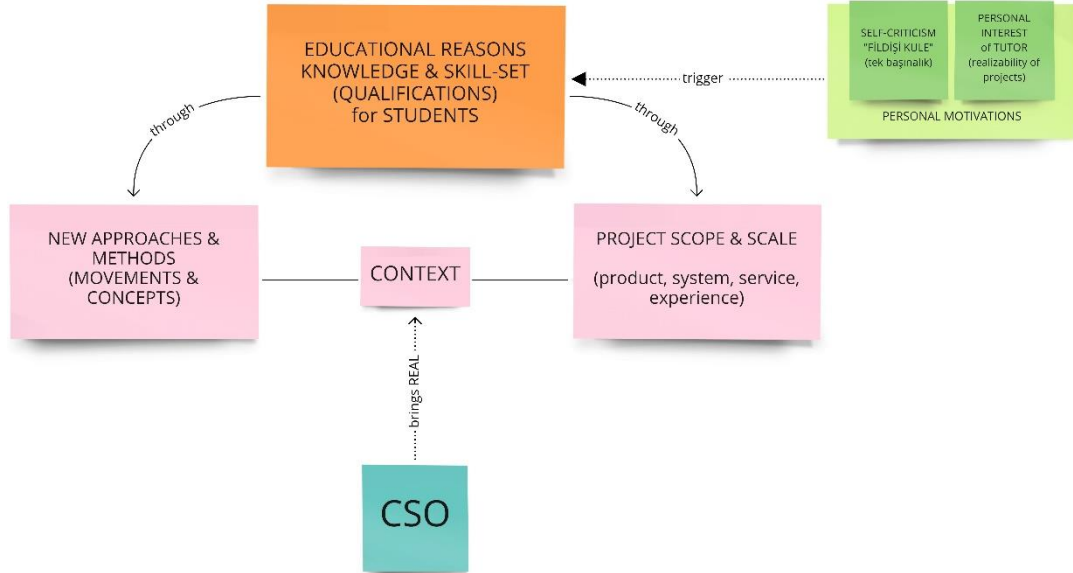


Figure 3.2 Template Example from Tutor-driven Collaboration Model

After creating the first template, I transferred initial codes and subcodes to a Microsoft Excel document, with the reflections as analytic memos about the data.

participant ...	code	sub-code	quote	notes
1	about rpo	local development	Öncelikle ben sorumlu turizm nedir onu anlayamıyorum. Sorumlu turizm, çevreye zarar olmayan, kültüre faydalı ve yerel toplulukların ekonomik ve sosyal faydalarını bir turizmci yapması. Turizm uygulamalarının yapılması için uğraşın bir demektir biz. Çok büyük bir demektir değil. 22 tane iyemiz var toplamda ama gördüğümüz çok fazla. 2007'den fazla gönüllü ile çalışıyoruz. Üyeler daha ziyade işi idari yürütülmesine bakıyorlar. Ama gönüllülerin ve özellikle her projede değişik değişik alanlarda yine akademiye olan gönüllülerimiz var. Sistemin içerisinde, turizm sektöründen gönüllülerimiz var. Çünkü bizim için önemli olan hepsini birleştirmek. Öğrenme gönüllümüz çok fazla. Öğrencilerle çok çalışıyoruz. Böylelikle yürütüme katılımımız bir demektiriz var	
1	benefits for rpo		Hiç kullanıma geçecek bir şeyimiz olmadı.	
1	benefits for stu	visibility	Çok daha benim gördüm. Çünkü üniversiteler yemli biliyoruz -gerçi biliyoruz ama koronadan sonra ne olur ama- çocukları hepisi artık dünya vatandaşları, pek çok yere gitmek istiyorlar. Avrupa'da, Amerika'da üniversitelere gidiyor zaman da çocukları şuul toplum örgütlerinde çalışıyor, bu konuda tecrübeleri olup olmadığı soruyoruz. Bence artık çocukların referanslarında, cv'lerinde olmaz olmaz bir şey: sivil toplum örgütlerine çalışmaları. (...) biz gelen her çocuğumuz. Mümkün olduğunca faydalı olmaya çalışıyoruz. Onların da faydalı olmalarını sağlıyoruz. Hiçbir zaman gülmüş değiliz. Orada da bir probleminiz oldu. Onu da sorguladık zaman aldık. Ama şu da hence yeni iş beemli bu anlamında yine toplama yapılmış gelenler bir şey. Daha sonrasında yapılmaması gereken şeyler bunlar. Orada bir yeni yapılan tasarımlar, çocukların ödev olarak yaptıkları tasarımların çocuklara tasarım işlerini ödeviye zatkını istedikler. Vahin böyle bir forosyonu da var. Fakat bunlar bir türü üniversiteler yapamıyorlar. Üniversite bir türü bunun gereğini bulamadı, nasıl yapacağını falan gibi orada bir probleminiz oldu. Bizim alında istediğimiz tasarımların kültürel miras algılamaya ve kültürel mirasın feyri olarak yaptıkları tasarımların içerisinde yine yerel halkın para kazanmasını istiyorlardı. Ve bunu da bu çocukları daha tasarıma eğitimin kapsamında öğretilmek istiyorduk. Bilgi üniversitesi programını tercih ediyor. Son aşamada, sonra başlama problem oldu. Sonuca başlama problem olunca da sınırlıdır (bilgi) de havada kalmış açışças. Atölyem ad sürdürülebilir tasarım ama projenin sürdürülebilirliği havada kaldı. Biz de bunun üzerine almış olduk. Çünkü önceden satın alınacak gibi bir şey olmadı. Onların içindeki bir şey oldu. Çünkü genelde biliyoruz projelerde çok nadirdir aa bunu muhakaka ben uygulamayım demez tekerik olur biraz daha ama böyle olmadı. Burada neydeneye hepisi uygulayabilecek projeler oldu.	assumption öğrenme destek
1	challenge	ip issues	Bizim için hedeflik eşyağı önemli olan. Sistem tasarımı falan da değil. Bir tek hedeflik eşyağı. Çünkü hedeflik eşyağı bizim en büyük sorunlarımızdan biri. Hem cumhurbaşkanı Öyle ama genelde Türkiye çapında öyle. Hedeflik eşyağı hem en mali hedeflik eşyağı karşı olduğumuz işin yeni muhakaka yerel para kazandırarak hedeflik eşyağı olmasını istediğimiz işin hem de bu deyatınan kültürel mirasın, yerel özelliklerini yaratıcılar değilse direkt tasarımla hedeflik eşyağı istediğimiz işin. Bizim zaten istediğimiz oldu.	
1	challenge	realisability of project	Gerçi dönüştürme maddeyi nasıl kullanabileceğiz, nereden ulaşabileceğiz. Akbaş holding bize atık kumaşları verdi. Atık kumaşlarla bir şeyler yaptık çocuklar. Mümkün olduğu kadar bir laboratuvar gibi, normal çalışma hayatlarında garları zırtan hepsini beraber kullanabiliriz. Onları küçük bir pencere hepsinden ayırdığımız istedik.	
1	contribution of design	design contribution	Endüstriyel tasarımcı, bence özellikle çok iyi bir kombinasyon: yerelle fayda sağlayacak işlerin bir endüstriyel tasarımcıyla beraber tasarlanması çok iyi bir şey. Çünkü hem yerelle gelecek olan faydaları artırıyor. Mesela fretileri ona göre azaltabiliyor. Daha çok bunlarla alakalı çözümler düşünüyönlüyorlar. Hem de onlara yeni bir bakış açısı geliyor. (...) Yeni halkın kabiliyetlerini yoldemleri gerektiriyor düşünüyorum. (...) Onun yerine alında tasarım kardan aşım hepimiz. Tasarımcı öğreniyor, ondan sonra onu yapmasını hepimiz öğrenimin yanında bakalım. (...) Çok büyük katkıları oldu. En büyük katkıları da orada yerel halkın daha değişik bir şey yapabileceğine, gereketen yerelle anı daha öznel/gizli satılacak tasarımlar yapabileceğine görüldü. Bir tane yine sistem tasarımıyla alakalı bir proje vardı. Mesela onu gördük. Yıllardır, yıldırım belediyesine götürülebilirdi - yıldırım belediyesi bir paydaş olmasaydı ağlarm - yıldırım belediyesine daha sorular sunulabilecek çok güzel katkılar bir meydan düzenleme projesi yapıtı bitti. O da çok güzel. Uzunamy yakıştın eden-değil gibi zaten yapacak istedi, üzerine gitmek istedi. Onun dışında biz hiçbir alanda çocukların beklentilerini karşılamadığımız söyleyem. (...) En önemli sonucu, yereldekilerin tasarım önemini anlaması.	bellirli ölçüm somut çıktı için design contribution!
1	contribution of design	environmental	Yeni farklı bakış açısı	
1	contribution of design	local development	Endüstriyel tasarımcı, bence özellikle çok iyi bir kombinasyon: yerelle fayda sağlayacak işlerin bir endüstriyel tasarımcıyla beraber tasarlanması çok iyi bir şey. Çünkü hem yerelle gelecek olan faydaları artırıyor. Mesela fretileri ona göre azaltabiliyor. Daha çok bunlarla alakalı çözümler düşünüyönlüyorlar. Hem de onlara yeni bir bakış açısı geliyor. (...) Yeni halkın kabiliyetlerini yoldemleri gerektiriyor düşünüyorum. (...) Onun yerine alında tasarım kardan aşım hepimiz. Tasarımcı öğreniyor, ondan sonra onu yapmasını hepimiz öğrenimin yanında bakalım. (...) Çok büyük katkıları oldu. En büyük katkıları da orada yerel halkın daha değişik bir şey yapabileceğine, gereketen yerelle anı daha öznel/gizli satılacak tasarımlar yapabileceğine görüldü. Bir tane yine sistem tasarımıyla alakalı bir proje vardı. Mesela onu gördük. Yıllardır, yıldırım belediyesine götürülebilirdi - yıldırım belediyesi bir paydaş olmasaydı ağlarm - yıldırım belediyesine daha sorular sunulabilecek çok güzel katkılar bir meydan düzenleme projesi yapıtı bitti. O da çok güzel. Uzunamy yakıştın eden-değil gibi zaten yapacak istedi, üzerine gitmek istedi. Onun dışında biz hiçbir alanda çocukların beklentilerini karşılamadığımız söyleyem. (...) En önemli sonucu, yereldekilerin tasarım önemini anlaması.	contributions of uni, for stik değil, amana local development proje konular local awareness
1	çok partner		Üniversite olmayan belde de alında bizim için sadece bir üniversite değil değil değil. Üniversite, sanayi, sivil toplum, belediye hepisi bir arada bir işbirliği ama üniversite olmasa, üniversitede öğrencilerin rahat çalışabileceğini işin. Bir de tabii ya da sergiler için de çabamız da değil. Sonunda not var. Bu tabii öğrencilere daha sahip olmasını sağlıyor. Öğrenci biliyoruz çok fazla sonra akıllarımızı bizi bizzat şeyleri ama bunun yanında not var. İdevi var. Onun için bizim için daha rahat oluyor açışças.	dernek amacı olarak çalışabileceğine ulaşmak ve farkındalık yaratmak
1	initiation	interpersonal	Öğrenik olguya çocuk bir ane öncekide biz Ertek'te bir proje yapmıştık. Ertek'te 30 senede yapılmayan bir festival, erdek zamanı festival olarak yeniden canlandırıldı. Orada diğer anı, çünkü orada da festivalin de çok önemli bir alan Ertek. Hem orada ki anı ile birleştirilmesi, 30 millet arası çözümlerimizden de çok gelen oluyor. İş millet aranda peşpeşi güzelliklerini kurmam gibi amaçları olan güzellik bir festival gerçekleştirildi erdekta. Biz bu festivali gerçekleştirirken bizimle bağlantılı olarak Bilgi Üniversitesinden Ayun Ateş haram Erdek'deki, babau da orada iş adamı. Ayun haramı bilgi üniversitesini getirmişti oraya. Ancak gelir var orada ve Kapalı sarmalardan aldatılarak peşpeşi yapıyorlardı. Orada bir sergi yapıyorlar. Biz de festivaldeki sergide tanıştık. Sergide tanışınca ya beraber bir şeyler yapalım, oradan çıktı. Ara juri burada gerçekleştirildi. İlinci istanbulda gerçekleştirildi. (...) hepisi davet edildi jürice.	formal değil informal
1	intensity of collab	high	Ancak proje başında olabilir. Yine bir proje vardı. Avrupa Birliği'ne de projeler hazırlıyoruz. Öyle bir proje olur ki bu projem içerisinde endüstriyel tasarımcı belli ölçülerde veya parti'leme olarak gerektirir. Bunu yapabiliriz. Çünkü böyle görselle, bir tane çalışmamız var öğrenciler için ama bu tür beceriler, diğer davalı olan yerel genelde dışarıdan olacak bir proje başında. Fon geliyor zaman, fon önerisinde karğınlar jektide yapıyor. Ve tabii ki endüstriyel tasarımcıya ihtiyaç olan da olur. Çünkü özellikle bu hedeflik eşyağıyla ilgili ve yerel ortamın daha kar getirilebilir, seri değil ama biraz kurumsallaştırılmaya ilgi konularında endüstriyel tasarımcıya son derece ihtiyacımız olur.	

Figure 3.3 Example of Analysis on Excel Sheet

Later, I custom-sorted the data first by codes and then by sub-codes in an alphabetical order. Some codes were combined; some were divided into subgroups. Then I transferred them to a Microsoft Word document, rearranged and organized them with the quotes.

King (2012) indicated that knowing when to stop while modifying and refining codes in the template is difficult unless all data relevant to the research questions are coded. Then, a template can be considered as final. Since template analysis is an iterative process, the final template is completed after coding all the data. Later, I defined the template to its final form as follows. I discuss all the findings in the next chapters (Chapters 4, 5, and 6).

NPO-DRIVEN COLLABORATION MODEL

Motivations of NPOs for University/Design Collaboration

- Public Awareness
- Visibility
- Realization of Results

Reasons of Tutors for Collaboration

Initiation of NPO-driven Collaborations

- Key Contact

Contributions of NPOs in NPO-driven Collaborations

- Educational Contributions
 - Brief Preparation
 - Feedback Sessions
 - Juries
 - Research Phase
- Organizational Support

Benefits of NPO-driven Collaborations

- Benefits for All
 - Public Awareness
 - Visibility
- Benefits for NPOs
 - Design Contribution
- Benefits for Students
 - Material and Manufacturing
 - New Concepts, Approaches and Methods
 - Professional Skills
 - Social Aspect of Design

Challenges in NPO-driven Collaborations

- Challenges for All
 - Common Understanding (Communication)
 - Realizability of Results
 - Budget/Funding
 - Intellectual Property Issues
 - Commitment (Time and Effort)
 - (Lack of) Applicability of Student Projects
- Challenges for NPOs
 - Archiving /Archive
- Challenges for Students
 - Scale and Scope of the Projects

Figure 3.4 Final Template of NPO-driven Collaboration Model

STUDENT-DRIVEN COLLABORATION MODEL

- Motivations of Students for NPO Collaboration
 - Personal Interest of Student
 - Affordance and Flexibility of NPO
- Reasons of NPOs for Collaboration
 - Goodwill and Positive Attitude of NPO
 - Benefit Expectation of NPO
- Initiation of Student-driven Collaborations
 - Student-initiated
 - Key Contact
 - Tutor-initiated
 - Key Contact
 - NPO-initiated
- Contributions of NPOs in Student-driven Collaborations
 - Educational Support
 - Brief Preparation
 - Feedback Sessions
 - Juries
 - Research Phases
 - Moral/Motivational Support
- Benefits of Student-driven Collaborations
 - Benefits for All
 - Visibility
 - Realization of Results
 - Benefits for Students
 - (Public) Awareness
 - Social Skills
 - Material and Manufacturing
 - Special User
 - Benefits for NPOs
 - Benefits for Tutors
- Challenges in Student-driven Collaborations
 - Challenges for All
 - Common Understanding (Communication)
 - Realizability of Results
 - Budget/Funding
 - Intellectual Property Issues
 - Commitment (Time and Effort)
 - (Lack of) Applicability of Student Projects
 - Challenges for Students
 - Model/Prototype Support
 - Scale and Scope of the Projects
 - Balancing Diverse Ideas
 - Non-designer Mentor/Advisor

Figure 3.5 Final Template of Student-driven Collaboration Model

3.5.3 Models of Collaboration

During the interviews, I asked parallel questions for each actor (tutor, NPO, and student). For example: “What were your aims and motivations at the beginning of the collaboration?” and “What were your expectations from the stakeholders, the process, and the outcomes?”.

After completing the interviews, during the analysis process, I realized that in some collaborations I could not get sufficient answers from some actors about their motivations and expectations. Or, their responses to those questions are “they offered a collaboration and it was suitable for our aims thus I/we accepted it”. These answers follow a pattern in which the initiator brings motivation and expectation into the collaboration.

Similarly, students’ motivations towards these collaborations vary depending on the initiation and process. For instance, students have clearer goals if the collaboration is for their graduation projects, while they have less idea about the collaboration if the collaboration is driven and conducted by a tutor in a studio or other course.

Hence, I suggest a driver-based model of educational collaborations between universities and nonprofit organizations. The rationale behind the word ‘driven’ is to express the motivations and expectations brought by the initiator and/or the driver into the collaboration.

CHAPTER 4

SCOPE OF UNIVERSITY-NPO COLLABORATION IN INDUSTRIAL DESIGN EDUCATION

To review the subjects of industrial design–NPO collaborations, collaborative student projects conducted in Turkey from 2010 to 2020 are explored. Within the scope of this study, over 40 educational projects in collaboration with NPOs are reached, compiled, and presented in this chapter.

To reveal the scopes and the subjects of the collaborative projects between industrial design departments and various NPOs, the collected data is categorized according to the key issues they address. These are projects related to (i) special groups, (ii) local development, and (iii) environmental projects. The boundaries between categories are not so clear, since some projects address multiple issues such as the design of a waste collection unit for children. The analysis also includes design approaches and methods they adopt and apply, the movements and concepts they highlight, and the course, grade, and year they were carried out if mentioned.

4.1 Projects for Special Groups

This category includes a variety of projects developed for special groups with the goal of providing a better life quality for every individual in society; people of different age groups like elderly or children, or disadvantaged groups such as disabled people, refugees, and women.

In collaboration with Karabağlar Municipality and a neighborhood nursing home (*Kemal Tarım Dinlenme Evi*), Yaşar University's first-year industrial design students developed product ideas combining them with fixperts framework that facilitate the daily lives of the elderlies, in the introduction to design course in 2016.

Within the scope of the third-year studio course at Middle East Technical University (METU), empowering disabled persons and carers in Çiğdem Neighborhood project was carried out through participatory and co-design methods in collaboration with neighborhood association; Çiğdem Education, Environment, and Solidarity Association (*Çiğdem Eğitim, Çevre ve Dayanışma Derneği*). Some industrial design studio courses at METU define a theme for the academic term and carry out related projects to this specific approach throughout the semester. As an example, some third-year studios focus on sustainability scenarios and develops participatory and co-design projects such as sustainable hygiene washbasin and school door handles and accessories, playful and engaging sustainability scenarios for fostering children's saving habits, and encouraging children's sharing behavior for children were conducted with Başkent University Private Ayşeabla Schools (*Başkent Üniversitesi Özel Ayşeabla Okulları*) in years between 2016 to 2018.

At Mimar Sinan Fine Arts University (MSFAU) a second-year studio project was conducted in 2016, on the topic of product designs for patients with rheumatoid arthritis to provide them with a better daily life adopting design for all approach in collaboration with two NGOs from the field; Rheumatology Association Turkey (*Türkiye Romatoloji Derneği*) and Society of Information and Support for Patients with Rheumatic Diseases (*Romatoloji Hastaları Bilgilendirme ve Destekleme Derneği*). In 2017, third and fourth-year students of MSFAU designed furniture for disabled people regarding inclusive/universal design principles through collaborating with the Spinal Cord Paralytics Association of Turkey (*Türkiye Omurilik Felçlileri Derneği*) in their studio course.

One project example from TOBB University of Economics and Technology is a fourth-year studio that lasted throughout the semester and attempts to design prosthetic hands suitable for 3D printer manufacturing for children with limb deformities. This term project focuses on hands customized for holding a pen to draw and paint and playing the drum. Robohand Turkey Association (*Robotel Türkiye Derneği*) takes its roots from the global Enabling the Future movement. The Enable is a voluntary movement with the participation of people from all over the world that

makes a mechanical (i.e., robot) hand to a child or an adult who does not have fingers from birth, and it is about sharing this with those who need it. Enabling the Future (i.e., e-NABLE Community) is an online platform where usable and economical robot hands are produced with 3D printer technology in personalized dimensions, and qualities are shared with individuals who need prostheses.

Food not Bombs (*Bombalara Karşı Sofralar*) is a global movement with branches in many countries that provides free food to the homeless and hungry. The civil collective grounds on a simple question: with over a billion people going hungry each day how can we spend one more dollar on war? As the collective believes food is a right, not a privilege and there is enough food for everyone, it aims to make produced food to be waste, accessible to those who cannot reach it. The community tries self-developed methods against hunger and poverty and by collecting the food, preparing and cooking it, then serving it to people who have difficulties finding food. WasteCycler is a graduation project from Istanbul Bilgi University in collaboration with Food not Bombs that focuses on reducing food waste by rescuing surplus food and making it reachable to people in need via design solutions. It eases the process of daily food distribution and sharing.

Istanbul Bilgi University Child Studies Unit (*İstanbul Bilgi Üniversitesi Çocuk Çalışmaları Birimi*), a separate unit within the university, has been working on the protection and realization of children's rights while empowering children in Turkey. It develops and disseminates educational materials, tools, and models based on research. *Söz Küçüğün* is an educational board game that aims for children to think, discuss, and learn about their rights, and was designed as a graduation project.

The Institute of Theoretical and Applied Physics (ITAP) is the first institution in physics research and education in Turkey, in the structure of a non-governmental organization. Science and Society Center is a subsidiary of ITAP. Their goal is to implement the basic laws of natural sciences in a thought-provoking and entertaining way for not only students from primary school to university but also those who are interested in, from all segments of society. To pursue this goal, they collaborated

with second and third-year industrial design students from Istanbul Technical University (ITU) in their studio course, to work on a product that turns a mobile phone camera into a microscope. The project embraces the do-it-yourself (DIY) approach while making technological products as a part of the maker movement (2018).

At Yaşar University in an elective course, Experimental Design, students were expected to make a spatial arrangement or an activity design related to the Center for Disability Awareness (*Engelli Farkındalık Merkezi*) to reflect the experience of a physical or mental disability to a person without disabilities so this person can experience that disability (2018). In another elective course, Design Thinking, in collaboration with Immigration Removal Center (*Göçmen Geri Gönderme Merkezi*) students from diverse disciplines including industrial design, suggested activity designs for children living in the center (2017-2019).

At MSFAU, within the learning objectives of a faculty elective course named ‘Social Responsibility Practices’, projects on social responsibility to increase awareness of social issues were developed in collaboration with two NGOs; Spinal Cord Paralytics Association of Turkey (*Türkiye Omurilik Felçlileri Derneği*) and Six Dots Foundation for the Blinds (*Altı Nokta Körler Vakfı*). The course is conducted by tutors from industrial design, architecture, interior architecture, and city and regional planning departments and is available to the students of these four departments (2019). Table 4.1 presents an overview of the projects.

Table 4.1 Projects for Special Groups

UNIVERSITY	NPOs	PROJECT SUBJECT
Bilgi University	Bombalara Karşı Sofralar	Waste-Cyclers
	İstanbul Bilgi Üniversitesi Çocuk Çalışmaları Birimi	Educational Board Game
	Tasarım Atölyesi Kadıköy	Design of a unit to coordinate communication and assistance for the earthquake assembly areas of Kadıköy Municipality
Eskişehir Technical University	Tasarım Atölyesi Kadıköy	Emergency vending machine for homeless people
	Tepebaşı Belediyesi	Waste Collection Unit for Children
Istanbul Technical University	ITAP (Institute of Theoretical and Applied Physics) Bilim ve Toplum Merkezi	Instructable Design: From Project to Product
Izmir University of Economics	Bayraklı 100. Yıl İlköğretim Okulu	Toy Design Social Responsibility Project
	İzmir Menderes Şehit Er İbrahim Kocagöbek İlkokulu	Container Kindergarten Design
Middle East Technical University	Ayşeabla Okulları	Sustainable Hygiene: Washbasin and Accessories for Primary Schools
		School Door Handles and Accessories Product Family
		Sustainability Scenarios for Fostering Children's Saving Habits
	Ayşeabla Okulları Meraklı Kedi İlkokulu	Passing On Memories and Experiences through Sharing: Playful and Engaging Sustainability Scenarios for Encouraging Children's Sharing Behaviour
	Çiğdemim Derneği Çankaya Belediyesi Sakatlar Derneği	Scenarios for a Caring Community: Empowering Disabled Persons and Carers in Çiğdem Neighborhood "Participation of People with Disabilities and Their Relatives in Social Life in Çiğdem Neighbourhood"
Engelsiz ODTÜ Birimi	Service design project to improve the services or to design new services provided by METU or METU without Barriers Unit to provide a more accessible learning experience for students with a disability studying at METU	

Table 4.1 (continued)

Mimar Sinan Fine Arts University	Türkiye Omurilik Felçlileri Derneği	Furniture design for people with disabilities
	Türkiye Omurilik Felçlileri Derneği Altı Nokta Körler Vakfı	Industrial Design Social Responsibility Practices
	Türkiye Romatoloji Derneği Romatizma Hastaları Bilgilendirme ve Destekleme Derneği	Product Designs for Patients with Rheumatoid Arthritis
TOBB University of Economics and Technology	Robot El Derneği	Prosthetic hand design suitable for 3D printer production for children with limb deformities
Yaşar University	Bornova Belediyesi	Safe Playgrounds and Equipment Design
	Çöp(m)adam	Product Design for Garbage Ladies
	GGM (Göçmen Geri Gönderme Merkezi)	Activity Design Solution Suggestions for Children Living in the Immigration Removal Center
	İzmir Büyükşehir Belediyesi Engelli Farkındalık Merkezi	Design of spatial arrangements, games, activities and/or materials to enable the experience of a physical or mental disability
	Karabağlar Belediyesi	Product Designs to Facilitate the Lives of Elderly People Living in Nursing Homes

4.2 Projects for Local Development

This category includes collaborations with local governments (i.e., municipalities) and other local partners for sustainable local development.

The earliest example of this category was conducted in 2010. In collaboration with Seferihisar Municipality, Izmir University of Economics's students designed concept projects as a part of a third-year industrial design studio in accordance with the Cittaslow Movement, as Seferihisar is the first cittaslow in Turkey.

Another collaboration of the same university with a potters association (*Menemen Çömlekçiler Derneği*) was revitalization of a craft, pottery, for local development.

Creating a dream neighborhood and a neighborhood identity are the other two project examples from METU, in collaboration with a neighborhood association (*Çiğdemim*

Derneği). Third-year industrial design students applied participatory, co-design methods during their design processes.

Other collaborative projects with a local government (Bornova Municipality) were designing urban furniture, and safe playgrounds and equipment in a third-year studio course at Yaşar University. (2013-2015). Besides, sales stands for marketplaces that can be used in village festivals, projects studied by six students as graduation projects to improve services of Bornova Municipality in 2015.

One specific industrial design studio carried out with third and fourth-year students at Istanbul Bilgi University, namely, studio-sustain focuses on selecting a rural site (e.g., Urla, Bursa) as a field and developing sustainable design solutions to improve that site in collaboration with municipalities and multiple local partners (e.g., *Batı Urla Köyleri Derneği, Yapı Biyolojisi ve Ekolojisi Enstitüsü, Bursa Tarihi Çarşı Ve Hanlar Birliği Derneği, Yeşil Valiz Sorumlu Turizm Derneği, Bursa Alan Yönetimi Başkanlığı, Uluumay Vakfı*) since Fall of 2017.

Two students from Eskişehir Technical University collaborated with nonprofit partners for their graduation projects in 2016. One project focused on the distribution of daily milk in collaboration with Tepebaşı Municipality and other local actors. The other concentrated on stall design for marketplaces in collaboration with TAK (*Tasarım Atölyesi Kadıköy*). Table 4.2 presents an overview of the projects.

Table 4.2 Projects for Local Development

UNIVERSITY	NPOs	PROJECT SUBJECT
Bilgi University	Gümüş Eşya El Sanatkarları Derneği	Appreinticeship in Design: Kapalıçarşı
	Kültür Kenti Vakfı Beyoğlu Belediyesi	Appreinticeship in Product Design
	Yapı Biyolojisi ve Ekolojisi Enstitüsü Urla Belediyesi Batı Urla Köyleri Derneği Mimas Sanatevi	Studio-Sustain Urla-Barbaros
	Yeşil Valiz Derneği Bursa Alan Yönetimi Başkanlığı İzmit Alan Yönetimi Başkanlığı Tarihi Çarşılar ve Hanlar Birliği Cumalıkızık Tarım Kooperatifi Cumalıkızık Kadın Derneği Bursa Büyükşehir Belediyesi Yıldırım Belediyesi Uluumay Müzesi ve Vakfı Bursa Kent Müzesi	Studio-Sustain Bursa-Heritage
Eskişehir Technical University	Tasarım Atölyesi Kadıköy	Stall Design for Market Places
	Tasarım Atölyesi Kadıköy	Sound Acoustic Relaxation Unit by the Seaside
	Tepebaşı Belediyesi	Distribution of Daily Milk
Istanbul Medipol University	Erzincan Binali Yıldırım Üniversitesi Kemaliye Hacı Ali Akın Uygulamalı Bilimler Yüksekokulu	Project 40 - Souvenir Design for Eğin District
Izmir University of Economics	Menemen Çömlekçiler Derneği	KULP - Developing Menemen Pottery
	Seferihisar Belediyesi	Concepts Projects for Seferihisar Citta Slow
Middle East Technical University	Çiğdem Eğitim, Çevre ve Dayanışma Derneği	Dream Çiğdem Neighbourhood “My Dream Çiğdem Neighbourhood”
		Çiğdem Neighbourhood Identity
	Çiğdem Eğitim, Çevre ve Dayanışma Derneği Ayşeabla Okulları	Empowering Çiğdem Neighborhood: Sustainability Senarios and Design Solutions for Post-Use “Çiğdem Neighbourhood Reuse Scenarios”

Table 4.2 (continued)

Yaşar University	Bornova Belediyesi	Portable Sales Unit Design for Marketplaces
		Urban Furniture, and Safe Playgrounds and Equipment
	Seferihisar Belediyesi	Safe Playgrounds and Equipment Design
		Reuse Service and Container Design for Seferihisar Municipality: Seferihisar Municipality Donation System Project

4.3 Environmental Projects

This category includes diverse environmental design projects emphasizing the significance of post-use, reuse, recycle, and waste management.

One of the earliest examples of this category focused on the reuse and recycling of worn-out tires in 2012 as a part of second and third-year studio projects. Although the Tire Manufacturers Association (*Lastik Sanayicileri Derneği*), shortly LASDER, consists of industrial partners, it undertakes waste management of end-of-life tires to minimize environmental damage. To raise awareness and inform the public about these worn-out tires, an environmentally responsible project was conducted at Kadir Has University. With the technical and logistics support of the association, designing urban-scale public socialization spaces and outdoor products in these areas such as furniture, playgrounds, and equipment with reused and recycled material was the goal of the project.

Another example in 2015 as a part of their studio course, fourth-year students of Yaşar University proposed new design solutions to diversify the product range of Garbage Ladies (*Çöp(m)adam*) which is a civil initiative that creates hand-made products from recyclable materials to increase employment opportunities for impoverished women who have not had a regular income throughout their lives.

As a neighborhood association, Çiğdemim was also involved in METU's third-year studio project to encourage post-use and empower the neighborhood in 2015.

Two graduation projects from Yaşar University were completed in 2017 in collaboration with Seferihisar Municipality. One of them was a mobile station (i.e., kiosk) that aimed to promote the reuse and donation service of the municipality and to raise awareness of sharing. The other was a system design that included the collection and distribution of reusable shoes, clothes, home textiles, toys, and books as second-hand.

The latest example of an environmentally concerned project was a recycle bin design as a part of the zero waste management policy of the Directorate General of Environment and Urbanisation (*Çevre ve Şehircilik İl Müdürlüğü*) in 2019. Istanbul Medipol University's second-year students created differentiated waste bins for several recyclable materials. Table 4.3 presents an overview of the projects.

Table 4.3 Environmental Projects

UNIVERSITY	NPOs	PROJECT SUBJECT
Eskişehir Technical University	Tepebaşı Belediyesi	Waste Collection Unit for Children
Istanbul Medipol University	T.C. İstanbul Valiliği Çevre ve Şehircilik İl Müdürlüğü	Waste Bin Design
Kadir Has University	Lastik Sanayicileri Derneği (LASDER)	Using end-of-life tire (ELT) in the new concept development process and product design: Design of public socialization areas and products to be placed in these areas at urban scale (urban and garden furniture; lighting units, flower pots, seating units, etc.).
Middle East Technical University	Çiğdem Eğitim, Çevre ve Dayanışma Derneği Ayşeabla Okulları	Empowering Çiğdem Neighborhood: Sustainability Scenarios and Design Solutions for Post-Use "Çiğdem Neighbourhood Reuse Scenarios"
Yaşar University	Çöp(m)adam	Product Design for Garbage Ladies
	Seferihisar Belediyesi	Reuse Service and Container Design for Seferihisar Municipality: Seferihisar Municipality Donation System Project

CHAPTER 5

TUTOR-DRIVEN COLLABORATION MODEL

This chapter examines the structure and features of tutor-driven collaborations. The tutor-driven model of collaboration is the most frequent one among the models. Nine tutors (Tutor 6, 8, 9, 16, 17, 18, 19, 21, and 22), from five universities, eight students (Student 15, 16, 17, 18, 19, 20, 21, and 22) from five universities, and thirteen representatives from twelve NPOs (NPO 1, 2, 5, 6, 9, 11, 13, 16, 18, 19, 22, and 23) were involved in tutor-driven collaborations. In total, thirty participants were interviewed and they shared their experiences and viewpoints on the tutor-driven model of collaboration. In this chapter, the perspectives of participants on this model are presented. Figure 5.1 presents an overview of the model.

In the tutor-driven model, tutors bring the motivation for establishing and driving collaborations. The major motivation of tutors to request a collaborative project with an NPO is educational. Tutors are responsible for introducing the topic and parties, bringing them together, maintaining common ground between them, arranging meetings, and guiding students throughout the process. Tutors are the most determinant partners and NPOs are also active partners in decision-making during the processes. However, the students are less effective in decision-making, they follow the decisions taken. The students are more active in project the process as they are the implementers. Whereas NPOs are less active in the design process compared to students.

MOTIVATIONS OF THE DRIVER		Teaching New Areas in Designs Guiding Students to Design for Special User Groups Expanding Project's Scope And Scale Developing Students' Collaboration Skills Emphasizing on Social Aspect of Design Personal Interest of Tutors
REASONS OF OTHERS		Goodwill and Positive Attitude of NPOs Benefit Expectation of NPOs
INITIATION		Tutor-initiated Key Contact-initiated
CONTRIBUTIONS OF NPO		Educational Support Organizational Support Moral Support
BENEFITS	for All	Visibility
	for Students	Learning New Concepts, Approaches, and Methods Professional and Social Skills Material and Manufacturing Knowledge Designing for/with Special User Groups Scale and Scope of the Projects Awareness of Social Aspect of Design
	for NPOs	Design Contribution
	for All	Maintaining Common Understanding Realizability of Results
CHALLENGES	for Students	Learning New Concepts, Approaches, and Methods Adaptation to New Scale and Scope Working with New Material and Manufacturing Techniques Working for and with Special User Groups
	for Tutors	Educational Challenges Organizational Challenges
	for NPOs	Documenting and Sharing Results

Figure 5.1 Tutor-Driven Collaboration Model

5.1 Motivations of Tutors for NPO Collaboration

Tutors form a collaboration based on educational and personal motivations. When tutors initiate and drive collaboration with NPOs, they pursue educational goals, which are the knowledge and skillset they want to provide to students. These collaborations enable future industrial designers to be trained with certain qualifications.

Through these collaborations, the aims of tutors can be listed as follows (i) introducing, teaching, and applying new concepts, approaches, and methods in

design, (ii) guiding students to design for a special user group, (iii) expanding projects' scopes from product scale to system, service, and experience (iv) developing students' collaboration skills in team working, in inter-disciplinary and inter-organizational contexts, and (v) emphasizing on the social aspect of design in undergraduate industrial design education. Along with these learning objectives, (vi) tutors' personal interests and motivations towards social, environmental, and economic issues also trigger the reasons for collaborating with NPOs. Therefore, tutors want to work on these issues that students gain awareness of, as they find valuable.

When tutors establish collaborations, the subject that they could work on is determined by them as well, at the beginning of collaborations. They share their opinions with collaborating partners and discuss them, while NPO partners help to further elaborate through recommendations.

Tutors want students to develop design projects that have a strong connection with real life for an existing need. NPOs bring real context that helps tutors and students to better implement and achieve educational purposes.

I think the good thing about that project is that the students go out into the field and they learn the real thoughts of the people in the local. They touch hands like this. They need to think in such a comprehensive way. They also need to touch the local. It is such a total learning process. (Tutor 8)

5.1.1 Teaching New Areas in Design

One of the first educational motivations of tutors for NPO collaboration is to introduce, teach, and apply new concepts, approaches, and methods in undergraduate design education. Reuse, post-use, recycle, up-cycle, sustainability, human factors, ergonomics, accessibility, universal design, inclusive design, design for all, human-centered design, user-centered design, participatory design, and co-design are some of them.

With the guidance of reality NPO provides, it becomes convenient and easier for tutors and understandable and meaningful for students to practice concepts like reuse, post-use, recycle, up-cycle, sustainability, and local development.

First you need to load theoretical knowledge with the seminars you do, like what is sustain? (Tutor 8)

Tutors want to go to another location and take the students with them, that is, going out of the university and town, and examining the place on site. So that, the students can study a real-life context and develop their design ideas based on that context. In the end, design is a practice that has a lot of impact on the environment. It uses resources and so on. Therefore, since design is a practice that has a lot of impact on the environment, it is also a practice with a lot of responsibility. For this reason, tutors want students to experience this responsibility first-hand. They expect them to understand well what they are designing and why they are designing it, develop their own arguments, and design solutions that have a strong connection with a real and an existing need. Moreover, they want them to propose certain usage scenarios, accordingly for certain environments, and contexts for their design solutions based on real life (Tutor 6, 8, 9, 16, 17, 21, and 22).

Being in the field and collaborating with locals causes them to embrace the work they do. (Tutor 6)

For example, when students go to the field, they can better learn about local needs, market, resources, materials, and production. In this way, they can better develop sustainable business models and contribute to local development and sustainability.

They learn how those craftsmen and tradesmen produce locally or what the real thoughts of the people in the village are. (Tutor 8)

To teach concepts like human factors and ergonomics or model and prototype making, tutors decide on and collaborate with stakeholders aligned with their objectives. The project topic is also shaped accordingly. For example, a small product that can be easily and quickly modeled and prototyped is chosen so that students try out their works to a certain extent during the process. As the process requires a lot of model and prototype making, it offers students a bit different process

than the usual ones. By going through this unusual process, students are expected to learn better. Moreover, tutors want to collaborate with associations and foundations for the disabled and patients to better adapt concepts and approaches such as accessibility, universal design, inclusive design, and design for all (Tutor 18).

Some of the tutors do not follow a conventional design process within the scope of these collaborative projects, as they aim to apply new approaches and methods. With respect to introducing and applying human-centered and user-centered design approaches and methods (e.g., participatory design and co-design), tutors arrange project topics that require involving the user in the process where NPOs can provide participant users (Tutor 6, Tutor 8, Tutor 9, Tutor 16, Tutor 17 and Tutor 18).

The working field of NPOs allows tutors to adapt new concepts, approaches, and methods in undergraduate design education. It also offers students to examine and identify the real problem and need in the context and gain professional experience (e.g., communication, collaboration, networking, and presentation) in the field.

5.1.2 Guiding Students to Design for Special User Groups

Collaborating with NPOs such as associations and foundations for disabled, patients or disadvantaged people (e.g., refugees), or neighborhood and village associations is aimed to guide students to design for a special user group or local people for their special needs (Tutor 6, 8, 9, 16, 17, 18, 19, 21, and 22).

Tutors think that design is important because it can put forward a better direction in people's lives or the general problems of society, especially for the disadvantaged ones. They believe in the transforming aspect of design. As they think that design can touch and change everyone's life, they want to bring this aspect to students and integrate it into undergraduate education.

Working with these kinds of NPOs is also seen as a powerful tool for teaching concepts such as human factors, ergonomics, accessibility, universal design, inclusive design, design for all, human-centered design, user-centered design, and

socially responsible design. Getting out of university and diving into the field that NPO provides also facilitates this learning process that tutors aim for (Tutor 8 and Tutor 18).

Having an awareness or personal interest or being voluntary about these issues in their private lives is advantageous for a tutor while guiding students to design for people with special needs as an educational goal.

5.1.3 Expanding Project's Scope and Scale

Design solutions are not necessarily required to be products only, as they shape the project topic according to the field of activity, problems, and needs of the stakeholder or stakeholders in the collaboration. Projects' scopes can also be experiences, services, or systems. As tutors think that students need to think in a more comprehensive way like a system and service approach, they intend to combine these approaches with NPO collaborations (Tutors 6, 8, 9, 16, 17, 21, and 22).

One of the main goals of tutors within these collaborations is to enable students to understand and experience the different scales in the design process, which is also important for them to consider both product-, system-, and service-oriented solutions together at the same time. For example, a sustainability scenario or a sustainable solution does not have to be a product, it can be a system, service, or experience design as well so that students can expand their vision from product scale to system, service, and experience scales. In previous years, when tutors were more product-oriented, they expected tangible design solutions from students. In the following years, they asked them to bring system-oriented sustainability scenarios to make them think and design at the macro-scale. Due to the educational objectives, students are expected to turn their design solutions into more system-oriented solutions and deliver sustainability scenarios including the resources and tools they use, and system map (i.e., how it will work in real life) (Tutor 6, 8, 9, 16, and 17).

Then we wanted to adapt this project to a local (e.g., neighborhood) scale. Of course, it can take time to adapt it to different scales. It is important for students to see that the design process can be directed and planned at a very different scale. That's why we wanted them to develop solutions for the actual system. So the focus, the center was perhaps more system-oriented solutions. (Tutor 16)

Furthermore, some of the tutors first introduce the concepts like system and service design, and then after theoretical knowledge, they start the process of collaborative projects (Tutors 6, Tutor 8, and Tutor 9).

5.1.4 Developing Students' Collaboration Skills

Although this is more like a sub-goal of collaborative projects, the tutors also aim to enable students to improve their collaboration skills in teamwork, in interdisciplinary and inter-organizational contexts.

For example, tutors planned a complex course that they can all take together and collaborate which also enhances communication between departments, as the students usually stay within themselves, within their departments at the faculty. An architect, an industrial designer, or a city and regional planner can have completely different perspectives. A city and regional planning student might have a more macro perspective which adds a lot to an industrial design student. An industrial design student might be a very good detail solver and their solutions tend to be more manufacturable. In this way, they can make suggestions and see different perspectives when developing projects together (Tutor 18).

Tutors want to take students to another location, that is, out of university and examine the place one-on-one. As the students study a real-life context and develop their own design project ideas based on that context that have a strong connection with a real need or problem it is necessary to communicate and collaborate with the real people in the field. Being in the field causes them to embrace the work and their relationships with stakeholders. Apart from that, once they go to the field, they adopt the work and create their own processes with stakeholders. They build their

connections, and they work together (Tutor 6). The students go out into the field and they learn the real thoughts of the local people through communication and exchange of opinions. They need to search the market by talking to and collaborating with locals (Tutor 8). They want students to experience this professional experience first-hand.

5.1.5 Emphasizing on Social Aspect of Design

Emphasizing the social aspect of design is another motivation of tutors for NPO collaboration. As tutors said, one of the goals was to work on topics that could raise students' awareness such as social and environmental issues (Tutor 6, Tutor 16, and Tutor 18).

They think the university is not separated from society. The university and design discipline should also have a strong social impact to strengthen society. The social aspect of design is valuable and can better improve people's lives by solving general problems of society. Design can touch and change everyone's life in that sense.

They believe that it is not just about entering the university, studying for four years, and getting a diploma. It is about questioning whether what they do has a social impact or not, whether they can bring this or these values to their students via these projects (Tutor 16 and Tutor 18).

5.1.6 Personal Interest of Tutors

Along with their educational motivations, the personal interest of tutors in social, environmental, economic, and local issues is a secondary motivation, after educational motivations, towards NPO collaborations. Tutors wish to increase this awareness and consciousness in their students as well. Tutors' personal interest and motivation are effective when deciding to adapt these collaborations into the curriculum.

Being alone while doing projects within a studio environment, or at a university campus without any real context is criticized by tutors, as they feel that they justify themselves. They call this self-criticism of being in an ivory tower. When they leave their comfort zone and question what can be done, they realize that they need an external reality that NPOs can provide, especially when studying subjects like sustainability. In this way, the university, tutors, and students can step out of their ivory tower and the expertise and views of stakeholders about usage, market, and production can be involved in the process.

According to tutors, some of the design projects can be suitable to be done in the studio. However, especially some issues are not possible to work in a closed environment within self like a studio or university. For this reason, it is valuable to go outside the university, connect with stakeholders, and develop projects with them. The unity should be ensured for the projects that can be related to stakeholders and their existing practices. Without external stakeholders, they can still produce projects by themselves in the studio. A project a bit detached from life might be developed and it might not be understood what that project touches and why it is designed in that way. However, they cannot go and get feedback from the stakeholders in their environment. They feel they somehow justify their own thinking. It makes more sense for tutors to go and collaborate. Otherwise, it loses its value. The university is not in a different place from society, it is not detached from it. However, most of the time the university creates a closed environment. Questioning what can be done by getting out of this safe space is a consequence of this (Tutor 6, Tutor 8, Tutor 16, Tutor 18, and Tutor 19).

Personal belief, trust, and reliability in collaboration and collaborative projects to achieve social responsibility and transformation through the power of design.

I am more interested in these fields (human-centered design, universal design) because my own PhD was actually about this. For example, in my doctoral study, I worked with 30 disabled people. That's why I'm close to the subject. I think it's critical. Maybe one of the reasons why I don't work in the profit sector. Specifically, I'm a volunteer myself. Associations call me, they say they need a poster, they say they need something, I try to do them all as long as I have time. This is a little bit about the thing, it's about the person being interested in it. (Tutor 18)

5.2 Reasons of NPOs for Design Collaboration

NPOs' reasons for accepting collaboration offers from tutors are both related to their goodwill and positive attitude, and their expectations from these collaborations. They either collaborate without any expectations, with an intention to support university education, or to benefit their work in line with their objectives.

5.2.1 Goodwill and Positive Attitude of NPOs

Depending on NPOs' goodwill and positive attitude towards tutors and students, without any expectation, they are open to collaboration, willing to support university education, and join collaborative projects and processes as much as they can.

If other people have an idea, come to us, want to do a project or give us ideas, we are open to that. Collaboration is new in Turkey. It is not very common yet. It is necessary to develop ideas. We would like to be a part of it. If people are curious, we want to feed them. If there is a sincere purpose. That's why I appreciate the tutors who came to us. (...) If someone wants to cooperate with us, we try to make good use of that time. If they want to cooperate with us, we are ready and open to developing ideas. We have a certain know-how, we would like to share that and help. (NPO 9)

One of the goals of associations is to help academia because they work with universities. They want to ensure that academia can communicate more easily with the nonprofit sector and local people not only through theory but also practice by working in the field (NPO 1).

Their mission and role as a non-governmental organization are to stand for the needs of the nonprofit sector to be fulfilled by managing stakeholders in the project, showing them the field, and providing the real context. They try to explain especially to students what needs to be done, what to do, and what not to do with responsibility. NPOs generally want to collaborate with all departments and kinds of universities as they have already collaborated with different universities on small projects before. They think and act practically. They pay attention to students and want them to learn something. It is very important for NPOs to teach students about the field from the right angle so that they are able to see the problems there and do whatever they want about these problems. So they prefer to continue to collaborate when they are asked to support students in such projects (NPO 1).

NPOs are open to collaborations and new ideas. Their approach is to combine theory and practice. They cannot imagine educational institutions and nonprofit organizations being separate. They have to be in collaboration as science and practicality should be in every field of life. They believe that managers and members of the associations, tutors, and students from relevant departments of universities, as well as individuals should be sensitive, constructive, and open so that NGOs and scientific and/or educational institutions should be working together (NPO 2).

5.2.2 Benefit Expectation of NPOs

The expectation of benefiting from these collaborations is another reason for NPOs to decide to collaborate with industrial design departments. They do not have exact, defined expectations but they are welcoming opportunities in accordance with their missions that might contribute to their work in disadvantaged groups and environmental and local development areas. They are motivated to be fed by academic and scientific knowledge for (i) creating and raising public awareness on these areas, (ii) realizing and implementing concrete outcomes and solutions, and (iii) increasing their visibility. They are seeking new, different viewpoints and ideas

that might be useful, and beneficial for their field of work, that university, academia, and design can contribute.

The expectation was actually this: the students, young minds would come and open a different window for us. (NPO 1)

You know, we believed that it would be a good study for us and we started in that way. (NPO 13)

The result NPOs want to achieve is that all stakeholders, everyone who participated, gain a new perspective towards social issues. They pay attention to scientific knowledge when approaching social issues. Naturally, acting together with an educational or scientific institution is essential and meaningful for NPOs because it provides more benefits to society. Therefore, they find the inclusion of NPOs' subjects in academic studies precious. The ideas, evaluations, and suggestions that will come out of academic studies can guide them in that respect. It is valuable for them and makes them feel happy and excited that professors, students, and universities are academically interested in these topics, and that they bring them pieces of advice for further development. As new ideas change the way they look at everything, rationally they know that they need to work with universities and accept collaborations for this reason (NPO 1, NPO 2, NPO 13, NPO 16, NPO 18, and NPO 19).

Our expectation is to meet with young people, mainly with universities. Our problem was to attract university youth. (NPO 16)

(i) As NPOs aim to reach as many people as possible and raise awareness, they accept the collaboration request from the university. NPOs are happy that the academia and younger generation are showing interest in these areas such as the environment, people with special needs, and local development. As the relationships with universities grow and university youth gain more awareness in these areas, this situation would make NPOs more satisfied (NPO 1 and NPO 16).

If a student has curiosity, or a tutor has some curiosity or enthusiasm, they respect that. They think that maybe nothing will happen or change. However, they hope that the seed thrown might grow. It is difficult to deal with civil society in Turkey. It has

never been an easy situation but it is possible if academia wants to deal with and work for a problem. If more people become aware of this, not only NGOs, it makes a difference (NPO 9).

Our expectation is that: if a group of thirty people come here, even two of them take the message we want to give and leave is enough for us. Because we may not be able to give this message to everyone, especially to a certain age group. Our aim is to improve disability awareness. For this department, our aim is to make them aware so that they provide more accessible areas when they become design professionals in the future. (NPO 6)

In another example related to special groups, the NPO accepted the offer because their aim is to provide quality time for the children in the removal center and the purpose of the project offered is in line with that. It was a course and one of the outcomes of that course was to do activities with children in the removal center (NPO 5).

(ii) Another motive of NPOs for beginning a tutor-driven collaboration is to realize and implement the results of the design process.

My expectation was like this: let them design things for me that I can sell in the sales section and we can make an income from it altogether. This will contribute to the foundation. (NPO 19)

(iii) Increasing their visibility is another reason for NPO while accepting a university collaboration.

Having worked with universities is a positive, valuable input about their work and activities in their annual declaration. As their association policy, they pay attention to and care about being together with all educational institutions and universities and carrying out such projects. They also want to carry it out and finalize it (NPO 2).

Considering the above-mentioned reasons, NPOs are ready and open to collaborate, facilitate the process, and give all kinds of support as much as possible. They try not to turn anyone away.

5.3 Initiations of Tutor-driven Collaborations

In this section, initiation stories of tutor-driven collaborations are explained with examples. When a tutor-driven collaboration is the case, generally, the tutors initiate the collaboration by bringing their motivations into it. As they are tutor-driven collaborations, generally tutors try to access NPOs but sometimes tutors need the support of a key contact who knows a representative from the NPO that tutors want to contact. A person or an NPO in a key contact role can help to establish these collaborations between stakeholders or reach out to more NPOs to have multiple partners.

When tutors establish collaborations, the subject that they could work on is determined by them as well, at the beginning of collaborations. They share their opinions with collaborating partners and discuss them, while NPO partners help to further elaborate through recommendations.

5.3.1 Tutor-initiated Tutor-driven Collaborations

When tutors initiate collaboration with NPO partners, they either pick the topic first and then look for a collaborating partner, or select with whom to collaborate, the stakeholder, first and then propose the topic accordingly. In both cases, the subject or problem area to work on is determined by tutors and elaborated by stakeholders.

In the first circumstance, usually the tutor, individually or as a team, determines the topic, theme, and main objectives, and presents them to stakeholders whether these are meaningful for them too or not. The information, subject, and content about the project and process come mostly from tutors. But they also talk to stakeholders and discuss with them. NPO partners give feedback on that subject and content to elaborate a bit more and if they have a special recommendation, tutors take it into consideration (Tutors 6, 8, 9, 16, and 17 and NPO 13).

We suggest what it could be. Then, after developing this proposal a bit, we go to the stakeholders. But of course, we work with stakeholders. (Tutor 16)

Certain materials whose users were visually impaired were to be designed. Therefore, we were asked to provide consultancy and this is actually how it started. They said that they think it would be appropriate to get feedback before doing this, continue with feedback during the project, and following processes. (NPO 13)

In the second situation, the tutor attended one of the presentations of the nonprofit organization out of curiosity and interest. After the presentation, the tutor invited them to the university's incubation center where they have a small cubicle to work. About three to four months later, the tutor suggested doing a collaborative project for the organization and they started that collaboration together (Tutor 19). As well as contacting on purpose, meeting with someone in a design competition jury by coincidence can start interpersonal relationships and lead to collaboration.

This project is developed a little bit through me. It was 2016 or 2015, I don't remember exactly, I took part in a design competition jury. These associations were there. I met the president of the association on the jury. (...) In the second semester, we (tutors) told the students that they would work with a foundation and an association. We limited it. (Tutor 18)

5.3.2 Key Contact-initiated Tutor-driven Collaborations

A key contact can be a person or an institution from previous acquaintances. A key contact is an initial connection (e.g., a former graduate of the department or a representative from the NPO) is an important factor who takes part in establishing, developing, and maintaining collaborations. Key contact eases the formation of the collaboration process.

For instance, a tutor has close friends who are very active members of an association. So, with friends' suggestions and introduction, the tutor got in touch, communicated, and worked with the association through them. Those friends were the main contact for the tutors (Tutor 6, Tutor 8, Tutor 16, NPO 5, and NPO 18).

Apart from bringing partners together, the key contact participates in the collaboration process and plays a role as an actor throughout the collaboration. The collaborations mostly begin and proceed with interpersonal and informal connections and relations (Tutor 6, NPO 16, NPO 18, and NPO 19).

On our second visit, when the accommodation was canceled at the last minute, she arranged accommodation for us with her personal efforts. We cannot ask for this from another shareholder. We can ask her, and she stepped in where she could. (Tutor 6)

In some cases, the key contact was an institution that brings more NPO stakeholders to collaboration. They invite other stakeholders to collaborate. Tutors and students always met these stakeholders through the key NPO (Tutor 6, Tutor 8, Tutor 16, NPO 18, NPO 19, and Student 20). For example, the tutors thought that the participation of school children would be better. The key contact helped tutors to communicate with the schools when tutors asked how to do a project with children/students and involve them into the collaboration. Tutors went to the school, contacted a teacher, and had an interview.

In order to make a collaborative project and to communicate with the relevant people, stakeholders, and institutions, tutors need a strong main stakeholder with good relations. If there were a few of such stakeholders, it would be even easier for them. However, even finding one strong stakeholder is a great chance. That stakeholder introduces them to everyone else, helps everyone to embrace the project, and cares about collaboration.

You need a stakeholder with whom you have good relations. We had this. (Tutor 6)

Sometimes, key contact has the task of bringing users into the collaboration process. User involvement is built through them (Tutor 18).

In processes, both for the continuity of the process and for ensuring communication, key names are very critical and important. Without those names, it is not possible to reach other people.

5.4 Contributions of NPOs in Tutor-Driven Collaborations

Contributions of NPOs in tutor-driven collaborations can be sorted as educational, moral, and organizational support. Educational contributions include the steps that they are involved in the design collaboration process, such as problem and need definition at the beginning, feedback sessions and research phases during the collaborative process, and juries at the end. Organizational support includes the necessary logistics arrangements and providing users for participation. Their moral support includes goodwill and positive attitudes towards their partners during these collaborations.

5.4.1 Educational Support

Tutor-driven collaborations in the educational context proceed as knowledge transfer between universities (i.e., tutors and students) and NPOs. NPOs make their educational contributions at several stages during collaborations. Many tutor-driven collaborations follow the usual process of a design project. Tutors inform students about the collaborative process. NPOs start sharing their know-how and expertise over presentations and videos they show at the beginning of the process (Tutor 6, NPO 1, NPO 2, NPO 5, NPO 6, NPO 9, NPO 11, NPO 13, NPO 16, NPO 18, NPO 19, Student 15, Student 17, Student 18, Student 20, and Student 21).

A stakeholder made good presentations. I mean, it changed our perspectives.
(Student 20)

For instance, the people who were working in an NPO went to the university, they introduced themselves, and said that there was such a community. They told students a little bit about how they make these robot hands for children and their process. They showed students a few prototypes and videos of those children, showing how they felt when they reached those hands (Student 21).

Students go and meet with stakeholders. These visits are reciprocally repeated two or three times in a design process. The first visit is generally a research trip for observation. The others are mostly for presentations, workshops, and feedback sessions (Tutor 6, NPO 1, NPO 2, NPO 5, NPO 6, NPO 9, NPO 11, NPO 13, NPO 16, NPO 18, NPO 19, Student 15, Student 17, Student 18, Student 20, and Student 21).

For instance, students had such a visit at the very first stage. Then they had another visit in the middle stages. Finally, after the projects were finalized, they had a visit from them again. Students had the opportunity to see the one-on-one response. They were doing an interview with the children and could get their reactions directly. After that, they continued the project with their reactions and feedback.

There was a feeling that we actually managed the whole process together. That's why it was very exciting. (Student 18)

Students start with defining the problem and/or need, empathizing with users, and understanding their expectations and preferences. Then, they develop ideas and design solutions. Through received feedback on their projects from tutors and users, they try to offer products, services, and systems that can satisfy users. In the end, students present their projects in the final jury, exhibit them and NPOs evaluate (Tutor 6, NPO 1, NPO 2, NPO 5, NPO 6, NPO 9, NPO 11, NPO 13, NPO 16, NPO 18, NPO 19, Student 15, Student 17, Student 18, Student 20, and Student 21).

In another example, when students went to the NPO, they saw where the NPO produced and assembled the prototypes. NPO also showed the sections to the students. Apart from that, NPO went to some of the lessons and showed students how they communicate with the children and their families and asked what they expect from these robot hands. NPO told students about how this process progresses, such as what would make these children happy. Since students already had studio classes two days a week, NPO representatives tried to attend most of those classes from the beginning to the end whenever they were free. Apart from that, the NPO brought the assembly parts to the class one by one.

I remember that they took part in most of the courses, I mean they were with us from the very beginning to the very end. They guided us at every stage. Whether it was design or assembly. We sat together and assembled very different models together for two or three hours in the class. I especially remember that part because I had a lot of difficulty in the assembly part. (Student 21)

NPOs contribute to brief preparation, feedback sessions, juries, and research phases of design education via these collaborative projects.

Universities need to take their cooperation with the externals seriously and incorporate as much external knowledge into education as possible. Even if it is difficult, they should bring students and the real world together. (Tutor 6)

5.4.1.1 Problem and Need Definition

NPOs generally contributed to the initial stages: problem and need identification-related parts of the project. As far as participants remember, tutors gave a broad project topic, so students got a general brief. Students went and talked to the associations to determine the project themselves at the end of these meetings. Students saw the stakeholders as people who knew the needs and problems. They mostly met the stakeholders and interviewed some of them to narrow the topic down and try to understand their needs. The students analyzed their interviews, the problem areas. At that stage, students evaluated the analysis with the users and defined the problems together with them. When partners came to visit the studio, they joined the student teams to describe their needs. In the initial stages, the problem definition stage, they defined the problems together. Some students received the problematic subjects as a direct order to work on (Tutor 16, Tutor 18, Tutor 19, NPO 13, NPO 18, Student 15, Student 16, Student 19, and Student 20).

We are actually trained to really investigate and find the problem together with the users. (Student 15)

We actually carried out a research study with the children. We asked questions related to the subject. What kind of expectations do they have? We tried to understand them a little bit. (Student 19)

So our expectation is more that they help us to recognize and understand the problem area as much as possible. (Tutor 16)

Stakeholders might not have made a direct contribution but they contributed a lot to students in terms of initial information and ideas as they were knowledgeable about the area and neighborhood. In other words, students received more direct feedback on issues such as the validity and impact of that problem. The data input came out of the interviews directed students in a way and shaped their projects (Tutor 16, Tutor 18, Tutor 19, NPO 13, NPO 18, Student 15, Student 16, Student 19, and Student 20).

It is also something that students have thought of and developed products in line with the needs identified by associations. (Tutor 18)

Students pay more attention when the problem and need definition comes from NPOs since they regard it as real(ity). They did not want to design anything that did not fit the needs of the stakeholders.

In that respect, I think it was like we were working for a company and that company gave us a brief and we were doing it. That part was good. At least we experienced that real life a little more. (...) At school, we learn everything in half and half and we are not complete in anything. That's why, well, at least this was something that was a little more real. (Student 20)

5.4.1.2 Feedback Sessions

At later stages of the process, the ideation phase, reciprocal visits continued. Tutors and students went to NPOs and their partners went to university for feedback sessions during collaboration processes.

Tutors and students invited partners to the university for lectures and workshops. NPOs shared their know-how and expertise and relevant information. For example, each student group was paired with some members of the association and users at different tables and had a workshop on students' initial ideas. Students presented their first draft ideas, received feedback, and exchanged ideas. Then, they presented their ideas again at a later stage of the project at the second workshop. This time, students got feedback with more advanced design solutions and mockups. For

instance, if the user group was children, children could either choose within existing design solutions or could make comments, suggestions, and changes (Tutor 16, Tutor 19, NPO 9, NPO 13, NPO 16, NPO 18, Student 16, Student 17, Student 19, and Student 21).

Let's start with feedback. Of course, the feedback they gave us was definitely useful. (Student 17)

We were curious about their opinions; we went to find out what kind of things they expected. In another one, I remember it as if we had inspected the mockups we had made. It was just like that. In that sense, it was very enjoyable in terms of getting feedback. (Student 19)

So, of course, we planned the feedback sessions together. (...) We invited people from the association and the neighborhood there. Then they came there, we told them about the projects. We presented this to the people. Then the participants commented on the projects they liked and why they liked them with their feedback. (Tutor 16)

5.4.1.3 Juries

In most cases, NPOs are invited to the final jury, but end-users are not because they are crowded in number. However, sometimes the day after the jury, the users (i.e., children) came to design studios from their school with their teachers. The children went around one by one and tried the product mock-ups of student groups (NPO 1, NPO 9, NPO 16, NPO 18, Student 18, and Student 19).

I remember especially the day of the exhibition and it was very enjoyable. The children had a lot of fun. When they had so much fun, we were very happy. (Student 18)

In some cases, partners attended all juries and made comments at the juries, especially the final jury. Partners transferred their point of views such as what kind of designs students can make that the users like and be happy.

For example, I made a few small different changes in the montage. Because I thought it would work easier. You know, they noticed the changes I made in that assembly. Apart from that, I remember that they liked my approach to those changes, for example, there is also the design evaluation. (Student 21)

5.4.1.4 Research Phases

Starting from understanding the problem area (i.e., brief preparation) with users, and continuing with feedback sessions, juries, and user testing; students need to access real users for user research. Therefore, it is important that NPOs support this process by providing participants and their contact details for interviewing. NPOs help tutors and students to find and involve users in the design process by using their database containing members' information.

The tutors meet the NPO representatives, get their ideas, and then they determine how they can get support for the research phases as they want students to do interviews. The NPO is instrumental in reaching out to interview participants. NPOs are the ones who organize communication between the participants and the students and try to include them in the collaboration process. For instance, since the NPO had a database, the secretariat of the NPO sent a message to the people and families they could reach through this database, asking if they would like to participate in the project. Then the students interviewed those people as the NPO provided them their contact information (Tutor 16).

We went to their school. As far as I remember, I think they had come to our school. As I said, when we first went, we went for research purposes, you know. (Student 19)

Most of the time the NPO practitioners and members were user groups in students' projects. Thus, their collaborative partners become their user groups for interviews and user testing. Students do not have to find and reach out to users for user research themselves. However, in collaboration with the industry, there is still a user on one side and they still need to plan and access that user somehow with their own efforts and do research. Students were even able to enter participants' homes to interview users. For example, if it is a neighborhood association, students have the opportunity to interview the association and neighbors as well. The NPO contributes by introducing the neighborhood, recommending neighbors, and even assigning a

person to each student for user research interviews (NPO 11, NPO 13, NPO 16, Student 15, Student 16, Student 17, and Student 20).

Students remember those research studies at the beginning of the process. They met the NPO for a short time, had some meetings with the participants (e.g., neighborhood residents) and then interviewed some of them. Students had taken these as group projects, they went to some homes with their group and tried to understand participants' needs.

I mean positively; it was an interesting feeling to be able to enter people's homes. We were doing interviews there. I think it was probably with the trust that came from the association. After all, people we didn't know, you know, they accepted us into their homes. I remember those things. That was nice. In the houses we went to, you know, we were constantly offered treats, these were nice when we were doing interviews. (Student 16)

Providing user involvement in the design process for user research, students had the chance to interview special user groups and ask them questions related to the subject. Especially while working for and with special user groups such as children, people with disabilities, their families, and retired people, user research becomes even more important. With the support of NPOs, students carried out a research study with the participants. They asked questions about their habits and behaviors in daily life. The needs and expectations of users came out of these interviews. These interviews provided them information about the user group and contributed to the project. NPOs supported the research stages (NPO 11, NPO 13, NPO 16, Student 16, Student 17, Student 18, Student 19, and Student 21).

We were introduced to a boy and his mother was also with him. We had a chance to talk a little bit. I mean, all together. We met with that boy. What is he expecting? What kind of life does he have? What does he need? They actually helped us a lot in that process. (Student 21)

User testing is another step of user research that takes part towards the end of the design process. For example, when students were designing a product for offices, they went to an office and found real office workers who did not know about their projects and then they checked their design solutions a few times with them. In some of the projects, they had the chance to observe user-testing participants one-on-one

while trying out and using the product mock-ups. They received very practical feedback directly from real users (NPO 11, NPO 13, NPO 16, Student 17, Student 18, and Student 19).

I would call the one with the kids more like user-testing. I think user-testing would be appropriate. Because we did user testing with the children. So, we did something. Let's see what kind of response we get. We said within ourselves that they responded well to this, they responded well to that, we understood it like that. (Student 17)

Again, I remember that we used to give a lot of importance to user testing and the feedback we would get from it. And we checked it knowing the importance of it, and all the other projects after that actually have the same understanding. (Student 18)

5.4.2 Organizational Support

During collaborative processes, NPOs also provide facilities and organizational and logistic support. Especially in local development projects tutors and students need to visit that site and sometimes stay there as well. NPOs contribute to the organization by doing all the planning for these trips, arranging shuttle services, the accommodation they stay in, the food they eat and drink every day, and meetings with local people (Tutor 6, Tutor 8, Tutor 16, NPO 1).

But we needed the support of very serious NGOs to buy these tickets because you want the students to go to the field for three or four days. They couldn't do it all by themselves, I mean, they needed financial support, for example. (...) Some of them at least, for example, the municipality supported us, they gave us a vehicle there. Because we went to three different regions, students were collected from three different regions and taken back to the hotel in the evening. There is a very serious logistical fatigue. (Tutor 8)

In the processes, NPOs make logistical plans such as coordinating. They make the necessary arrangements. For the places where university stakeholders use, again, NPOs get the permissions. Their main contribution is to provide students and tutors access to the places and people they need while conducting the project there. For example, ensuring communication with local partners. As it was mentioned earlier, the members of the associations help students to access and meet people for

interviewing. Tutors and students think that this is a remarkable support from NPOs (Tutor 6, Tutor 8, Tutor 16, and NPO 1).

She was very helpful, for example. There was a group working there, they were active in the association. That group actually supported us a lot. Especially in this first project we did, they made very serious contributions. (Tutor 16)

On our second visit, our accommodation was canceled at the last minute, but one of the locals opened his house to us and 15 of us stayed there. A few students stayed in another house. (Tutor 6)

5.4.3 Moral Support

NPOs welcome all suggestions and collaboration offers from stakeholders and they approach with high motivation and energy. They are open and ready for every kind of collaboration with anyone who works in their field, social and environmental issues, but especially with universities and academics. They try to do their best from the moment they are involved. As a working model, they prefer to carry out collaborative projects and work on educational projects with universities, academics, and students. Once the collaboration starts, they provide assistance, moral support, and a positive attitude throughout the process. This support is one of the most important and highly mentioned contributions of NPOs by all partners (Tutor 6, Tutor 8, Tutor 16, Tutor 18, Tutor 19, NPO 2, NPO 5, NPO 11, NPO 13, NPO 18, NPO 19, Student 16, Student 18, Student 21).

The tutors and students appreciate NPOs' undeniable help and contribution. All stakeholders were as sincere as possible towards each other. All took their job seriously and invested a lot of their time while working together in the collaboration process (Tutor 6, Tutor 18, Tutor 19, and Student 21).

They were always helpful, actually. We sat together and assembled very different models together for two or three hours in the class. Apart from that, you know, it's not just in the class, when you went there and said that I couldn't do it like this, or when we asked for help, I remember that they always helped us in that regard. (Student 21)

For instance, when students wanted to ask questions, the NPOs always made appointments. The NPOs invited students to their place where they made prototypes (Tutor 6, Tutor 18, Tutor 19, and Student 21).

I mean, everyone was already positive, everyone was trying to help in some way because it was like a social responsibility project. (Tutor 19)

5.5 Benefits of Tutor-driven Collaborations

This section will evaluate the benefits of tutor-driven collaborations from the actors' perspectives. According to participants' viewpoints, increasing individual and institutional visibility are common benefits for all parties. Obviously, tutor-driven collaborations have more benefits for students and NPOs. Some benefits are more participant-specific. Furthermore; learning materials and manufacturing techniques, meeting with new concepts, approaches, and methods, gaining professional and social skills, and experiencing special user groups and the social aspect of design are more student-specific benefits. Meanwhile, design contribution is a benefit for NPOs.

5.5.1 Benefits for All

All stakeholders who were involved in tutor-driven collaborations said that there are benefits for all. Visibility is one and only common benefit for all.

Visibility

Visibility can be both individual and institutional. Individual visibility is the reputation of people that is obtained through exhibitions, presentations, and publications, especially for students and tutors.

Students believe that exhibitions and presentations to share project and process outputs with stakeholders increase their visibility. Since they were very satisfied with

the process and the collaboration and found it valuable, they put the project boards as well as the exhibition and presentation photos in their portfolios. Although they have already graduated, many of them still have these projects in their portfolios. It is also a plus for students as it is a project that is generally appreciated and attracts interest in internships, master's degrees, and job applications (Tutor 6, Tutor 8, Tutor 16, Tutor 18, NPO 1, NPO 13, NPO 18, Student 16, Student 17, Student 18, Student 19 and Student 20).

Institutional visibility is the recognition of institutions and disciplines by other stakeholders. University and NPO acquaintance and the fact that they have become close(r) to each other are considered as one of the most important outcomes of collaborations. Even minimal interaction and acquaintance create visibility for NPO, university (students and tutors), and design discipline. It also provides design awareness for the NPO and social awareness for tutors and especially students about the NPO and its area of activity (Tutor 6, Tutor 8, Tutor 16, Tutor 18, NPO 1, NPO 2, NPO9, NPO 11, NPO 13, NPO 18, Student 17, and Student 21).

The most important result is that the local people understand the importance of design. (NPO 1)

Collaboration is a step towards the recognition and acceptance of the presence of designers as actors and decision-makers in the nonprofit and public sector by the members of the association. These are the proofs of designers' place, positions, and responsibilities and that they can create value in the nonprofit and public sector. These are the takeaways from these collaborations.

5.5.2 Benefits for Students

Along with the common benefits of tutor-driven collaborations for all actors, there are four more benefits specific to students. The student's gains depending on the content of the project can be sorted as follows: (i) learning new concepts, approaches, and methods, (ii) improved professional and social skills due to the interaction and communication with an external stakeholder during collaboration, (iii) experience of

obtaining more detailed information about a specific material and manufacturing technique, (iv) experience of designing for and/or with a user group that they have never experienced before when they work for a special user group, (v) trying new scales and scope in design, and (vi) increased awareness of social and environmental areas that NPOs work in.

The partners and their environment provide a real context for students to benefit. In that respect, they think collaborating with an external partner is a simulation of working as a professional. For students, it is very important to visit and be in contact with a partner and its environment and design accordingly for the real context of which place or whom they are designing. Going to and seeing another place other than school, the place they are designing for, are good experiences for students. They positively recall the memories of visiting the association, meeting people there, their welcoming, and spending some time outside of the university environment (Student 15 and Student 20).

In school, we learn everything incomplete and we are not complete in anything. So doing it in a real context was something I was glad about it, at the end of the day. Because it was the first time we confronted that reality so much. At least this was something that was a little bit more real. (Student 20)

If the students were asked to design with the same theme and for the same environment but in the studio, it would not be the same as doing it in the real context. Because they will never know some realities about the context. For example, in a project topic related to a city, students might have missed the fact that the chestnut trees are almost gone, they no longer exist in Bursa. They would not know that chestnut trees are not there anymore if they did not talk to stakeholders (Student 20).

This project was a good project in terms of its contribution to the students. (Student 17)

It was very enjoyable and very instructive in terms of designing the product. (Student 18)

It could have been much more useful maybe if it had been really planned and organized better. Even as it was, it was very useful. (Student 20)

5.5.2.1 Learning New Concepts, Approaches, and Methods

As one of the main motivations of tutors in tutor-driven collaborations is to teach new concepts, approaches, and methods, learning them is the biggest gain for students. Students have a chance to familiarize themselves with unheard-of or recently heard and becoming widespread concepts like recycle, reuse, post-use, and user-centered approaches and methods such as participatory design, co-design, and public service design. They feel lucky to be one of the first to learn those that will become popular later.

It was a learning experience for me; it was a good learning process. Apart from that, now I'm doing my master's degree. I'm even finishing it. There are these kinds of approaches in some courses here too, and you know, I realize that I had done something similar to this at METU. That's a good thing. Because at least it was an introduction. In that respect, it was good, I think it was valuable. (Student 16)

In line with their tutors' motivations, students learn new design methods and how to apply them in the design process. Even though most of the students are in third grade, they said that it was their first project that they approached methodologically. Before that, during their conventional first (basic design) and second years, they do not learn and apply many methods. Rather, as students' perception, they believe inspiration will find them and they will come up with a brilliant idea. They also think that the third year might be a little late but they do not realize that design is not like they thought it was until that moment.

As students remember, first their tutors explain these new concepts, approaches, and methods to them. With the explanations of participatory design and co-design at the beginning, the process becomes clear(er) for students. Then, the theoretical explanation is followed by the implementation. With especially participatory and co-design methods, students learn to involve users in the design process and take their opinions into consideration. For example, they realize that some of the assumptions or scenarios they create are completely different from users'. Users can approach a

criterion from completely different angles when that is actually suitable for students which surprises them.

That's why I realized that the duty of the designer is not to find and design the problem on his own and design (it) for the users, but his main task is actually to communicate with the user and make the right determinations. (Student 15)

5.5.2.2 Professional and Social Skills

Collaborating with an external partner is a real-life experience for students, improving their social skills and making them feel like professionals. The multidisciplinary/interdisciplinary nature of the NPO offers an environment where students can interact with people from other disciplines. Professional experience in a real context enhances students' professional and social skills, such as research, presentations, collaboration, empathy, communication, and networking.

It was absolutely necessary. It was a project that was very important for the skill sets that a student should acquire. (Student 17)

With these collaborative projects, students' research skills are improved. After receiving the project brief from their tutors, the research phase starts with the stakeholder interviews with collaborative partners and potential users that participate in the collaboration process.

As students are trained to investigate and find the problem and need of users together with them, while doing this they use a variety of user research methods such as interviews and user testing (usability testing). For example, if it is a collaboration with a neighborhood association, students visit the association and neighborhood and meet the members of the association and local people to interview them to understand their problems, needs, and desires of users.

Before the interview process, they are taught how to prepare non-leading questions to get clear answers. They prepare interview questions for different users such as children and their parents, what children want, what that age group is interested in,

and the importance of colors and shapes for them. They learn how to conduct interviews with the guidance of their tutors which eventually improves their research skills (Student 15, Student 16, Student 17, Student 18, Student 19, and Tutor 6).

When they are designing a product for offices as a group, they go to an office, find an office worker who is a user of that product, and test their product. They do this knowing the importance of user testing (usability testing) and the feedback they get from the user.

Even after that experience, while doing research, they realize that this is a very important stage and the basis of almost everything. Afterwards, they continue to apply this approach in other project processes.

You know how it is to knit like this, the more attention is paid at the beginning, the more beautiful something emerges afterwards. You know, I always feel that I start the project knowing that the first stitches are thrown in that research phase, in every project. (Student 18)

The new concepts, approaches, and methods such as participatory and co-design, that are taught and practiced in tutor-driven collaborations include user involvement. The involvement of different user groups especially in the research phase, helps students understand the importance of research and develop their research skills.

One of the most gained and improved social skills is empathy. Students learn to empathize with the people they are designing for. They think that the purpose of doing a collaborative project was both to see how to work together with a non-governmental organization and empathize with those children and, what their expectations from them might be, or what they can provide for both the user and the NGO.

So, in this way, I was able to see how to approach people in terms of both empathy and communication, for myself. (Student 21)

In other projects as well they design for a target group, they empathize with them, and they think that it might be valuable for them. However, sometimes they still feel like there is no such user as they do not directly know them and cannot directly see the benefit to those people. They say that it is very different to design for and

empathize with someone who is a real user and someone they directly meet. Collaborating with an NPO and the context provided by it, allows students to empathize with feelings they have never known and people they have never met before. For example, it helps students to empathize with a limbless child and understand their expectations.

It was a project that made me happy. I learned to empathize the most in this process. At least I think I have learned to empathize in another way. It gave me the developed ability to empathize with a user, especially a child without an arm. So that's how we discovered a lot of things about them. (Student 21)

Both in collaborative processes and especially in projects where students apply participatory and co-design methods, they also need to perform socially. It is essential to be able to talk to, communicate, build relationships, and be friends with both stakeholders and users to understand each other. Communication and collaboration might be easier for some of the students and some might improve these skills faster. However, even a student who cannot communicate very well or does not prefer to communicate, develops their communication and collaboration competencies (Student 15 and Student 21).

With these projects, students find answers to some questions such as how to approach and talk to people, a special group, or a child, what to say is right, what to say is wrong or do they say something wrong. During these collaborations, after realizing that the partners and users are human beings like them, they start to communicate quite easily and everything becomes easier. They learn how to approach users by doing.

So what it really gave me was this: how to approach a user, especially a child, and how to communicate with a child without a limb in this way. (Student 21)

5.5.2.3 Material and Manufacturing Knowledge

Having a real context sometimes forces students to work with certain materials or manufacturing techniques they did not know about before. Modeling, mock-up,

prototype, 3D printing, 3D prototype, model making challenges turn into benefits. Those collaborations improve students as they learn about new materials and manufacturing techniques.

Due to the collaborative and participatory nature of the process, students are constantly making mock-ups and prototypes and trying them during the process. Since the process requires users to try, use, and test the product, and students need to get feedback, they make 1/1 scale models of the products throughout the process (Student 18).

Although students have taken prototypes from 3D printers before, modeling and 3D printing a mechanical and working product is a new and inexperienced field for them before the process. However, they realize that they can deal with the particular production technique and master it with the support of their tutors and partners throughout the process.

I think I was lucky, of course, it allowed me to improve in computer-aided modeling and 3D printing abilities. I have done it somehow. (Student 21)

5.5.2.4 Designing for/with Special User Groups

Working with special groups such as children, patients, disabled and elderly people, and pets via these collaborative projects, students experience a different category of users which they had never experienced until these collaboration processes. Trying to get to know diverse groups is instructive for them. Although most of them are human, each has different problems, needs, and perspectives. Often, they designed products that they thought would be useful for that specific user group but it did not make any sense to those users. With these collaborative processes, students realized that each user group thinks and reacts completely differently and they all need to be understood.

Tutor-driven collaborations were mostly focused on children as a group in collaboration with associations and schools. Through these collaborators, students were enabled to reach a young age group and to understand them in design education.

Students carried out one-on-one work with the children. In fact, they wanted to include children's imagination in the project. They gave them some small tasks. Students and children were divided into groups to complete these tasks. They carried out a user research study with the children using crayons, scissors, and handicraft materials that would attract their attention. Students expected children to draw what they imagined and asked questions related to the subject such as what kind of expectations they have. They observed how children behave and learned how they should treat children. They tried to understand them in that way (Tutor 16, Student 18, and Student 19).

It makes a lot of sense to us and we do it thinking that they will think so too, but the reaction we get is something completely different. Either they find it very funny or they find it very ridiculous. And they react in a way that we never expected. So it contributed a lot in terms of being user-oriented on different user groups. I can say that. (Student 18)

Students believe specifically in these projects and that collaborations can make great contributions to them. They were thankful to their tutors for bringing these opportunities. They think that it was a professional experience for their future career.

You know; I may have even wondered why all projects are not like this. Because I think it's very nourishing, I mean, it's a very rich thing for a designer to see the reactions of the user group that you make the product for, one-on-one. So, in general, it has always been a positive process for me. (Student 18)

Most of the students remember being excited and curious while working with special groups, especially with children. They said that they enjoyed and loved the process a lot.

It was a very enjoyable project. For me, as I said before, we had such a good experience in the case of that collaboration. And of course, it was also a difference for us. (...) Later on, I also worked with children in my graduation project. In that sense, it was actually a pleasant project for me. I mean, especially because I enjoyed working with them. Maybe my own personal

opinion is like this, I enjoyed it because I thought I communicated well with them. It was very nice in that sense. It helped me in my graduation project. You know, I worked once. I know what to do, it was a good experience for me. (Student 19)

5.5.2.5 Scale and Scope of the Projects

Most of the students who took part in experiencing new scale and scope projects were aware that one of the aims of the project was to design services and/or systems. So they knew that their tutors wanted them to approach the design as a system with stakeholders.

Until these projects, they were not experienced in system design even though they have never designed a system before. It was their first experience where they worked with real stakeholders and learned the importance of perceiving and approaching the project as a whole system for sustainable design.

Having done such a project well and going beyond the product design were contributed to students since they find service and system design more valuable than product design. They think these are emerging fields in Turkey and all over the world, and are a bit interesting and fun in this respect. On the other hand, product design feels a bit outdated for them (Student 16 and Student 20).

I think that the problems in people's lives are no longer products, but maybe newer relationships can solve them. (Student 16)

There was also a project related to system design there. They had also done a project on how the rural areas and the walking paths there could be included in tourism. (NPO 1)

5.5.2.6 Awareness of Social Aspect of Design

Recognizing the social aspect of design is one of the highly mentioned benefits for students in collaboration with NPOs via these projects addressing a real problem. Students discover the social aspect of the design and experience professional and moral satisfaction.

It is also very enjoyable in terms of one's own personal development, in the sense that when you help, it is very good to see that this help really reaches the right people. (...) Nothing gives the moral satisfaction that it brings. Other than that, I mean, of course, I am very much in favor of it. (Student 19)

The students are conscious that industrial design is a field that can contribute a lot in every field of society. They are questioning the social and environmental impact of their projects, designs, and approaches. The tutors observed that their students' social awareness has changed a lot (Tutor 16 and Student 21).

Even at the first meeting, students' hearts melted. They suddenly became different people. That was a nice surprise for me. I was happy because I felt at that moment that the work we did had an impact when we looked at the whole. (...) The reaction of the students to the general process was a nice surprise. (Tutor 16)

They gave us such a perspective like how we can make children happy if we make designs. (Student 21)

Although they are in the department of product design, students call it social design more than product design. When the design is done for people in need with nonprofits, it is more like a social responsibility and it is closer to social design rather than product design. They are able to see more directly and closely the contribution made to people's lives and society. In that respect, they find it more valuable. Because the design that is made for society, for people, is more valuable for them. For this reason, being involved in such projects is already among their priorities.

I was happier working with the NPO. Because companies are very goal-oriented. You know, the market dynamics and what is wanted from a designer in that industrial environment is more restrictive to me because of the limitations. But the NPO in general only has a goal of making the neighborhood better. There were no limits such as increasing efficiency or reducing costs. In that respect, it seemed more beautiful to me. (Student 16)

However, when something is done for such a social responsibility with a nonprofit organization, it is expected to be realized. The only purpose of it should be implementing the vision (Student 15).

As students knew the NPOs and the work they have been doing, they started to consider social responsibility, volunteering, and professional and moral satisfaction

rather than financial satisfaction. Although they are aware that financial satisfaction is also a part of their profession, they want to design for NPOs for free.

Let me use the word "being useful". As a designer, I think it makes me very happy to see that a design that I design is working. If I can say it in a personal sense. Making products that touch people's lives one-to-one and providing them with these products without any profit motive. It would make me happy. (Student 18)

Students remarked that the contribution of these collaborations and projects is great for them. When tutors approach students with such collaborative projects, they open up a new vision and add a different perspective. They noticed that they can and want to work at NPOs too and make a contribution there as a designer. They feel lucky to have a chance like this (Student 16 and Student 17).

It is also very valuable because it is very rare to be able to do projects like those since it is especially new in Turkey. I mean, it is an approach that has not existed before. I mean, I think it was very nice to be involved in something like that at that age. Because an alternative mode of design like this can also happen. You know, doing this is just a matter of establishing a point of view and some relationships. Of course, I wish I had been more conscious at that age. (Student 16)

5.5.3 Benefits for NPOs

Similar to NPOs' reasons towards accepting tutor-driven collaborations, they have benefited from design contribution in (i) increased design awareness for NPOs (i.e., visibility for design discipline), (ii) creating and raising public awareness in these areas, (iii) or realizing and implementing concrete outcomes and solutions.

Although NPOs were completely voluntary and did not have any interest, tutors and students are not sure about whether NPOs have benefited from these collaborations or not, or how much they benefited, and how much they could follow the process. Since the expectations and benefits of NPOs are not determined at the beginning, sometimes NPOs may not have tangible gains (Tutor 16, NPO 1, NPO 2, NPO 3, NPO 9, Student 16, Student 17, Student 18, Student 19, and Student 21).

We never had anything to use. (NPO 1)

It did not create anything new, it only strengthened awareness of some issues. For example, let's say it reinforced our awareness of compost, more precisely fertilizer, the importance of compost, there was an awareness on this issue. I am talking about agricultural production. (NPO 2)

They also do not know the positive or negative short-term and long-term impacts of these collaborative projects for NPOs. They are aware that all stakeholders should evaluate the process; however, they did not ask follow-up questions such as do they remember anything from these collaborations, or what they remember. Tutors and students were so focused on benefiting from NPOs that they even forgot to ask NPOs about their gains and process evaluations (Tutor 16, NPO 1, NPO 2, NPO 3, NPO 9, Student 16, Student 17, Student 18, Student 19, and Student 21).

The project they worked on was never used but it was an opportunity for us to look at it from a different perspective. As I said, sharing ideas is a good thing, but it is not always convenient for us. (...) We are open to new ideas. Different things can happen. (NPO 9)

Tutors and students also have doubts about whether they were able to convey the right message through these projects and share the results of the collaborations with NPO partners. They think these associations should be accessed after the process and these collaborations should be evaluated and valued by NPOs from their perspectives as well. However, they have almost never communicated with their stakeholders one-on-one after the completion of these projects. Tutors and students have only predictions and assumptions about NPOs' thoughts and benefits like they might be happy that they contributed to the academy. However, they are not sure about the problem they tried to solve for NPOs, NPOs might not even have had such a need at all. They do not remember what kind of contribution academia made to them. They think they did not make any concrete contribution. They believe that if these products had been produced and given to them, or been available to them, the contribution would have been more, they could have received more concrete contribution from the process (Tutor 16, NPO 1, NPO 2, NPO 3, NPO 9, Student 16, Student 17, Student 18, Student 19, and Student 21).

But I think there is such a question. I mean, I may have gained a lot for myself, but how much have we added to the other side? I think we stopped following it a little bit afterwards. I mean, what did we bring to them? What was the result? For example, I have no idea about this. It's a bit like that when you get to the last stage, sometimes you get a little bit of that feeling. You know, you have worked for those three or four months. But at the end, when you enter and leave the jury, it feels like it's over, but I would at least want to see what happened, what was done, or I would like to know if we made a contribution. (Student 21)

Design Contribution

At first, NPOs have doubts and second thoughts about collaborating with a university department in educational contexts since they are not familiar with the industrial design discipline. They think that industrial design is not relevant to social problems.

To be honest, now, I remember the first meeting with tutors, we had thoughts about what is the relevance of industrial design. When tutors told us, I thought it was strange, you know. What does this have to do with industrial design? But we got used to it, I mean, when we entered the lessons, when we started to do what they wanted to do, we learned that social problems can be addressed in some other way, from a different point of view, from an industrial point of view. (NPO 11)

These collaborative projects are proof that there are designers in the public sector. The members of the association recognized the designer as a decision-maker in the sector. They learned the role of a designer as a value-creator actor. The associations understood industrial design and that it would have a place in public service design. They started to have a great awareness of design. As a result of design awareness of NPOs, the visibility of industrial design discipline increased (NPO 1, NPO 13, Tutor, 18, Student 17, and Student 21).

In fact, it made us start and complete it with a little more idea about the design. (NPO 13)

They have made great contributions. The biggest result was that the local people there realized the importance of design. They understood that something different could be done, that design could make things in a more beautiful way. (NPO 1)

NPOs think that every person gives a new perspective, the academic eye is more multidimensional as they respect. They started to look from those perspectives and then the ideas provided by students and tutors helped them. They were happy to be involved in these processes and the whole collaboration was useful for them (NPO 19, Student 15, Student 16).

It sheds light on how and on which issues the university can work with. What else can emerge from it, or what other types of work can be done with universities? It was useful in this regard. We have experienced this. (NPO 2)

You know a designer looks at one thing and something else comes to life. (NPO 19)

NPOs saw that not only the students but also tutors and research assistants were constructive and worked hard for this collaboration and project, so really good things came out without any problems (NPO 11).

During the time they were working on this project, it gave me a perspective on how I should approach my own project. (NPO 19)

Sometimes, these ideas are not usable at the time they were created or they do not implement them immediately and cannot predict when they will. In these cases, NPOs look at these projects from time to time, review them, and take some examples from there for the projects they are planning to implement. They examine and evaluate the ideas and activities as a source of inspiration. They do not implement them exactly the same, they partially put some of them into practice by incorporating them into other ideas (Student 15, Student 21).

It is not possible for everything you get from here to be useful at that moment, it is not possible to use it at that moment. It may not be useful for us today, but tomorrow it may be. You will encounter it over time. (...) Of course, it was nice that such beautiful projects emerged, and that they were a source of inspiration for us. These projects still inspire us. (...) I mean, when we look at them one by one, all these studies have added a lot to us. (NPO 11)

Although it is not always possible to realize the results of collaboration, NPOs can benefit when they are able to implement some of the potential outcomes and solutions.

Sometimes design solutions can be tangible outputs like souvenirs. Since NPOs are against souvenirs made in China, the souvenirs are one of their biggest problems. They want properly designed souvenirs that they can produce immediately. Students come up with ideas that reflect the cultural heritage and local characteristics of the destination. So local people can definitely make money (NPO 1 and Tutor 8).

When these collaborative projects did not create anything new in the form of usable products, they still strengthened awareness of issues like local development, environment, and special user groups.

In the field of local development industrial design students have done a study on how to make cultural assets more effective and functional by respecting and protecting them without harming or damaging the culture. Not at the professional level, but even at the student level, some cultural assets in a local area (i.e., a village) were recorded and it remains in the archive of a university. Recording cultural assets is one of the most important achievements provided by design for NPOs. Many of the cultural assets such as traditional dishes, their recipes, plants, geographical values, and ceremonies in our culture get lost. Since many of them disappear with the local people who die, recording the cultural assets that remain in people's memories is valuable in terms of the development of cultural awareness and preservation of intangible cultural heritage. Therefore, the values we have that are unique to us should be recorded, these impactful works should be carried out, and the utmost sensitivity should also be shown to cultural assets to protect them. (NPO 2, NPO 18, and NPO 19).

When the students came, they paid attention to some pieces that I had never paid attention to. Because we have a place where we exhibit 60,000 pieces. We can't exhibit all of them, though. They walked through some pieces there that I had overlooked. In that sense, I got very positive feedback. (NPO 19)

There was also a system design project related to local development. It concentrates on how the rural areas, the surrounding agricultural areas, and the walking paths there could be integrated into tourism. For example, one student made a participatory square arrangement project and presented it to the municipality later.

I think the industrial designer is very good. To design handicrafts that will benefit the local community, together with an industrial designer, increases the benefit to the local community. They can think of solutions more related to this. It also opens up a new perspective for us. I think the design skills of local people should also be increased. (NPO 1)

In the field of environment, a contribution is about the access to the waste material and reuse of it. Students made designs with waste fabrics which can reduce waste accordingly. NPO practitioners started to think of solutions related to this issue. It opened up a new window for them (NPO 1).

For example, let's say it reinforced our awareness of creating an inventory of seeds or creating an inventory of a certain group of plants. Compost, more precisely fertilizer, the importance of compost, there was an awareness on this issue. I am talking about agricultural production. These come to my mind right now. (NPO 2)

One of the examples in the special user groups area, children learned how to play games that they did not know at all and had a lot of fun. Even the NPO representatives had a lot of fun while the children were playing with different toys. NPOs evaluated design contribution as very useful, positive, and enjoyable, and they added that they gained different perspectives (NPO 5).

In another example, industrial design students prepared a video that makes people sit and watch it to explain and convey autism through the eyes of someone with autism. Focusing on the sensory sensitivity of autism, they prepared a sensory wall with different materials that can be randomly put on the wall. Work of design and production came into play as a contribution to creating and raising public awareness of autism (NPO 6).

5.6 Challenges in Tutor-driven Collaborations

As with every collaboration, tutor-driven collaborations also pose distinct challenges for the stakeholders involved.

5.6.1 Challenges for All

Maintaining common understanding and realizability of results are common challenges for all in tutor-driven collaborations.

5.6.1.1 Maintaining Common Understanding

The common understanding challenge is fundamental communication and collaboration problems that occur between stakeholders. Communication and collaboration problems arise due to stakeholders from different backgrounds. In the tutor-driven collaboration model, tutors are responsible for establishing common ground between stakeholders along with initiating collaborations by bringing their motivations.

From the students' point of view, the common understanding challenge is rooted in the fact that collaborating partners are not designers and students are having a hard time balancing diverse feedback from different perspectives that are not familiar with the design discipline.

Frankly, we had difficulties at that point because we got design criticism from people who were very far away from design. There was such an absurd feedback that was very different from both the studio approach and our ideal design approach. (Student 20)

Students mentioned that if their partners had known what industrial design and service design were or the roles and capabilities of a design student from the very beginning, maybe these communications could have progressed in a healthier way. Therefore, it is crucial that the role of the designer and design student are well explained to the stakeholders and understood by them. Although these roles and responsibilities of actors are best defined in tutor-driven collaborations compared to other models, the parties, especially the students, might face the common understanding challenge.

Some arguments between the students and NPO members while discussing design solutions are remembered negatively by students. For example, sometimes both sides think and argue that their own solution is much more correct and their opinions conflict. In these kinds of collaborative processes, it is natural to have conflicts and disagreements but different points of view have to be managed.

Working with partners is a bit more difficult. I think as a student, you have a certain perspective as a design student. When we go to the partner, there is a different perspective. You know, there is something like a conflict of ideas. I mean, of course, this is a normal thing to happen, but we had no experience and knowledge about how to approach such issues. To be honest, we tried to find our own way. (Student 16)

As well as not defining and knowing the roles and responsibilities of each other, the mismatch of expectations of parties is another obstacle to achieving a common understanding. Students also find feedback, criticism, and comments from non-designer partners very imposing, strict, and unconstructive as if it is not a student project but a real project that will start soon. It seems that in tutor-driven collaborations, clearly telling the roles and responsibilities of each actor and avoiding false expectations are tutors' duties.

But it needs to be said clearly again. This is not a project that will be realized tomorrow. We are not solving problems yet; we are creating ideas for the future. This could have been better explained to the partners. (Student 17)

Regarding communication-related issues, students mentioned two problems in addition to previous ones. The first one is that they do not have direct communication with the stakeholders, instead they communicate through their tutors in a meeting scheduled by tutors. For example, when they wanted to send their sketches and ask for opinions, they did not have the chance to communicate directly via phone, email, or one-to-one without tutors' supervision. Secondly, communication becomes an issue, especially when dealing with special groups like children. However, this is not due to miscommunication or misunderstanding between actors. The difficulty is caused by the personality, communication and social skills of individuals. For instance, it is tough for a shy person to talk and it is also hard to talk to a shy person, make them talk, open, and warm them up.

5.6.1.2 Realizability of Results

Since these collaborative projects have benefits for all stakeholders, as well as the society, the realization and implementation of project outcomes are desired by all stakeholders. Most of the participants mentioned that they and also their collaborating partners had intentions to do so, as they discussed this issue during collaborations (NPO 1, 2, 3, 9, 11, 13, 15, 16, 17, 18, 19, 20, 21; Tutor 5, 6, 8, 10, 13, 15, 16, 18, 21; Student 7, 11, 12, 13, 16, 17, 18).

We had a conversation with the municipality about realizing the projects we did. They said yes, we can take those to the next level; your products can be produced. I mean, they were talking about using these products for the cherry festival. But it didn't happen. (Student 1)

When I was a student, I was very excited about the idea that they would actually produce this project, and for the first time, someone would use the product I designed. Well, maybe they'll complain about it by making comments like I wish she'd done this in another way or this is too heavy. That's why the possibility of its realization gave me great enthusiasm. (...) As we thought that our products would be produced, we negotiated with the manufacturers over the price like we could do it up to this price. (Student 2)

We talked about the fact that they can produce it. They said that they would like to use it, why not? (...) It is exciting to see the product I think and design is produced and used in real life. I would like to see my product actually produced and used; it would make me happy. (Student 7)

However, as the realization is harder to attain, these expectations turn into challenges. The realizability of project results is a difficulty for every actor in a collaboration. The realizability of projects faces four obstacles; necessary budget, intellectual property rights, commitment (time and effort) required for post-production, and the lack of applicability of students' projects.

We have never had anything usable. (NPO 1)

The number of stakeholders can be increased and diversified, project durations can be extended, and topics can carefully be chosen to cope with these challenges.

Budget/Funding

Collaborations between industrial design departments and nonprofit organizations (NPOs) face a notable challenge in realizing their outcomes due to budget and funding constraints. These collaborations often require financial resources for research, development, and implementation of projects, but both universities and NPOs may contend with limited budgets. Securing adequate funding becomes critical for translating collaborative efforts into tangible results, whether it involves implementing products, systems, services, or experiences (NPO 4, 12, 15, 20, 21; Tutor 3, 13, 16; Student 11).

They said it would be very good for them if my project was realized. But, budget-wise, it wasn't something I could afford. I would love to, but unfortunately, it didn't happen. But they didn't expect me to do it either. (Student 4)

As I recall, the municipality would have a budget to make it done. But as far as I remember, we didn't receive any financial support. We met them later. We were already seeing each other. He said, 'everything is ok, we made all the payments'. We said well, but I guess they didn't pay for it. (Student 3)

Intellectual Property Issues

The collaboration between universities and NPOs in industrial design education introduces a significant challenge in the realm of intellectual property rights. Determining ownership and rights to innovations or creations arising from joint projects can be complex. Although there are examples of collaborations that often have established protocols for intellectual property, usually there is not a written agreement between the stakeholders within the scope of this study, as the collaborations are built with interpersonal relations based on sincerity and trust. Universities want to keep intellectual property issues while NPOs prioritize open access and public benefit. Resolving these differences requires clear agreements and negotiations to ensure that both parties are satisfied with the handling of intellectual property. Striking a balance between fostering innovation and addressing ownership concerns is crucial for maintaining a productive and mutually beneficial

collaboration between universities and NPOs (NPO 1, 2; Tutor 3, 8, 16; Student 3, 12).

We were expecting a design registration or something else. Because we worked for it for about a year. (Student 3)

Commitment of Stakeholders

The commitment of stakeholders in terms of time and effort is another struggle for the realization of results. Many of these collaborative projects do not end within the timeline as they need more time post-production for realization. Completing and realizing the results of them is not so easy because of not only the time but also the effort expected from the partners, although they are willing to continue. This obstacle to realization might be caused by either the internal dynamics of stakeholders or procedures of the collaboration between them (NPO 2, 3, 7; Tutor 15, 21; Student 5, 6, 11, 12).

Applicability of Student Projects

It is valuable for students to work on real-life problems; however, their implementation is harder to attain as they often do not have simple solutions and they are much more complex than students can solve. Therefore, the results expected from a university student might not be viable (NPO 3, 4, 7, 10, 12, 15, 17, 21; Tutor 10, 13, 19, 21; Student 12).

They were expecting a producible product. Okay, maybe they were right, but in fact, each project may still have some unsolved issues and needs improvement. It could have been manufactured after solving those issues.” (Student 1)

Even though student projects are considered feasible and appropriate to be implemented, the student may not be able to follow the outcome due to lack of communication. Thus, they have doubts about whether the collaboration is helpful or not.

5.6.2 Challenges for Students

Students face several challenges throughout tutor-driven collaborations. Although tutors are not aware of challenges for students, (i) learning new concepts, approaches, and methods, (ii) adaptation to the scale and scope of the projects, (iii) dealing with particular material and manufacturing technique, and (iv) working for and with special user groups can be problematic for students.

5.6.2.1 Learning New Concepts, Approaches, and Methods

Teaching new concepts, approaches, and methods to students is one of the primary purposes of tutor-driven collaborations. Participatory design and co-design are practiced quite often. However, students complain that these concepts and methods are not specifically and theoretically introduced. Rather tutors embrace and prefer learning by doing it approach while teaching. Therefore, students are mostly aware that they are learning and implementing something new but they do not know what it is.

Actually, it was kind of like a participatory design process, but maybe we didn't even know what it was, and its name at the time. I mean, I don't remember it being named like that. (Student 16)

But at that time I didn't know what I was doing, the students didn't know what they were doing. I didn't know that the session was participatory or co-design. I just go and play with the children. I knew that it was something valuable, but I didn't know the name of it. The names of the methods were unknown. (Student 17)

Not knowing the names of the concepts and approaches makes it difficult to put their projects into their portfolios and present them later. Because if the student is going to apply for an internship, master's degree, or job, especially internationally, they need to be more knowledgeable about the methods to compete.

As a suggestion, the process of applying these approaches and methods can start with theory, an introductory lecture, about them. The names of them can be emphasized a little more and taught to students what they are exactly doing so that they can learn

better. In addition to the names of concepts, the phases of the research or design process such as feedback sessions and user testing need to be taught. Moreover, some tools like interviewing and storytelling that can be used in these phases can also be provided to the students.

Actually, it could have been said that here's the interview, storytelling. So we could have used them. Especially when we do something with children, when we communicate with them, you know, methods like storytelling can be used. I don't know, a lot of things could have been mentioned. It would have definitely been much better if how to conduct an interview in research was taught. (Student 15)

5.6.2.2 Adaptation to New Scale and Scope

As university-NPO collaborations cover not only product design solutions but also service and system solutions in design, students face some challenges in adapting to these scales. In comparison to designing a product, students find the logic of designing a system or service completely different. They think product design is controllable as it has a straightforward process and concrete outcome whereas system design and service design require a different and more abstract logic for them.

Because at some points, we struggled so much with the system design issue. The project was done in the last two weeks. There were products that hadn't yet been finished. For example, there were products that had not started. You know, I guess that process was not very clear, I mean, at what point what will be done (what to do at what point). So, I guess, at some point, it could not be finalized like that, it was stuck on that system issue and it became a thing. (Student 20)

For example, while detailing their system design solutions students have difficulties, as they are experiencing for the first time.

We're designing a system. How deep are we going to go? How detailed will we explain this scenario? I mean, in the production of a plastic cup, are we going to explain it as yes, plastic becomes a plastic cup, or first, the plastic comes to the factory, it is heated, it is mixed. I mean, how do we establish the depth difference between these two when we explain that system? We had trouble there. (Student 15)

Since product design is an older discipline, it gives some ready-made tools that students can benefit from. On the other hand, these tools might be suitable for service and system design. The challenge is that service and system design does not yet provide such required tools or students are not familiar with them. In that respect, they cannot always design with pen and paper which creates difficulties (Student 16).

5.6.2.3 Working with New Materials and Manufacturing Techniques

These collaborations can be challenging for students when they require working with a specific material or production techniques constraint as a project criterion. When it is the first time they create a mechanical-oriented design project including computer-aided modeling, creating a prototype from 3D printer phases of the process are challenging for students.

For example, for the mechanism of moving fingers and arm and in order to combine them properly and make them move, students had to 3D print several times. Since there were so many parts, students had to draw and model those fingers, hand, and arm one by one separately. They also need to think about the assembly, and how those parts will come together.

To be honest, at the very beginning, when they brought all those pieces I felt a little bit that it would be difficult. I said, "I think it's impossible for me to prototype and produce so many things". I had the question of how I could do it. You know, the prototyping part, the production part, and so on. That's why those stages were a bit troublesome for me. (Student 21)

As they mostly do the 3D printing and complete the project process by themselves, they feel like the responsibility belongs to them from the very beginning to the very end. Although their tutors help them during the process, students still feel alone in the prototyping phase.

5.6.2.4 Working for and with Special User Groups

Students have some difficulties in the process while dealing with special groups such as disadvantaged people and children that they have never worked with before. They might encounter tough situations while managing collaboration between them. As they do not want to offend people, they are selective in their words and actions.

To be honest, I never talked about it, but you know, before the child came, there was always an uneasiness in us. What would be wrong to say, how would we talk, would we say something wrong? I mean, after all, we had a lot of things like that. (Student 21)

For instance, while collaborating with primary school-level children, sometimes it becomes hard to keep their attention and stay well-coordinated. Considering the age group, it is very normal for that age children can easily get distracted and lose interest at some points. Even the materials that the mockups are made of affect them a lot (Student 19).

Apart from children's attention and concentration, some of them are shy. While it is hard for children to talk, it is also difficult for students to try and make them talk.

We were trying to open up a conversation, to get them to talk, and to warm up to us. Some were very shy while others were very dominant in the group. It was even difficult for us to keep coordination while they were telling the story or drawing. There was such a difficulty that we never expected, in the encounters. (Student 18)

5.6.3 Challenges for Tutors

NPO collaboration in an educational context brings organizational, educational, and realization challenges from the perspectives of tutors.

5.6.3.1 Educational Challenges

Educational challenges include (i) introducing and integrating new approaches and methods into design education, (ii) changing project scale from product to system,

service, and experience and teaching these scales, as well as (iii) matching project scope with students' level. Since each project requires a different plan, the determination of methods and processes takes time in terms of introducing the concept and adapting it to different scales. When the projects remain on a macro scale, the students cannot associate them with design much, the projects remain more general. Students struggle with the transition from a tangible product scale to a more intangible system and service scale. Nevertheless, in one of the examples, tutors coped with this struggle as they repeated the collaborations and project schemes and improved the plan and guidance of the design process year by year. Repeating the collaboration with the same stakeholders helps to overcome educational challenges. In repeating collaborations, the scale and scope of the next projects are changed and adapted to ease the design process for students. Positive past experiences resulting from the first collaboration and the workload (i.e., time and effort) of establishing new relationships and collaborations with partners are the main reasons for tutors to prefer sustainability of collaboration with the same partner, which is not always possible.

Then, in order to improve the processes among ourselves, the scale became smaller in this next project. It became more focused. Therefore, our expectation was to include more products in the process and design solutions. (Tutor 16)

Matching projects' scope with students' level is another challenge for tutors as collaborative projects with NPOs require many arrangements in terms of the approaches and methods used and scale and scope. It is necessary to cover NPOs' subjects at an appropriate level.

5.6.3.2 Organizational Challenges

Collaboration requires some organizational arrangements such as time planning, logistics, and communication with contacts. Time management is an issue due to the intense and tiring process in terms of scheduling, conducting, and coordinating the events as well as flexibility in time plan and adjustments for last-minute changes in

the program. Logistics like transportation, accommodation, food arrangements for field trips, and other financial issues should be resolved in advance. Safety is also one of the important concerns for tutors as they are responsible for ensuring the safety of students and outside of the university campus is risky. Such organizational processes require a lot of personal interest, energy, and social effort in terms of communication and networking. Due to the responsibility and intense workload, these collaborations might not be preferable in education. Tutors should be very dedicated to handling these challenges. Establishing connections with contacts from NPOs is also a necessity for collaborative projects. Communication is a major challenge that can occur at any time during a collaboration which also needs the instant problem-solving abilities of stakeholders.

5.6.4 Challenges for NPOs

Documenting and Sharing Results

There is only documenting and sharing results challenge for NPOs in tutor-driven collaborations. The lack of recordings and archives of results and process are highly mentioned drawbacks for NPOs. Since the products that came out were not shared with them in the end, they are disappointed about this issue. They think a brochure of the products could have been made and they believe that as a document, as a reminder, it should have been distributed to all stakeholders who were involved. The names of the people and institutions should also be written down in that brochure for future reference. If they are going to be involved in such an endeavor, they will definitely be sure to do this for the next time. The results may not be useful at first, but after some time they might want to look at them again and it is hard to remember the results and process if there is no record of it (NPO 2, NPO 5, and NPO 16).

They weren't on the jury, but they might have contacted the instructors afterwards; I'm not sure. We didn't share the results.
(Student 14)

CHAPTER 6

NPO-DRIVEN COLLABORATION MODEL

This chapter examines the structure and features of NPO-driven collaborations. The NPO-driven collaboration model rarely occurred compared to other models. Eighteen of the participants; six students (Student 9, 10, 11, 12, 13, and 14) and five tutors (Tutor 10, 13, 15, 18, and 20) from five educational institutions, and seven representatives from six NPOs (NPO 3, 4, 7, 10, 14, and 20) interviewed were involved in NPO-driven collaborations and shared their experiences on this model. In this chapter, the viewpoints of all actors on NPO-driven collaborations are presented. Figure 6.1 presents an overview of the model.

In the NPO-driven model, NPO brings the motivations for initiating and driving collaborations. NPO intends to collaborate and initiates the collaboration by reaching out to the tutor or department either directly or indirectly through a key contact. Tutors welcome the opportunity and match it with the learning objectives and students' level. Then, they integrate this collaboration within the scope of a studio or an elective course. Representatives, practitioners from NPOs, and tutors are the determinant and active actors during the initiation and conduct of collaboration, while students' roles are more passive in NPO-driven collaborations.

MOTIVATIONS OF THE DRIVER		Public Awareness Visibility Realization of Results
REASONS OF OTHERS		Educational Personal Practical
INITIATION		NPO-initiated Key Contact-initiated
CONTRIBUTIONS OF NPO		Educational Organizational
BENEFITS	for All	Visibility Public Awareness
	for Students	Learning New Concepts, Approaches, and Methods Material and Manufacturing Knowledge Professional and Social Skills Awareness of Social Aspect of Design
	for NPOs	Design Contribution
CHALLENGES	for All	Maintaining Common Understanding Realizability of Results
	for Students	Adaptation to New Scale and Scope Working with New Material and Manufacturing
	for NPOs	Documenting and Sharing Results

Figure 6.1 NPO-Driven Collaboration Model

6.1 Motivations of NPOs for Design Collaboration

The characteristic of NPO-driven collaboration is that the motivation for the collaboration comes from the NPO. Receiving design contributions is the main motivation and expectation of NPOs to drive collaboration. I call design contribution as NPOs search for new, different ideas and perspectives from industrial design departments for their actions to fulfill their objectives. Design contribution includes (i) raising public awareness on specific topics, (ii) increasing the visibility for NPOs, and (iii) realizing the results in the form of tangible outcomes along with their goals.

Having design awareness is a prerequisite for an NPO to demand a design contribution. For instance, one of the patient and caregiver associations with design awareness requires a design contribution for a patient group and their caregivers.

This business, after all, is a design event abroad. This design thing is about everything. It is in every subject. It's an area where we're not strangers. (NPO 4)

For instance, when someone gets sick or when they have an incurable disease going on, they need to learn to live with it. After all, as they learn to live with it, many things they use in their lives inevitably depend on design such as cars, shoes, handheld shower head, the side zipper of the pants, cups and so on. The products designed become crucial for particular disease. The patients with rheumatoid arthritis sometimes cannot put their fingers on the handle and lift the cup.

Why is that design? I think the life itself as a design. All your stuff is a design. That's why we chose the design department. I can't think of any other department, frankly, what it could be. But design, I always feel so; life itself is a design. Everything we use is a product of design. I think that's what it should have been. (NPO 20)

As already mentioned, the topics studied in these collaborations are categorized as environmental, local development, and special groups. The areas of collaboration are parallel to the areas of activities of NPOs. In line with their objectives, NPOs who have design awareness seek design contributions that will support their fields of work.

We are a nonprofit association. Our task is to collect tires and return them to recycling. If something creative has come out about it and it can be useful, we help with the material. (...) We can evaluate them in the social responsibility project, of course. (NPO 10)

It was a project that we wanted to strengthen both the association and its mission. What is the mission of our association? To empower and enrich university students academically. To strengthen and enhance the academic environment. That is what we are doing right now, actually supporting university students. (NPO 3)

As a result of this desire and collaboration, they expect design contribution from an external partner. They are looking for a new idea, a point of view. Another NPO seeks design contribution in the environmental field, specifically reusing and recycling worn-out car tires. Through these collaborations, they search for answers to some questions.

We were wondering if something new would come out. I don't have much in my mind right now, but they did some very interesting things. We wanted to see that too, what else can be done from car tires? Reuse and recycling have improved so much. For what purpose can it be used? So different things can happen. We wondered what would happen. (NPO 10)

The underlying reason for choosing the undergraduate design department, in particular, is that they are both young and have design perspectives. Another environment-oriented NGO, which focuses on collecting and recycling paper, metal, and plastic waste, looks for a design contribution in their field.

Especially in our work with schools, in regions with a lot of paper waste, we care about a third eye. (...) How did we start? I am sure that these young minds can look at them from a very different angle than we do, and very different designs can emerge. Indeed, very functional, beautiful designs that we could not think of, to be used both outdoors and indoors, came out. (NPO 7)

To sum up, NPOs want to get ideas from different points of view or people who want to think about their issues. They do collaborative projects to see what and how the others think on those issues. They may also present their project ideas to other universities and repeat the same project in collaboration with them as well.

Because the design part is not given much importance in Turkey, maybe the perspective of students and designers may have been important for them. That's why I think they may have wanted to do and did such a project. (Student 11)

6.1.1 Public Awareness

NPOs that are open to collaboration are willing to collaborate in line with their fields of work and objectives. Since the association aims to create public awareness and increase existing public awareness, they expect design contributions in line with the association's purpose. Design contribution is expected to support the association's purpose of raising awareness.

When an NPO is in search of a new idea, or a different perspective to raise public awareness on an environmental issue or a specific group of people, they contact the

industrial design department. They require design contributions to raise public awareness on that specific issue.

While I was forming this collaboration alone, our only goal was to raise awareness. That's the purpose. Each year, we celebrate a few awareness days. (...) Since society doesn't know about the disease, our aim here is to say that there is such a disease, such a life; we want to say don't stay in this life. (NPO 4)

In one of the cases, when an environmental day started to approach, the NPO began to brainstorm how they could organize an event that included zero waste. In the past, there was a redbud tree environmental festival (*Erguvan Festivali*); the redbud is a flower unique to Istanbul. There were various painting and composition competitions in schools on June 5, Environment Day. The Redbud Tree festivals are made with great effort; children make their own presentations and are given prizes. Therefore, they brainstormed to find an activity considering zero waste. Then they came up with the idea of designing a zero-waste bin. While thinking about how to design a zero-waste bin, they wanted to collaborate with a university in Istanbul and met one of the tutors from the industrial design department. In this way, they launched and introduced the Redbud Festival and zero waste intricately (NPO 7).

In another example, the motivation of an NPO representative for collaboration is to raise awareness of people about a specific disease, rheumatoid arthritis. They believe this awareness can be created in educational institutions. Raising public awareness can take place in universities rather than high schools. NPOs expect design contribution on a particular condition from young industrial design students primarily to raise their awareness by holding design competitions.

The university project raises students' awareness, namely young people, on this issue. And what can be created from their point of view? That is, to tell them about the disease and to get young ideas accordingly. Frankly, not the ideas from a professional person. Instead, it was to raise awareness of young people on this issue and to reward them a little. (NPO 20)

Sometimes awareness is boosted when these awareness activities are supported with concrete outputs (realization of results).

The production of new designs should effectively be designed and supported by visuals to attract the attention of the citizens and direct them there with the sign system. These are very important. (NPO 7)

It wasn't like a competition, I mean they didn't choose a project at the end of the day, like a winner. They just wanted people to have an idea about this issue, to say that there is such a thing. (Tutor 10)

6.1.2 Visibility

Increasing their visibility as an institution through these collaborations also motivates NPOs towards university collaboration. Visibility refers to the actions and results that improve an organization's recognition and reputation.

It was a project that we wanted to strengthen both the association and its mission. (NPO 3)

After all, when we started this collaboration, our biggest motivation was to raise public awareness and somehow provide our promotion and advertisement. (NPO 10)

For the objective of increasing their visibility, NPOs tend to collaborate with particular partners.

The fact that it is this university is an area that we can benefit from in the field of publicity. This university was chosen because it is a well-established university in Istanbul that we can also benefit from in the promotion area. It's a disciplined field; that's why it was chosen. (NPO 4)

However, in some cases, even collaborating with diverse and significant partners might not be seen as adequate for advertising the NPO.

Now, the zero waste project was obviously a prestige project for both our ministry and our provincial directorate. Therefore, it was important for us to collaborate with different institutions, let's say universities and the industrial design department, to carry the project to a higher level and reach more people. I wish interviews could be done about this and the press could be contacted, but these didn't happen. (NPO 7)

6.1.3 Realization of the Results

The realization of the results is another expectation and motivation of NPOs in NPO-driven collaborations. They are actually looking for industrial design departments to collaborate for the productization of ideas. They think that a study aimed at turning collaboration outputs into a real product would also attract the attention of the tutors and students in this department. In this sense, they are interested in industrial design departments. They want the study to not only remain at the academic level but also take it to the next level and realize it (NPO 3).

How can the production of new designs be effectively designed and supported by visuals to attract the attention of the citizens and direct them there with the sign system? These are very important. (NPO 7)

As a sign that the NPO has clarified its intentions, tutors are also aware of NPOs' motivation and thoughts about producing it and how to do it (Tutor 13).

But he came up with the idea that we should commercialize this, there should be TÜBİTAK sets, and these should be purchased. (...) The aim was to design and commercialize science kits for children so that children or parents could purchase them. (Tutor 13)

In an example where the design contribution is needed as a concrete outcome, undergraduate students are expected to design a waste bin considering the material selection and usage.

Children, of course, get their education as well. Maybe the material to be used here is also important. You threw the paper, threw the metal, threw the plastic. Where do you throw it, how do you throw it without getting your hands dirty? (NPO 7)

The realization of results is expected because it allows it to spread widely and reach more people. However, when they want to take these projects to the next level and turn them into products, they all go through the same process. Sometimes they all might be left unfinished or incomplete (NPO 3).

I would like this project to reach many more people. Let's study in schools, let's do it in kindergartens. Let it go into mass production, and spread it to more people, but that part is a bit lacking. (NPO 7)

Apart from remaining unfinished or incomplete, the realization of results and their realization processes require more stakeholders to make them happen. Due to the multiple stakeholders needed, the realization of results turns into a difficulty, rather than a motivation for collaboration which will be discussed in the following sections.

We have many projects like this one. But all these simple engineering and design stages need to be done to meet with companies to turn them into products. Therefore, we are still looking for partners who can do this. (NPO 3)

6.2 Reasons of Tutors for NPO Collaboration

In the NPO-driven model, the NPO brings its intention to collaborate and initiates collaboration. Tutors welcome the opportunity, they combine it with educational purposes and integrate this collaboration within the scope of a studio or an elective course.

There are educational, personal, and practical reasons for tutors to collaborate with NPOs. When NPOs initiate collaboration, tutors primarily have educational reasons to accept the offer and adapt it to their schedules. Educational reasons aim at evoking the social aspect of design, teaching new concepts, and leading students to design for a special user group or with a material constraint (Tutor 10, Tutor 13, Tutor 15, and Tutor 18).

It is about our ethical stance. We have a sensitivity to the social dimension of this business, such as improving the quality of life and making people's lives easier. We don't want this to be limited to profit-oriented industrial enterprises. We evaluate the requests that come to us positively. We don't search for them, they come to us. We have such a stance as a university. (Tutor 15)

Departmental concerns about environmental issues have influences on teaching approaches.

There are a lot of problems related to the environment, we are sensitive about sustainability as a department. We like to work on this issue and we want our students to make projects with this sensitivity. We wanted them to see that

every work they do can actually leave a good mark on the earth. This was the ethical dimension of the project. (Tutor 15)

For instance, if the topic includes working with a different material constraint, to extend the knowledge and skill set of students, tutors seize the opportunity. Their reason is to know a material that has limits. The fact that it is a waste material, does not make it less valuable. In fact, tutors think it is informative and instructive for students to recognize a material that has another function until recently and utilize it as a raw material. Since the material itself is not suitable for indoor use, it directed them to the outdoor space, to the public space (Tutor 15).

It was a subject where we could experiment with some materials. Because, when you say waste bin, there are many materials and manufacturing methods you can think of, such as wood, plastic, metal, stainless steel, hard, and cast iron. (Tutor 10)

As tutors constantly look for ways to upgrade design education and better equip students, NPOs propose a suitable ground. The tutors find the topics brought by NPOs, coming from practice, valuable. They agree to collaborate if these topics are up-to-date (e.g., zero waste, recycle, reuse, sustainability) and compatible with the purpose of education to teach students these recent concepts.

We cannot stay away from current issues, and current topics. I don't want them to stay away, I want them to follow these things. I want them to be up to date with what's going on and where. (...) They had preliminary information about zero waste and conducted research. (Tutor 10)

Tutors also try to match collaboration topics with the learning objectives and students' level. For instance, if it is also in line with the educational objectives in terms of the materials and manufacturing techniques, tutors accept.

Taking it in 2nd and 3rd grades offered a good experience to be creative and innovative. We find the products valuable at the level of applicability. So it was a good project. (Tutor 15)

I think it was a project that would be too light for 3rds and 4ths. Because, when you look at certain details, it was a subject that a 2nd-year student could very easily study and react fast. They made good alternatives in a short time. I think it was a good project. (Tutor 10)

Tutors' personal interest in social, environmental, and local issues and their desire to raise public awareness in these certain subjects can be considered as a side reason. Personal reasons affect decisions when adapting these collaboration offers into the curriculum.

I see this as an opportunity for universities, youth, and the country to raise awareness, to remind them how important it is, an opportunity to touch, understand, and research. This should not be seen as a competition but as an awareness-raising project. (Tutor 10)

Tutors' reasons for accepting a collaboration request are also practical such as not turning down an opportunity from an external partner or taking advantage of a ready-made subject. The subjects brought by the NPOs provide diversity, thus not every student studies the same subject, and they have a chance to pick.

After that, I accepted it as a project so that we would continue to work. (Tutor 13)

6.3 Initiations of NPO-driven Collaborations

In this section, initiation stories of NPO-driven collaborations are explained with examples. When an NPO-driven collaboration is the case, generally, the NPO partner initiates the collaboration by bringing their motivations into it. In some cases, key contacts (see also Section 5.3.2) might also help to establish these collaborations between partners. As they are NPO-driven collaborations, either directly or indirectly, via key contact, the NPO decides to initiate.

6.3.1 NPO-initiated NPO-driven Collaborations

The NPO contacted, they called the design department. They came and then we met. (Tutor 13)

In one of the cases, an NPO had a team in their institution that was interested in the education side, which had previously collaborated with many schools to organize various activities and competitions, especially on environmental days. They reach

the university through that team. When another environment day approached, they brainstormed on organizing an event that included zero waste. Then they came up with the idea of designing a zero-waste bin. While they were thinking about how to design a zero-waste bin, they wanted to collaborate with an industrial design department in Istanbul. First, they found out which universities have design departments and then decided on one. Later, they met one of the tutors from the industrial design department (NPO 7).

It was a project that we wanted to strengthen both the association and its mission. What is the mission of our association? To empower and enrich university students academically. To strengthen and enhance the academic environment. That is what we are doing right now, actually supporting university students. So this is how I started for the first time. I got in touch with their team. (NPO 3)

In one of the cases, at a certain stage, a practitioner from an NPO, also a professor at the physics department at the same university, thought about how they could collaborate with the department of industrial design. He realized that there were many different departments that they could collaborate with. He thought that they could collaborate with departments like industrial design. First, they looked at the department's website to see with whom they could meet since they did not know anyone. Then he went and contacted the department of industrial design, and they put him in touch with one of the tutors. That is how they met. He came up with a number of projects, more in the form of mechanisms, aiming to commercialize them. The idea was to design and commercialize science kits for children so that children or parents could purchase them. The tutor made some suggestions to him; they talked about commercializing issues. There were two stages. The first stage was a kind of consultancy when the actors came together at the department. The tutor tried to understand their intention and motivation and what could be done. She questioned their production and productization intention and motivation. She told them her concerns about the possibility and feasibility of production and productization. She tried to give them some advice for design and production. She explained that it might not be possible to do it only in the department, and it might be necessary to contact other stakeholders, such as manufacturers, in order to produce and commercialize it.

However, the tutor's reaction was a bit different from what they expected because they had thoughts that they could produce it. Then, the second stage was conducting this as an educational project with students in a studio course. The NPO did not suggest that this could be done as a project by students. They brought it to the department to do it with the tutors and assistants as well. The tutor wrote this to a team of doctoral and graduate students, indicating that there is such a project anyone would be interested in. However, only a few assistants and a master's student volunteered. While they were talking about what they could do, the tutor mentioned their studio course. She suggested giving projects on topics that interest the NPO in this studio course. So the NPO could even be a member of the jury. In the end, she convinced them to do it as an educational project. There were ongoing studies in this studio course for a semester, a maker project. Students were asked who would like to work on the items that the NPO brought. A group of 8-9 students wanted to work on them. Students were divided into groups. It also felt good to the tutor that a group of students wanted something like this so that not everyone worked on the same project. In this class, they made plans to turn a project created by students into a product. Volunteer physics students working at the NPO also met with industrial design students and attended the development of the science kit mechanism project (NPO 3 and Tutor 13).

I think the NPO communicated with our instructor. Later on, she said that we could also address the topics there. (Student 12)

In another collaboration, within the scope of zero waste, the respective unit of the ministry reached the head of industrial design departments of universities via email. The topic of the project was given by the ministry. They contacted not only one university. They sent the same email to many industrial design departments. Hence other universities worked on it as well. The head of the department asked the studio course tutor if she would be interested in doing it. The tutor accepted, and they worked on it as a mid-project for a very short period of time (Tutor 10).

Participants confirmed that the formation and process of collaborations and interaction relationships within these collaborations are informal and interpersonal rather than formal and corporate.

In fact, we did not have an institutional collaboration with the industrial design department. We did this work with a professor there and their team. (NPO 3)

6.3.2 Key Contact-initiated NPO-driven Collaborations

In some cases, NPOs establish a collaboration with university partners with the help of key contacts such as pharmaceutical companies, public relations firms, advertising agencies, or former graduates.

We were not dealing with the NGO directly, there was a public relations company in between. (Tutor 15)

Sometimes NGOs work with advertising agencies to promote the institution, publish advertising materials, and give them suggestions about raising public awareness. When an advertising agency, working as a consultant for an NGO, was constantly organizing and following the events to raise awareness, the department heard their demand. Then they started to work together on an environmental issue. As the advertising agency represents both the NGO and the department separately at the same time, they provided an opportunity for them to come together and collaborate. Therefore, a bond between the two institutions was established with the help of a key contact (NPO 10).

The NPO requested an awareness-raising project from the key contact (i.e., public relations company) they work with. The key contact, a former industrial design graduate, went to the department and suggested whether they could conduct a student project as a part of social responsibility. They asked tutors how to reuse the end-of-life tires, bring them back to life, and extend their lives. As a result, it was not the NPO who knocked on the university's door, it was the key contact. Then, the key

contact introduced the NPO. Tutors evaluated the offer positively and met the NPO (Tutor 15).

In some cases, the key contact plays a role as the third actor throughout the collaboration. Apart from bringing NPO and university partners together, they also participate in collaboration and take part in the process.

In one of the examples, three actors decided to have a design for rheumatoid arthritis patients. The patients cannot take a shower by themselves, hold the shower head, or open the lid of a bottle or jar because this disease reduces patients' life quality when they have joint stiffness. They agreed to open a design competition. The doctors' and patients' associations had a project idea. They talked to the key contact, and determined what they could do. The project idea came from the NPOs, while the key contact supported the economic dimension of the project. They financed and sponsored the rewards. Then they searched for a university partner for this design competition. Later, the department that accepted the design competition was chosen for collaboration. In the end, the key contact contributed to the work by financially supporting (NPO 4 and NPO 20).

The project came to us as a joint project from the association and the company. I think the company might have supported the financial part here. As I said, the company had financial support and they also gave us a presentation about this issue in general. And, of course, it was probably the company that gave these awards to the students economically. (Student 9)

There could be communication issues related to key contact. Not communicating directly and being in contact with an intermediary organization in between might create a blockage. Communication breakdown on the issues might cause misunderstandings and unmet expectations, which prevent the common ground (Tutor 15).

6.4 Contributions of NPOs in NPO-driven Collaborations

Contributions of NPOs during the collaboration process can be classified as educational, moral, and organizational support. Educational contributions include the steps that they are involved in the design collaboration process, such as brief preparation at the beginning, feedback sessions, research, and juries at the end. NPOs provide lectures in their areas of expertise and attend project exhibitions. Hence, they contribute to knowledge and experience sharing. Organizational support includes the material supply and other logistics services they provided throughout the collaborations. Their moral support includes goodwill and positive attitudes towards their partners during these collaborations.

6.4.1 Educational Support

The educational contributions of NPOs are the support they provided during the design collaboration process. In all NPO-driven model collaborations, described by the participants, the design collaboration process starts in a similar way. NPOs' contributions to the design collaboration process can be explained through a generalizable example.

First of all, the representatives from an NPO get in touch with the tutors and arrange a meeting day together. At the beginning of the project, they go to the lesson for the main meeting. They came together with industrial design students in that meeting. They introduce themselves and their association, talk about their organization and its goals, and explain their activities. They might make a brief and informative presentation including general information about the subject, show videos, and bring some examples. Then the students ask questions about the topic, and the NPO answers them. Hence, the framework of the project brief is drawn. By bringing the project itself, they start the project, and the students begin to work. They are there at the beginning and end but might be absent in between. They take part in the final jury and sometimes also the preliminary jury. They rarely participate in the rest of

the process steps, such as feedback sessions and research phases, but if they attend, they provide feedback for students. They generally do not have a leading and determinant role during the collaboration process (NPO 7, NPO 10, Tutor 10, Tutor 13, Student 9, and Student 12).

6.4.1.1 Brief Preparation

It is considered that the NPO contributes inevitably by bringing the brief and starting the project. Bringing the need and problem definition, project topic, and introducing the subject are the most extensive contributions of NPOs in an NPO-driven collaboration. Their contribution is more like narrowing down the scope and direction of the project in a way.

Well, of course, they contributed inevitably. I mean, after all, I got the brief from them. They have already made the beginning of my project. They were contributing in some way. They contributed to me more in terms of creating the brief. There, their contribution was more like limiting myself somehow, you know, bringing it to that point, limiting the brief. (Student 12)

6.4.1.2 Feedback Sessions

The practitioners from NPOs and other volunteer workers give feedback to students to contribute to their design development process. Although feedback sessions are stages in which NPOs rarely participate in NPO-driven collaborations, they visit students from time to time, give ideas, and support students.

Since NPOs do not generally know product design, they are not involved in that part; rather, they are interested in issues related to their expertise during feedback sessions. For instance, in one of the cases, NPO was more critical of tire use, and they mostly made positive and negative comments on tire-related issues (Student 13). In another example, the students were able to talk with the doctors on the subject, gain better insights, and were enlightened, compared to other project processes without collaboration (Student 9).

In some cases, people from NPOs were directly involved in the process and the students were able to communicate any time they needed. While the project was progressing, the students could show them the work that they had done so far, ask them what they had in their minds, and directly receive feedback from them about their projects. When students needed information, NPO members fed students by giving them that information, even when the students did not make an effort to access it, which naturally made the process much easier and more comfortable for the students. NPOs try to inform students about the subject and answer their questions as much as possible during the collaborations. Sometimes the students are in contact with NPOs more than their tutors in NPO-driven collaborations (Student 9, Student 11, and Student 12).

The feedback from an institution, a non-governmental organization, is also important for us. We can come up with a design using the information and feedback they share with us. (Student 11)

6.4.1.3 Juries

As a final phase of the design collaboration process, representatives from NPOs attend jury presentations and evaluations. NPO partners might participate in both preliminary and final juries and sometimes only in the final jury. They continued to guide students at these juries to make their last contributions. In the juries, the students tried to follow the NPO's guidance as much as they could as they were also trying to do something that would somehow meet their expectations at the end (Student 12).

In one of the cases, the representatives from the NPO visited the university on jury day. The professors took them around the university and showed them all the projects that the students designed. They told them what they did in the design department and what they designed. As students are getting grades for these projects, a jury consisting of three tutors from the industrial design department, three rheumatologists, two people from the patient association, and two people from the

company gathered around a table. As doctors and patients, they were asked to choose the top five of these designs. They were also told to give them prizes. More precisely, for each student, they looked at their designs, evaluated the projects and according to that evaluation they voted and selected the students to be awarded in the form of a competition. They gave awards to the ones they thought were the most successful, or rather, they thought that all of them were very successful. But at least some of the designs were more studied and some students put themselves in the place of the other party, the patient. They evaluated the designs by enlightening the students, raising their awareness about the disease, and asking them what could appropriately be done by empathizing with these patients. One of them was chosen by a patient, another one by a doctor. So, five designs were selected and found worthy of the award (NPO 4, NPO 20).

They organized a competition and put us on the jury. Then there were the works they had done for the project, and they invited us to see them. We visited to see them and participated in their exhibition. We helped them in this regard. (NPO 10)

6.4.1.4 Research Phases

NPOs' educational contributions at the research phase of the design collaboration process include user research and site visits.

In one of the examples, students visited the president of the association for user research. As the members, even the president, of the association are spinal cord paralyzed people with spinal cord paralysis, they are in wheelchairs. A group of five or six students went to one of the members' houses. They spent an hour or two there to see her daily life. She simulated all the procedures at home one by one for the students. She showed how she uses the products at home like iron. She explained what it is like to be a paraplegic and live in a wheelchair. She informed students about the subject as much as possible and answered the questions that the students asked.

She showed a lot of sensitivity, and she really tried to help us as much as she could. So she was very active in the process, let me put it that way. I guess that was good. (Student 9)

In another example, the students went and visited a tire factory as a field trip to see how production is done (Student 13).

6.4.2 Organizational Support

Organizational support provided by NPOs during NPO-driven collaborations includes material supply, especially when students work on specific materials with specific manufacturing techniques.

For example, in an environmental project where students studied the re-use of end-of-life tires, the association provided tires. NPO asked students and tutors about tire quantity and sizes they needed and they had tires cut in the types and sizes accordingly. They made tires ready and delivered them to the university (Tutor 15, NPO 10, Student 13, and Student 14).

6.5 Benefits of NPO-driven Collaborations

This section will evaluate the benefits of NPO-driven collaborations from the actors' perspectives. According to participants' viewpoints, public awareness and visibility are common benefits for all parties. Clearly, NPO-driven collaborations have more benefits for students and NPOs. Some benefits are more participant-specific. Furthermore; learning materials and manufacturing techniques, meeting with new concepts, approaches, and methods, gaining professional skills and experiencing the social aspect of design are more student-specific benefits. Meanwhile, design contribution is a benefit for NPOs.

6.5.1 Benefits for All

All actors who participated in interviews stated that these collaborations have benefits for all. As topics studied in these collaborations (i.e., environmental, special groups, and local development) are issues that concern a large part of society, public awareness is a common benefit for parties that are involved in these collaborations and for society as well. Visibility is another common benefit as it was emphasized by all actors interviewed.

Of course, people became more conscious, and an awareness about patients and our association was created. This worked. In fact, design should not be overlooked. Something happened thanks to the design. It both contributed to the association and created awareness for people. I think it was very nice. (NPO 20)

6.5.1.1 Public Awareness

As in NPO-driven collaborations NPOs bring their creating and raising public's awareness on social, environmental, and local issues, increased public awareness is a benefit for all parties.

It was an awareness-raising project. A semester-long project had a very high impact on the university's approach. I'm talking about a university with 7000 students. 7000 people started sorting garbage in the building. Something completely different happened here. Students started to question where to throw the paper, metal, and plastic waste. This is a good thing. (Tutor 10)

Depending on the subject both students and tutors become aware of a particular disease and patient group (i.e., special user groups) or environmental issues such as recycling and reuse. NPOs are satisfied with the outcomes. The process and results not only increase students' and tutors' awareness but also draw the public's attention with the help of these collaborative projects. The impacts of these collaborations are growing and they gradually affect more people (Tutor 10, Tutor 15, Tutor 18, NPO 4, NPO 7, NPO10, NPO 20, Student 9, Student 10, Student 11, Student 13, and Student 14).

I think the most important outcome is that university youth are aware of such a disease, and for this reason, they have designed thoughtfully to prevent the problems this disease brings to patients. That's a beautiful thing. (...) An awareness has arisen about patients; I think it was very nice. (NPO 20)

It is a trouble for everyone when it is in a state of waste. When it is collected and recycled, it becomes a very useful material and product. That's why such efforts are beneficial in raising people's awareness. For example, the university did something made from recycling, it was helpful to raise awareness of other people. (NPO 10)

6.5.1.2 Visibility

Visibility is another common benefit provided by NPO-driven collaborations for individuals and institutions. Increasing visibility is particularly beneficial for students and NPOs.

With these collaborative projects, students find the chance to present their projects and models in national and international seminars and fairs and win certificates and awards in competitions correspondingly. Afterwards, they attend award ceremony events where they can meet with new people and network. Students also hope to find internship and employment opportunities from these connections such as working at municipalities or NPOs in the near future, after graduation (Student 9 and Student 11).

For instance, a project received an award. Within the scope of this award-winning project, the models were made on the 3D printer. A year after the project was finished, it was selected from about fifty projects and prepared for an international health fair.

The process was already very good that the university took us seriously. (...) This competition of course makes people more enthusiastic compared to a normal project, I mean people worked more enthusiastically. Because at the same time, as I said, I think the process was taken seriously. There were meetings, the stakeholders came four or five times. Therefore, it kept us, how can I put it, it kept us more alert. I can say that we did the project by paying more attention and spending more time and effort. (Student 9)

For NPOs, along with award ceremonies, seminars, and fairs; media coverage such as appearing in the press, newspaper and journal articles, and live television programs also increases the visibility of NPOs and helps them gain publicity (NPO 4, NPO 7, and NPO 20).

The events like design competitions can contribute to announcing the name of the association to people who are not aware of the existence of such an association. People were informed about the association and eventually learned that the association has such an activity. People became aware (NPO 20).

Now, the zero waste project was obviously a prestige project for both our ministry and our provincial directorate. Therefore, it was important for us to collaborate with different institutions, let's say universities and the industrial design department, both in terms of carrying the project to a higher level and reaching many more people. (NPO 7)

6.5.2 Benefits for Students

In addition to awareness and visibility common benefits, NPO-driven collaborations grant four more benefits for students. Along with the common benefits of tutor-driven collaborations for all actors, there are four more benefits specific to students. The benefits which are specific to students can be sorted as: (i) learning new concepts, approaches, and methods in design, (ii) material and manufacturing knowledge, (iii) professional and social skills, and (iv) awareness of the social aspect of design.

I also think it contributes to education. Really, because you are directly involved in it. You don't just draw or design something out of nothing. You dive directly into the context and see in a much more realistic way whether what you do will work or not. That's how I think. (Student 9)

6.5.2.1 Learning New Concepts, Approaches, and Methods

Parallel with the reasons of tutors for accepting a collaboration offer from an NPO, students meet with new concepts, approaches, and methods through these

collaborations. Similar to the benefits gained in tutor-driven collaborations, NPO-driven collaborations also teach new concepts, approaches, and methods such as re-use, recycle, and sustainability (Tutor 15, Tutor 18, and Student 13).

It was a re-use project. It was good to see the reuse and sustainability in that respect. (Student 13)

With these collaborative projects with NPOs, students start to learn new design concepts and approaches and work with these considerations throughout their professional lives (Tutor 15, Tutor 18, and Student 13).

This was a very good first example. For me, it was to see the advantages of reusing this product. I can say, it had advantages for the environment and for me to find my own path. In general, I want to try to continue my projects in this way as much as I can. (Student 13)

6.5.2.2 Material and Manufacturing Knowledge

Material and manufacturing knowledge is another benefit of NPO-driven collaborations for students. In some collaborative projects, students had to learn 3D modeling and manufacturing techniques in order to answer material and production-related questions (which material would be better in that environment, what material will it be made of, how will it be produced, by which technique, what will be the wall thickness) while presenting their projects in juries. As a result, they gain knowledge about the materials and manufacturing (Student 11 and Student 13).

It was interesting to see how a tire is produced, to see its parts, to see its inner part, which contributed to my design. I wouldn't have thought that a product could be made out of it could be shaped in many different ways. I mean, because they offer such a product and provide the opportunity to design from such material, they have a contribution in that way. (Student 11)

6.5.2.3 Professional and Social Skills

Parallel to professional and social skills acquired in tutor-driven collaborations, NPO-driven collaborations also provide real context which helps students equip

themselves with the required skill set. Written and oral presentations are the most highlighted skills by students in NPO-driven collaborations.

The external and professional view is motivational for students compared to other projects without collaboration. They are also more advantageous especially for preparing and presenting formal presentations, since students did not present other projects to external partners (Student 9 and Student 11).

It was a bit more motivating than normal projects for us, doing a project with a real organization. In that respect, it was good in terms of a presentation experience. (...) Because it was the first time we were making a presentation to another institution. Our tutor told us how to present and what to put on the posters. For example, there must be their logo on every sheet. That's how we learned how to make a presentation specific to the institution we work for. We presented it to the people who came. (Student 11)

6.5.2.4 Awareness of Social Aspect of Design

Awareness of the social aspect of design is another benefit of NPO-driven collaborations for students. As students have been doing projects since their first grade, these projects are always within the same framework. However, doing a project with and for an institution motivates them in terms of making something good, useful, and nonprofit. NPOs request a product, system, or service from students that makes students feel satisfied with their work (Student 11, Student 12, and Student 13).

Secondly, it was a project that also had a volunteering part. I mean, after all, what I will do can go somewhere good. You know, this was also a motivation. (Student 12)

I can say this as the difference: because of the product requested from us, this directly appeared as a social project. It was satisfying in that respect. (Student 13)

6.5.3 Benefits for NPOs

Similar to tutor-driven collaborations, NPO-driven collaborations also have design contributions as benefits for NPOs. Design can contribute to (i) increasing design awareness for NPOs, (ii) creating and raising the public's awareness of NPOs' field of work, or (iii) generating concrete outputs. However, how and how much the design contributed is not clear.

Design Contribution

As previously described, design contribution can be anything new that can broaden their perspectives. With the support of their tutors, students design more functional products accessible to everyone. For instance, they came up with waste bin solutions in various characters for kindergartens to attract children's attention.

Now, when you type waste bins on the internet, many images appear. But the students had prepared such things that we could not think of or imagine. (...) From our point of view, they showed us what we cannot see like functionality, because it is also very important. How can I say that, working with people who received professional training expands our horizons. That's how it was. (NPO 7)

However, the contribution of design is still unknown to tutors and students. They only have some predictions about how NPOs benefitted from design.

In the students' opinion, NPOs might have wanted to work on this issue and consult people from a different point of view. NPOs might have wanted to see what universities think and what students could make on these issues. Students hope that their design point of view would be important for NPOs and would have been beneficial for them (Student 11 and Student 13).

From the NPOs' side, they believe that they can produce ideas together with students and tutors within a scenario. The ground that will realize this scenario is the university since they have designs in many fields. NPOs think if they have something in their minds that they want to create, an industrial department is the address.

Students in an industrial design department, focused on this topic and produced a product, and it happened. (...) They've just actually been instrumental in raising awareness. (NPO 4)

Design contributed most to creating and raising public awareness.

Of course, people became more conscious, and an awareness about patients and our association was created. This worked. In fact, design should not be overlooked. Something happened thanks to the design. It both contributed to the association and created awareness for people. I think it was very nice. (NPO 20)

6.6 Challenges in NPO-driven Collaborations

As in every collaboration, stakeholders encounter various challenges in NPO-driven collaborations.

6.6.1 Challenges for All

In NPO-driven collaborations, realizability of results and maintaining common understanding are challenges that all stakeholders face.

6.6.1.1 Maintaining Common Understanding

Maintaining a common understanding is a challenge for all stakeholders in NPO-driven collaborations. The biggest barrier to creating and maintaining common understanding in NPO-driven collaborations is the realization of results expectations of NPOs. Realization of results is one of the motivations of NPOs towards initiating and driving collaborations. Common understanding becomes an issue when they do not share this expectation with their stakeholders or when they share but tutors do not tell whether this expectation cannot be met.

The realization of the results motivation of the NPOs might be ill-defined. This expectation of NPOs might not be met at all as students' projects lack applicability. Tutors accept the lack of applicability of students' projects since the purpose of these

collaborative projects is not the realization or implementation but the education of students (Tutor 10, Tutor 13, Tutor 15, NPO 3, NPO 4, NPO 7, NPO 10, and NPO 20).

Another situation that affects common understanding is the presence of the key contact. Often collaboration relies on the key contact and key contact might prevent stakeholders from communicating directly with each other. This indirect communication between partners is an obstacle to finding common ground.

These two communication-related issues need to be solved to overcome the common understanding challenge.

The instructor did not call me much during the semester. I didn't hear much from the students either. I called them and told them that I wanted to follow them during the semester, but they didn't invite me either. After all, I didn't want to go there before they said yes, we are waiting for you, to not interfere with their work. It seems to me that there was a bit of an understanding that you gave the idea at the beginning and you will evaluate it at the end, but don't interfere with what we do in between. (NPO 3)

6.6.1.2 Realizability of Results

Stakeholders aim to transform the outputs of these collaborations into products or services together with collaborating partners. According to NPOs, one of the success criteria for industrial design departments should be how many of the student projects can potentially be turned into products or services. However, it may not be possible to finalize this process professionally (NPO 3 and NPO 20). There has been an approach that projects should be commercialized immediately. This was done without considering issues such as suitability for mass production, cost, user base and competitors. This has led to a constant struggle with efforts to consider projects from different angles. NPO demands can have such barriers, and they can sometimes be ill-defined, i.e. formulated incorrectly (Tutor 13, NPO 3, and Student 12).

For example, while some projects have made progress, such as the prototype of a lid-opening device, there has been no significant progress in realizing and activating

other projects. The work done in collaboration with associations has generally remained at the initial stage and has not progressed. Even though NPOs think that these projects have the potential to be turned into a long-term plan, collaborations between industrial design departments and NPOs seem to have become less active by the end of the period (NPO 3 and NPO 20). These challenges also exist from the student's perspective. Students often almost know that the projects will not be implemented. It was stated that when the projects are presented, they are very much appreciated and steps are planned towards production, but after the project, the registration or production process did not start (Student 11 and Student 13). In some cases, no information was provided from NPOs in the final stages. During the jury process, it was stated that the project progressed nicely during the studio course and that great support was provided. However, when the project was actually realized, it was not completed (Student 12 and Student 13).

In one of the cases, only four or five of the project results were selected and one of them was a bottle opener project produced with a 3D printer under the sponsorship of an industry partner (i.e., key contact) and distributed to patients in the association (Tutor 18). Most of the student projects met the expectations of tutors and NPOs and they were found to be valuable in terms of applicability, although there were some missing parts in the projects. For example, it was planned to place the projects in parks in collaboration with the district municipality (Tutor 15). However, the results could not be realized, mostly due to the post-production stage. Even if they cannot be produced, projects considered as concepts can find a place in the market and gain value in the long run. According to the stakeholders, the realization of the projects could have had a positive impact on student's motivation and professional development and it could be exciting to see working prototypes for students such as using a cell phone camera as a microscope (Tutors 10, 13, 15, and 18; Student 11 and 13).

Some tutors emphasize the importance of considering projects from a broader perspective rather than commercializing them (Tutor 13, NPO 3, and Student 12). For example, in an NPO-driven collaboration, the tutor presented a proposal so that

the project could be carried out as an educational project within the scope of the studio course. It was stated that more results could be achieved by giving this project to students, but reservations were expressed that the work of designers or design students might not result in commercialization. Instead, it was suggested that ways of funding could be found and TÜBİTAK projects could be written. The NPO was generally in favor of commercialization. They emphasized manufacturability in the project and asked the students to think about every detail from packaging to assembly and to make sure that the product would work when it was produced (Tutor 13, NPO 3, and Student 12).

Budget/Funding

Neither the university nor the NPOs have the budget to commercialize the products or services. It is thought that such projects should be for the benefit of society, but NPOs cannot allocate too many resources for this. In some cases, NPO's efforts to start mass production and reach a wider audience remained incomplete, although they wanted to do their best in design and realize them (NPO 7). For example, if an apparatus that can be used in kitchens for rare diseases is mass-produced in Turkey, it could be useful for 500-600 thousand patients (NPO 4). Another example is the waste bin project, where there were problems with the project budget and therefore the planned activities could not be realized. At the award ceremony, due to budget limitations, small gifts were given to everyone and no bigger prizes or events were organized (Student 11).

In funded projects, NPOs might cooperate with institutions like TÜBİTAK or Horizon. This means they can find financial support. Volunteering and donations can also be potential sources (Tutor 13). The associations do not have commercial purposes and do not have the resources to realize such projects. Therefore, it could have collaborated with companies (i.e., industrial partners) to produce these projects and promote them. Thus, companies can also increase their visibility by supporting such social responsibility projects (NPO 20).

Initially, I thought of bringing the project to a certain stage on a voluntary basis, then doing an engineering study with the limited resources of the association and then collaborating with a company, but we could not reach these stages. Therefore, due to the mission of the association and resource constraints, we had to follow this path. (NPO 3)

Intellectual Property Issues

During the process, students went through a period of constantly having question marks in their minds and hesitating about getting a patent. The fact is that these issues were not clarified and openly discussed while collaborating with NPOs. This was one of the factors that affected the progress of the project. It seems that the lack of clarity also affected stakeholders' motivation, especially students' (Student 12). If intellectual property issues can be clarified, a healthier progress of the project is ensured.

Commitment of Stakeholders

The aim of this social responsibility project was to gain a reputation by sharing it with the public, and they were approaching it a bit more superficially. Details like production processes might have been complicated for them. This is my interpretation; I didn't hear it from them. Prototyping one of the products would have been on the agenda, but the post-production part is always the most difficult part of collaborations. (Tutor 15)

NPOs emphasized that industrial design department projects should be evaluated in terms of social benefit and industrial applicability, but the expected progress in this direction has not been realized (NPO 3, 4, 7, and 10). The projects were generally feasible, but there were deficiencies in mass production and advanced stages. They are insufficient in terms of technical depth and engineering calculations. It was stated that the interest initially shown by the industrial design department at the beginning of the collaboration decreased over time, and it was emphasized that the project required better team selection and continuous academic interest. The project

remained only as an academic project for the students, did not leave a satisfactory effect and the interest was insufficient (NPO 3 and NPO 7).

The fact that some projects were carried out online, the lack of face-to-face communication and the inability to adequately express the technical details seem to have reduced the commitment and motivation of the stakeholders. In an example, the student was on Erasmus after the project process which also slowed down communication and affected the realizability progress. As a result, the project could not be fully put into production and the process was abandoned. However, students continue to wait with the thought that the project may come up again in the future and perhaps create opportunities for future collaborations (Student 11 and Student 12).

Applicability of Student Projects

According to some of the tutors, getting the best out of students is quite challenging, even with recent graduates. Therefore, collaborations need to be built in the right way; it is important not to start projects by making huge promises to NPOs or SMEs (Tutor 10).

For example, after the final jury, NPO thought of working with the student, a student who stood out with her microscope with a camera project. During the summer, they came together with the idea of producing this project and although NPO liked it very much, there were problems about its feasibility. After the meeting, they tried to maintain contact with her or other projects. However, the project was ultimately not produced and the desired results were not achieved. This showed that one should be careful about the feasibility of projects and not start projects with big promises (Tutor 13). In some cases, NPOs wanted to put the project into production, but the product students presented to the final jury was not fully ready for production and needed more work. In this case, additional work needs to be done to develop the project and make it manufacturable (Student 12).

Some of the projects are feasible and manufacturable, but there are deficiencies in mass production and advanced stages. It was emphasized that industrial design department projects are insufficient in terms of technical depth and engineering calculations. It was emphasized that the project should be evaluated in terms of social benefit and industrial applicability, but it was stated that the expected progress in this direction has not been realized (NPO 3, 4, 7, and 10).

6.6.2 Challenges for Students

Participants mentioned two challenges, (i) adaptation to new scale and scope and (ii) working with specific materials or manufacturing techniques, which they had to tackle during NPO-driven collaborations.

6.6.2.1 Adaptation to Scale and Scope

The scale of the design, such as service or system can also be an issue as students are used to designing industrial products rather than others. Students are also distant from designing user experiences and interfaces compared to products. Similarly, they stay away from areas such as social design or approach timidly.

I think my preference is designing the product because, you know, whether it's user experience or interface design, it's a little more difficult for me. It feels like it's a stressful area that needs to be thought about. (...) Actually, design is a really good tool in these matters, there are many problems that we can solve. But maybe when I develop myself a little more in these issues. (...) But right now I can't do much or say anything about it because I haven't really developed myself and thought about it. (Student 11)

6.6.2.2 Working with New Materials and Manufacturing Techniques

While working with a constraint of a specific material or manufacturing technique, NPO collaborations could be challenging for students. For instance, at first, students thought that they could handle the material; however, they were unfamiliar with the

material. The structure of the material was very hard and different than they expected. So, they could not cut, shape, or use it. They were disappointed that they did not have a chance to play with the material as they wanted and they could not fully realize their dreams in the project (Student 13, Student 14, Tutor, 15, and NPO 10). The students' difficulty in working with a specific material or manufacturing technique is also a challenge for the NGO since it affects the process.

6.6.3 Challenges for NPOs

Similar to tutor-driven collaborations, documenting and sharing results is the only challenge NPOs confront in NPO-driven collaborations.

Documenting and Sharing Results

In spite of the fact that the collaborations are NPO-driven, they are still in an educational context and the tutors are responsible for the project process. When the documents from the project and collaboration process are not shared with NPO partners, it becomes a challenge for them. The lack of recordings and archives is the only mentioned challenge for nonprofits. As the results might not be ready to implement, NPOs might wish to recall and revise them later.

I don't know if they shared images of those waste bins where they worked. I don't have them. If there was, I would actually send them to you. Frankly, if we could reach them somehow, it would give us ideas. (NPO 7)

CHAPTER 7

STUDENT-DRIVEN COLLABORATION MODEL

This chapter examines the structure and features of the student-driven model of collaboration. Student-driven model of collaboration is common in graduation projects. Eight students (Student 1, 2, 3, 4, 5, 6, 7, and 8) and eight tutors (Tutor 1, 2, 3, 4, 5, 7, 20, and 21) from three educational institutions, and seven representatives from five NPOs (NPO 8, 12, 15, 17, and 21) were involved in student-driven collaborations. In total, twenty-three of the participants were interviewed and they shared their experiences on this model. In this chapter, the viewpoints of all actors on student-driven collaborations are presented. Figure 7.1 presents the overview of the model.

In a student-driven collaboration model, the student is the determinant of the collaboration process from the beginning until the end. The student is responsible for driving and leading the collaboration process.

The student does all their own correspondence and face-to-face meetings. No one interferes in this process. (...) It is entirely the student's design. The process belongs to the student. It is the student's responsibility to go and meet face to face and find out who to work with. Everything is the student's responsibility in the graduation project. (Tutor 2)

MOTIVATIONS OF THE DRIVER		Personal Interest of Students Affordance and Flexibility of NPOs
REASONS OF OTHERS		Goodwill and Positive Attitude of NPOs Benefit Expectation of NPOs
INITIATION		Student-initiated Tutor-initiated NPO-initiated
CONTRIBUTIONS OF NPO		Educational Moral
BENEFITS	for All	Visibility Realization of Results
	for Students	Public Awareness Professional and Social Skills Material and Manufacturing Knowledge Designing for/with Special User Groups
	for NPOs	Design Contribution Documenting and Sharing Results
	for Tutors	Discovering New Areas
CHALLENGES	for All	Maintaining Common Understanding Realizability of Results
	for Students	Model/Prototype Support Adaptation to Scale and Scope Balancing Diverse Ideas Non-designer Advisor/Mentor

Figure 7.1 Student-Driven Collaboration Model

7.1 Motivations of Students for NPO Collaboration

In their graduation projects this year, some students say, “I will not work with industry in any way; I will work entirely with the municipality”. Years ago, those who could not find a company were doing business with the municipality. (...) The students have expressed that they want to work on these issues for the last three years. They choose the municipality consciously. (Tutor 1)

One of the most decisive dimensions while determining the driver of the collaboration is the motivations of the driver brought into the collaboration. The reasons behind students’ working with municipalities and other nonprofit organizations can be listed as follows: (i) students’ personal interest in social and environmental issues or particular groups, and (ii) the reachability and flexibility of nonprofit organizations. Some students prefer collaborating with NPOs for idealistic motivations, while others for more pragmatic reasons.

7.1.1 Personal Interest of Students

Students' personal awareness and sensitivity to environmental and social issues, such as food waste, direct them towards collaboration with a relevant nonprofit organization. Family habits shape their personal interest; thus, personal interests play a role in their motivations.

I guess it comes from my family. My mother tries not to waste food at all. We always compost vegetable waste. We give leftovers to stray animals. And since we are like that in our family, the food waste issue affects me. That's why I want to address this issue because there is too much food waste in the world. (...) 'Food against Bombs' is doing something good for the world. It's a non-profit. So it makes me happy to do something for them. (Student 4)

In some cases, rather than designing a commercial product for a commercial purpose with an industrial partner, students find it valuable to work with a nonprofit partner on special groups or disadvantaged people like children to help them to some extent.

Instead of offering a concrete product based on industrial or mass production, students want to touch on different subjects. They think that design exists in many areas of life, and if its purpose is to improve a product or a process, it can also have some remedial effects in the social area.

In fact, the essence of the social skills and experiences we build throughout our lives is our childhood habits and experiences that start from the first time we step into social life. Therefore, I decided to do a project about children, thinking that dealing with a childhood problem and seeing its results would provide us with better data. (Student 5)

In some cases, the students first decide on the subject they want to study. Then they notice that they could better work with nonprofit organizations. For example, although the students want to design a mass-produced product, they prefer to work with local governments instead of industrial partners.

I first came up with the idea (public space furniture) and started looking for a partner. I already knew I could work with the municipality on the subject I wanted. Then we agreed with the municipality. (Student 7)

The observations of tutors are also in this direction. According to tutors, new-generation industrial design students are more conscious about and responsive to social and environmental issues. They are willing to take responsibility and initiative.

New generation, new generation. The students' collective consciousness is very strong. As humanity, we produce garbage, and the new generation is very aware of this. I'm talking about Generations Y and Z. They are more sensitive about the environment, more sensitive and sharing about civil society. (...) Students like to take a role on the side that is more sharing and less aware of consuming. I think their awareness is higher. (Tutor 1)

Another reason for NPO collaboration is students' interest in design methods and approaches such as community-based design and sustainability. They think they can better learn and apply these methods with NPO partners.

Let me tell you why I collaborated with the local government. While thinking about what to do next, I found some research methods like community-based design as a part of the sustainability course of one of my tutors. I had an interest in that topic. Then I said, "okay, what can I do about it?" and agreed with them. (Student 6)

Personal interest also includes students' career plans, such as working in a nonprofit organization after graduation. This affects their preferences as well while searching for a collaborative partner.

We chose it ourselves. I chose it because I wanted to work in the municipality when I graduated. I thought it would be a good reference. Later, I couldn't work in a municipality, but it was still a good experience for me. (Student 2)

7.1.2 Affordance and Flexibility of NPOs

Students prefer to work with nonprofit actors due to NPOs' easy-going nature. Affordance and flexibility provided by NPOs during the collaboration process regarding physical access and communication make them attractive to collaborate. NPOs usually support education without any expectations. As students know their positive attitudes, they tend to choose NPOs to collaborate with for their graduation projects.

We were two or three students. We thought working with the municipality could be more flexible. I think that was the reason why we chose the municipality in the first place. Since the municipality was close to the university, it was easy to reach. As the project progressed, their working environment also strengthened our thoughts. (Student 2)

Moreover, flexibility in time plans and topic selection makes them more preferable. Especially some repeating students or students who have difficulties in going out of town prefer to work with local governments. Since NPOs are open to accepting collaboration requests and help, students access and arrange collaborations easily and quickly.

For instance, a student chose to work with the NPO because they thought they should focus on a clear subject defined by the NPO.

But I had a situation: my friends' design processes had started in the first semester. I missed the research phase because I wasn't at school during the first term. The research part would also take my time. However, the municipality is more specific, "this is our topic, you will design for it". So I skipped the research part and preferred collaborating with the municipality. The process was closer to the result. (Student 1)

Key contact is a determining factor for "reachability and flexibility" that affects students' motivations.

I needed to find a partner very quickly, within two weeks. As the local government employees graduated from my university, they understood my situation. We kind of formed a bond, and I agreed with them. (Student 6)

7.2 Reasons of NPOs for Design Collaboration

It is possible to divide NPOs' reasons for accepting collaboration requests from students depending on their expectations of it. The first reason NPOs accept an offer is their goodwill and positive attitude towards students without any expectations. The second reason is related to their prospects to benefit from the collaboration process and its outcomes.

7.2.1 Goodwill and Positive Attitude of NPOs

NPOs' goodwill and positive attitude are two of the reasons for accepting collaboration requests from students. They accept offers as an indication of their goodwill, and this intention and positive attitude continue throughout the collaboration process.

Some municipalities voluntarily support education without any expectations from the university partner.

By the way, of course, ours is a lucky city in this sense. The municipality is open to this kind of collaboration. (...) Of course, the fact that both municipalities, the metropolitan municipality and the district municipality were open to such collaboration, the number of collaborations started to increase. As far as I understand, the municipality approached education with support and volunteering. (Tutor 3)

As municipalities are open to supporting students, they tend to approve the collaboration offers coming from students as well. All of them wholeheartedly support students and their projects, especially when it is a university project including social responsibility. The university has sincere visits from their partner and positive collaborations with them. Everyone works voluntarily.

And there is no conflict of interest here. The only interest here is to support the student and contribute to education. Therefore, people came running very positively to the things we invited; they came to the lesson running, and their faces were smiling. Both designers and outsiders (non-designers) were very positive and supportive at the school workshops. (Tutor 21)

What also motivates NPOs to collaborate is that they pay attention to theoretical knowledge from universities.

Well, we love such things. To speak on behalf of the Municipality (...) We were in contact with universities not only with Yaşar University but with all universities. (...) We have gained a lot of momentum in many fields of education, that is, with the work we do jointly. (...) Professors from many universities came, and we had a meeting. We got their thoughts too. (NPO 8)

They generally approach with minimum expectations from students mainly due to their workload. Another cause is the thought that their expectations would not be

met. They generally have little or no expectations. They tend to accept the collaboration offer if the project topic is in line with their area of focus. They intend to serve research.

Could there be another expectation, since her (the student's) research is ultimately about revealing something material and concrete at the end? It could be different. However, we did not approach her and the project with such an expectation. We were not looking for a solution until the problem arose. Since we approached from a point of view such as what is our problem, rather than how we can improve it, offering us a solution probably wouldn't have corresponded to our needs at that time. (NPO 15)

7.2.2 Benefit Expectation of NPOs

The second reason NPOs accept a collaboration offer from a student is benefit expectation. They hope to benefit from the results of students' projects, as their previous experiences in knowledge transfer were one-sided.

The collaboration's expectations and potential outcomes were not discussed in advance. Besides, as they are in a more passive role in student-driven collaborations, they are the ones who accept or reject the collaboration offer from the student or tutor. It is not clear or defined for NPOs what to expect from these collaborations.

We accepted because it might have been beneficial for us – because generally, researchers collect their data and leave, do not share their results, and don't return; maybe it would benefit us as well. (NPO 15)

If the scope of the collaboration aligns with NPO's mission and vision, they try to be open to novelty. NPOs believe that openness might bring some advantages in return. They care about the new ideas from the university that may result in the improvement of the municipality's products or services.

Let me try to say things about the working principle of our vice presidency and our directorate – first of all, we try to continue producing new things here and putting forward something new. Of course, while we do this, we actually do a lot of work with young people. We have many units working on youth. Also, the university and the municipality are somewhat nested. It could cause a lot of things. It can lead to the development of new products and new services. In this sense, we try to keep ourselves open to any request and new

techniques and technologies the university brings. As long as something is produced, something is revealed, and the capacity (human resources) development is provided here, in the municipality. (NPO 17)

NPOs are civil initiatives of people who come together for a purpose. Therefore, their purpose of existence is to raise public awareness in their field. Moreover, they aim to make themselves and those they represent visible and audible. These collaborations are opportunities to achieve their goals.

Our expectation is to make our voices heard and have some control over how our voice is heard too. (...) We were doing this for the purpose of controlling the word and being aware of where the word was going. (...) She (the student) came, saw, witnessed, and helped personally. I remember she brought up a couple of connections. After all, that's what's important to us: people witness it. Witnessing such a practice of mutual aid. (NPO 15)

For example, an NPO working on waste management and recycling wants to create public awareness of those environmental issues via these collaborations.

It's mostly about waste. As you know, zero waste has become a widespread concept. We also concentrate on what we can do about this issue on a city basis. Our job is to explain it to the public, share it with the public, and make it applicable to the public. We are looking at what can be done in this respect. (NPO 17)

As another example, a municipality explains its need for an external collaborating partner and its expectations from them. Their first expectation is a design contribution that will benefit the local development and local community. They are looking for sustainable contributions for the city and the municipality. For instance, they plan and organize activities such as raising awareness of citizens and students and bringing them together. They need stakeholders and benefit from this partnership for these activities. The university also prefers to work with the municipalities.

The important thing for us is that it contributes to the city. Does it really change anything, benefit the children, and contribute to the citizens? This is the most important thing for us. I can probably say that. When we look at it in the first place, what is the benefit for us? We look at how this contributes to us, the municipality, the citizens, and the city. (NPO 17)

NPOs are looking for new, different ideas, and perspectives. They think design can contribute to generating new ideas. So that they may be helpful later on if they are not right now.

The more students work on projects; the more ideas come out. We thought it would give us new ideas as well. In other words, the more ideas there were, the more we had the chance to choose from alternatives. It also gave birth to new ideas. So that's why. (...) Because he cared that there were new and young ideas, which our president also attaches importance to, to be in line with their wishes. Common sense. Yes, our previous term president had the principle of common sense. (NPO 21)

7.3 Initiations of Student-driven Collaborations

When student-driven collaboration is the case, collaborations are generally established by the students as they are driven by the students. Even though it seems like collaborations can only be established by students, tutors, and NPOs can also initiate such collaborations, which are then driven by students.

7.3.1 Student-initiated Student-driven Collaborations

When the students establish collaborations with NPOs for their graduation projects in the final year studio course, they individually look for and find the institution they will collaborate with during their graduation term. After finding the institution, they are the ones who ask for collaboration and introduce themselves and their intentions.

I made a request to them about my project. I said I had a project and thought I could work with you. I asked them about their expectations from me or any point that I could get involved in their processes. They asked me what I could do. I told them about my competencies and how I could contribute to them. We agreed that I would create a product that can be useful and usable by keeping the content confidential and by getting their content and approval at all stages. It wasn't written, but we verbally communicated. (Student 5)

Because when she first came, she said, "After all, I am not an expert in working with children; our instructor says it is important to have someone in this regard, and you already have this game". She asked, "Will you be in such a collaboration? There is such a need for my project." (NPO 12)

Students make the necessary arrangements by themselves, such as finding contact persons and getting in touch with them.

Our university doesn't help us. It doesn't act as a mediator by providing a list like you can contact (with) these partners. We can only access them by getting their contact numbers from previous graduates. That's what I did, so I sent an email first. They called me right away, and we agreed on a phone call. Then, they asked me to fill out a form. I think they had a form to submit to the municipality. I also had a form to submit to the school. We signed them, and that was all. (...) I talked to the local government and told them I needed to find a partner as soon as possible. I agreed with them. (Student 6)

Tutors also emphasize the dominance of students during the initiation process. During the initiation period, students make their own agreements for their graduation projects. Since they do not have a pool system or a recommended list as a department, students find collaborating partners and contact persons themselves, apply, meet, and agree with them. Therefore, there are those who want to work with NPOs. If they want to collaborate with an NGO or a municipality, the agreements are the initiative of the students according to their own wishes. Neither the partner (i.e., company or NPO) nor the tutors are the determining factor. It was definitely students' own choice (Tutor 5 and Tutor 21).

Tutors want students to decide and go with their own ideas. They do not find it right for them to be involved in the initiation process. They said that the student should find their institution and let them establish a connection. They expect students to make a scenario according to what they do in their graduation project. Students choose a company accordingly, do their own project, and bring it to tutors. Tutors see it, approve it, and say okay or not. Students have already applied to stakeholders long before the term begins and after then they start working with tutors. Tutors generally do not know whether the student works with a firm or an NPO. The student comes with an agreement already made with their partner (Tutor 5 and Tutor 21).

Also, a student says, "I don't want to do that project; I wanted to do this". Then we say do whatever you want to do. Therefore, it has changed in the last two years; we changed the formula. Students have been finding their own company (institution) for the last two years. (Tutor 21)

This is the case when there is not a pool system or a list of institutions recommended by tutors that they can choose from.

Since our students look for projects individually, we do not choose them from a pool. Students find themselves the company they will work with for their graduation projects. It started with the Metropolitan Municipality. (...) The students who preferred to make urban furniture with the Metropolitan Municipality began to work there. (Tutor 3)

One of the reasons for that is the limited number of academic staff in that department.

At the end of the (previous) course, the student comes to us with a partner. (...) But when I was setting up this system, I did not particularly want the pool system. Of course, it was related to the scarcity of our academic staff at that time. (Tutor 1)

The other reason is to prepare the students for professional life by letting them choose a partner and make necessary connections according to their wishes.

But I wanted the student, who will graduate within three months and experience the same things, to simulate the reality beforehand. (...) We don't find the stakeholders ourselves. In which field the student wants to work, he chooses and finds himself. (Tutor 1)

Once the collaboration is formed, it continues with interpersonal relationships between the student and the external advisor from the NPO. Communication and partnership proceed between the student and the NPO representative. It is a two-sided collaboration rather than a three-sided collaboration. As the student is the most dominant actor in collaboration, NPO is the second actor actively involved in the collaboration process.

This was my graduation project in undergraduate. The student is more dominant in choosing the project and making some decisions while the tutors are slightly guiding them. This mostly happens in the graduation projects. (...) Each student had to have a mentor for the graduation project. Mentors with whom we can benefit from their expertise and consult at certain steps of the process. She was involved in my process as my mentor, and I only communicated with her. (Student 5)

As graduation projects are individual projects, they sometimes are not considered as university-NPO collaboration. They progress through individual sharing and mentorship rather than a direct collaboration between institutions.

Therefore, the situation in the projects you have chosen and mentioned is related to the fact that those individual mentors are affiliated with these NGOs. It takes place entirely through individual contact. (...) They present both their briefs, current project examples, mentor suggestions, and more defined problems, etc. (Tutor 7)

Since students are the drivers of the collaboration process, the briefs for their graduation projects, including the design problem area and the related literature review, are also defined by them.

They prepare the basis of the brief. They conduct several studies such as literature review, sector review, and benchmarking. A design problem framework is already drawn in that course and must be agreed upon with a company. This is how the project starts. (Tutor 2)

Generally, before the term starts, the student first determines the topic they want to work on and then searches for a partner to collaborate with.

As we were expected to design a product at graduation, after determining the subject, I actually searched the institutions that could support my idea or with whom I could collaborate. I sent emails to institutions producing park and garden equipment and municipalities. Because municipalities also produce park and garden equipment or furniture for schools. That's why I chose the municipality. (Student 7)

In our graduation projects, our students prepare and define their briefs themselves. This is really important. They even defined it a term ago. (...) After that, they contact the mentors. (Tutor 7)

As students are the initiators, they apply to NPOs in line with their wishes and bring the ideas they want to work on in advance. After that, they agree on the topic with the NPO partner. NPOs support students in the process of determining the subject.

They were all graduation projects. (...) Generally, students have several ideas in their minds. There are very few students who do not have an idea. In such cases, we direct them. Then we try to choose among those few ideas together. Together, we identify situations that we can support or facilitate. Afterwards, of course, with the decision of their tutors, an agreement is reached on an issue. (NPO 17)

In one of the examples, a student reached out to a representative from an NPO to talk about their research and intention to design to prevent food waste. The student contacted the NPO because they were also working on food waste. The students were

interested in the NPO's needs and processes such as collecting, cooking, and distributing the food. The students intended to see the needs and the processes and design in response to those needs (NPO 15).

Tutors slightly guide and help students during this process.

At first, I heard about the NPO from my instructor. Then I searched and contacted them. I talked about myself and my project. They responded positively and invited me to participate in their processes. And I really enjoyed it. (Student 4)

The students there come here with the guidance of the tutors. And as an institution, we try to support as much as possible. (NPO 17)

Tutors passively follow these collaborations through weekly reports written by the students.

Every week, the students document their meetings and bring them to us by having them signed; we evaluate them with other tutors and give grades. We usually meet with the external advisors at the beginning of the term; we meet once for the student's situation. Then we meet with the jury at the end. If there is a problem with the project or a project that goes bad, we see each other more often. (Tutor 1)

In some cases, NPOs are not invited to the juries; even if they are asked, they do not show up. For this reason, the three actors of the collaboration cannot even come together on the jury and tutors rarely meet with NPO representatives.

I don't remember if we ever met. If they come to the graduation jury, we meet there. (Tutor 3)

As the collaboration process proceeds between the student and the NPO partner, tutors do not meet the external advisor unless there is an essential situation like a communication problem. This finding is valid for all examples.

Unless there is an extreme situation after the start of the project, our project coordinator tutors do not meet with the other party (NPOs) much. As long as there are no serious problems, what our student did about this project, it seemed to me like this, what do you say, what is your approach, there is no dialog. (Tutor 3).

Key Contact

The students could use their interpersonal relationships based on former acquaintances to establish collaborations. They find it easier and more comfortable to initiate and maintain collaborations with connections (i.e., key contacts).

As a volunteer, I previously attended some activities with this child studies unit. Then, I decided to meet them for my graduation project. Since I was already in contact with them, I asked how we could collaborate. (Student 5)

Both sides agree on this ease and comfort.

But as I said, we had a slightly more comfortable relationship with the students in this regard because we're acquainted. Because we have worked with children together before. (...) She carried out this project with an institution she was more familiar with and volunteered for. We already had that kind of acquaintance. (NPO 12)

In some cases, the key contact can be a former department graduate so that the students can freely access and communicate. The students have a network where upper grades share the list of project advisors including their institutions and graduation information. Students usually contact previous graduates as advisors for their graduation projects. The graduates' primary preference is these students to provide stakeholder support. The tutors also direct their students to apply for them. So, the former graduates who work as initiative officials become advisors for students. This situation is advantageous. Sometimes if a tutor's relationship with the graduate or the NPO is better, she/he takes the lead and corresponds. The tutor becomes the key contact. Still, the students make the deal themselves (Tutor 2).

The friends at the local initiative are the graduates of our department. They are also advisors for us. (Tutor 1)

7.3.2 Tutor-initiated Student-driven Collaborations

In one of the universities that have recently founded their industrial design department with fewer students, the tutors take the responsibility of initiating collaborations with partners. The tutors who run the graduation project course,

decide on collaborative partner/advisor connections. The project topics come from the partners, they shape it together with tutors, and tutors present them to the students at the beginning of the term.

For example, we were asking the partners: “What should we do? What do you have in mind?” You know, is there a subject you want to work on but can't? (...) Look, we have four topics. You will now be divided evenly into topics. We were explaining the possibilities to the students one by one, and we were distributing them that way. (Tutor 21)

The tutors, who conducted the graduation project course, set up the connections and decided on project topics beforehand.

This was something that we created a brief for, together with one of the tutors. Two people from the municipality were involved in this project. One of them was the mayor at that time. We went there; we want to do such a project with our students, to ask if you could send someone to us. We presented this project brief to the municipality to see if you would like to work on this project or let us work together. Of course, the mayor did a lot. (Tutor 21)

In general, the professors wanted to work on graduation projects, so they could be close to reality. (...) The following year, when a tutor heard from another, they said we want to work with you, too. As I said at that time, such a need arose for our festivals in Beşyol and Yakaköy. Such a topic has arisen. They happily told us that we would work on this topic. This is how the process went. (NPO 21)

At the beginning of the term, tutors asked about students' topics and stakeholder preferences. Then tutors distributed the topics and matched students with collaborating partners according to students' desires.

They choose themselves. We do not choose. We take four subjects; we explain the projects, and they choose themselves. Because I want to do this. (...) Students were choosing. They were choosing themselves. We were presenting the project. Students were choosing the project. (Tutor 21)

Although the project was tutor-initiated, it was the students' decision to work with nonprofit organizations.

Students request such projects themselves, and we support them as stakeholders. Or we say that there is such a project, and if they want, they go ahead. (Tutor 1)

After establishing collaborations and matching students with the stakeholders, tutors let students maintain and drive collaborations. Hence, these collaborations are considered student-driven.

Key Contact

Tutors also prefer to use their personal network and find it easier to use their interpersonal and informal relationships than formal, corporate relations while initiating a collaboration.

The tutor was also involved in this project and was obviously establishing the relationship with the municipality. (...) Because he was their interlocutor. Because he knew the team there because he did other projects, and we do these things with our personal connections and credits. (Tutor 21)

Key contacts from previous acquaintances help to establish and maintain collaboration.

We've talked to the tutors before. So the planning developed in an instant. The mayor's relations with the dean of the University were very close. Our relationship with the tutor was also very good. We did a project together before. We determined the points of all the hotels in the town; we made direction signs. So we have known each other. Our acquaintance made these plans when we suddenly made a common decision. We made a joint decision at once. We proceeded in line with these decisions. (NPO 8)

7.3.3 NPO-initiated Student-driven Collaborations

NPOs might also initiate the collaboration by offering. Although they are NPO-initiated collaborations, the rest of the collaboration processes are driven by students. In some cases, the tutor receives a professional proposal from the NPO but turns it into an educational project for students and adapts it to their level.

Two or three people from the municipality called the head of the department and knocked on the tutors' door. An NPO, a municipality, came at the end of the summer or the beginning of the first term and asked tutors what they could do as a project

since they wanted to do a project with them. Obviously, the municipal structure is not a financially profitable business where a tutor or a designer will work to provide design services. That is why they insisted on doing something with students. They convinced them by speaking with other tutors. Tutors wanted to be partners in the graduation project and became intermediaries as tutors. Then tutors were directed to the Social Services Directorate of the municipality. The directorate wanted to touch on specific areas and issues they care about. They talked and discussed what could be done. Since there are many festivals in İzmir, cherry festivals, artichoke festivals, and portable sales units to be used there were one of the subjects. Then tutors carried it to the diploma project and asked the students if there was such a project and if anyone wanted to be involved. From there, four people volunteered from fourth graders. The students themselves voluntarily chose their fields of study (Tutor 20 and Tutor 21).

In some cases, tutors change the format of the collaboration offered by NPOs and turn them into graduation projects.

They (the NPO) wanted to do it as a competition. Then, our department head insisted on considering this as a graduation project. So, our head of department arranged it because we were twelve students. (Student 2)

In this section, I have presented the characteristics of the student-driven model of collaboration. Student-driven collaborations are generally initiated by the student, but the tutor or NPO might also initiate the collaboration. Regardless of the initiator, the student is the driver of the collaboration process and is responsible for leading the collaboration process as they are the most dominant and active actors in the collaboration. The collaboration process proceeds between the two active actors (i.e., student and NPO) while the tutor is more passively involved. In any case, the interaction and communication between partners begin and continue with personal and informal relations and connections rather than corporate and formal relations. Key contact is an important factor in establishing the collaboration. Key contact eases the formation process and helps to maintain the collaboration process.

7.4 Contributions of NPOs in Student-driven Collaborations

Contributions of NPOs during the collaboration process can be classified as educational and moral support. Educational contributions include the steps that they are involved in the design collaboration process, such as brief preparation at the beginning, feedback sessions, research, and juries at the end. NPOs provide training in their areas of expertise. Hence, they contribute to knowledge and experience transfer. Their moral support includes goodwill and positive attitudes towards their partners during these collaborations.

7.4.1 Educational Support

The collaboration process proceeds with knowledge transfer between actors. In the student-driven model, the information flow is mostly one-sided, from NPO to student. The advisor (i.e., mentor) from NPOs shares knowledge and experience, which provides a productive and instructive design collaboration process for the student. Educational contributions of NPOs can be divided into the phases they attended of the design collaboration process. These phases are indicated as follows: brief preparation, feedback sessions, preliminary and final juries, and research.

7.4.1.1 Brief Preparation

As already stated, in the student-driven model of collaboration, the preparation of a brief that includes the problem and need definition is the student's responsibility. The knowledge transfer between actors starts at this phase. NPOs contribute to the problem and need definition while students prepare project briefs.

In student-driven collaborations, students prepare their briefs themselves. They even defined them in the previous semester, at the end of another course. Then, the student finds a partner. They contact external advisors and mentors. The student and the official partner start collaborating for the first time and try to define the design

problem together. They make a joint decision. The student hands over a file that includes signatures, process, and time management, along with the joint brief they created with the partner. After that, the student forwards it to tutors for their approval. They present their briefs, the current examples of the field they work in, their mentor suggestions, and more focused problems. If the subject is suitable for tutors as well, the student continues to study (Tutor 1, Tutor 4, and Tutor 7). In some cases, tutors who carry out the course might also meet with the partners to determine the project subject (Tutor 20).

Students require a definition of the problem and need for their design projects. Actually, NPOs (municipalities) facilitate students' processes by providing a real context. Students identify the problems and needs by observing NPO's services. They try to understand what the service is, how they are doing it there, how they work, and why they do not work (Tutor 21). Moreover, NPOs answer some questions like who needs this specific design solution, why they need it, where, when, and in which context they need it. For instance, municipal problems are real problems. They collect complaints from citizens, as they are much more connected with society. (Tutor 3). So students prepare the brief according to these answers. Ideally, they bring a brief about what NPOs might need, areas they lacked before, areas they consider investing in, or areas that excite them. NPOs can provide support in defining the reason for the existence of the design solution (e.g., product, service, or system) within a real context (Tutor 5).

Then she said she wanted to do something about peer bullying in her graduation project. "I want to produce educational material about peer bullying", she said. At that time, we actually had our board game. We developed this game as part of a project. Since 2009, we have printed more than five thousand copies for children. In fact, there were cases of peer bullying in a part of this game itself. We shared this with her. Nur Seda was trying to create her project in the first stage. I said that we actually need something like this and I said that it is suitable for your department. (NPO 12)

In some situations, the student must go to an organization compulsorily because s/he cannot find a partner. Hence, s/he might not be able to negotiate with the partner

about which field they will work with. Therefore, the partner can be more dominant in determining the subject (Tutor 4).

7.4.1.2 Feedback Sessions

Students' external advisors from NPOs are their mentors in collaboration processes. In feedback sessions, students' expectation is thinking and developing with NPO partners, while the mentors' role is transferring their knowledge and expertise on a specific topic. For instance, municipalities share knowledge and experience about the local region with students. In feedback sessions at several stages of the collaboration process, students share their ideas and receive advice about their projects from people who are experts in a particular field of action. When the communication between actors progresses well, including the feedback sessions, students find answers to their project-related questions. This knowledge-sharing results in an informative and enlightening process.

That expertise contributed tremendously to the project, of course, when there was also good dialogue. They hosted our students. They opened up their accumulation of knowledge and experience to her. And he dived in boldly, and it was a very productive and instructive process. (Tutor 7)

The reality and information of the field are the most important sharing of NPOs, as they are in the field. They share their experiences and knowledge of the operations and conditions in the area and pass them on to the students.

Their contribution was great because they are very experienced in this type of social issue. They contributed so much good information and ideas. In terms of their experience in life, what might be there, and the conditions there. (...) And therefore, I can say that the emerging ideas were shaped by their knowledge and experience. (...) Their contributions were very nice. They shared so much useful information, information in a field that we would not be able to see and know from school, that the project there became a kind of collective production. (Tutor 21)

It is good to have at least a second opinion from an expert on the subject for their projects since students need direct access to expertise in their field of study. It is also good to experience working with others. Because in the near future, when students

become professionals, they have to work together with stakeholders. For this reason, students should not make design decisions by themselves. The decision-making mechanism should integrate as many stakeholders as possible in the creative design process.

Since everyone is very knowledgeable, they guide the students in the subject very well. They can explain what they expect well, and students can benefit from that know-how and produce innovative projects. (Tutor 2)

For instance, the corporate relations unit and graphic designer guide the two-dimensional design parts like general color or communication. When something concrete is to be done, the team in the workshop gives critical comments about what can be produced in terms of their capabilities and maintenance to suit the infrastructure of that team. The science affairs unit evaluates the feasibility of the work and whether it fits its infrastructure. Social services give feedback on business operations (Tutor 20).

Multi-disciplinarity and inter-disciplinarity of NPOs provide a professional environment for students. For example, a sociologist or another person with a different background from the municipality brings a distinct perspective. As a matter of fact, in some cases, a non-designer mentor contributes better than a designer mentor.

A designer mentor in some projects had a very negative effect because the mentor wanted to jump into the design. On the contrary, it is better not to be a designer mentor when I think of such examples. (...) Here is her project, in fact, one of the examples where the mentorship of a non-designer worked very well. (Tutor 7)

Feedback sessions continue with reciprocal visits. Either the student or the NPO partner visits each other. In that sense, it is common for a student to spend at least seven of the fourteen weeks in the stakeholder organization. In some cases, NPOs come to class almost every week or two weeks. They give critiques on the project and participate in the design process. So students receive support in the detailing of the project.

7.4.1.3 Juries

Another phase of the collaboration process in which NPOs are involved is preliminary and final jury presentations and evaluations. In some cases, students and/or tutors invite NPOs to the juries. Attending juries is not a duty of NPO partners. If they participate in these juries, students also present the projects' results to them. Therefore, juries become an opportunity for a final evaluation and contribution from NPOs. Moreover, they continue to support students when they attend.

In the jury, they actually defended the projects with us instead of criticizing them. (...) The representatives from the municipality defended our projects as if they were theirs. Since they had a good grasp of our projects, they had no difficulties in this regard. (Student 2)

If they do not attend the juries, they might not be able to meet with tutors in student-driven collaborations. In some cases, they are not invited to juries due to a large number of students and advisors. Involving them in the evaluation process, even as an audience, can be a burden to deal with.

7.4.1.4 Research Phases

NPOs also contribute to the research phase of the collaboration process. The research phase includes field trips, user observations, and user testing. NPOs allow students to do field research and meet with potential end-users and other key stakeholders (e.g., farmers, producers, cooperatives, and teachers).

In one of the cases, the students go to the municipality and set up a meeting to discuss how they can go to the field altogether. The municipality arranges a vehicle for students, and one of the tutors accompanies them on their first visit to the site. So before the project process starts, students get a chance to visit the villages with the municipality as a part of the research phase and speak with the villagers and the mayor about the festivals there and their wishes. They observe the marketplace area to see where they design a product. After the project progresses, students visit the site for the second time with their friends (Student 2).

NPOs assist the research phase by directly arranging and organizing user meetings and site visits or indirectly providing network, organizational, and logistics support. One of the contributions of NPOs in the research phase is providing user involvement, especially fulfilling a need for a specific user group like local people or children.

They will do it with the children, but they need the child to try, to pilot, or something else. If such a project is carried out, of course, we need to provide such support. (NPO 12)

Their biggest problem is that they can't find children in the age range they want. Because they can't find children, they reach them thanks to us. Previous students have also observed the children on the spot. Thanks to us, they reached out to the children to learn about their reactions. (NPO 17)

In one of the examples, the NPO introduced the students to the teachers for her/his project about ecological schools. The NPO made the meetings and communication easier for the students and NPO guided them to do their field research.

In my topic, the eco-school project, I was really lucky in this regard. (...) NPO was really helpful. They helped me reach other teachers. They also enabled me to meet with other schools. I thank them very much for that. I can say that they were the biggest supporters of this project. She (NPO member) was also like that. Again, she helped me establish these communications. In other words, the main pillar of this project is that I was able to establish those communications and reach those students and teachers in those schools and make observations thanks to them. If they didn't exist, such a project might not have happened, I might not be able to understand what those children were thinking without making observations and without their support. (Student 7)

NPOs are significant partners in networking for user research. They help to reach out to the critical components of the projects and contribute to the user testing of the design process in this direction. The mentor's contribution can be very remarkable and make a project leap. Knowledge sharing with someone who is very informed and works directly in the NPO is a considerable experience for students. The students benefited and got information from these processes while testing some of their design ideas with end-users.

Therefore, it is very important to have a mentor who knows that end-user group well, works with them, and has such a background and pedagogical knowledge. Her project could not have been with another mentor. I think it affected the project in a very positive way. (Tutor 7)

During the collaboration process, NPOs, especially municipalities, supply a set of access possibilities and transportation facilities that students can take advantage of (Tutor 4).

We are just trying to support them. It can be the use of space. If there will be an event, we can intervene in terms of supporting, organizing, and disseminating the event. (NPO 17)

7.4.2 Moral Support

Along with the know-how, the goodwill and positive attitude NPOs bring into collaboration lasts throughout the process. They are supportive and motivating by nature.

Students indicated that NPO partners were so welcoming, they and their institution approached them and the issue very positively when they first met. NPOs support many student projects and even the mayor of the municipality attends students' presentations (Student 3, Student 4, Student 5, and Student 7).

When I first went there and said that I wanted to conduct a project with them that could be beneficial to them as well, they also got excited. (...) The coordinator was very close and behaved warmly both before and during this process and during my volunteering. (Student 5)

They were also so enthusiastic. (Student 3)

They allocate the necessary amount of time and effort when needed. Students have easy access and communication with NPO representatives throughout the process. Students got accepted and agreed with NPOs as soon as they told them they needed to find a partner to work with. Students were able to access NPO partners whenever they wanted to. As they thought the municipality was already very close to the campus, they spared a lot of time for students when they came to campus, and always invited students over. They also think that because the municipality has more time

compared to companies, they talk to students in more detail. Students see this as an advantage (Student 2 and Student 6).

They never said, “don’t come, or we don’t have to meet”. We were quite comfortable with their attitude. As far as I know, my friends had difficulties in reaching companies. (Student 2)

In some cases, students easily formed a common understanding with them.

After all, we communicated with the municipality's architects, environmental engineers, and landscape architects. Their education is somewhat similar to ours. I think they understand us. (...) As I said, they were architects, landscape architects, people who speak the same language as us. (Student 2)

NPOs had almost no written or verbal expectations from students. They approach these collaborations with minimal expectations that students can fulfill. They only mentioned that it would be very beneficial for them as well if the project was realized. However, they still did not have any expectations from students in terms of realization (Student 2, Student 4, Student 5, and Student 7).

This institution always seems like people working there do their job well and without any financial expectation. (Student 5)

7.5 Benefits of Student-Driven Collaborations

This section will evaluate the benefits of student-driven collaborations from the actors' perspectives. According to participants' viewpoints, visibility and realization of results are common benefits for all parties. Obviously, student-driven collaborations have more benefits for students. Some benefits are more participant-specific. In other words, raised social awareness, improved social skills, learnt materials and manufacturing techniques, and experiencing special user groups are more student-specific benefits.

7.5.1 Benefits for All

Although participants mention that these collaborations have benefits for all, it is not accurate to speak for others. Participants' remarks reflect their observations and assumptions about others' experiences, feelings, and thoughts. However, some benefits such as visibility and realization of results are common benefits for all actors, as they are stated by all sides.

Again, it was an instructive project for all of us. (Tutor 7)

7.5.1.1 Visibility

When people think they have done something good, successful, or valuable, they want to show them and make them visible. Visibility refers to all actions that increase an individual's or organization's reputation, and it is a common benefit for all actors.

Visibility is one of the most beneficial aspects students mentioned during the interviews. Presentations, competitions, award ceremonies, and news on the internet and in newspapers are increasing the professional visibility of students. They have a reference they can use in their professional life.

They also gave awards and I won one. (...) We visualized our projects and presented them to the mayor of the municipality. It was in the newspaper, not only in the local but also in major ones such as Milliyet and Hürriyet. I think it was useful in that respect. (Student 2)

We went there, then, there was a photoshoot for the press, next to the kiosks. The mayor of the municipality expressed his pleasure. We had a little chat with him. (Student 3)

Events such as exhibitions, awards, and news are considered as tangible outputs of collaborations. They contribute to making the collaboration, process, and result visible. These are benefits and successes for the student. In one of the cities, Izmir, these collaborative projects and other graduation projects of all art and design schools in the city are exhibited in an annual event called Design Days (Tutor 21).

Tutors are also proud of their students' achievements and express their satisfaction with their visibility. This also means increased visibility for the tutors and their institutions, the university.

In order to create a sustainable environment in the public space, we designed an item of urban furniture for Istanbul, working with solar energy. That project received the first prize from TÜBİTAK (The Scientific and Technological Research Council of Turkey). We also make TÜBİTAK applications for graduation projects. We have been receiving good awards for three years. (Tutor 1)

Exhibitions in festivals and fairs are also places where NPOs make the results of collaboration visible. These activities publicize the work done. NPOs (e.g., municipalities) select some of the collaborative projects and display them at their events. Sometimes, when there is a prototype, they bring it to exhibitions and use it. In another case, a municipality puts these collaborations in its booklet as part of its activities (Tutor 21).

Apart from public recognition, these occasions allow parties to know each other and be aware of each other's work. For example, the university (tutors and students) becomes familiar with the services of the municipality, which also increases the municipality's visibility.

There are services that they do, such small solutions. For example, they issued a card for recycling, I don't remember them very well, but they have applications that give rewards to the person who recycles. They had a lot of social services and trials that would benefit green card holders. It was very nice to hear them, how sensitive, how nice trials, little services they gave, they were showing this. (Tutor 21)

Concurrently, the visibility for the design discipline is increasing as a consequence of this acquaintance between partners. NPOs experience working with design departments. They see and learn what an industrial designer and a university's design department can do (Tutor 20). This also provides design awareness for NPOs which will be further discussed in the 'Benefits for NPOs' section.

From tutors' perspectives, it is crucial to publicize the industrial design discipline via these collaborations. Tutors want to show that industrial design can be beneficial for NPOs in terms of improving their services.

When these people see that these kinds of things can be done, when they see what can be done, that's the reaction. In fact, if you look at our profession, it goes everywhere, there is no problem. However, it is necessary to show the municipality and institutions that these results can be achieved. Then the collaboration can find its place. That's a win-win. The municipality will use the industrial designer both in terms of infrastructure, in terms of simplifying its own services, and in terms of providing a more efficient service, but it does not know yet. (Tutor 20)

Tutors write academic articles and papers based on these collaborations and their processes. Turning these collaborations into publications also increases tutors' visibility (Tutor 7).

7.5.1.2 Realization of Results

And then we saw that we turned them into projects and implemented them in the town. (NPO 8)

Realizing the results is the only benefit for all stakeholders and the society when it is achieved. Among the driven-based models, the only example that participants mentioned was the realization in student-driven collaboration. Since realizing the outcomes is hard to achieve, only one of the student-driven projects is produced, which starts as a graduation project in collaboration with a municipality and then turns into a professional design process (Student 3, NPO 8, and Tutor 21).

We didn't think that this work would be left unfinished or the students would not be able to do it. We had no hesitation. There was a group of very hardworking students, and all were active. All of them did the planning they thought, and they all created the project in a short time, at the specified time. As I said, it was very enjoyable. I wish projects like this were continuous. (NPO 8)

Participating in the manufacturing process is a key benefit for the student regarding professional experience and occupational satisfaction. One of the students explains her gain from the realization process as follows:

Being involved in such a project and being able to say, “Look, we did something like this!” As an output, a kiosk was designed and produced. It is currently in use. I had designed something I could physically get into, when I was a student. And as soon as I graduated, I worked on its production with one of my tutors. I had the opportunity to produce my graduation project. I was always in charge of the production process at all stages. It was a good experience for me. It added a lot to me. (...) As I said before, it was very valuable for me to realize the results after my graduation. In terms of my personal gain, I can say that it improved me a lot.” (Student 3)

Realization might include working models or prototypes as tangible outcomes of the collaboration process, or service and system design solutions which are usable but might be utilized later.

NPO actors are surprised at the end of the process when they see prototypes that they can use as pilots to meet their needs.

She conducted a pilot study for the in-class version. With her questions, we also thought about details such as how these can be made, how a large group can play, and what kind of packaging can be made for easy transportation. The main joy for us, of course, was that. (NPO 12)

Similarly, another student expresses her joy about the working model she developed.

Playing this game with them, seeing that the solutions I’ve come up with excite them, and seeing how they work was fun. To see that I could turn it into a classroom game over time and their happiness excited me the most. And it kept me excited till the end of the project. (Student 5)

Sometimes NPOs are not informed about the outcomes of collaborations at the beginning consequently, they do not know what to expect from the results, and the realization of the results is not an expectation of NPOs. When the outcomes are realized and beneficial for them as well, they are amazed. One of the participants showed their appreciation as follows:

I never really thought that she would actually produce and make it herself. It surprised me a lot. I thought that only presentation sheets and big posters would be prepared and presented. It made me very happy. Now, we have a version that we can play with and show. With its material and everything, it made me happy because something concrete came out. That made me very happy. It is also appropriate and possible in terms of the applicability and implementation of the product. (NPO 12)

In contrast to NPOs' views, from tutors' perspectives, realization and implementation are not essential outcomes of these collaborations, since the focus is education. However, they welcome the opportunity.

One of them came to life, it might not have. But it's also a great achievement. (Tutor 20)

In all circumstances, the realization of results not only becomes practical and functional outcomes but also boosts the visibility for actors.

After the first prototype was produced, they bought it, exhibited it, took it to various events, and used it. (Tutor 21)

7.5.2 Benefits for Students

In addition to the common benefits mentioned above, there are four more benefits for students. The student's gains can be sorted as follows: (i) increased public awareness of social and environmental areas that NPOs work in, (ii) improved social skills due to the interaction and communication with an external stakeholder during collaboration, (iii) experience of designing for and/or with a user group that they have never experienced before when they work for a special user group, and (iv) experience of obtaining more detailed information about a specific material and manufacturing technique depending on the content of the project.

Students' experiences become more realistic and professional with the help of the context provided by municipalities and NPOs. Real context activates all the benefits mentioned below.

As a matter of fact, working with another institution and real customers is such a great opportunity. (Student 5)

7.5.2.1 Public Awareness

One of the most highlighted benefits for students is the awareness that students gain on social and environmental issues. Through social awareness, students recognize

the human-focused, social aspect of design. During these collaborations, students feel morally satisfied, as they do something for the public good and collaborating partner.

It was a project that I proudly tell and share. It was very different from other ones; it had a human touch. Donation service was also a valuable topic in trying to fulfill its requirements as much as possible and ensuring its realism. (...) It turned into public service. We wanted it to be the best since we were doing something for people. What can I do? How can I do it better? I started to feel something moral about the project. It was no longer my graduation project. What do I need to do to construct that service more accurately, to make it more accessible? Let me do something that will benefit people. (...) Then I left what I was doing; I focused on serving the municipality and the society. That's why it was morally strong. (Student 3)

While collaborating with a nonprofit actor, students also embrace the aims of the NPOs they collaborate with, and their consciousness increases accordingly. Students are influenced by what NPOs are doing for society, and they try to support them in line with their goals.

I felt a bit like one of them while working with them. So, I was participating in their activities. They were very conscious and trying to raise awareness of people. (Student 4)

Students emphasize sharing the solutions they developed and their reflections on society. This also indicates that their awareness has increased, and they have learned the social aspect of design.

Playing this game with them, seeing that the solutions I've come up with excite them, and seeing how they work was fun. Knowing that I could turn it into a classroom game over time and their happiness excited me the most. And it kept me excited till the end of the project. (Student 5)

In line with the aims of the NPO, such as fighting against hunger, poverty, and homelessness, students help them design solutions to provide better services for society's welfare. Tutors also underline the social awareness that students acquire.

Students' awareness. That is, seeing that there is another world. I find it very valuable in that sense. (...) We should definitely include this in our curriculum, either formally or informally, so that students can see that there is another life. Municipality or NGO. Services offered by the municipality.

Municipalities are also important for students to see where their services come from. (Tutor 5)

There is a class reality in cooperation with NGOs. It has a dimension such as facing a community or a segment of the society that the student has not encountered before. He didn't think about it. Hunger, poverty, homelessness. That encounter is also very meaningful regarding individual development and sensitivity to the real world. (Tutor 7)

7.5.2.2 Professional and Social Skills

Collaborating with an external partner is a real-life experience for students, improving their social skills and making them feel like professionals. The multi-/interdisciplinary nature of the NPO offers an environment where students can interact with people from other disciplines. Professional experience in a real context enhances students' social skills, such as self-esteem, communication, and networking.

One of the students expresses the self-confidence gained through collaboration as follows:

I used to be a bit shy; I mean; I would probably hesitate to join such a community if I didn't have a friend there. But this collaboration pushed me towards it. My reservations and timidity in joining such communities have disappeared. So it's something personal. (Student 4)

These collaborations can be seen as a simulation of real life that prepares them for professional life. Within the reality and multi-/interdisciplinary context provided by NPOs, students build professional relationships and learn how to communicate with professionals from other disciplines.

For me, it was a process that I carried out with great pleasure. I learned human relations and how designers and stakeholders should communicate. Because until then, you always design something by yourself and never meet the user. This was the biggest contribution to me. (Student 6)

With the knowledge of their mentors, the students work really comprehensively and successfully on many projects. Before their graduation, students benefit from exchanging ideas and working together with expert professionals in the field. In

addition to communication with other stakeholders, students also have a chance to communicate with potential end-users. These connections and developed networking skills are significant benefits for students, which might turn into an opportunity for employment in the future.

It was not always an opportunity for every student to construct a project communicating with potential end-users or experts who have knowledge and equipment about potential users. (...) Students who were able to choose the right mentor and establish the right relationship were much more successful in this project. (Tutor 7)

7.5.2.3 Material and Manufacturing Knowledge

Having real context sometimes forces students to work with certain materials or manufacturing techniques they did not know about before. Those collaborations improve students as they learn about new materials and manufacturing techniques.

I can say that I have advantages based on the project. I hadn't worked with the material before. I used wood mainly. That's how I became involved with the material. It was a plus. At the same time, I looked at wood joining techniques to join them using less material. And also, my knowledge of endurance has increased a little more. I learned a lot from that. (Student 1)

For example, the student involved in that part experienced a different production system and structure in detail. (Tutor 20)

7.5.2.4 Designing for/with Special User Groups

As they work with specific user groups in a real context, they also have the opportunity to meet the users and empathize with them during the design process. During these collaboration processes, students work with special user groups such as children, elders, and patients that they have never worked with before. Until that time, they used to design and present their projects to users like themselves who feel close to them. Working with a completely different and sensitive user group and understanding their needs gives a new vision and also improves students' self-esteem/self-confidence, empathy, and research skills.

Working with children and trying to get to know them was encouraging for my future studies and projects. Because I guess working with children might be a bit more complicated. Therefore, being able to carry out this process with them and finally doing something I can describe as successful encouraged me. This was the biggest plus, of course. (Student 5)

7.5.3 Benefits for NPOs

Similar to tutor-driven and NPO-driven collaborations, student-driven collaborations also bring substantial benefits to NPOs in terms of design contributions. Contribution of design can be (i) design awareness for NPO, and (ii) realization of collaboration results either in the form of applicable outputs or source of inspiration for the future.

As previously described, design contribution is new and different ideas and viewpoints for NPOs in line with their fields of work and objectives. NPOs believe that as long as there is a mutual interaction and it is supported by two-sided, good things can come out. They think design can contribute to and support their actions and give ideas in the areas of climate change, global warming, waste management training, compost training, human rights, and children's rights. They know that design is to their advantage (NPO 12 and NPO 17).

Getting ideas when designing a board game or a toy. Even a different person contributes a lot. Another point of view. It adds a different perspective. It's not only that we are working on children's rights, human rights, play learning, etc., but it also relates to learning from others. (NPO 12)

When we look back and think about the technologies we used, it was horrible. Could we come up with a better solution? We started discussing this at that time, thanks to her, you know. How could it contribute to us? In that respect, I can say that it contributed to the formation of a dialogue about how we can upgrade it and how we can strengthen it. (NPO 15)

Design Contribution

NPOs meet students and learn about the department and industrial design discipline through these collaborations as they did not have much information before. They gain design awareness. They learn what an industrial designer does and that they can

actually contribute to them. They start to notice the possibilities and impact of industrial design and its contributions to NPOs' work. This design awareness of NPOs also helps to promote and publicize design discipline and to increase its visibility (NPO 12, NPO 15, and NPO 17).

I didn't really know much about what industrial design is and what it is not, what industrial designers do. I learned about them through this project and process. It attracted my interest. I feel like these types of projects have such contributions and advantages. (NPO 12)

In this respect, even the presence of the student, thanks to the fact that we were in conversation for a while, had a great impact. Because it's a story we don't know. I can say that we did not see it as an area that we could benefit from because it was stuck in a very industrial, profit-based industry. (...) Now, I look and see how design can eliminate some problems, their contribution. (NPO 15)

Collaborations with universities and contributions of design are also seen as the realization of results such as free trials and pilot tests that are directly related to their needs. In terms of realization, students fulfill NPOs' needs. For instance, a child unit did not have an industrial designer in their design development team when they were designing a product for a child group. The production of it was very difficult and the game was not available for large numbers. So, working with an industrial design student, they could make a pilot study played by the whole class of children.

It responded to a need of ours by piloting a student's work on a need of ours and feeding it with our feedback. What was that need? We were asking if this pilot study was something that could be done, and we realized that yes, it could be done. It can be turned into a children's play like this. (NPO 12)

Considering the resource constraints often faced by NPOs, design contribution also provides human capacity for realizing the results. When students start a project without money or sponsors, it becomes important for NPOs because normally budget is an issue for them (NPO 12 and NPO 15).

As a result, here, we can actually conduct a pilot test related to such a direct need without finding funding. Because normally, when we start a study, we make such a pilot, it is a trial. After all, this is a very important thing, since we have been talking about the budget issue since the beginning. (NPO 12)

Industrial design students bring specialized expertise in creating functional, user-friendly, and aesthetically pleasing product, service, and system solutions. NPOs think it is very necessary to have such a person and get consultancy, as these contributions can enhance the design and usability of their work, ultimately aiding in achieving their social and humanitarian goals.

Obviously, we could predict the result, and that was something within our plans. The result suddenly emerged as the plan and service for citizens we had already thought of. (...) In line with the planning, our thoughts are sometimes not enough, you know what I mean? I mean, you have to go to someone, someone who knows, and consult with them. As I said, those collaborations we had, we couldn't have done it without them, frankly. (NPO 8)

This expertise can also help NPOs articulate their messages more efficiently, creating visually engaging materials that resonate with their target audience, especially special user groups.

Actually, the design and the aesthetics are very good. It is very good that it thinks of everything. In that sense, it is very impressive. I wouldn't have thought about these things much. I mean it makes a valuable contribution to us. (NPO 12)

However, sometimes they cannot directly continue with the same design solution or use it right after but it can contribute to other work of them such as what else they can do with this inspiration. The contribution of design plays an influential role in whether it would be possible to realize and implement it in the future with less effort.

At first NPOs have some question marks in their minds, they wonder whether a demand from the field would be possible. Students organize feedback sessions. NPOs met students in a few meetings and gave them feedback.

A concrete idea is in front of us. And it actually gave us the opportunity to develop it as we wish, we can carry it out, we can turn it into a new project, we can find funding for it. It was a concrete output from which we could draw inspiration. At least it's like we found the answers to our questions. (NPO 12)

7.5.3.1 Documenting and Sharing Results

Unlike the other two models (i.e., tutor-driven and NPO-driven), documenting and sharing the process and results of the collaboration is a benefit of student-driven collaborations rather than a challenge. Documentation and sharing, as well as design contribution, is the biggest gain for NPOs in student-driven collaborations. Publishing and archiving the results of these projects ease the process of transferring the knowledge obtained through these collaborations for NPOs and students and tutors as well. It can play a substantial role as a source of inspiration and base for future implications that can be beneficial later on. For example, both students and NPO practitioners can look at the past projects and benefit from them.

But in the end, it was an output that could inspire something to happen in the future. (...) That's why we have actually made a new booklet now. (NPO 12)

The university students researched and worked on the subjects. They made analyses and generated countless different ideas on the subjects they studied.

Maybe the future could be this: in this area, I mean for a certain area. Let's take a look at these studies. What has been done? When we look at what can be done, it is really a base for us. You know, what have the students done in the municipality? When it is asked what is needed for this field, it is a serious source. I mean, if the municipal personnel try to do such research, it may take time and not result well. This is a serious time saving for us. This is also an advantage for us. We can benefit from them. (NPO 21)

7.5.4 Benefits for Tutors

As student-driven collaborations proceed between students and NPOs, tutors have fewer benefits compared to other actors. Tutors believe in continuous learning and with each collaboration process they discover new design-related areas as students develop projects in a variety of topics in collaboration with NPO partners.

It is very instructive for us. With each project, we get ideas about new areas. In fact, perhaps we are the ones who learn the most as educators. (Tutor 7)

7.6 Challenges in Student-driven Collaborations

All stakeholders have some common and specific challenges in student-driven collaborations.

7.6.1 Challenges for All

Similar to tutor-driven and NPO-driven collaborations, maintaining common understanding and realizability of results are the joint challenges of student-driven collaborations for all.

7.6.1.1 Maintaining Common Understanding

As it is already mentioned in Sections 5.6.1.1 and 6.6.1.1 collaborations often encounter the challenge of establishing a common understanding among stakeholders. This challenge arises when individuals or groups involved in a collaborative effort have different perspectives, goals, or expectations. Miscommunication and differing interpretations can hinder progress and lead to misunderstandings. Achieving a shared understanding requires effective communication, active listening, and a willingness to reconcile diverse viewpoints. It necessitates clarity regarding the project's objectives, roles, and responsibilities, ensuring that all participants are on the same page. Overcoming the common understanding challenge thus maintaining it is crucial for fostering a harmonious and productive collaboration, where each member contributes cohesively towards shared goals.

In student-driven collaborations, communication-related problems mostly affect students. They occur due to non-designer advisors (see Section 7.6.2.4) and students' efforts to balance diverse feedback (see section 7.6.2.3).

7.6.1.2 Realizability of Results

There is a desire to see student-designed projects produced and used in real life, which would be very exciting and fulfilling for the students. Although some projects showed great potential, many projects face challenges in transitioning from concept to production due to insufficient follow-up and practical constraints (Student 7 and Tutor 5). For example, projects were presented to stakeholders and received positive feedback, and there was potential for support from entities like the European Union, especially for projects aligning with goals such as zero waste. However, issues like limited budgets, lack of technical expertise, and insufficient ongoing motivation hindered their progression into tangible products. Improved collaboration, clear communication, and practical follow-up are needed to ensure the successful implementation and realization of these innovative projects (Student 7 and Tutor 5).

Efforts to transition student-designed projects into practical use often faced challenges. Despite the initial interest of NPOs, communication and follow-up were missing in the later steps. For example, a student delivered their final product to a unit, hoping for feedback or further development, but did not receive a response. Another project with potential collaboration with a municipality stalled because none of the parties pursued it actively. Students mentioned reasons such as graduation fatigue and uncertainty about career direction for not following up. Initial discussions between the stakeholders suggested the product could be useful, but practical considerations about materials and manufacturability left it unrealized. Ultimately, many projects remained in a conceptual phase due to insufficient engagement and clear communication between parties (Students 5, 6, and 7).

Budget/Funding

Several promising student projects faced significant obstacles in transitioning from concept to production primarily due to budget constraints and manufacturability issues. Practical challenges like high costs and limited production capabilities led to

many projects being shelved (Student 4, Student 7; NPO 12, 15, and 21; Tutor 3). For instance, one student's project could not be produced because the student could not cover the costs and the municipality did not have the budget to fund it. Similarly, other projects also faced issues due to the need for specific materials and forms that were not feasible within budget constraints. Public institutions, like municipalities, often prioritize cost over innovation, leading to many innovative ideas not being realized. One of the NPO team, despite having a bit more flexibility, also struggled with budget issues and the difficulty of turning projects into production investments. Overall, financial limitations and the need for practical, cost-effective solutions prevented many creative projects from coming to fruition (Student 4, Student 7; NPOs 12, 15, and 21; Tutor 3).

Intellectual Property Issues

Students hope for design registration or patent due to their significant efforts over a semester (Student 3, NPO 21, and Tutor 3). The participants expressed that municipalities do not have conflicts that private companies bring about intellectual property rights and designer recognition. The municipality would ensure proper credit, without ownership issues. However, the projects often did not materialize as initially planned because of the municipality's internal dynamics and leadership input, leading to these projects serving more as inspiration or groundwork rather than being fully implemented. Intellectual property issues were not prominently discussed, as the primary aim was to generate ideas and public interest rather than actual product realization (Student 3, NPO 21, and Tutor 3).

Commitment of Stakeholders

Commitment can also become a barrier to the realization of projects. For instance, in one of the cases, after the prototype was produced, it was bought, exhibited, and used at various events. However, the project eventually stalled. Neither the student

nor the NPO pursued it further. The project, despite being the most advanced one they had worked on, remained unfinished. The tutor mentioned that the project's significant progress was due to the extended time spent on it—one and a half semesters plus an additional year—compared to shorter-term projects. Despite its potential, the project halted as everyone moved on to other things, highlighting the difficulty in sustaining commitment over time (Tutor 21).

Applicability of Student Projects

The challenges faced often include a disparity between what is envisioned and what is practically achievable. Student projects lack applicability and may sometimes be unrealistic or impractical, highlighting the gap between academic exercises and real-world applications (NPOs 12, 15, 17, and 21; Tutor 21). Student projects, while valuable, often need further professional development to be implemented. The participants note that even the best student projects require enhancements to be produced. Those projects, though promising, are expensive with their materials. Feasibility studies and modifications make them more viable and affordable (NPOs 12, 15, 17, and 21; Tutor 21).

The participants also emphasize the importance of considering social conditions and user experience in design, suggesting a more inclusive approach involving the community. They argue that designers are responsible for ensuring their creations can be manufactured and accessed by the intended users (NPOs 12, 15, 17, and 21; Tutor 21).

7.6.2 Challenges for Students

During student-driven collaborations, students tackle several challenges. Even though it was promised, they sometimes cannot get prototype support. Due to the nature of the NPOs, they may not be able to work with a designer mentor. This could also result in receiving diverse ideas from tutors and NPOs which could confuse

students. The scale of the design, such as service, system, or social design, can also be an issue as students are used to designing products rather than others. Finally, realizing (i.e., tangible implementation) the results appears as another primary challenge.

7.6.2.1 Model/Prototype Support

Prototype making is one of the most significant supports students expect from NPOs for their project models. However, this expectation cannot be met in some cases due to various reasons such as cost.

The jury, consisting of tutors, expects a prototype of the product in the final jury. Sometimes, NPOs promise to support them in prototype-making in the beginning. However, it is difficult to make one-to-one prototypes of five or six students in terms of time and budget allocated by them. NPOs cannot support students on that issue, although they initially agree to deliver prototypes of the exact size. Students have to make their models of final projects by themselves. This is a disadvantage for them as industrial partners usually help with prototypes (Student 2 and Student 7).

For example, when we first talked to them, they were going to provide prototype support, but it didn't happen after all. I had to do it myself. The reason for this was, they said they didn't have a budget for this. (...) It cost me a lot to have a prototype done. It was a bit upsetting that they didn't support it. So, I was a little disappointed about that. (Student 6)

From their previous experiences, tutors are aware of this challenge. Some tutors mention that there has been no production or manufacturing support from the municipality or NGO so far. In other cases, such organizations cannot always provide model/prototype support adequately as they do not have such a chance (related to financial issues). For instance, one of the tutors remembers that a student working with the municipality did not have a good-quality model since the prototype part was left to the student. Each year, tutors try to inform their students about the situation to prevent frustrations. (Tutor 2, Tutor 4, and Tutor 5).

NPO leaves off the student. Therefore, we tell the student that they (NPOs) can say “we will make the model, we will do it”, but they can be let down. It really does happen. They say let's do it, then they say we had an international fair, a foreign guest came, and they can't do it. This has happened to us a lot. That's why we do not expect anything from them, in any way, since we have the opportunity to make a model and get support. (...) We say to the student, do not expect. (Tutor 21)

7.6.2.2 Adaptation to Scale and Scope

Industrial design education is transforming from product scale to service and system scale. In line with that alteration, these collaborations expect a broader outcome that includes social responsibility and serving a community as a specific user group rather than a sole product design. This expectation turns into a challenge for the students who are used to designing only products. Furthermore, socially responsible projects do not always include product solutions; they may require service and system solutions as well.

When the NPO partner wanted a service design, students were afraid at first, as until that time, students had always designed tangible products.

And it was our graduation project; as you know, it had to be something tangible and visible. When we graduated, we should have been able to say, “Look, I did this”. (...) But there was a huge gap when it was noted that the municipality expects a service. So? What do they want? Ok, I designed the service, then what will be the product? I had no idea. We had a lot of concerns during that period. (...) It was really a difficult subject. I got lost in the process. I forgot where I was in the project, what I was doing, and to whom I was doing it. (Student 3)

She didn't understand anything from what was said. She got lost in the project. She didn't understand anything about service design. (Tutor 21)

Students are familiar with thinking at product scale. Service and system design concepts are relatively new to them. They tend to design tangible products; however, they are not good at thinking on a service and system scale. Thus, they find it easier to design a concrete product compared to service and system design. Conventional product design has some clear constraints in terms of material selection, usage

scenario, and dimensions. For instance, if it is a market stall design for a municipality, there are constraints such as it should be made out of wooden material and/or it should not be larger than a certain size. However, if it is a service design for a municipality, there are more uncertainties that students have to decide on (Tutor 21).

I spent too much time designing the system but came up with a market booth. The end product had to be a market booth, unfortunately. (...) So, I was stuck at turning this system into a product. Do I have to design a product so that I can graduate? I was worried about how to productize. The productization (product development) process was the most challenging. (Student 6)

The scope of the projects is another challenge for students. As they are used to designing for users similar to them, they can consider themselves as users of the product. However, they struggle while designing for people who are different from them. They have to put themselves in a specific user group's position. They need to work harder and empathize better with users. Solving a real problem and offering a solution for a special user group put pressure on students to do everything right (Student 5). Therefore, tutors warn students before socially responsible projects.

At the very beginning of the process, I got a reaction like this: our tutors warned me that the projects that tried to address social problems didn't have satisfactory results or didn't succeed eventually based on their previous experiences. They gave some examples from previous work. Because it's a difficult subject and the result isn't understandable or a product design, it might be more difficult to present, express it, and convince others. I got such a warning. My tutors asked me if I had enough energy for this. (Student 5)

7.6.2.3 Balancing Diverse Ideas

During these collaborations, students receive feedback from the tutors as design leads and NPOs as product and service owners. However, sometimes, these feedbacks conflict with each other or become confusing for students. As tutors and NPO partners do not have direct communication in student-driven collaborations, students have to balance diverse ideas from diverse actors and face difficulties while trying.

Actually, I can't talk about something unexpected or surprising, but, for example, there was a conflict. I had a feeling of being in between. I was trying to make a revision using the content I got from the NPO. So I didn't want to change the content in any way because I believe it was already prepared by the experts, and it was reliable. However, many times the content was questioned by some of the studio tutors. I wanted them to discuss the materials and/or the revisions (of the product), but sometimes jury comments deviated from the focus; they were more content-oriented. I tried to draw the conversation to my product by saying the content is reliable and cannot be changed. It happened very often and demoralized me. Sometimes, I didn't know what to do. Because I think these comments were unnecessary. (Student 5)

On top of the difficulties in balancing the external advisor's view with the tutors', in some cases, tutors' opinions and criticism contradict each other. Students have a hard time balancing both.

In the juries, NPOs defended the projects with students instead of criticizing them.

Of course, juries can be a bit stressful. I can say that some of the jury members (tutors) act like good cops, and some like bad cops. After I completed my presentation, there was a split. Some of them really liked it. Some, of course, brought criticism. The municipality intervened in the conversation for me. Or they discussed it among themselves. The representatives from the municipality defended our projects as if they were theirs. (Student 2)

Due to the goodwill and positive attitudes of NPO partners, students tend to believe and trust NPO partners more than their tutors. They think that the NPO is trying to be supportive, whereas tutors are criticizing.

Since the NPOs always acted as if they were co-creating with students, students mentioned that the challenging part was the part with tutors. Students had some trouble when ideas from the NPO and the ideas from tutors or the ideas given by two or more tutors conflicted.

As I said, it was the only problem. The school, not the municipality, was a little harder, naturally, in terms of feedback. So I can say that there was a conflict. (Student 2)

This situation can even result in the student focusing on serving NPO and society rather than undertaking a design project as a student.

She had become a personnel of the municipality when she arrived. She even forgot about being a designer and became a person who spoke and acted like a municipal employee. She could not balance the knowledge in the municipality with his state of being a designer. She went to the municipality a lot, she spent a lot of time there, and she forgot her design. (Tutor 21)

Then I left what I was doing; I focused on serving the municipality and these people. That's why it was morally strong. Things changed, and I suddenly found myself as a municipal employee. (Student 3)

7.6.2.4 Non-designer Advisor/Mentor

Although the expertise and contributions of the mentors are appreciated regardless of the institution and its capabilities, NPOs generally do not have industrial designers employed. Hence, a non-designer mentor/advisor might fail to provide design-specific feedback. Different backgrounds sometimes negatively affect communication and make it challenging to create a common understanding.

So, there were no industrial designers. I mean, if there was an industrial designer, maybe I could communicate better. But of course, we think differently than architects and interior architects. (...) I can't say that I have a positive opinion about it. I think the municipality limits the design ideas and design perspective. (Student 1)

Apart from the external advisor from the NPO, the fact that there is no manufacturing facility becomes a prominent factor for students. They do not learn about the materials, production methods, and other technical details they require during their design processes.

For example, if I had worked with an industrial production facility, I would have worked with a designer, and he/she would have been able to give me information about the manufacturing methods, details, materials, etc. I didn't have a designer mentor and felt the lack of it, to be honest. (...) As I said, their moral support was more intense, rather than their professional support. (Student 6)

On the contrary, when a stakeholder organization (e.g., TAK) has an industrial designer as a mentor, students do not confront this problem. They find such organizations more inspiring compared to municipalities. Tutors and students remark that NPOs cannot deliver design-related, technical feedback that students lack.

Hence the design approach is limited, if there are not any industrial designers or manufacturing facilities in the collaborating organization. When there is an industrial designer, students do not have a problem in terms of production knowledge and details. However, when there are no industrial designers, NPOs can only channel students into human-centered and urban projects more quickly (Tutor 1).

For many years, one industrial design department has had pre-defined criteria for graduation partners, such as having a facility with manufacturing capability. The collaborator is expected to guide the student with the know-how on the market research and manufacturing techniques of the product to be designed. However, NPOs are insufficient to satisfy this technical expectation. Thus, students were not allowed to carry out graduation projects with NPOs. However, as the number of students increased, students started to have difficulty in finding institutions that meet this criterion.

Normally, companies that are able to produce industrial products are expected by tutors. Since the municipality only contributes to idea generation and has the product manufactured elsewhere, it is difficult for tutors to lean towards municipality collaboration. (Student 7)

Being from another discipline, the non-designer mentor/advisor is not familiar with the design process. They might criticize the concept drawing of the student as if it is a finished product which disappoints and discourages students (Tutor 3).

Furthermore, according to tutors, advisors in NPOs (NGOs or municipalities) have a disadvantage regarding the recent or current materials and manufacturing techniques, and what can be produced or not. They do not have the technical knowledge or cannot feed students enough if they have. Therefore, tutors do not find it efficient for students to work with such organizations in their graduation projects, depending on the goals set by the department. Expectation from the mentor is guidance for the project's progress, such as showing alternatives, offering new possibilities, and asking questions. However, these might be missing in non-designer mentors (Tutor 4).

All technical details of the project are left to the student. The consultant they gave us is usually the Parks and Gardens Manager, something the manager of the municipality. That man has no manufacturing background. There isn't a production workshop. That man hasn't designed a lighting element before. He doesn't know what to do either. He knows what he needs, but I don't think he gives students any different feedback than a customer interview. We are struggling so much. (Tutor 5)

CHAPTER 8

DISCUSSION

This chapter starts with a brief evaluation of the three models. Then, it continues by comparing the findings of the thesis with the extant literature. This analysis is followed by guiding principles (protocol) to make the collaborations more efficient and effective. The chapter concludes with a set of key dimensions that would be nice to have to maintain better outcomes and sustainable collaborations.

8.1 Driver-based Models

When the related literature was searched, the theoretical frameworks of academic-NPO collaboration were categorized according to collaboration initiation (Roper, 2002), collaboration intensity (Ross et al., 2003; Lewis et al., 2012), collaboration perspective and organizational relationship (Sullivan & Skelcher, 2003). However, there were not any NPO-university-tailored collaboration models or frameworks that also included students as a stakeholder.

This thesis takes Roper's (2002) typologies of initiating academic-practitioner research collaboration as a basis and extends to driver-based models of educational collaborations between universities and nonprofit organizations which are tutor-driven, NPO-driven, and student-driven. The rationale behind the word 'driven' is to express the motivations and expectations brought by the initiator or the driver into the collaboration. The initiator has a clear motivation to collaborate and brings their motivation, aim, and expectation into the collaboration whereas other stakeholders accept the collaboration offer and benefit as much as they can. For this reason, I suggested driver-based collaboration models. As the collaboration is driven and conducted by the driver, I called them tutor-driven, NPO-driven, and student-driven models of collaboration (Table 8.1).

Table 8.1 Overview of Models

		TUTOR-DRIVEN	NPO-DRIVEN	STUDENT-DRIVEN
MOTIVATIONS OF THE DRIVER		Teaching New Areas in Designs Guiding Students to Design for Special User Groups Expanding Project's Scope And Scale Developing Students' Collaboration Skills Emphasizing on Social Aspect of Design Personal Interest of Tutors	Public Awareness Visibility Realization of Results	Personal Interest of Students Affordance and Flexibility of NPOs
REASONS OF OTHERS		Goodwill and Positive Attitude of NPOs Benefit Expectation of NPOs	Educational Personal Practical	Goodwill and Positive Attitude of NPOs Benefit Expectation of NPOs
CHALLENGES	for All	Maintaining Common Understanding Realizability of Results	Maintaining Common Understanding Realizability of Results	Maintaining Common Understanding Realizability of Results
	for Students	Learning New Concepts, Approaches, and Methods Adaptation to New Scale and Scope Working with New Material and Manufacturing Techniques Working for and with Special User Groups	Adaptation to New Scale and Scope Working with New Material and Manufacturing Techniques	Model/Prototype Support Adaptation to New Scale and Scope Balancing Diverse Ideas Non-designer Advisor/Mentor
	for Tutors	Educational Challenges Organizational Challenges	-	-
	for NPOs	Documenting and Sharing Results	Documenting and Sharing Results	-
	for All	Visibility	Visibility Public Awareness	Visibility Realization of Results
BENEFITS	for Students	Learning New Concepts, Approaches, and Methods Professional and Social Skills Material and Manufacturing Knowledge Designing for/with Special User Groups Scale and Scope of the Projects Awareness of Social Aspect of Design	Learning New Concepts, Approaches, and Methods Material and Manufacturing Knowledge Professional and Social Skills Awareness of Social Aspect of Design	Public Awareness Professional and Social Skills Material and Manufacturing Knowledge Designing for/with Special User Groups
	for NPOs	Design Contribution	Design Contribution	Design Contribution Documenting and Sharing Results
	for Tutors	-	-	Discovering New Areas

8.1.1 Tutor-driven Collaboration Model

In tutor-driven collaborations, tutors as drivers have clearly defined educational motivations (e.g., teaching new concepts, approaches, and methods in design) towards collaboration. The tutors convey their motivations and educational goals very well to both NPOs and students. Since students are aware of these educational goals and they are more conscious, this model provides more benefits for them. Tutors as determinant and active actors of collaboration, see NPOs as co-educators (as also stated by Sandy & Holland, 2006; Trebil-Smith & Shields, 2019) and try to involve NPO partners in planning and preparation. With this approach; the roles, responsibilities, and capabilities of students are well transferred to NPOs and it becomes easier to achieve a common understanding between stakeholders. Hence, the tutor-driven model is more likely to be successful and sustainable as there are a few examples of yearly recurring collaborations with the same NPO partners (Tutor 16, 17, 18, 20, and 21; NPO 5, 11, and 13). However, tutor-driven collaboration is the only model where tutors point out educational and organizational challenges for themselves. The reason could be that they are overwhelmed by the responsibilities the driver role brings on top of the educational responsibilities they aim for. If the goal and focus is education such as teaching design methods to students, or a long-term relation (Roper, 2002; Ross et al., 2003; Sullivan & Skelcher, 2003) (i.e., sustainability of collaboration (NPO 2)), a tutor-driven collaboration model is recommended.

The roles of stakeholders in tutor-driven collaborations are well-established and organized (NPO 2, 13, 16, and 18) compared to other models. Tutors as supervisors, are responsible for observing, analyzing, guiding, and evaluating the process and students. As facilitators and mediators, they ensure communication and try to prevent possible communication problems and disagreements between NPOs and students. They act as a bridge between them throughout collaboration. As experts and external advisors, NPOs in tutor-driven collaborations are responsible for sharing their know-

how about the related issues (e.g., local, environmental, and social), informing students about the subject, helping students to define the needs and problem areas, answering their questions, and introducing and connect students with relevant contacts when needed. As active actors in the design collaboration process, students are the most guided stakeholders by others.

As a result, tutors need to initiate the study because NPOs generally cannot or will not go to the related departments of universities and ask for collaboration, out of the blue. Considering the capacities of NPOs in our country, they cannot know the related departments or what to study together with universities. Thus, tutors need to identify the scope of the project (e.g., local development, environment, etc.) and let NPOs know that the project would contribute to them as well. They should take the first step to initiate and drive communication and collaboration. Many interviewees agree that the responsibility for initiating and driving collaborations should lie with universities, departments, and therefore tutors (Tutor 10 and 13; NPO 2, 11, and 19).

On the other hand, tutor-driven collaborations (i.e., education-oriented) are often criticized (Trebil-Smith & Shields, 2019) for not going beyond the teaching and learning mission of higher education. They should consider the contribution to NPOs and the benefits for them as well (Roper, 2002; NPO 1, 2, 3, and 9). Having this perspective would create a win-win collaboration for all stakeholders and also for society.

8.1.2 NPO-driven Collaboration Model

Although the realization of results is desired by every stakeholder, it is one of the main motivations of NPOs to initiate and drive a collaboration. When this expectation is not met, it turns into a disappointment for NPOs and a challenge for all. Student projects might lack applicability (see also Gronski & Pigg, 2000; Roper, 2002; Zeilstra, 2003; Dominato, 2009; Lucas et al., 2013; De Sousa, 2015; NPO 3). Therefore, realization motivation might be an ill-defined expectation of NPO-driven

collaborations and this expectation might not be met. Tutors are aware of the lack of applicability of students' projects since the focus is students' education (Tutor 13). The source of this challenge is missing open communication and common understanding that need to be discussed and solved beforehand.

Compared to tutor-driven and student-driven collaborations, NPO-driven collaborations proceed with a traditional product design and development process. Generally, new or specific design methods are not aimed or applied (Tutor 10). Although the collaboration is NPO-driven, tutors are supervisors of the design process since these are educational projects at the same time. Tutors are the ones who supervise and decide how to carry out the project (Tutor 15).

The biggest advantage of NPO-driven collaborations is that NPOs, as drivers, start these collaborations already having the design awareness. NPOs that have design awareness are essential to have a successful process. Moreover, they provide more opportunities and organizational support (see also Fışgın et al., 2018). If the goal of the collaboration is the realization of results or social benefit, it should be NPO-driven, so that the design awareness, demand, and need will come from the NPOs' real contexts. A drawback of this model is that when NPOs were asked how hard it is to start collaborations with universities, the NPOs replied that it is very or moderately challenging (see also Trebil-Smith & Shields, 2019). NPOs see universities as complex organizations and find them hard to communicate which appears as a barrier for NPOs to initiate and continue collaborations. NPOs have difficulty in learning and knowing their contact for each collaboration. Minimizing this difficulty is important to create impactful collaborations.

8.1.3 Student-driven Collaboration Model

The first prominent feature of student-driven collaborations compared to other collaboration models is examples that have been successfully realized and implemented (Student 3 and 5; NPO 8 and 12; Tutor 20 and 21). The reasons for this

successful realization and implementation are (i) a student has studied for one semester in the format of a graduation project and (ii) even worked on it for a longer period of time afterwards with the help and contribution of their tutor. Students' work might need some extra time and effort (Calefato et al., 2016) for post-production. Increasing the number of similar examples would help go beyond teaching and learning, turning this model into an opportunity where the society (Trebil-Smith & Shields, 2019), in addition to all stakeholders, benefit from it.

The second prominent feature of student-driven collaborations is documenting and sharing results. Students successfully document the results of the collaborations and share them with NPOs, turning a potential challenge into a benefit for NPOs. On the other hand, it remains a challenge for NPO partners in tutor-driven and NPO-driven collaborations when the results are not documented or shared.

Thirdly, the only benefit specific to tutors mentioned by the participants is in student-driven collaborations. Tutors discover new design-related areas as students develop projects in a variety of topics in collaboration with NPOs (also see Fışgın et al., 2018).

On the contrary, students have difficulty in balancing diverse ideas and feedback from their tutors and non-designer mentors (Calefato et al., 2016; Student 1, 2, 3, 5, 6, and 7; Tutor 1, 3, 4, 5, and 21). The main reason for this difficulty is that the three stakeholders of the collaboration do not get together in the feedback sessions. Students get feedback from NPO partners without the presence of their tutors in the student-driven collaboration sample.

Since the role of tutors is not very dominant or active in student-driven collaborations, students can feel isolated in their efforts to find common ground with NPO partners and might not receive the support (e.g., i.e., model/prototype) initially promised (Student 2, 6, and 7; Tutor 2, 4, 5, and 21).

8.2 Evaluation of Findings Through Literature

This section evaluates (i) motivations and aims of the driver towards initiating collaboration and reasons of others to accept the collaboration request, (ii) challenges of university-NPO collaboration, (iii) benefits of university-NPO collaboration, and (iv) process of university-NPO collaboration by discussing the findings of this thesis with the literature.

8.2.1 Aims and Motivations of the Driver and Reasons of Others

The extant literature concentrates and agrees on universities' (i.e., tutors') motivations for collaboration as maximizing students' learning and professional skills (Lucas et al., 2013; Chernikova et al., 2017; Trebil-Smith & Shields, 2019; Fışgın Korkmaz, 2020; Cifter et al., 2023). This is obvious and remains too general for design education context, as I named them: 'educational motivations/reasons'. These educational motivations/reasons are required to be further elaborated for collaborative processes in industrial design education. For instance, tutors are motivated to teach design-related concepts, approaches, and methods (e.g., socially responsible design), guide students to design for special users, expand projects' scale from product to service, experience, and system, and develop students' collaboration skills. These are unique in tutor-driven collaborations with NPOs in industrial design education.

Apart from the above-mentioned motivations, in tutor-driven collaborations, one of the motivations of tutors is to emphasize social aspects of design. Parallel to the focus on society's welfare in my findings, most of the collaborations between higher education and nonprofits pay attention to teaching students about civil society, social responsibility, community outreach, and social innovation (also see Trebil-Smith & Shields, 2019; Peng et al., 2022). Although Vodeb et al. (2015) argue prestige, financial rewards, and awards are also motivations for tutors to initiate these

collaborations, this thesis states that they are the benefits of these collaborations for tutors rather than motivations.

When NPOs drive a collaboration, their motivations are creating and raising public awareness on certain social, environmental, and local issues, and realizing the results for public good. When NPOs are not the drivers in tutor-driven and student-driven collaborations, they aim to benefit as much as they can and welcome the contribution again to their institution's missions (creating and raising public awareness and increasing visibility) and public good (realization of results). Hence, I called NPOs' embracing future opportunities as the 'benefit and contribution expectation of NPOs'. This embracement includes creating awareness about social, environmental, and economic concerns and promoting sustainability in the community which is aligned with previous studies (e.g., Sandy & Holland, 2006; De Sousa, 2015). 'Realization of the results' motivation of NPOs was also mentioned in the literature (Roper, 2002; Sullivan & Skelcher, 2003).

Another reason NPOs accept a request from tutors and students in tutor-driven and student-driven collaborations is their goodwill and positive attitude towards students. They are open, willing, and ready to collaborate. However, this manner might be because NPOs do not want to turn down the offers as they want to be regarded as "nice" (Trebil-Smith & Shields, 2019).

8.2.2 Challenges of University-NPO Collaboration

Time and budget-related organizational challenges such as planning, coordinating, and budgeting are some of the most common limiting factors of collaborations (Ross et al., 2003; Quinn, 2006; Lucas et al., 2013; De Souza, 2015; Calefato et al., 2016; Chernikova et al., 2017). In collaborations on student projects, not all actors face these organizational challenges, as coordination is mainly the responsibility of tutors. As a solution for coordination challenges, time restraints, and budget concerns; a protocol, including a scheduled calendar and an article about funding issues, and/or

a model could be offered as well as seeking more committed partners and allocating more time. More specifically for funding, there are many funding institutions (e.g., European Union funds, Horizon Europe, and TÜBİTAK) and applying to these institutions could be a solution to budget issues. However, stakeholders should be careful with this application process as these funding institutions may require an adjustment to the previously agreed problem and project process (see Fışgın Korkmaz, 2020).

There are some student-related barriers such as the lack of applicability of student projects (see also Roper, 2002), matching project scope with students' level (see also Ross et al., 2003; Kaygan et al., 2017), students learning and adapting to new, and designing for/with special user groups. Tutors have to play a leading role in removing these barriers.

There are examples in the literature in which students remained incompetent in meeting very basic expectations and needs of NPOs as students were not equipped for this task (Gronski & Pigg, 2000; Ross et al., 2003; Zeilstra, 2003; Dominato, 2009; Lucas et al., 2013; da Costa et al., 2018a). It is rare to locate a single student who possesses the wide variety of required skills and knowledge to assist a project (De Sousa, 2015). In this study, as students lack professional and social skills (e.g., empathy, research, communication, collaboration, presentation, and networking) and material and manufacturing knowledge at the beginning of these collaborations, they sometimes fail to fulfill the realizability of results at the end (see also Sullivan & Skelcher, 2003). Tutors could be responsible for solving the lack of applicability of students' projects. Consequently, the realization of the results problem by matching the projects' scope with the students' level and reconciling with the NPO partner on what to expect from a student and student project, before the collaboration process, at the pre-collaboration step, as suggested in the literature (Trebil-Smith & Shields, 2019). These roles are particularly important in NPO-driven collaborations in which the NPO does not know what to expect so that the NPO does not get disappointed in the end. The knowledge and skill expectations of the NPOs can be higher, but the students' levels are lower than they expect. Knowing that not all students are at the

same level and their abilities and capabilities may differ, addresses realistic and right expectations.

According to Ordóñez et al. (2017) and Trebil-Smith and Shields (2019), another area in which students are required to be trained is; the experience of interacting and working with people from different cultures and backgrounds. This is similar to my findings on tutors' aim of guiding students to design for/with special user groups. This aim shows itself as a challenge that students may encounter and a benefit afterwards.

The design kits (e.g., HCD Toolkit the Field Guide to Human-Centered Design by IDEO) designed and launched by nonprofit organizations containing human-centered design methods and tools to guide designers to tackle systemic problems and achieve social innovation (IDEO, 2011; Brown & Wyatt, 2010; Peng et al., 2022). These design kits could be a solution to challenges that occur during university-NPO collaborations, such as designing for/with special user groups, learning new concepts, approaches, and methods, and adapting to new scales and scopes (also see Sullivan & Skelcher, 2003; Peng et al., 2022).

Many tutors did not mention methods or approaches in the interviews. Therefore, it is inferred that these tutors do not explain or implement design methods and approaches in a structured/systematic way. Rather than step-by-step integration of these methods to the process, they more oftenly mention concepts, movements, and terms (e.g., do-it-yourself, reuse, fixperts, recycle, accessibility, social responsibility, user involvement, and citta slow) that involves stakeholders and sometimes also users in the process (Tutor 19, 20, 21, and 22). It is observed that even the students who apply methods and approaches (e.g., participatory design) might not be completely knowledgeable of these approaches and methods they utilize during their collaborative projects (Student 15, 16, 17, and 18). Hence, even if the tutor explains and tells them, the students might not grasp them as a learning outcome. They retrospectively remember the process and realize the method they had followed.

Actually, it was kind of like a participatory design process, but maybe we didn't even know what it was, and its name at the time. I mean, I don't remember it being named like that. (Student 16)

But at that time I didn't know what I was doing, the students didn't know what they were doing. I didn't know that the session was participatory or co-design. (Student 17)

Ross et al. (2003) argue that academics highly concentrate on the issues of NPOs and it becomes a challenge for academics. However, this study shows that the contributions of universities to NPOs and the benefits for NPOs are overlooked by some of the tutors since they are education-oriented (Tutor 5, 7, and 14). This also reflects on students as they may not realize that they can contribute to NPOs missions (Student 17). This approach turns into a challenge for NPOs. Documenting and sharing results appears as another challenge for NPOs. However, universities should not only be education-oriented as criticized by their partners, especially in tutor-driven and student-driven collaboration models. They should consider NPOs as well as the community for a win-win collaboration.

8.2.3 Benefits of University-NPO Collaboration

Considering all three driven-based collaboration models, all of them provide the most benefits for students and more benefits for NPOs than tutors. This means that these collaborations focus on students and their learning as they take place in the educational context.

This study highlights several opportunities for university-NPO collaboration for students: gaining new skills, knowledge, and perspectives, access to real and professional experiences, and connections for their future careers. These opportunities are in line with the literature (Lucas et al., 2013; Sanchez-Ramos et al., 2016; Trebil-Smith & Shields, 2019).

Among professional and social skills such as empathy, research, communication, collaboration, presentation, and networking that were found in this study, collaboration and teamwork skills are the most emphasized ones in the literature. In

fact, successful team building and teamwork reinforce the improvement of social and professional skills which the literature defined as “interpersonal skills, problem-solving ability, oral and written communication, and leadership skills” (Gronski & Pigg, 2000; Zeilstra, 2003; Lu & Lambright, 2010; Lucas et al., 2013). These collaborations could enhance the link between design education and design practice. Concepts of collaboration, social responsibility, and design thinking have been gaining even more importance worldwide. The 21st century’s desired industrial designer should be raised to become both socially conscious and open to collaborative work. Table 8.2 presents an overview of contribution of university-NPO collaborations to 21st century designers’ knowledge and skill-set.

Along with these professional and social skills, the findings of this thesis showed the benefits for students in detail and specific to industrial design education such as learning design-related concepts, approaches, methods, material and manufacturing knowledge, designing for or with special users, and experiencing new scales like services. As these benefits are contextual, they are not specifically mentioned in the literature which sets out a natural contribution of the thesis.

The real context that NPOs bring enhances students’ learning. Tutors self-criticize being alone in a studio or at a university campus while doing projects. As they are aware that they need an external partner and environment to be fed by expert knowledge, it is valuable to go outside. The provided real context results in benefits for students. Other researchers also affirm that these collaborative projects with external stakeholders and users integrate theory and practice and enable real-life experiences for students. More working outside of the classroom, the campus has a greater impact on students’ learning, progress, and skills in social projects (Ziff & Beamish, 2004; Burnett et al., 2004; Lu & Lambright, 2010; Nandan & Scott, 2011; Lucas et al., 2013; Appe & Barragán, 2017).

Table 8.2 Contribution of university-NPO collaborations to 21st century designers' knowledge and skill-set

	SKILLS & KNOWLEDGE	THIS THESIS	REFERENCES
Professional & Social Skills	collaboration and teamwork	✓	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2011; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Frascara, 2020; Meyer & Norman, 2020; Pontis & Van der Waarde, 2020; Souleles et al., 2020; Weil & Mayfield, 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020; Yenilmez, 2021
	working on complex real-world issues	✓	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Frascara, 2020; Meyer & Norman, 2020; Pontis & Van der Waarde, 2020; Souleles et al., 2020; Weil & Mayfield, 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020
	empathy	✓	Kiernan & Ledwith, 2014; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Souleles et al., 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020
	communication	✓	Yang et al., 2005; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Frascara, 2020; Souleles et al., 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020
	networking	✓	Yang et al., 2005; Majithia, 2017; Novoa, 2018; Meyer & Norman, 2020; Souleles et al., 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020
	research	✓	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Frascara, 2020; Meyer & Norman, 2020; Pontis & Van der Waarde, 2020; Souleles et al., 2020; Weil & Mayfield, 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020
	presentation	✓	Kolko, 2005; Yang et al., 2005; Novoa, 2018; Meyer & Norman, 2020
	creativity and innovation		Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2011; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Frascara, 2020; Meyer & Norman, 2020; Souleles et al., 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020
	analytical/critical thinking and problem solving		Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Souleles et al., 2020; Weil & Mayfield, 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020
	sketching and model making	✓	Yang et al., 2005; Kiernan & Ledwith, 2014; McMahon & Bhamra, 2017; Novoa, 2018; Meyer & Norman, 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020
	flexibility/adaptability/transferability of skills		Yang et al., 2005; Kiernan & Ledwith, 2014; Majithia, 2017; McMahon & Bhamra, 2017; Novoa, 2018; Souleles et al., 2020
	self-confidence / self-esteem	✓	-

Table 8.2 (continued)

Concepts & Approaches & Methods	project-based learning	✓	Kolko, 2005; Kiernan & Ledwith, 2011; Kiernan & Ledwith, 2014; Majithia, 2017; Novoa, 2018; Frascara, 2020; Meyer & Norman, 2020; Pontis & Van der Waarde, 2020; Souleles et al., 2020; Yenilmez, 2021
	design thinking	✓	Yang et al., 2005; Kiernan & Ledwith, 2014; Majithia, 2017; Novoa, 2018; Frascara, 2020; Meyer & Norman, 2020; Souleles et al., 2020; Yenilmez, 2021
	human-centered design user-centered design	✓	Kolko, 2005; Kiernan & Ledwith, 2011; Kiernan & Ledwith, 2014; Majithia, 2017; Novoa, 2018; Ferreira et al., 2020; Meyer & Norman, 2020
	participatory design co-design	✓	Kiernan & Ledwith, 2011; WDO, 2015; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Frascara, 2020; Meyer & Norman, 2020; Pontis & Van der Waarde, 2020; Souleles et al., 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020; Yenilmez, 2021
	design for all inclusive design universal design	✓	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2011
	sustainable design design for sustainability	✓	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2011; Kiernan & Ledwith, 2014; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020; Yenilmez, 2021
	social design	✓	Novoa, 2018; Ferreira et al., 2020; Souleles et al., 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020; Yenilmez, 2021
Knowledge	human factors and ergonomics	✓	Kolko, 2005; Yang et al., 2005; Novoa, 2018; Ferreira et al., 2020; Meyer & Norman, 2020
	material and manufacturing knowledge	✓	Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2014; Novoa, 2018; Meyer & Norman, 2020; Weil & Mayfield, 2020
	technology knowledge		Yang et al., 2005; WDO, 2015; Novoa, 2018; Meyer & Norman, 2020; Souleles et al., 2020
	business		Yang et al., 2005; Kiernan & Ledwith, 2014; WDO, 2015; Majithia, 2017; Novoa, 2018; Ferreira et al., 2020; Meyer & Norman, 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020
	strategic thinking and planning		Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2011; Kiernan & Ledwith, 2014; Majithia, 2017; Novoa, 2018; Ferreira et al., 2020; Pontis & Van der Waarde, 2020
	leadership and management		Kolko, 2005; Yang et al., 2005; Kiernan & Ledwith, 2014; McMahon & Bhamra, 2017; Novoa, 2018; Ferreira et al., 2020; Meyer & Norman, 2020; Souleles et al., 2020; Weil & Mayfield, 2020; Press & Cooper, 2003-Fışgın Korkmaz, 2020

Students gain and raise awareness of the social aspect of design (see also Ross et al. 2003). This awareness directs students to volunteering and the nonprofit sector which may result in future opportunities. This finding is also emphasized in the literature as volunteer work and unpaid internship choices of students after these kinds of collaborations with nonprofits (Lucas et al., 2013; Appe & Barragán, 2017).

I have gathered the benefits for NPOs under design contribution. Some design contributions are more tangible, including creating and raising public awareness on

a certain topic, increasing institutional visibility, and the realization of results. Some of them are less tangible such as new, different ideas and perspectives they receive from industrial design departments for their actions to fulfill their objectives. Similarly, the human capital obtained from collaborations is valued because it advances NPOs' missions and is mentioned as "external insights" and "practical assistance" in the literature (Roper, 2002; Ross et al., 2003; Sullivan & Skelcher, 2003; Lucas et al., 2013; Appe & Barragán, 2017). Resources like new perspectives, theoretical knowledge and expertise, and connections (see also Ross et al., 2003; Sandy & Holland, 2006) that can be advantageous for reaching institutional aims are viewed as a part of those contributions (Trebil-Smith & Shields, 2019).

Tutors generally get common benefits with other stakeholders like visibility, if they document and share the results (see also Ross et al., 2003, Fışgın Korkmaz, 2020), and realization of results. On top of that, their benefits are limited to professional satisfaction as an outcome of these collaborative organizations. The literature also notes tutors' professional and moral satisfaction (Ross et al., 2003) with what they achieve for their students (Lucas et al., 2013).

As findings revealed, the realization (implementation) of collaboration results is desired by all partners and is the biggest benefit for all, including society, once it is reached. Realization of results means implementing the solutions offered, and they may bring social innovation and local and sustainable development if these solutions are adopted and diffused to a larger scale which is extensively discussed in Section 8.4 under the 'Realization of Results' title.

8.2.4 Process of University-NPO Collaboration

A generic collaboration process can simply be divided into three; pre, during, and after. Pre-collaboration is a beginning where the stage for a partnership, and short and long-term strategic planning are set. During-collaboration is where the actual

collaboration takes place. Post-collaboration is where stakeholders evaluate and reflect on collaboration (Lucas et al., 2013; Trebil-Smith & Shields, 2019).

Collaboration is a knowledge-sharing process between stakeholders. However, this study shows that knowledge transfer in design collaboration in the educational context is mostly one-sided. NPOs share their know-how, expertise, and experience with students and tutors via presentations and comments that provide educational support (see Contributions of NPOs) for students. This is the reason why there are only Contributions of NPOs sections in the findings of driver-based models.

This study also finds out that the university-NPO collaboration process in the industrial design context does not follow pre-defined phases. In addition, there are no predefined phases in the literature as well. By following data patterns, this study is an attempt to explain the process through NPOs' interaction in the design process. I added initiation of collaboration (5.3, 6.3, 7.3) and protocol (see next section) in the pre-collaboration phase. I divided during collaboration into brief preparation (need and problem definition), feedback sessions, juries, and research phases. Post-collaboration should start after the final jury and continue with sharing the documents, a reflection on the current collaboration (process), and an evaluation of the sustainability of collaboration.

Pre-Collaboration	During-Collaboration	Post-Collaboration
Protocol	Knowledge Sharing	Finalization
<ul style="list-style-type: none"> • Knowing Each Other • Understanding Each Other • Division and Distribution of Roles and Responsibilities • Scheduling • Budget/Funding • Documenting and Sharing Results • Intellectual Property Issues 	<ul style="list-style-type: none"> • Need and Problem Definition (Brief Preparation) • Feedback Sessions • Juries • Research Phases 	<ul style="list-style-type: none"> • Sharing Results and Documents • Reflection on Current Collaboration • Evaluation for Sustainability of Collaboration

Figure 8.1 Phases of Collaboration

8.3 Protocol

Stakeholders of university-NPO collaboration do not explicitly discuss and share their motivations and expectations at the beginning. Therefore, collaborations begin without having a written or even verbal agreement (Tutor 13; NPO 3).

In the related literature, collaboration is seen as a process of disseminating information and transferring knowledge between parties so that each can accomplish their distinct objectives (De Sousa, 2015). Moreover, an ideal collaboration should be based on reciprocity and should start with partners' pre-developed or co-created objectives (Trebil-Smith & Shields, 2019). However, for university-NPO collaborations in the design education context, it is hard to talk about reciprocity and co-established goals. In fact, the non-drivers do not have clear expectations since these are not openly discussed.

Moreover, the literature related to university-NPO collaboration in the overall education context lacks information about the content of a potential protocol (see Yalman Yıldırım & Hasdoğan, 2021) that addresses the challenges stakeholders face in these collaborations. Based on the findings of this study and the related literature, especially for the challenges, I propose guiding principles (i.e., protocol) as a solution. Protocol is a drawn framework and the very first step to building common understanding, coping with challenges, guiding the collaboration process and results, supporting the dialogue between stakeholders, and sustaining long-term relationships. The protocol, a written agreement, can play a useful role in an effective and efficient collaboration. The protocol is also common in university-industry collaborations (see Börekçi et al., 2006). To assure win-win, mutual benefit a written agreement is a must. That is why I proposed a protocol.

The importance of establishing a common ground and a solid foundation for high-quality partnerships is also mentioned in the literature (Holland, 2005; Sandy & Holland, 2006; Trebil-Smith & Shields, 2019). Since drafting formal agreements are time and resource-consuming, it is mostly disregarded and skipped (Appe &

Barragán, 2017). There is a necessity for spending some time and resources early in the process to structure the initiation, maintenance, and sustainability of collaboration.

The protocol should be prepared, considered, and agreed on by stakeholders at the first meeting in the pre-collaboration phase. It includes seven subjects. Some of these subjects are adapted from Allison and Kaye (2005) and redefined for this context whereas some are compiled from the findings chapter as follows: knowing each other, understanding each other, dividing and distributing tasks, roles and responsibilities, scheduling, budget planning, documenting and sharing results, and resolving intellectual property issues.

Content of Protocol: For each article listed, addressed challenges or benefits, and recommendations are presented.

Knowing Each Other

Knowing each other is stakeholders' telling and talking about individual selves and their institutions. Generally, it results in knowing each other and each other's profession (e.g., what does this department do, what does this NPO do).

Understanding Each Other

Understanding each other is understanding each other's motivations/reasons, goals for collaboration, expectations from each other and the collaboration process, deliverables, and overall outcomes. The extant literature also mentions the importance of clarifying the scope, expectations, and deliverables (i.e., desired outcomes) (Roper, 2002; Allison & Kaye, 2005; Sandy & Holland, 2006; Aniekwe et al., 2012; Lucas et al., 2013; De Sousa, 2015). This subject also contributes to increasing awareness and visibility.

Aligning expectations, abilities, goals, and deliverables is essential to ensure win-win collaboration which is beneficial for all sides (also see Ateş Akdeniz & Öz, 2018). For example, the educational missions of universities (students and tutors) and the institutional missions of NPOs should be aligned. Moreover, since designers

and NPOs have different backgrounds and jargon (see Fıŷgım Korkmaz, 2020), mutual understanding gains more importance. By maintaining mutual understanding, deeper learning outcomes for students, better assistance for NPOs, and more benefits for society are provided. Hence, common understanding is built and mutual benefit for all is assured at the beginning.

Once expectations are clearly identified then tasks and deliverables can be determined while being aware of the limitations. Instead of trying to meet all demands, realistic expectations are crucial. For example, being aware that not every student can perform at the same level, what to expect from a student, and what they are able to deliver is key to preventing the lack of applicability of students' projects. Furthermore, sometimes NPOs seek higher knowledge and skills from students than they have and can give. Thus, managing and matching project scope with students' level should be the tutors' role, especially in NPO-driven and Student-driven collaboration models. Holland (2005) and Trebil-Smith and Shields (2019) also state the significance of recognizing the limitations and capacity of partners.

Division and Distribution of Roles and Responsibilities

Division and distribution of roles and responsibilities is defining tasks and workload of each actor, and the work plan at each phase of the collaboration. The roles and responsibilities of stakeholders should be identified and distributed according to the expertise, skills, and opportunities they have. For example, the facilitator role of the tutor (Lucas et al., 2013; De Sousa, 2015) is highly recommended especially in the student-driven model to help overcome the non-designer mentor/advisor (and balancing diverse ideas/feedback) challenge. Each individual stakeholder should play a role in the success of collaboration (see also Sandy & Holland, 2006; Aniekwe et al., 2012; Trebil-Smith & Shields, 2019). Apart from unique tasks, facilitating and supporting partnerships throughout the process should be duties of every actor involved which also contributes to the sustainability of collaborations later on.

The involvement of actors in each phase and their interaction level and therefore intensity of collaboration can also be determined in this subject. Although De Sousa

(2015) suggests balanced involvement of partners for enhanced collaboration, I believe partners fulfilling their duties with a sense of responsibility is more powerful than balanced involvement.

Scheduling

Scheduling is allocating time to tasks and having a shared calendar. These are also highly mentioned and recommended for collaboration in the literature (Allison & Kaye, 2005; Lucas et al., 2013; Zolezzi, 2014; Trebil-Smith & Shields, 2019). If the collaboration is in the scope of a course, the syllabus can be co-created with the NPO partner as well. These aspects would minimize time and planning-related issues and organizational challenges.

Similar to planning roles and responsibilities, scheduling is considerably important in shaping the intensity of collaboration. The emphasis on intensity is about gathering frequency which strengthens or weakens communication and thereby collaboration (De Sousa, 2015; Trebil-Smith & Shields, 2019).

Budget/Funding

Budget/Funding is the monetary requirement during and after (realizability of results) the collaboration. Budget/funding is another issue that should be discussed and added as an article to the protocol. If the collaborative project or realization of the results requires a budget, it should clearly be identified which stakeholder(s) will be responsible for this and when. According to Allison and Kaye (2005) deciding on a budget/funding is finalizing the initial step (see also Lucas et al., 2013).

Financial issues can be covered by sponsors and writing funded projects. Overcoming this challenge necessitates effective grant-seeking strategies, joint fundraising efforts, and a commitment to identifying and allocating resources efficiently to ensure the successful realization of collaborative goals in university-NPO partnerships. NPOs should also introduce; how to write projects, which projects they can take part in or what their financial means are.

Documenting and Sharing Results

Documenting and sharing results is recording activities step by step and reporting and sharing the results of the projects with NPO partners in a way they can utilize later on. The findings of this thesis revealed that documenting the collaboration process and sharing the results are often neglected. Hence, this becomes a challenge for NPO partners in tutor-driven and NPO-driven models of collaboration. Including this article in the protocol will eliminate this challenge. Alternatively, hiring project assistants or coordinators for collaboration or recording and reporting purposes within the budget of the project could be another solution.

Intellectual Property (IP) Issues

Intellectual property (IP) issues are resolving the question of who should own intellectual property rights which could damage the relationship of stakeholders, and therefore, the sustainability of the collaboration (Börekçi & Korkut, 2017). IP rights are significant and common problems (also see Fışgın Korkmaz, 2020) that are also encountered in university-industry collaborations (see Bohemia & Harman, 2006). Many interviewees also reflect these issues as a barrier to realizability (Tutor 6, 8, 9; NPO 1, 3; Student 3). Hence, they should be resolved and finalized (involving external parties, if necessary) at the beginning of the collaboration. For example, if one of the goals is the realization of results, to whom the intellectual property rights belong should clearly be discussed and agreed upon by the experts such as lawyers and the technology transfer office. The ways to implement the output should also be prescribed in the protocol along with the other barriers (e.g., funding). Agreeing on an open-source and open-design approach is another way to solve IP issues upfront.

8.4 Key Dimensions of University-NPO Collaboration

In addition to a must-have protocol between stakeholders which should be written and signed before the collaboration process, there are also nice-to-have key dimensions that could form a better collaboration.

Personal Interest, Commitment, and Goodwill and Positive Attitude

In the findings of this thesis, concepts like personal interest (motivation of the driver for collaboration and reason of others to accept the collaboration offer), goodwill and positive attitude (shown particularly by NPOs), and commitment (effort required especially for the realization of results) are nice-to-have to ease the communication and collaboration process. All of these help to tackle maintaining common understanding (this challenge is also mentioned by Roper (2002)), realizability of results, and organizational challenges. These are also key for the sustainability of collaboration. Studies in the literature (Ross et al., 2003) value and appreciate “a personal desire and effort” (De Sousa, 2015), “good intention” and “dedicated and talented” partners (Trebil-Smith & Shields, 2019), “positive relationship” and “positive energy” (Lucas et al., 2013).

Knowing the time and capacity-consuming nature of collaborations; being thoughtful, transparent, and open is key to strong communication. With equal participation and regular meetings, partners become tolerant, ready to compromise, and contribute to communication between them (as also underlined by De Sousa, 2015; Trebil-Smith & Shields, 2019). Interest, effort, and support provided ensure the sustainability of collaboration.

Required Time for post-Production

Along with effort commitment, the necessity of more time has emerged as a research finding for productive collaborations. Lucas et al. (2013) also agree on the need for extra time on collaborative tasks. In university-NPO collaboration in the educational context, more time is required and it will be useful for the post-production (e.g., exhibitions) step of students’ projects which will make a contribution to the visibility and realization of results. Hence, more time is also necessary to achieve social innovation and sustainable development, which are the ultimate goals for societal benefit, as Hillgren et al. (2011) explain the requirement of long-term commitment to reach these goals. Certainly, extra time should be planned and added to the project calendar at the planning step before the collaboration.

Sustainability of Collaborations

The sustainability of collaborations (also see Souleles et al., 2020) has arisen as a desired and expected concept (NPO 10; Tutor 15). When this expectation is not satisfied, it turns into a frustration of stakeholders.

It is ironic that the focus of the studio is sustainable design, but the sustainability of collaboration could not be achieved. (NPO 1)

The positive past experience resulting from the first collaboration (e.g., a successful outcome - Roper, 2002) is the main reason for stakeholders to prefer the sustainability of collaborations. At the same time, the workload of establishing new relationships is another reason for collaborating with the same partner. Continuity of collaborations (Roper, 2002; Sullivan & Skelcher, 2003) is also named “a second partnership” (Lucas et al., 2013) and “a long-term relationship” (De Sousa, 2015) in the literature.

There are examples of university-NPO collaborations without setting goals or stating expectations just to initiate the relationship (e.g., Tutor 14 and 20) but, as explained also in Fışgın Korkmaz (2020), these collaborations should have clear goals and expectations to achieve sustainable collaborations. Moreover, if the sustainability of collaboration is desired, it could be negotiated beforehand among the principles agreed by both parties. However, it is ensured when there are not only must-haves but also nice-to-haves. For example, celebrating the results of every step and supporting each other help both maintain and deepen existing collaborations and build new ones.

Most of the participants agree that when a relationship of trust is already established, collaboration becomes easier (NPO 2; Student 16). When the sustainability of collaboration is substantial; commitment, goodwill, and a positive attitude during the communication and collaboration process are vital for the sustainability of collaboration. Holland (2005) also notifies the value of positive, sustained, and continuous relationships along with collaboration outcomes.

Trebil-Smith and Shields (2019) suggest exploring the new and other forms of collaboration. At this point, internships and voluntary work could be alternative ways to continue the dialogue and relationship between partners. These collaborations can serve as career opportunities for industrial designers in the future.

This is very similar to the period when industrial design departments were collaborating with small and medium-sized enterprises and then larger-scale companies from the industry. Accordingly, industry got to know industrial design discipline and industrial designers. It became a workplace for designers as a result of the collaborations they established when they were students. Something similar can happen for NPOs. Such university-NPO collaborations in design education will increase and become regular. Later, this culture can spread and turn into employment opportunities (also see Ordóñez et al., 2017) with these beginnings and acquaintances.

More and Multiple Stakeholders

Multi-stakeholder collaborations are needed for inter, multi, trans-disciplinary collaborations. To solve complex problems and achieve social innovation, as Van der Bijl-Brouwer (2019) highlights, multiple transdisciplinary stakeholders and systemic thinking is necessary. This thesis supports the idea of Cifter et al. (2023) on involving multiple stakeholders (e.g., two NPOs) in an interdisciplinary context could greatly improve the learning outcomes of student projects. Moreover, the quality and quantity of ideas increase in the presence of multiple stakeholder and interdisciplinary contexts (also see Fışgın et al., 2018).

Which specific actors to involve should be determined in advance and the roles and responsibilities of these actors could be included in the protocol. More consultants, experts, and end-users could be involved considering the related problem that needs to be solved (see also Bringle et al., 2009; Fışgın & Bağlı, 2016). Additionally, project assistants or coordinators could be hired for managing, recording, and reporting the collaboration process and results, within the planned budget of the project. Assistants and coordinators could solve organizational and time-related

challenges and, more prominently, documentation and sharing the results challenge. Industry or for-profit partners could help to manage funding issues thus solving the realizability of results and model/prototype support challenges that appear during collaborations.

Theories in the literature can inform us what type of stakeholders could also be included in university-NPO collaborations. The triple helix theory (Etzkowitz, 1996; Rodrigues & Melo, 2012; Etzkowitz, 2012; Park et al., 2015) includes university, industry, and government collaboration for innovation as a result of knowledge sharing and co-creation. This model has been applied in different contexts (Galvao et al., 2019). The quadruple helix theory (Carayannis & Campbell, 2009; Afonso et al., 2012) emphasizes the public-based civil society as a fourth helix. The quintuple helix is even more detailed and extensive which adds the natural environment (Ketikidis et al., 2016) as another main actor.

However, some challenges might be strengthened by including more and multiple stakeholders. Complex systems in these projects can consist of various stakeholders, such as NPOs, governments, end-users, knowledge producers, and community representatives. Since in these contexts the resources are generally limited, especially in low-income markets and developing economies, the complexity and ambiguity of stakeholder interests are greater than in traditional systems as mentioned by da Costa et al. (2018).

Tools and Methods Supporting Design Process

In line with including more and multiple stakeholders in the collaboration process, how these stakeholders could be integrated into collaboration processes is also significant (Tutor 15). A lot of models proposed in the literature to efficiently collaborate with diverse stakeholders and help to deal with the complexity of the design process. Collaboration makes the design process even more complex. Therefore, using already proposed models in design collaboration will make the process defined, structured, and easier. For example, “a multilevel design model”

suggested by Joore and Brezet (2015) could aid collaboration in design and be used specifically to adapt students to new scales and scopes.

Design kits (e.g., the Field Guide to Human-Centered Design), containing human-centered design methods and tools for solving problems, are guides for designers, entrepreneurs, and social innovators to tackle challenges like a designer. These design kits could also be a solution to challenges that occur during university-NPO collaborations, such as designing for/with special user groups, learning new concepts, approaches, and methods, and adapting to new scale and scope. Besides, they trigger creativity and innovation and facilitate collaboration.

As these models provide structure for collaboration in design, well-structured student-based projects and collaborations tend to succeed and maximize benefits for all partners (as also mentioned by Trebil-Smith & Shields, 2019). Utilizing models could also help to manage organizational challenges.

Volunteer Work/Volunteering

The findings of the study showed that volunteer work students and tutors have done before the NPO collaboration positively affects the communication and collaboration in the process, contributes to the construction of common understanding, and creates a basis. This is reciprocal, and if the process and overall collaboration work out nicely, with the acquired awareness and social aspect of design, students can become volunteers in an association. NPOs can benefit from these low-cost labors who can become potential volunteers or employees in the future (see also Sandy & Holland, 2006; Ordóñez et al., 2017). Although Cifter et al. (2023) interpret volunteering as a skill and benefit that develops in the process, it is more likely a nice-to-have for the sake of collaboration.

Interpersonal and Informal rather than Institutional and Formal

As participants (students, tutors, and NPOs) of the study confirmed, the collaborations mostly begin and proceed with their personal network based on former acquaintances. They described the communication, interactions, and

relationships within these collaborations as interpersonal and informal rather than institutional and formal.

Parallel to the findings of Bringle et al. (2009) and Trebil-Smith and Shields (2019), most university-NPO collaborations are established by chance and between two partners. The dialogue takes place at the individual level, and the collaborations are affected by this dialogue between individuals rather than corporations. This fact endangers collaborations as there is possibility that the new decision-makers of NPOs have no interest in design (also see Fışgın Korkmaz, 2020; Çatalyürekli & Kaya, 2014).

Key Contact

A key contact can be a person or an institution. A key contact is an initial connection (e.g., a graduate of the department or a representative from the NPO) and an important factor who takes part in establishing, developing, and maintaining collaborations (see also Börekçi & Korkut, 2017; Chernikova et al., 2017; Fışgın Korkmaz, 2020). Design and innovation labs and networks (e.g., DESIS and DFA) that are in contact with industrial design departments and design schools can also initiate these collaborations and help maintain a healthy connection between stakeholders (see also Fışgın Korkmaz, 2020).

Key contact eases the formation of the collaboration process. Apart from bringing partners together, they help to reach out to more partners to have multiple partners. In some cases, the key contact participates in the collaboration process and plays a role as a separate third actor throughout the collaboration. As Trebil-Smith and Shields (2019) mentioned, these previous acquaintances between the university and NPO partners naturally lead and deepen the current collaboration and start new ones. For example, in one of the studies, the core staff of NPO takes the responsibility of setting up agreements and putting plans into practice (Trebil-Smith & Shields, 2019). This role can be assigned to the driver of the collaboration or any other stakeholder at the protocol step while deciding on roles, responsibilities, and tasks. In this way, they can play a stronger role in the initiation.

Realization of Results

Realization of the collaboration results is another nice-to-have key dimension. Realization is expected by all stakeholders as the collaborations and their results are beneficial not only for the stakeholders but also for the society. However, this expectation is not expressed in written or spoken. Realization of results is desired and ideal when it is achieved. However, when it is not achieved, it turns into a challenge for everyone. Therefore, barriers against realizability (budget/funding, intellectual property issues, commitment of stakeholders, and the lack of applicability of student projects) needs to be solved in advance.

It is observed that many projects considered in this thesis could not complete the implementation process (e.g., NPO 1, 2, 4, 7, 11, and 21), meaning that the realization of the results are not achieved and/or there are less tangible outcomes. Von Busch and Palmås (2016) emphasizes that social means do not justify social ends, inviting designers to be realist instead of idealist and focus on the results instead of the process. This also implies that the creative community driven social innovation that is mentioned in Manzini and M'Rithaa (2016) and the sustainable development triggered by these innovations are not achieved as well. Rather than directly causing sustainable development, most of the projects had indirect contributions, such as providing an awareness to the society (including the students themselves) on how they can contribute to their welfare through creative solutions to their issues while ensuring sustainability. Moreover NPOs get design awareness and contribution to their processes. Even if the product or service is not realized (i.e. commercialized), it still proposes an innovative perspective, substantially affects, and contributes to ideation (see also Yang, 2015).

For the realized projects, creating new products or services (i.e. invention) does not mean that social innovation is secured (Manzini, 2015). Invention can be considered as a solution. However, together with the analysis and solution, implementation is required (Van der Bijl-Brouwer, 2019) which is essential to create benefits to societies (Weil & Mayfield, 2020). Moreover, social innovation requires adoption

and diffusion potentially requiring a very high investment in terms of time and attention (commitment of stakeholders as mentioned in this thesis) from the stakeholders involved (Manzini, 2015). Therefore, for social innovations to succeed, these innovations should be targeting systemic problems, scaling, and bringing systemic change eventually (Manzini, 2015; Ferreira et al., 2020; Peng et al., 2022). For example, rather than focusing only on manufacturing prosthetic hands, using different perspectives (also see Peng et al., 2022), the solution could also include how people can be made aware, access, and use that product or service. This approach takes a macro perspective, indicating a much more complicated system, to allow the solution to diffuse, scale, and bring systemic change. However, semester-long studio courses or graduation projects, generally, are not sufficient to achieve those targets. In some projects (e.g., NPO 3, 7, and 16; Student 6; Tutor 21), students or NPOs lose their motivation once the semester is finished, and they do not spend their time and effort on post-project implementation processes for realizability, which is also mentioned by Ateş Akdeniz and Öz (2018) and Fıışgın Korkmaz (2020). Especially governmental institutions can have budget and time constraints (also see Fıışgın & Baęlı, 2016). As Hillgren et al. (2011) agree, social innovation requires a long-term commitment and engagement, especially in the implementation, rather than only a project-based learning approach, which is characterized by a predefined duration (e.g., a semester) that sometimes limits the outcomes. This finding is in parallel with Fıışgın Korkmaz (2020) and Easterday et al. (2018) where they state that even if realistic projects are planned at the beginning, it is common to see unhealthy design steps and incomplete projects at the end of the semester. Hence, the initial step to take should be towards increasing the realizability of these projects by offering ways to make them more efficient and productive, such as the protocol (see Section 8.3) which is offered in this thesis.

Tutors in many projects in this thesis focus mainly on education, aiming to teach students new skills and design approaches. Indeed, some of the tutors do not see these projects as candidates to make a major contribution to society, placing less emphasis on those motivations (Tutor 5, 7, and 14).

Our ultimate goal in the education project is the one who receives that education. (...) I cannot claim that we have done such a project and the crime rate in Izmir has decreased. (Tutor 14)

As these projects focus on the social aspect of design, they create an awareness on the presence of complex societal problems and a visibility of the NPOs introducing (see Yang & Sung, 2016) and working towards solving these problems. Even though Easterday et al. (2018) claim that students do not find enough time to practice the full range of social design, students learn relevant skills that would help them deal with these problems. Therefore, it would be easier for them to run and complete social innovation projects in their professional life and contribute to sustainable development and resilient society, especially if they direct their careers towards these problems. For student projects, currently, social innovation and sustainable development goals stay as an ultimate goal but they, generally, cannot be achieved.

On a final note, there are social innovation networks (e.g., DESIS and DFA), that are also NPOs, supporting the local and sustainable development. These NPOs help universities and local communities to meet through design projects. As they are a community with more experience on such projects, they might help increase the realizability of the university-NPO collaborations as key contacts.

CONCLUSION

This thesis examines the current nature of university-NPO collaboration using the data from semi-structured interviews conducted with 71 participants from three stakeholders. It divides these collaborations into three: tutor-driven, NPO-driven, and student-driven. Then, it sets out the motivations, expectations, contributions, benefits, and challenges of each stakeholder in each driver-based model. Finally, this study suggests a protocol with a predefined content and eight key dimensions to enhance university-NPO collaborations and solve potential challenges that might arise during these collaborations.

For impactful collaborations, the recommended protocol can be adapted and applied at the beginning of such collaborations. Furthermore, the insights drawn (motivations, expectations, contributions, benefits, and challenges of each stakeholder) in the findings can be taken into account to get a holistic perspective. Key dimensions, compiled in this research, could be considered by the stakeholders during university-NPO collaborations as the integration of them into a collaboration results in fruitful outcomes.

Collaboration is required for stakeholders to achieve their motivations such as the educational goals of universities (e.g., raising industrial designers for the 21st century) and missions of NPOs (e.g., creating and raising public awareness, increasing society's welfare). Contributions of the thesis have the potential to deepen student learning in industrial education, generate key knowledge through social innovation, and create a sustainable future for the entire society.

9.1 Revisiting Research Questions

This doctoral study aims to explore and understand university-NPO collaboration in the industrial design education context to enhance these collaborations so that they

can provide benefits for all stakeholders and society as well. In the light of this aim, the main research question and five sub-questions emerged are as follows:

1. How can university-NPO collaboration in the industrial design education context be enhanced?
 - 1.1 What are the topics addressed in these collaborations?
 - 1.2 How are these collaborations established/initiated?
 - 1.3 How do university-NPO collaborations and NPOs influence industrial design education, students (future industrial designers)?
 - 1.4 How do university-NPO collaborations and industrial design education (tutors and students) influence NPOs to achieve their goals?
 - 1.5 How can university-NPO collaborations be improved?

The main research question and the five sub-questions are addressed in the following sections.

9.1.1 Topics addressed in University-NPO Collaborations

As one of the goals of this doctoral thesis is to report student projects conducted between university-NPO collaborations in industrial design education in Turkey from 2010 to 2020, over 40 educational projects were reached within the scope of this study.

This study revealed that the subjects of the collaborative projects between industrial design departments and various NPOs can be categorized according to the key issues they address. These are projects related to (i) special groups, (ii) local development, and (iii) environmental projects. The boundaries between categories are not so clear, since some projects address multiple issues. The findings also reflect the design approaches and methods they adopt or apply, the movements and concepts they include, and the course, grade, and year they were carried out if mentioned (see

Chapter 4 Scope of University-NPO Collaborations in Industrial Design Education). The topics covered in these collaborations are in line with the NPOs' fields of activity.

9.1.2 Establishing University-NPO Collaborations

Considering the initiation stories (see Sections 5.3, 6.3, and 7.3) and the aims, expectations of the initiator that are brought into the collaboration, these collaborations are modeled. Three driver-based models are; tutor-driven, NPO-driven, and student-driven which reflects the driver of the collaborations who initiates and brings their motivations to the collaborations (see Sections 0, 0, and 0). Once the driver brings their aims and expectations, the other stakeholders accept the collaboration offer based on their own reasons (see Sections 5.2, 6.2, and 7.2). Often the key contact actor is also involved in the establishment of these collaborations and plays an important role in the whole process (see Sections 5.3.2, 6.3.2, 0, and 0).

Tutor-driven model is the most frequent one among the models. In tutor-driven collaborations, tutors bring their educational and personal motivations into collaborations. Teaching design-related concepts, approaches, and methods in education, guiding students to design for special user groups, expanding projects' scale and scope, developing students' collaboration skills, and emphasizing the social aspect of design are tutors' educational motivations in tutor-driven collaborations, together with their personal interests towards collaborations (see Section 0 Motivations of Tutors for NPO Collaboration). NPOs accept collaboration because of their benefit and contribution expectations from these collaborations and their goodwill and positive attitudes (see Section 5.2 Reasons of NPOs for Design Collaboration).

In NPO-driven collaborations, NPOs bring the following motivations into the collaborations: creating and raising public awareness of related issues, increasing institutions' visibility, and realizing the results (see Section 0 Motivations of NPOs

for Design Collaboration). Tutors accept the offers due to educational, practical, and personal reasons (see Section 6.2 Reasons of Tutors for NPO Collaboration).

Student-driven collaboration model is widespread in graduation projects. In student-driven collaborations, students are motivated by their personal interest in the topic and the affordance and flexibility of NPOs (see Section 0 Motivations of Students for NPO Collaboration). NPOs, on the other hand, accept the requests for the same reasons as tutor-driven collaborations (see Section 7.2 Reasons of NPOs for Design Collaboration).

9.1.3 Influences of University-NPO Collaborations and NPOs on Industrial Design Education and Students

To understand the influence of university-NPO collaborations on industrial design education and future industrial designers, current expectations from 21st century industrial designers were identified under three categories as ‘Professional & Social Skills’, ‘Concepts, & Approaches & Methods’, and ‘Knowledge’ (see Table 2.1). The main contribution of these collaborations and NPOs is that they provide a real context for their stakeholders. The real context creates an environment that benefits industrial design education and students (i.e., future industrial designers) to develop the skill and knowledge set and learned design-related concepts, approaches, and methods to train students for the new roles (Table 8.2). These roles as system, service, and experience designers, and researchers create future career and employment alternatives for them.

In tutor-driven collaborations, NPOs have educational, organizational, and moral contributions to these collaborations and their stakeholders (see Section 5.4 Contributions of NPOs in Tutor-driven Collaborations). Learning new concepts, approaches and methods, materials and manufacturing techniques, gaining professional and social skills, and awareness of the social aspect of design, designing for or with special user groups, and experiencing new scales and scopes are benefits

of tutor-driven collaborations for students (see Sections 5.5.2). Increasing visibility is a common benefit for students, tutors as actors, and universities as stakeholders (see Sections 5.5.1). These collaborations increase the visibility of individuals, institutions, and design as a discipline.

In NPO-driven collaborations, NPOs contribute to education and organization throughout collaborations (see Section 6.4 Contributions of NPOs in NPO-driven Collaborations). Students learn new concepts, approaches, and methods, improve material and manufacturing knowledge, develop professional and social skills, and raise awareness of the social aspect of design (see Section 6.5.2). Creating or increasing awareness of social, environmental, and local issues of NPOs and gaining individual and institutional reputations are benefits for all stakeholders (see Section 6.5.1).

In student-driven collaborations, NPOs have educational and moral contributions to the students and their project processes (see Section 7.4). Students gain public awareness of social, environmental, and local issues, material and manufacturing knowledge, professional and social skills, and experience designing for and with special user groups (see Section 7.5.2). Visibility and realized project results which also increase individual and institutional visibility are benefits for students, tutors, and departments, as well as the universities (see Section 7.5.1).

9.1.4 Influences of University-NPO Collaborations and Industrial Design Education on NPOs

NPOs have three main expectations from the collaborations with universities in industrial design education. They are motivated to be fed by academic and scientific knowledge for (i) creating and raising public awareness on these areas, (ii) increasing their visibility, and (iii) realizing and implementing concrete outcomes and solutions.

NPOs receive new, different ideas and perspectives from industrial design departments. Similarly, the human capital obtained from collaborations is valued

because it advances NPOs' missions in serving the community with innovative products and services. As a result, NPOs reach their first and second but they, generally, have difficulties reaching the third goal, that is, implementing solutions as products or services. Although students, tutors, and industrial design education provide benefits for NPOs via these collaborations, this study revealed that universities do not prioritize contributing to NPOs as the collaborations are in the educational context and the focus is students' learning.

9.1.5 Improving University-NPO Collaborations

Despite the benefits provided, university-NPO collaborations are also challenging for all stakeholders. Maintaining common understanding and realizability of results are common challenges in three models (see Sections 5.6.1, 6.6.1, and 7.6.1). The realization of results has four obstacles that need to be solved; the necessary budget, intellectual property rights, the lack of applicability of students' projects, and the commitment (time and effort) of stakeholders.

In tutor-driven collaborations, tutors face educational and organizational challenges since they are the drivers of the collaborations (see Section 5.6.3). Students have difficulty in learning new concepts, approaches and methods, adapting to new scales and scope, working with new materials and manufacturing techniques, and designing for and with special user groups (5.6.2). Eventually, most of these challenges turn into benefits for students after the collaboration processes. NPOs, on the other hand, face the challenge that the documents and results are not shared with them.

In NPO-driven collaborations, students have difficulty in adapting to new scales and scope and working with new materials and manufacturing techniques while, in many instances, NPOs again face the challenge of not sharing the documents and results with them.

Student-driven collaborations have challenges for only students since they are the most dominant and active actors during the collaboration process (see Section 0).

Students face difficulties in balancing diverse ideas and feedback from their tutors and non-designer advisors, receiving previously promised prototype support, and adapting to new scales and scope.

A protocol content (knowing each other, understanding each other, division and distribution of roles and responsibilities, scheduling, budget/funding, documenting and sharing results, and intellectual property issues) and nice-to-have key dimensions (personal interest, commitment, goodwill and positive attitude, required time for post-production, more and multiple stakeholders, utilizing models, volunteering, interpersonal and informal rather than institutional and formal, key contact and sustainability of collaboration) are suggested aligned with the challenges revealed within the scope of this thesis (see Sections 8.3 and 8.4). Having a protocol and as many key dimensions as possible could help stakeholders overcome the aforementioned challenges and improve university-NPO collaborations in the design education context.

9.2 Contribution of the Thesis

This section explains the contribution of this thesis in two subtitles as theoretical contribution and practical contribution.

9.2.1 Theoretical Contribution

As this thesis aims to analyze and enhance the university-NPO collaboration in the design education context, it makes theoretical contributions to various parts of this collaboration.

Firstly, this study is one of the few that takes an outsider perspective (i.e., from the point of view of a person outside the group portrayed) with an unbiased and neutral point of view. In the literature, there are mainly case studies conducted by the tutors, with an insider point of view (i.e., the author narrates their self-observations and self-

reflections), and their deductions of what other partners' challenges, contributions, and benefits are. Yet, the inferences made by this study address not only the one or two actor's point of view but also clarify how all stakeholders view these collaborations and what can be done to improve their outcomes. Therefore, considering all three angles, this study provides a comprehensive overview of university-NPO collaboration in industrial design education in Turkey.

This study also is an attempt to systematically analyze these collaborations with semi-structured interviews trying to include all stakeholders as interviewees. There are a low number of studies in the literature that have explicitly referred to their methodological approaches as the researchers involved in these collaborations tend to narrate their case-specific personal experiences. Conducting interviews with the stakeholders from all three sides provided their perspectives and deepened the findings.

This thesis also responds to the intention of defining the types of these collaborations (Lewis et al., 2012; Roper, 2002; Ross et al., 2003; Sullivan & Skelcher, 2003) and sets out a detailed analysis of tutor-driven, NPO-driven, and student-driven models that are derived from the data patterns. Roper's (2002) approach of dividing these collaborations with respect to the initiator stakeholder is further developed to include how these collaborations are shaped by the motivations and expectations of the initiating stakeholders and turn them into drivers. Moreover, this study identified that there are not predefined roles and responsibilities for each stakeholder involved in the collaboration. Roles and responsibilities are shaped by the fact that who is the driving stakeholder and which stakeholders accept to collaborate. For example, there are different roles and responsibilities for the tutors when they are driving the collaboration compared to when the student is driving it. Hence, the roles and responsibilities of each stakeholder should be defined in advance of the particular collaboration, potentially through the protocol.

This thesis outlines the overall expectations from 21st century designers under three categories as 'Professional & Social Skills', 'Concepts, & Approaches & Methods',

and ‘Knowledge’. It also explains how university-NPO collaborations contribute to these skills, approaches, and knowledge.

Finally, this thesis suggests a protocol with seven subjects and eight key dimensions to increase the effectiveness of collaborations. Even though the protocol was mentioned both in the university-industry collaborations (including Börekçi et al., 2006) and university-NPO collaborations (including Sandy & Holland, 2006; Trebil-Smith & Shields, 2019), none of these studies attempted to offer a content for protocol. Similarly, there are studies that discuss particular key dimensions, however, a list of these dimensions was missing in the literature.

9.2.2 Practical Contribution

This thesis contributes to practice through the stakeholders of the collaboration. Firstly, this thesis sets out the challenges of university-NPO collaborations in the design education context through the perspectives of all the stakeholders involved (tutors, students, and NPOs). Knowing these challenges would help all three stakeholders to be prepared for them and be an opportunity to address them even before initiating the collaboration.

Having identified the challenges of the collaborations, another contribution of the thesis is offering the protocol, including the content it should cover as subjects, to overcome these challenges during the initiation phase of these collaborations. Protocol, with its specified content, could be a guidance for stakeholders to plan and build stronger and win-win collaborations.

This thesis also identifies the key dimensions of these collaborations as nice-to-haves (e.g., personal interest and commitment, more time and stakeholders, key contact, and sustainability of collaboration). Considering and including these nice-to-haves in the collaborations would create more successful and productive outcomes. To better explain the contributions of the protocol and key dimensions, a figure was

created to show how challenges of university-NPO collaborations could be overcome by utilizing the content of the protocol and key dimensions (Figure 9.1).

This thesis explains three driven models that would help stakeholders identify other stakeholders' potential motivations, reasons to collaborate, and contributions in their particular model. Moreover, this thesis examines the patterns of these models and divides them into phases and steps. Having ideas about all these would help the driver-stakeholder to form healthier and win-win collaborations.

This thesis highlights the impact of university-NPO collaboration on design education and future industrial designers which encourages tutors to carry out these collaborations. As the expectations from 21st century designers shifted and evolved over time, this thesis sets out how new generations of industrial designers can benefit from these collaborations. Compared to university-industry collaboration, university-NPO collaborations bring forward the social aspect of design and the value of not-for-profit which are unique and invaluable notions for students.

Finally, as the aim of this thesis is to improve university-NPO collaborations, it indirectly contributes to society by increasing the likelihood of the realizability of the results of the collaborations. Eventually, products, systems, services, and experiences that are developed out of these collaborations are going to lead to creating a better society through social innovation and sustainable development.



Figure 9.1 How Protocol Subjects and Key Dimensions Interact with Challenges

9.3 Limitations of the Study

As with any study, there are limitations to this research. Firstly, Covid-19 was a major limitation that limited face-to-face interviews and, therefore, the physical aspect which could play an important role in communication. It also became an obstacle for some tutors and NPO participants as they were not used to conducting online meetings. Due to Covid-19, almost all of the interviews were conducted online. Moreover, the mental burden we had to carry also made the research more difficult.

Secondly, even though the literature on industry-university collaboration is widely studied and developed in terms of theoretical conceptualization, university-NPO collaboration was not studied in-depth and systematic manner which limited the initial theoretical buildup of the study. The literature is scarce in terms of the theories used, and the potential frameworks to explain these collaborations.

Finally, there were limitations in terms of data collection. As these collaborations might have happened a few (or even several) years before our interviews, participants had difficulties remembering the details of some collaboration experiences. This fact had a negative impact on causal relationships with some potentially missing pieces of information. Another data collection-related limitation is the amount of data I had to deal with out of 71 interviews. The data was compelling to manage and categorize as well as to present.

Despite these limitations, this thesis offers new insight into how universities and NPOs can collaborate to establish win-win outcomes while building a better society.

9.4 Research Outputs

This thesis possesses publishing opportunities in more than one direction. The first output of this thesis is a conference paper in DRS Learn X Design 2021 6th International Conference for Design Education Researchers (Yalman Yıldırım & Hasdoğan, 2021). The aim of the publication is to receive feedback about the idea of driver-based models by mentioning only the tutor-driven collaborations (Chapter 5) in the conference paper. The feedback helped the researcher and her supervisor to think broadly about the differences of these models and reflect them concretely in their respective chapters.

Even though there is only one output of this thesis so far, the researcher aims for one more conference paper and one journal article publications out of this thesis. The conference paper is planned to be about the scope of university-NPO collaboration in industrial design education in Turkey (special groups, local development, and

environment). It is going to aim to shed light on the type of university-NPO collaborations being conducted in Turkey which is mentioned in detail in Chapter 4 of this thesis.

Finally, merging the driver-based models mentioned in Chapters 5, 6, and 7; a publication is being planned to convey the theoretical idea of driver-based models in a more comprehensive manner. This article would be a holistic version of the conference paper published by Yalman Yıldırım and Hasdoğan (2021).

9.5 Future Research Directions

As mentioned, compared to university-industry collaborations, university-NPO collaborations in Turkey are in their nascent state. Further research on knowledge production through community outreach is needed to increase the effectiveness and productivity of these collaborations. To begin with, the findings of this thesis could be evaluated through the stakeholders of these collaborations. The enablers such as the protocol (with its suggested content) and nice-to-haves offered in this thesis, and the barriers for the stakeholders in different models could be validated by the stakeholders via survey methodology. As semi-structured interviews or case studies lack generalizability, surveys would be a way to obtain generalizable results.

As another extension of this thesis, the study could be repeated in different countries to see the differences and solution approaches in those countries. The findings and discussions in different countries can feed each other to make these collaborations more fruitful.

Even though this study explores university-NPO collaborations in the industrial design education context, this study's theoretical contributions (e.g., driver-based models and perspectives of each stakeholder) could be used in other design disciplines. In other words, similar studies could be repeated in different design education contexts to see the differences of various design disciplines to advance design education in general.

Finally, for the models defined in this thesis, case studies could be carried out to set out deeper insights into the frameworks developed. Considering the presence of tutor perspectives on the collaborations they established, student-driven and NPO-driven models require more research as insights for students are limited to tutor-perspective case studies and insights for NPOs are mainly limited to their individually-prepared reports.

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APPENDICES

A. National Classification of Associations Regarding the Scope of Their Activities (reproduced from Republic of Turkey, Ministry of Interior, Department of Association, 2018)

Professional and Solidarity Associations
Sports Associations
Associations for Religious Services
Education – Research Associations
Culture, Art and Tourism Associations
Humanitarian Aid Associations
Health Associations
Community Development Associations
Preservation of Social Values Associations
Environment, Wildlife, Animal Protection Associations
Urbanism and Development Associations
Rights and Advocacy Associations
Disability Associations
Associations that Support Public Institutions and Civil Servant
Thought-Based Associations
Food, Agriculture and Livestock Associations
International Collaboration Associations
Solidarity with Turks Abroad Associations
Martyr’s Relatives and (War) Veterans Associations
Elders and Children Associations
Children Associations

B. Consent Form

Araştırmaya Gönüllü Katılım Formu

Bu araştırma, ODTÜ Endüstri Ürünleri Tasarımı Bölümü doktora öğrencisi Zeynep Yalman tarafından Prof. Dr. Gülay Hasdoğın danışmanlığındaki doktora çalışması kapsamında yürütülmektedir. Bu form sizi araştırma koşulları hakkında bilgilendirmek için hazırlanmıştır.

Çalışmanın amacı nedir?

Araştırmanın amacı, endüstriyel tasarım bölümlerinde öğrenci projeleri kapsamında yürütülen üniversite-sivil toplum kuruluşu işbirliğine ilişkin bilgi toplamaktır.

Bize nasıl yardımcı olmanızı isteyeceğiz?

Araştırmaya katılmayı kabul ederseniz, sizden mülakatta yer alan bir dizi soruyu cevaplamanız beklenmektedir. Görüşmeler yaklaşık bir saat sürmektedir. Daha sonra analiz edilmesi için sorulara verdiğiniz yanıtlar ses kaydına alınacaktır.

Sizden topladığımız bilgileri nasıl kullanacağız?

Araştırmaya katılımınız gönüllülük temelinde olmalıdır. Cevaplarınız tamamen gizli tutulacak, ve sağladığımız veriler ile gönüllü katılım formunda toplanan kimlik bilgileri herhangi bir şekilde eşleştirilmeyecektir. Görüşmeler sırasında yapılan ses kayıtları ancak anonimleştirildikten sonra ve sadece bu doktora tezinde, konferans bildirimlerinde ve akademik makalelerde kullanılacaktır. Bunların dışında, katılımcının yazılı izni olmadan başka hiçbir amaç için kullanılmayacak ve benden başka kimsenin orijinal kayıtlara erişimi olmayacaktır.

Katılımınızla ilgili bilmeniz gerekenler:

Çalışma, genel olarak kişisel rahatsızlık verecek sorular veya uygulamalar içermemektedir. İstedığınız zaman, hiçbir neden belirtmeksizin ve hiçbir olumsuz sonuçla karşılaşmaksızın bu çalışmadan çekilebilirsiniz.

Araştırmayla ilgili daha fazla bilgi almak isterseniz:

Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için ODTÜ Endüstri Ürünleri Tasarımı Bölümü doktora öğrencisi Zeynep Yalman ile iletişim kurabilirsiniz.

Yukarıdaki bilgileri okudum ve bu çalışmaya tamamen gönüllü olarak katılıyorum.

(Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

Ad Soyad

Tarih

İmza

C. Consent Form (in English)

Voluntary Participation Form

This research is conducted by Zeynep Yalman, PhD student at METU Department of Industrial Design, under the supervision of Prof. Dr. Gülay Hasdođan. This form has been prepared to inform you about the research conditions.

What is the purpose of the study?

The research aims to collect information about university-civil society organization cooperation within the scope of student projects in industrial design departments.

How will we ask you to help us?

If you agree to participate in the research, you will be expected to answer a series of questions in the interview. The interviews last approximately one hour. Your answers to the questions will be audio-recorded for later analysis.

How will we use the information we collect from you?

Your participation in the research must be voluntary. Your answers will be kept completely confidential, and the data you provide will not be matched in any way with the identifying information collected on the consent form. Audio recordings made during the interviews will be used only after anonymization and only in this PhD thesis, conference proceedings and academic articles. Apart from these, they will not be used for any other purpose without the written consent of the participant and no one other than me will have access to the original recordings.

What you need to know about your participation:

The study does not include questions or practices that may cause personal discomfort in general. You can withdraw from this study at any time, without giving any reason and without any negative consequences.

If you would like more information about the study:

Thank you in advance for participating in this study. For more information about the study, please contact Zeynep Yalman, PhD student at METU Department of Industrial Design.

I have read the above information and I participate in this study completely voluntarily.

(Please fill in and sign the form and return it to the researcher.)

Name Surname

Date

Signature

D. Questionnaire

Katılımcı Bilgilendirme

Bu form, ODTÜ Endüstri Ürünleri Tasarımı Bölümü doktora öğrencisi Zeynep Yalman tarafından, Prof. Dr. Gülay Hasdoğan danışmanlığındaki doktora çalışmasının ilk aşaması için veri toplama amacıyla hazırlanmıştır. Bu çalışma için ODTÜ İnsan Araştırmaları Etik Kurulu'ndan onay alınmıştır. (Protokol no: 121-ODTÜ-2019) Araştırmanın bu aşamasının amacı, Türkiye'de endüstriyel tasarım bölümlerinde öğrenci projeleri kapsamında gelişen üniversite - kar amacı gütmeyen oluşumlar (sivil toplum kuruluşları, belediyeler vb.) işbirliğine ilişkin bilgi toplamak ve çalışmanın ikinci aşaması olan görüşmeler için katılımcıları belirlemektir. Toplanan verinin analiziyle, bu işbirlikleri kapsamında yürütülen veya tamamlanmış projelerin mevcut durumu ortaya konacaktır.

Form, bu projelere dair temel sorular içermektedir. Birden fazla proje gerçekleştirdiyseniz lütfen her proje için doldurunuz.

Bu formu doldurmanız çalışmama önemli bir katkı sağlayacaktır. Form, her ne kadar gizlilik gerektirecek türde sorular içermese de soruların cevaplarıyla sağladığınız bilgiler, anonimleştirilerek kullanılacaktır. Katkınız için şimdiden çok teşekkür ediyorum.

Proje yürütücüleri isimleri

İşbirliği ortakları (Lösemili Çocuklar Vakfı, Türkiye Sakatlar Derneği, Çankaya Belediyesi, Tasarım Atölyesi Kadıköy vb.)

Proje başlığı ve konusu

İşbirliğinin yürütüldüğü üniversite

İşbirliğinin yürütüldüğü ders (2. sınıf stüdyo, mezuniyet projesi, EÜT 308 Servis Tasarımı seçmeli dersi vb.)

İşbirliğinin yürütüldüğü akademik yıl ve dönem

E. Questionnaire (in English)

General Information and Informed Consent

This form was prepared by Zeynep Yalman, a PhD student at METU Department of Industrial Design, to collect data for the first phase of her PhD study under the supervision of Prof. Dr. Gülay Hasdoğan. Approval for this study was obtained from METU Human Research Ethics Committee (Protocol no: 121-ODTÜ-2019) this phase of the research aims to collect information about the university - non-profit organizations (NGOs, municipalities, etc.) collaborations developed within the scope of student projects in industrial design departments in Turkey and to identify participants for the second phase of the study, the interviews. By analyzing the collected data, the current status of the projects carried out or completed within the scope of these collaborations will be revealed.

The form contains basic questions about these projects. If you have carried out more than one project, please fill in the form for each project.

Your completion of this form will be an important contribution to my study. Although the form does not contain any confidential questions, the information you provide through the answers to the questions will be anonymized and used. Thank you very much in advance for your contribution.

Names of the project coordinators

Partners/stakeholders of collaboration

Title and topic of project

University where the project is carried out

Course name and code that the project is carried out

Academic year and term that the project is carried out

F. Interview Questions

Görüşme Soruları (Akademisyenler için)

Bu iş birliği nasıl kuruldu? (talep kimden geldi, konuyu birlikte mi belirlediniz?)

İşbirliğinin konusu ve amaçları:

Sizin bu işbirliğine başlarken amacınız neydi?

İş birliğine başlarken motivasyonlarınız nelerdi?

İş birliğinde olduğunuz paydaşlardan, süreçten ve sonuçtan beklentileriniz nelerdi?

Süreç ilerledikçe bu beklentiler karşılandı mı? Nasıl?

Süreçte beklentiniz dışında olumlu-olumsuz gerçekleşen şeyler oldu mu?

İş birliğindeki paydaşlar ne gibi roller aldı, görev ve sorumlulukları nasıl belirlendi?

Süreçte kimlerle iletişim halinde oldunuz?

Amaçlarınız çerçevesinde değerlendirdiğinizde paydaşlar (sivil toplum kuruluşlarından temsilciler, öğrenciler) nasıl katkı sağladılar?

Bu işbirliğinin/projenin en önemli sonucu ne?

İşbirliği süreci ve sonuçlarını göz önünde bulundurduğunuzda olumlu-olumsuz deneyimlerinizi paylaşır mısınız?

Başka benzer işbirlikleri yaptınız mı? Neden?

İlerleyen zamanlarda aynı ya da farklı bir kar amacı gütmeyen kuruluş ile tekrar işbirliği yapmayı düşünür müsünüz? Bunun sebepleri nelerdir?

Endüstriyel tasarım bölümleri–STK işbirliği için önerileriniz var mı? (başka işbirliği modeli vb.)

Üniversite–STK işbirliğinin geleceğini nasıl görüyorsunuz? (Üniversite–sanayi işbirliği ile kıyaslamalı?)

STKlar endüstriyel tasarımcıların istihdam alanlarından olabilir mi? Sebepleri nelerdir?

Görüşme Soruları (Sivil Toplum Kuruluşları için)

Bu iş birliği nasıl kuruldu? (talep kimden geldi, konuyu birlikte mi belirlediniz?)

İşbirliğinin konusu ve amaçları:

Sizin bu işbirliğine başlarken amacınız neydi?

İş birliğine başlarken motivasyonlarınız nelerdi?

Neden üniversite eğitim işbirliği?

İş birliğinde olduğunuz paydaşlardan, süreçten ve sonuçtan beklentileriniz nelerdi?

Süreç ilerledikçe bu beklentiler karşılandı mı? Nasıl?

Süreçte beklentiniz dışında olumlu-olumsuz gerçekleşen şeyler oldu mu?

İş birliğindeki paydaşlar ne gibi roller aldı, görev ve sorumlulukları nasıl belirlendi?

Süreçte kimlerle iletişim halinde oldunuz?

Amaçlarınız çerçevesinde değerlendirdiğinizde paydaşlar (üniversite; akademisyenler, öğrenciler) nasıl katkı sağladılar?

Bu işbirliğinin/projenin en önemli sonucu ne?

İşbirliği süreci ve sonuçlarını göz önünde bulundurduğunuzda olumlu-olumsuz deneyimlerinizi paylaşır mısınız?

Başka benzer işbirlikleri yaptınız mı? Neden?

Üniversitelerin endüstriyel tasarım veya başka bölümleriyle yeniden işbirliği yapmayı düşünür müsünüz? Bunun sebepleri nelerdir?

Daha önce tasarımla ilgili bir çalışma yapmış mıydınız?

Tasarımın katkısı/rolü hakkında ne düşünüyorsunuz?

Endüstriyel tasarım bölümleri–STK işbirliği için önerileriniz var mı? (başka işbirliği modeli vb.)

Endüstriyel tasarım bölümleri özelinde üniversite–STK iş birliğinin geleceğini nasıl görüyorsunuz?

Kurumunuz içinde endüstriyel tasarımcı istihdam etmek ister misiniz? Sebepleri nelerdir?

Görüşme Soruları (Öğrenciler için)

Projenin konusu neydi?

İşbirliği süreci nasıldı?

Sizden beklenen görev ve sorumluluklar nelerdi?

STK'larla iletişim nasıldı?

Başka kimler ile iletişim halindeydiniz?

İşbirliğinde olduğunuz STK paydaşları, sürece nasıl katkı sağladılar?

STK ile işbirliğinde proje yapmanın diğer projelerden farkı var mıydı? Ne açıdan?

İşbirliği süreci ve sonuçlarını göz önünde bulundurduğunuzda olumlu-olumsuz deneyimlerinizi paylaşır mısınız?

Üniversite–STK işbirliği süreçleri ile ilgili önerileriniz var mı?

Üniversite–STK işbirliğinin geleceğini nasıl görüyorsunuz?

İlerleyen zamanlarda aynı ya da farklı bir kar amacı gütmeyen kuruluş ile tekrar işbirliği kurmayı düşünür müsünüz? Bunun sebepleri nelerdir?

STKlar endüstriyel tasarımcılara istihdam sağlayabilir mi? Sebepleri nelerdir?

Mezuniyet sonrası (profesyonel olarak) kar amacı gütmeyen bir kurumda çalışmak ister misiniz? Neden?

G. Interview Questions (in English)

Interview Questions (for Tutors)

How was this collaboration established? (who initiated the process, have you decided on the project topic together?)

What was your aim at the beginning of the collaboration?

What were your motivations at the beginning of the collaboration?

What were your expectations from the stakeholders, the process, and the outcomes?

As the process progressed, were your expectations satisfied? How?

Are there any unexpected positive or negative incidents that occurred throughout the process?

What were the roles of the stakeholders, how were the tasks and responsibilities determined?

With whom have you communicated throughout the process?

Considering your aims, how did stakeholders (university; academic staff, students) contribute those aims?

What is the most important outcome of this collaboration?

Could you share your positive or negative experiences considering the process and results of this collaboration?

Have you undertaken any other similar collaborations? Why?

Would you again consider establishing collaboration with industrial design departments or other departments of universities? What are the reasons for that?

Do you have any suggestions for industrial design department–NPO collaboration? (such as different collaboration models)

What do you think the future of university (specifically industrial design departments)–NPO collaboration? (How do you see?)

Could NPOs, NGOs be an area of employment for industrial designers? Why?

Interview Questions (for NPOs)

How was this collaboration established? (who initiated the process, have you decided on the project topic together?)

What was your aim at the beginning of the collaboration?

What were your motivations at the beginning of the collaboration?

Why university education project?

What were your expectations from the stakeholders, the process, and the results?

As the process progressed, were your expectations satisfied? How?

Are there any unexpected positive or negative incidents that occurred throughout the process?

What roles did the stakeholders undertake, how were the tasks and responsibilities determined?

With whom have you communicated throughout the process?

If you take your aims into consideration, how did stakeholders (university; academic staff, students) contribute those aims?

What is the most important outcome of this collaboration?

Could you share your positive or negative experiences considering the process and results of this collaboration?

Have you undertaken any other similar collaboration? Why?

Would you again consider establishing collaboration with industrial design departments or other departments of universities? What are the reasons for that?

Üniversitelerin endüstriyel tasarım veya başka bölümleriyle yeniden işbirliği yapmayı düşünür müsünüz? Bunun sebepleri nelerdir?

Have you ever done a project related with design before?

What are your thoughts about the contribution/role of design?

Do you have any suggestions for industrial design department–NPO collaboration? (such as different collaboration models)

What do you think the future of university (specifically industrial design departments)–NPO collaboration? (How do you see?)

Would you like to employ industrial designers in your institution? Why?

Interview Questions (for Students)

What was the subject of the collaboration and project?

How was the process of the collaboration?

What were the tasks and responsibilities expected from you?

How was your communication with NPO partners?

Who else were you in contact with?

How did the NPO partners contribute to the process?

Was collaborating with an NPO different from other project processes? In what ways?

Could you share your positive or negative experiences considering the process and results of this collaboration?

Do you have any suggestions related to the University–NPO collaboration processes?

What do you think the future of university–NSO collaboration? (How do you see?)

Would you again consider establishing collaborations with this NPO or any others? Why?

Could NPOs hire industrial designers? Why?

Once you are graduated (become professional), would you want to work for a non-profit organization? Why?

H. Example of Sent Email

Merhaba,

Endüstriyel tasarım bölümleri ve kar amacı gütmeyen kurumlar (sivil toplum kuruluşları, belediyeler vb.) arasında eğitim bağlamında gerçekleşen tasarım işbirliğine ilişkin, ODTÜ'de Prof. Dr. Gülay Hasdoğan danışmanlığındaki doktora araştırmam için bilgi toplamak amacıyla yazıyorum.

Bu işbirlikleri kapsamındaki projelere dair proje yürütücüleri ile görüşmeler yapmak istiyorum. Bunun için yardımınızı rica ediyorum.

Yapı Biyolojisi ve Ekolojisi Enstitüsü ile Bilgi Üniversitesi, Endüstriyel Tasarım Bölümü işbirliğinde 2017-2017 Güz yarıyılında gerçekleşen ve derneğinizin paydaşlarından biri olduğu "Studio Sustain Urla-Barbaros" öğrenci projeleri ve bu işbirliği hakkında görüşmek istiyorum. Proje yürütücüsü hocalarımız ile görüşmelerimi tamamladım.

Kabul ederseniz ve bu konuda konuşmak üzere online görüşme için bir gün ve saat belirleyebilirsek çok sevinirim. Görüşme yaklaşık bir saat sürmektedir.

Eğer önden incelemek isterseniz, topladığım verileri izniniz dahilinde nasıl kullanacağıma ilişkin katılımcı bilgilendirme formunu ekte gönderiyorum.

Katılımınız ve katkılarınız için şimdiden çok teşekkür ediyorum.

Saygılarımla,

Zeynep Yalman Yıldırım

I. Example of Sent Email (in English)

Hi,

I am writing to gather information about design collaborations between industrial design departments and non-profit institutions (NGOs, municipalities, etc.) in the context of education for my PhD research at METU under the supervision of Prof. Gülay Hasdoğın.

I would like to interview the project coordinators of the projects within the scope of these collaborations. I would like to ask for your help in this regard.

I would like to talk about the “Studio Sustain Urla-Barbaros” student projects that took place in the Fall 2017-2017 semester in collaboration with the Institute of Building Biology and Ecology and Bilgi University, Department of Industrial Design and your association is one of the stakeholders. I have completed my interviews with our project coordinators.

I would be very grateful if you agree and we can set a day and time for an online meeting to talk about this. The interview will take approximately one hour.

If you would like to review it in advance, I am enclosing the participant information form on how I will use the data I have collected with your permission.

Thank you very much in advance for your participation and contribution.

Best regards,

Zeynep Yalman Yıldırım

J. Permission Letters

İSTANBUL VALİLİĞİ ÇEVRE VE ŞEHİRCİLİK İL MÜDÜRLÜĞÜ
ÇEVRE YÖNETİMİ ŞUBE MÜDÜRLÜĞÜ

11 Kasım 2020

Endüstriyel tasarım bölümleri ve kar amacı gütmeyen oluşumlar (sivil toplum kuruluşları, yerel yönetimler, belediyeler vb.) arasında eğitim bağlamında gerçekleşen tasarım işbirliğine ilişkin, ODTÜ'de Prof. Dr. Gülay Hasdoğın danışmanlığında doktora yapıyorum. Doktora arařtırmam için bilgi toplamak amacıyla; bu işbirlikleri kapsamında devam eden veya tamamlanmış işbirliklerine dair proje yürütücülerini ile görüşmeler yapmak istiyorum.

Çevre ve Şehircilik İstanbul İl Müdürlüğü ile İstanbul Medipol Üniversitesi, Endüstriyel Tasarım Bölümü işbirliğinde gerçekleşen ve paydařlarından biri olduğunuz "Sıfır Atık" öğrenci projeleri hakkında Funda ERCAN ile görüşmek için izninizi istiyorum.

Gereğini arz ederim.

Saygılarımla,

Zeynep YALMAN YILDIRIM

ANKARA GÖÇ İDARESİ GENEL MÜDÜRLÜĞÜ
GÖÇ POLİTİKA VE PROJELER DAİRESİ BAŞKANLIĞI
DESTEK HİZMETLERİ DAİRESİ BAŞKANLIĞI

27 Kasım 2020

Endüstriyel tasarım bölümleri ve kar amacı gütmeyen oluşumlar (sivil toplum kuruluşları, yerel yönetimler, belediyeler vb.) arasında eğitim bağlamında gerçekleşen tasarım işbirliğine ilişkin, ODTÜ'de Prof. Dr. Gülay Hasdoğan danışmanlığında doktora yapıyorum. Doktora araştırmam için bilgi toplamak amacıyla; bu işbirlikleri kapsamında devam eden veya tamamlanmış işbirliklerine dair proje yürütücüleri ile görüşmeler yapmak istiyorum.

Harmandalı Geri Gönderme Merkezi ile Yaşar Üniversitesi, Endüstriyel Tasarım Bölümü işbirliğinde çeşitli yıllarda gerçekleşen ve paydaşlarından biri olduğunuz "GGM'de Yaşayan Çocuklar için Etkinlik Tasarım Önerileri" öğrenci projeleri hakkında GGM müdürü ile görüşmek için izninizi istiyorum. Proje yürütücüsü hocalarımız ile görüşmelerimi tamamladım.

Ekte, topladığım verileri izniniz dahilinde nasıl kullanacağıma ilişkin katılımlı bilgilendirme formunu ve mülakat sorularımı gönderiyorum.

Gereğini arz ederim.

Saygılarımla,

Zeynep YALMAN YILDIRIM

K. Permission Letters (in English)

ISTANBUL GOVERNORSHIP PROVINCIAL DIRECTORATE OF
ENVIRONMENT AND URBANIZATION
ENVIRONMENTAL MANAGEMENT BRANCH DIRECTORATE

November 11, 2020

I am doing my PhD at METU under the supervision of Prof. Dr. Gülay Hasdoğan regarding design collaborations between industrial design departments and non-profit organizations (non-governmental organizations, local governments, municipalities, etc.) in the context of education. In order to collect information for my PhD research; I would like to interview project coordinators regarding ongoing or completed collaborations within the scope of these collaborations.

I would like to ask your permission to meet with Funda ERCAN about the “Zero Waste” student projects that you are one of the stakeholders in the collaboration between Istanbul Provincial Directorate of Environment and Urbanization and Istanbul Medipol University, Department of Industrial Design.

I would like to request your permission.

Sincerely,

Zeynep YALMAN YILDIRIM

ANKARA DIRECTORATE GENERAL OF MIGRATION ADMINISTRATION
MIGRATION POLICY AND PROJECTS DEPARTMENT
DEPARTMENT OF SUPPORT SERVICES

November 27, 2020

I am doing my PhD at METU under the supervision of Prof. Dr. Gülay Hasdođan on design collaborations between industrial design departments and non-profit organizations (non-governmental organizations, local governments, municipalities, etc.) in the context of education. In order to collect information for my PhD research; I would like to interview project coordinators about ongoing or completed collaborations within the scope of these collaborations.

I would like to ask for your permission to interview the director of the Harmandalı Repatriation Center about the “Activity Design Suggestions for Children Living in Harmandalı Repatriation Center” student projects that took place in various years in cooperation with Yaşar University, Department of Industrial Design and of which you are one of the stakeholders. I have completed my interviews with our project coordinators.

I am enclosing the participatory information form and interview questions about how I will use the data I have collected with your permission.

I would like to request your permission.

Sincerely,

Zeynep YALMAN YILDIRIM

CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Yalman Yıldırım, Zeynep

EDUCATION

Degree	Institution	Year of Graduation
PhD	METU, Industrial Design	2024
BSS	Anadolu University, Sociology	2022
MS	Gazi University, Industrial Design	2015
BS	METU, Industrial Design	2011

WORK EXPERIENCE

Year	Place	Enrollment
2022-Present	Intertech	Senior UX Researcher
2019-2022	METU, Industrial Design	Research Assistant
2017-2019	UTRLAB	UX Design Specialist
2013-2017	Gazi University, Industrial Design	Research Assistant

PUBLICATIONS

1. Yalman Yıldırım, Z. and Hasdoğın, G. (2021) Tutors' perspectives on NPO collaboration in industrial design education, in Bohemia, E., Nielsen, L.M., Pan, L., Börekçi, N.A.G.Z., Zhang, Y. (eds.), *Learn X Design 2021: Engaging with challenges in design education*, 24-26 September, Shandong University of Art & Design, Jinan, China. https://doi.org/10.21606/drs_lxd2021.01.217
2. Doğan, Ç. (Editor), Kruithof, A. R. (Editor), Turhan, S. (Editor), and **Yalman-Yıldırım, Z. (Editor)**. (2020). *Sustainable Design Solutions for a Flexible, Adaptable Cooking Platform Enabling Healthy Eating Habits for Shared Kitchen*.
3. Kutbay, H., Kesdi, H. S., Yavuz, C. and **Yalman, Z.** (2016). Public Space Furniture: Sitting Units in Shopping Malls' Waiting / Resting Areas, *Design Communication Association European Conference 2016 İstanbul, Turkey*
4. Yalman, Z. and Yavuz, C. (2015). The Role of User Research in Design Process in Product Design Education. *5th World Conference on Educational Technology Researches (WCETR)* North Nicosia, Northern Cyprus

5. Yavuz, C. and **Yalman, Z.** (2015). Herkesin Kendisini Tasarımcı Gördüğü Bir Dünyada, Tasarım ve Tasarımcı Olmak Üzerine. *4th World Conference on Design and Arts (WCDA)* St. Petersburg, Russia
6. Yalman, Z. and Yavuzcan, H. G. (2015). Co-Design Practice in Industrial Design Education in Turkey. *Procedia – Social and Behavioral Sciences 197 (2015)* p.2244-2250
7. Aydın, H. S., Kutbay, N. H., **Yalman, Z.** and Yavuz, C. (2015). User Involvement in Context of Innovation: User Innovation, *International Journal of Innovative Research in Education*. <http://sproc.org/ojs/index.php/IJIRE>, 2(2), 68-73
8. Yalman, Z. (2014). Darwinian Processes and Memes in Furniture Design in Turkey A Memetic Theory of IKEA Design. *International Journal of Arts and Commerce*. vol.3 no.8 p.95-102

WORKSHOPS

- (b)İçmek (2015) – İstanbul Kültür University, Faculty of Art and Design
Wooden Toy Workshop (2015) – Municipality of Çankaya
Furniture Workshop: Parametric Design (*Mobilya Atölyesi: Parametrik Tasarım*)
(2013) – Marmara University, Faculty of Fine Arts
Metamorphosis: Allegoric Approach Workshop (*Dönüşüm: Alegorik Yaklaşım Atölyesi*) (2013) – Yıldız Technical University, Faculty of Architecture

AWARDS AND HONOURS

- 2013 – TAK (Design Workshop of Kadıköy) – “Kıyı Köşe” Outdoor Space Design Competition / 2nd Prize
2013 – TAK (Design Workshop of Kadıköy) – “Kıyı Köşe” Outdoor Space Design Competition / 3rd Prize
2011 – Design for Export – 4th National Furniture Design Competition / Special Award