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JOÃO NUNO  
GAGO BERNARDA

COLLABORATIVE DESIGN METHODOLOGIES  
AND SOCIAL DYNAMICS: A PORTUGUESE  
SOCIAL AND PUBLIC HEALTH CASE STUDY.

Professora Doutora Ana Margarida Ribeiro Dias Fernandes  
Gomes Ferreira,  
IADE - Universidade Europeia  
Orientação

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Tese apresentada ao IADE - Faculdade de Design, Tecnologia e Comunicação da Universidade Europeia, para cumprimento dos requisitos necessários à obtenção do grau de Doutor em Design realizada sob a orientação científica da Doutora Ana Margarida Ribeiro Dias Fernandes Gomes Ferreira, Professora Associada com Agregação do IADE - Universidade Europeia, do Doutor Carlos Augusto Santos Silva, Professor Auxiliar do IST – Instituto Superior Técnico da Universidade de Lisboa e da Doutora Maria Inês Pires Soares da Costa Queiroz, Professora Auxiliar Convidada do Departamento de Ciências da Comunicação da FCSH/UNL - Faculdade de Ciências Sociais e Humanas da Universidade Nova de Lisboa

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Obrigado.

## Resumo

O projeto de investigação desenvolvido visa a compreensão da ação colaborativa entre disciplinas de diferentes ramos da ciência, e da ação prática com enfoque na ação social. Visa também avaliar o impacto desta ação colaborativa na resposta às necessidades de diferentes comunidades, em particular do sector da saúde, cuja vulnerabilidade é elevada e nos demais participantes desses processos.

O despertar da comunidade para a sua sustentabilidade, referido por Innerarity (2006), a sua superação através da colaboração entre diferentes atores e sectores da mesma, acentuada por Freire (1972), e os benefícios nas relações entre o trabalho social e outras disciplinas, constatada por Vigotsky (1962) e Morin (1999), determinaram o mote da investigação sobre a colaboração trans e interdisciplinar promovida.

A integração do Design no sector social tem-se verificado uma tendência ainda que com algum fator de novidade e resistência. Victor Papanek, em 1971, já identificava o potencial no Design para a resolução de problemas sociais. Jacques Rancière (2010), aponta a vontade emancipatória dos cidadãos para contribuir para uma sociedade mais participativa e Margolin (2012) refere o envolvimento de Designers em instituições ou organizações governamentais e procedimentos de apoio aos cidadãos com base numa visão centrada no ser humano. Esta mudança estratégica de vários sectores, favorece, segundo Manzini (2019), novas práticas de interação, aplicabilidade e combinação de conhecimentos, melhoria da intervenção, progresso e desenvolvimento do Estado social.

A partir destas considerações e com este enquadramento, o nosso estudo, que pretendeu responder à hipótese “*Metodologias colaborativas de design aperfeiçoam a efetividade da prática dos serviços sociais.*”, estrutura-se, e é apresuntado nesta tese, em capítulos, nomeadamente: enquadramento teórico e a constituição da problemática do estudo, a construção do modelo e estrutura de investigação e identificação da hipótese, revisão dos modelos colaborativos e enquadramento do Design social através de casos de estudo, aplicação de um caso em profundidade, recolha, tratamento e análise de dados. No final do documento são apresentadas as conclusões do estudo.

Como já referido, as áreas de intervenção onde atuámos são caracterizadas por realidades na qual a vulnerabilidade da condição humana, é evidente e às quais são aplicadas metodologias e

conceitos distintos. Referimo-nos, a áreas de intervenção clínica, preventiva e comunitária, caracterizadas por diferentes processos operativos de intervenção ou acompanhamento, realizadas por técnicos de saúde, na sua maioria terapeutas e psicólogos.

A prática da relação do Designer com o sector social, diferenciada pelo modo como foi desenvolvida e materializada, tornou-se determinante para a constituição da nossa questão de partida “Uma metodologia colaborativa e interdisciplinar com enfoque na resposta aos problemas sociais de comunidades vulneráveis pode dar respostas mais efetivas e resultados mais aprofundados a essas comunidades?”

A análise de um questionário realizado aos *stakeholders* sobre a mais valia da parceria com o Design para a comunidade, permitiu-nos concluir que, além dos pressupostos mais expectáveis, como a capacidade de geração de inovação, de diferenciação de produtos qualidade estética, outras descrições que apontam para uma maior eficácia na resolução de problemas do quotidiano e facilitação de práticas. Os casos de estudo preliminares desenvolvidos, que funcionaram como pré-teste do projeto final, materializaram esse fenómeno.

Os resultados destes casos de estudo preliminares revelaram um espaço de oportunidade para a integração do Design no sector social e de intervenção que, como pudemos verificar, teve um impacto positivo nos resultados obtidos, essencialmente nas capacidades dos técnicos e terapeutas envolvidos, de obtenção de mais dados e informações úteis sobre as comunidades onde operam.

No caso de estudo principal, com maior participação de *stakeholders*, instituições e outras organizações, foi elaborado um projeto que permitiu levantar dados mais consistentes sobre o impacto da ação colaborativa. O projeto contou com a participação de vários parceiros de áreas distintas de suporte a diferentes comunidades, mais vulneráveis ou fragilizadas da nossa sociedade que, em diferentes fases, colaboraram ativamente e foram essenciais para a criação, implementação e validação do produto de suporte ao processo investigativo.

No âmbito do caso de estudo, que se materializou no desenvolvimento de uma atividade de interação e estimulação cognitiva, foi possível recolher, a avaliação dos agentes que integraram e beneficiaram com a atividade proposta através de uma análise descritiva. Esta ação potenciou a recolha de novos dados no campo das capacidades percetivas, cognitivas, de recuperação de memórias e reminiscências, linguagem e motricidade, beneficiando, deste modo, o trabalho dos agentes no terreno e demonstrando o contributo do Design para a sua maior efetividade.

Para avaliar o impacto da atividade promovida foi elaborado um questionário que, em conjunto com os relatórios elaborados pelos técnicos, permitiu compreender e quantificar dados que validam a proposição “Metodologias colaborativas de Design promovem a efetividade das práticas dos serviços sociais”.

Procuramos, com este estudo, deste modo, perceber a influência do Design na ação colaborativa, na geração de resultados mais efetivos e na obtenção de informação, impacto nos demais setores (intervenção, assistência, solidariedade, ação comunitária e desenvolvimento social). Foi também importante perceber o potencial de criação futuras alianças com parceiros que, com base no processo desenvolvido, se mantêm interessados em continuar este tipo de interações.

A sequência de dados que valida a pertinência da integração do Design no sector da ação social acentua também a potencialidade da intervenção desta área disciplinar na construção, desenvolvimento e preservação de capacidades e resiliência do sector social.

Numa perspetiva mais estruturante, considera-se também importante a integração do Design no contexto de intervenção das políticas sociais, destacando o fator interdisciplinar que o caracteriza e que, de acordo com o que foi possível apurar, é relevante para uma maior eficácia dos serviços prestados à comunidade.

A integração do Design na área social ainda está naturalmente, sujeita a alguns desafios que tornam mais complexa a sua participação e dificultam a geração de ideias inovadoras e consequente sustentabilidade social. Podemos enumerar alguns fatores entre os quais o desafio do cruzamento de conhecimentos interdisciplinares, a resistência a novas metodologias de colaboração, o desconhecimento das capacidades do Design, e a inconsequência na calendarização dos projetos nos planos estratégicos. Estas questões tornam-se desafios para a medição de impacto.

No decorrer do caso em profundidade, foi perceptível a novidade, para a maior parte das pessoas, do tipo de colaboração e intervenção. Os resultados obtidos, a nível distrital (Lisboa), desta nova prática com propriedades lúdicas e dinâmicas próprias demonstraram maiores capacidades de verbalização e, permitiram desbloquear informações pertinentes dos utentes das diferentes Instituições/Organizações.

Os dados levantados nesta investigação, permitem perceber o impacto da atividade promovida, os seus benefícios, e ainda, a descrição do processo colaborativo interdisciplinar na sua dinâmica estrutural e temporal.

Este processo colaborativo, que traduz o processo de investigação desejado, foi organizado em três fases metodológicas distintas. Para o desenvolvimento da atividade proposta nestes três grandes momentos de investigação, foram aplicados processos metodológicos de Lawson (2005) e Dorst (2015), e metodologias desenvolvidas por organizações como a LUMA Institute (2012), e a IDEO (2015), centradas nas pessoas, respeitando o compromisso cívico sublinhado por Manzini (2015, 2017, 2019).

O caso desenvolvido em profundidade também ele foi estruturado em três fases, a recolha de dados e análise; ação e implementação e por fim a avaliação e validação.

Os dados recolhidos do caso de estudo permitiram constatar a pertinência da ação colaborativa no sector social potenciada pelo Design para a construção de soluções mais efetivas que podem contribuir para um maior conhecimento e resposta sobre e para as comunidades mais vulneráveis. Esta constatação incentiva uma maior ligação da disciplina ao sector social nomeadamente no desenho de estruturas de intervenção e políticas sociais com vista a uma otimização dos seus resultados.

Este estudo clarifica o potencial da integração do Design e dos Designers nas organizações em geral e, em particular, nas que visam responder às necessidades das comunidades mais expostas aos impactos sociais. O aumento da capacidade de resposta às suas vulnerabilidades permitirá a redução do risco de exclusão e isolamento social, bem como a consciencialização por parte dos parceiros sociais, da mais valia do Design e do seu contributo para a maturidade e sustentabilidade dos processos sociais.

**palavras-chave**

Co-Design, Sistemas de Saúde Pública, Interdisciplinaridade, Colaboração, Inovação Social, Inclusão, Sustentabilidade Social



## **Abstract**

This research project addresses the understanding of collaborative action among disciplines from distinct branches of science with particular focus on social action. It also aims to evaluate the impact of this collaborative action on responding to the needs of different highly vulnerable communities and on other participants of these same processes.

The integration of design in the social sector is a growing tendency, albeit to a certain extent characterised by novelty and resistance. Hence, and within this framework, the present thesis seeks to respond to the hypothesis “Collaborative design methodologies improve the effectiveness of social services’ practice”, and is organized into six phases, namely: the theoretical framework and the main research question, the construction of the model structure of the research and identification of the hypothesis, a review of the collaborative models and Social Design framework through case studies, the application of an in-depth case, the collection, processing and analysis of data and conclusions.

The aim of this research is to ascertain the influence of Design on collaborative action, namely in the generation of more effective results and in obtaining information, and its impact on other sectors (intervention, assistance, solidarity, community action and social development). Moreover, it has served to highlight the potential for future alliances with prospective partners who, in light of the developed process, have manifested an interest in establishing co-partnerships of this nature. This study sheds light upon the potential of integrating Design and Designers in organizations in general, and in particular in those that aim to respond to the needs of communities who are most exposed to social impacts. By increasing the capacity to respond to their vulnerabilities, the risk of social exclusion and isolation will be significantly reduced. Additionally, awareness on the part of social partners, of the added value of Design and its contribution to the maturity and sustainability of social processes will be enhanced.

## **Keywords**

Co-Design, Public Health Systems, Interdisciplinarity, Collaboration, Social Innovation, Inclusion, Social Sustainability



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## **List of Acronyms and Abbreviations**

ADHD (Attention Deficit Hyperactivity Disorder)

ASD (Autism Spectrum Disorder)

EIA (Environmental Impact Assessment)

HCD (Human Centred Design)

OECD (Organization for Economic Co-operation and Development)

MCI (Mild cognitive impairment)

IDD (Intellectual Development Disorder)

NGO (Non-Governmental Organization)

PAR (Participatory Action Research)

PCM (Phase Change Material)

PL (Language Disorder)

PLA (Polylactic acid)

SIA (Social Impact Assessment)

## **Introduction**

The present thesis aims to identify the character and impact of the designer as both an agent and actor of society. In a context of uncertainty, the application of collaborative and transdisciplinary actions paves the way towards an understanding of various perspectives, consequently leading to the construction of solutions which take a wider range of interests (social, economic, environmental) into account. The organization of social assemblies has taken on increasing importance since these events are conducive to the discussion of a multitude of pertinent issues

The gathering of individuals, local entities from different fields of activity, from the public, private and social sectors, results in a process of activities and interventions that seek to achieve the proposed objectives, by focusing on several lines of intervention, among which entrepreneurship, social vulnerabilities, social innovation, education, environment, housing heritage and solidarity may be highlighted. The main objective is to involve all the interested parties in the co-creation and implementation process. The intervention of the designer is explored and analysed in 3 preliminary case studies and 1 case study by means of the following: in the diffusion of knowledge, in collaborative problem-solving, in the ability to reformulate a problem, in how it facilitates situations that have not been explored, and the impact on the results obtained and observed in the improved interventionist practices of the social agents, thus stimulating their resilience in the face of adversities resulting from the current socio-economic policies.

Design has become closer to citizens and has emerged as being more confident and aware of its roles in culture, politics and society, namely to serve and create. Indeed, this approach may be applied not only in relation to citizens but also to the structural governing policy. Although viewed as a profession linked to industry and commerce, Design has unveiled its potential to act as a motivator of social responsibility values and behavioural change, as a facilitator of interactions between agents of different areas, as a platform for the visualization, creation and development of solutions, to finally turn itself into an active participant within the context of social intervention.

## **Research Structure**

The present research is structured in five chapters corresponding to the following stages of the project:

### **Chapter 1 - Research framework**

In this phase, which essentially focuses on the research and analysis of the various theoretical frameworks alluding to the central theme, the reflections of some of the most influential thinkers of the various areas related to social policies, philosophy and design are addressed.

Through the analysis of theoretical frameworks, including social responsibility, social resilience and sustainability, the aim is to understand the evolution of how design has become integrated in society and, thus, to draw relevant conclusions that will enable a contribution to the enrichment of a future perspective.

Accordingly, this chapter is divided into three fundamental themes for reflection on the design process in society: 1. State of the art in research problems, 2. Design and Social responsibility and 3. Resilience and sustainability

### **Chapter 2 – Research Overview**

Chapter 2 presents the research overview, referring to the philosophical view of the world that underlies the questions and objectives of the research, namely an advocacy and participatory worldview and its emancipatory and participatory principles. The research approach adopted for this thesis includes different intervention activities: Action Research, due to its intervention typology (action-based) in the field; Human Focused Design, with particular emphasis on integrating the perspective of the person who experiences a problem into the process; and Participatory Design, due to its co-creation procedures with all the interveners (stakeholders and community).

This chapter begins with a contextualization of the problem under study, referring to the motivations behind the urge to conduct this research. This is followed by an explanation of how the organogram analysis model, the chronogram and timeline were constructed. Their formulation stemmed from a breakdown of the initial research questions for which we set out to find answers. At the end of this chapter, the data collection time points are specified.

### Chapter 3 - Social Design and Collaborative Methodologies

This chapter outlines the rigour and ethics criteria that guided the preparation of the research. The rationale for the methodological approach and data collection instruments used in the processing and analysis of the collected data from the preliminary case studies is presented along with the conclusions.

### Chapter 4 – Field Research Design and Implementation: Case study

This chapter, divided into four topics, provides a description of the case study under analysis. The first topic presents the Fieldwork Research Design, the second describes the Product Design process, the third the Implementation Approach and Intervention Model, and finally the fourth topic discusses the impact of the design on the stakeholders and patients.

### Chapter 5 – Data Collection and Analysis

The fifth chapter aims to provide a clear and detailed description of all the activities conducted. The first analysis is related to a survey on Collaborative Practices and Design. The aim of this step was to ascertain how the general public perceives design and its influence on society. This analysis was performed on the basis of a case study of the development and implementation of a product, framed within a context of social vulnerability. This project resulted from collaborative methodology with social service entities with which the project was developed and where it was consequently applied. The data collection and analysis, by means of questionnaires and reports, shed light upon the importance of collaborative action, with recourse to an instrument developed within the same parameters.

### Conclusions and future developments

The conclusions of the present research are divided into three parts which, although intrinsically interconnected, differ in so far as they represent distinct parts of the contribution to the construction of knowledge through design methodology in social intervention.

The first analysis is a reflection where the main aim was to transpose the findings obtained from the observations made and the projects developed, confronting them with the initial research questions of the study. Secondly, a comparison of the preliminary case studies results and the

analysis of the collaborative action, the contribution of design and the added value to communities was performed. Subsequently, the case study was examined in further depth, given the greater control of the researcher, both in terms of its implementation and in the collection of data which allowed for a more comprehensive analysis of the impact of the design methodology on social services' practices and communities.

Finally, some of the limitations that conditioned the research are described at the end of this thesis, with suggestions for future studies, since the data collection brought a number of issues to light that were not resolved and are worthy of further analysis.

## **Chapter 1 - Research Framework**

### **a) State-of-the-art research**

#### **a1) Social context - The urban society**

The socioeconomic transformations of society are well-known and subject to analysis in the context of their era and in the different fields in which they are most evident. These transformations have given rise to new challenges, namely the construction of new means and modes of operation, that simultaneously characterize them along the way and serve as the platform for their success. Urban societies are subject to ever-evolving social and economic impacts that are becoming particularly more aggressive. This phenomenon has been repeated over the centuries, and man, in turn, has continued to adapt and modify his response, generating socioeconomic solutions with varying degrees of effectiveness, while confronted with a reduction in the life span of each cycle and its possible acceleration, such as that presented by Ferreira (2008); there is a common feeling of increasing caution in the face of an unknown future and, above all, of impending change.

As referred to by Innerarity (2006), the arrival of any innovation is always accompanied by the shadow of fear and, instinctively, that which is novel is placed within the boundaries of the monstrous; technical advances almost automatically cause a negative reversal. The future is not so safe, technology, science and innovation are associated with danger, instability, destruction, and control. Prevention triumphs over risk in laws, and in science and war the forms of cultural pessimism that intersect with technophobia (right or left), naturalist ecology and elementary anti-capitalism abound (Idem, 2009).

Prejudice apprehends the judgments of this future and the possible connection or disconnection with new visions and predictions. The presence of distrust and a dominant discourse of discredit related to those least privileged by the impending changes remove the possibility of new horizons and consistent opportunities in a community movement. (Piketty, 2014) The growing sense of interest geared towards uniqueness does not create a firm basis for the future. The value of cooperation is already reflected in the very genetics of living beings, as some authors have questioned and debated, such as Dawkins (1976), who defends in his book “The Selfish Gene”, that members of different species generally have a lot to offer each other since they can bring



different "skills" to society, and that asymmetry can also lead to evolutionarily stable strategies of mutual cooperation.

Complex interaction and collaboration with others and the environment are important means for construction and implementation. There is an urgent need to motivate and foster a collective and aggregating feeling of citizenship so as to promote a common future (Innenarity, 2009).

A vertical society does not rise to the heights of its fellow men. The proposal of philosopher Daniel Innerarity (idem) is based on a horizontal intervention in which interaction with social, economic and cultural agents in each context with a medium/long term vision is imperative to witness cohesive and sustainable results. The detachment shown by citizens in relation to their habitat is also due to an awareness of the little influence of their leaders and the multiplication of successive alternatives. Exceptional cases of community motivation and transformation formed by ordinary citizens have arisen as a result of the lack of visionary and consistent governance alternatives. As is common in the dynamic realities of contemporary times, the social movements one witnesses today may be related to some of the philosophical currents of the past. This analysis seeks to connect the times in which we live with concepts explored by German philosopher Friedrich Nietzsche, a cultural critic and analyst of the human condition. As a defender of the self, he challenges the theological legacy by extolling the capacities for self-realization and conquest. According to Wilkerson (2016), the concepts share common features with daily experiences: "nihilism and the revaluation of values", "the human specimen", "the last man" and "eternal return". Nietzsche's relationship with religion is narrow, in so far as it rejects human evolution to the benefit of a deity and highlights the importance of human-created values as a tool developed for survival. Nihilism is present in the construction and renewal of values which, by replacing those already outdated and unsuited to the human condition, reaffirm and enhance their creative capacity at each moment in time. This breach of values is constantly evaluated by future generations that adapt them to their times and needs. In the weakening and meaninglessness of values, Nietzsche identifies two positions that contrast in the way they respond and react to phenomena. The attitude of conformism and passiveness, identified in the figure of "the last man", gives rise to a daily life without risk-taking, a routine model devoid of both action and reaction. This figure is neutralized to the point of being considered a threat to evolution. Conversely, as far as "the last man" is concerned, the philosopher presents the disruptive and transformative figure

of the “Übermensch”, the exemplary human being, in whom he has placed the hope of overcoming the inherited pessimism. He puts him in the position of a benefactor of modernity due to his futuristic vision of a reforming, passionate and emotional model, affecting the lives of others who will follow his values to overcome states of insignificance and apathy. This figure is entirely related to the next concept in which Nietzsche relates values and time cycles in “the eternal return”. This is a direct association with facts that have occurred, are occurring and will occur again. With this concept, two characteristics emerge in confrontation with each other. The first can be measured by the capacity for improvement through repetition until perfection, a doctrine or teaching is achieved. However, it does not diverge from possible consequences such as monotony and apathy which can compromise the creative ability and willingness to pursue new challenges. Another characteristic that stems from the concept of “the eternal return” occurs through a rupture, where the cycle of successive and ordered phenomena undergoes a shock that promotes a sense of novelty through which the system is restored, based on reformulation methods or improvisation. This perspective of resilience, in response to a stagnation of the existing scenario, arguing with others and thus learning about human flourishing (MacIntyre, 1999) is crucial to the creation of new values and solutions in the search for a cooperative and supportive common good (Wilkerson, 2018).

The sense of community, by virtue of its heterogeneous nature, fosters interdisciplinary collaboration where different views of various disciplines on a given problem serve to demonstrate the relevance of theoretical concepts related to the vital interests of contemporary society. The degree to which people in the community demonstrate shared responsibility and collective competence are two elements of a community's ability to respond to the wellbeing and safety needs of its population (Mancini & Bowen, 2009).

According to Maslow (1943), these human-centred elements turn into needs, which are the driver of human motivation and increase achievement capacities. In his book “Motivation and Personality”, Abraham Maslow identified creativeness as the way self-actualizing persons think and pinpoint their lack of basic satisfaction and a less enculturated nature, that can provide a greater freshness and effectiveness of perception in society (Maslow, 1943).

The purpose of design is to mediate and redefine the relationship between the State and citizens’ well-being in different sectors. This collaboration can give rise to the development of a new facet of design in the construction of society (Heller & Vienne, 2018).

Jenny Winhall, a social innovator and service design expert, exposes the disassociation of design from politics as an opportunity to consider their co-relationship in the construction of values and their influence on the exclusion or inclusion of people in all sorts of societies. According to Winhall, the proposal of design is political since it has consequences, which are frequently serious, with a direct impact on people. Design, in Cynthia Weber's words, must be seen as an important strategic and political concept and practice through which citizenship and politics can be altered and redefined with mutually supportive and mutually self-interested engagement (Weber, 2010). Effective social regeneration enables participants to contribute to community life and wider society in a more meaningful and collectively sustainable manner.

## **b) Co-Design and Social Responsibility**

Collaboration comprises a set of activities that advocate the success of all those involved and establishes a goal towards which all parties strive, namely a practical agreement within the open framework of an idea of co-operation by means of collaborative services and the development of mutual partnerships based on trust and commitment to the communities and a sense of responsibility.

According to Fontes (2001), Vigotsky (1962) quotes Piaget (1926) when referring to the common agreement established between individuals when they collaborate and the rules of that collaboration, which communicate to thought the discipline that forms reason in both the theoretical and practical (Vigotsky, 1962) (Fontes, 2001).

In the prologue to Vigotsky's *Thought and Language* (1934), Barata (2000) states that the multidisciplinary analysis of the theme of thought and language is consistent with the author's conception of the mediating nature of psychic activity and the origin of inner psychic processes. It is a social background activity in which man interacts with his peers and his world in an inter-complementary exchange through the mediation of discourse and the formation of ideas and thoughts. This activity makes individuals who know the society in which they are inserted capable of acting within it in a dynamic and complex process of transformation and learning, thus uplifting their intellectual capacities (Vigotsky, 1962). However, from Morin's perspective, this interaction does not define society but rather an entity with specific qualities, resulting from a heterogeneous

composition (Morin, 1999). The author highlights the complex nature of this composition, which results from a fundamental bonding concept. This type of organization with multiple institution units establishes complementariness between the idea of unity and the idea of diversity or multiplicity, thus leading to a circular relationship between the parties and the whole, to which one owes the circular understanding of the whole to the parties and vice versa. Organization in Morin's words means self-structure, the relationship between the whole and its parts, from diversity and multiplicity to unity, a dynamic interaction capable of transforming and adapting.

In his book, *Pedagogy of the Oppressed* (1972), Paulo Freire defined what in his understanding and experience defines the constructive capacity of a society, emphasizing the need for a dialogical matrix through the characteristics of a transformative praxis in the construction of the world by the human being through reflection and action. He argues that this transformation must be joint, through dialogue, as only through this channel is it possible to conceive a clearer and more conscious reality, and consequently a more assertive and knowledgeable approach to challenges (idem, 1972). The author emphasizes the need for the levelling of statuses, placing both actors (leaders and the general population) on the same level of credibility. To this end, he indicates the practice of dialogue as the essence for the revolutionary action of social transformation – the so-called theory of dialogical action.

The collaboration and communion of objectives between the masses and the leaders result in their liberation and consequent emancipation. From this emancipation the emergence of previously unknown attributes is expected, which are an asset to the community.

The social sense of rupture, in the opinion of philosopher and social researcher Jacques Rancière, is the act of emancipation. In a related language, in terms of scenic art, he questions the relationship between the performative stage and the spectator, conveying this interaction to the public space (Rancière, 2010).

In an initial analysis, the author defines and characterises the spectator through a series of values. The spectator-citizen is placed in a condition of passiveness, since he only observes what is happening around him, without being allowed to relate or intervene in this space. The show itself is thought, staged, produced and performed without the contribution of the spectator and able to generate distancing by his possible inability to understand the message. The spectator thus needs to remove the distance between himself and the stage to become a participant in the performance

of a collective undertaking in an interdependent society so that the welfare of each individual may be regained, using collective power as the basis for the path forward (Rancière, 2010). The common good is not related to specific goods, but rather to all the features that contribute to the preservation of human values. It is this movement of solidarity and reciprocity that creates emancipation and awareness in a group with common goals, restoring the identity of the subject and his community as a social entity. The meaning of emancipation is, therefore, and according to Rancière, the breaking of boundaries between those who act and those who see, of individuals and members of a collective body.

The exchange of roles and occupations generates a new attitude towards society. The will to think, act and overcome has become inextricably linked to all classes, in general, and all their members (Morin, 1999). In this process, the project has become a powerful tool with which man shapes the direction towards which he gears his transformation while society demands great social and moral responsibility from him. As socially and morally driven designers, it is our duty to meet the needs of a world where inequalities must be exposed and resolved by means of a joint construction to include design, social sciences, biology, anthropology, politics, engineering, technology and behavioural sciences in order to define a new intervention approach. On this basis, it will be possible to demonstrate the relevance of the designer as a problem-solver and his contribution to society and social cohesion (Papanek, 1971).

As stated by Ehn (1992), according to Nilsson and Topgaard (2014), participatory design actions have developed progressively in public spaces with the involvement of both non-governmental and grassroots organizations and marginalized groups through the creation of collaborative practices or creative communities consisting of stakeholders, designers and various groups of active citizens. These communities may take the form of social commissions, seeking the support of local partners from a variety of sectors and disciplines to collaborate in initiatives with commitment, upon which the success of such collaborative ventures in social innovation is heavily reliant.



Figure 1 - Collaborative Development at a Social Commission

As far as designing conditions for the social is concerned, Emilson (2014) itemizes the essential social innovation methodological concepts: diversity, complementary skills, mutual respect and learning, long-term relationships and trust with stakeholders and real-life context prototyping to face potential dilemmas. (Fig.1) However, according to Santos (2013), despite positive results in the social context of Portugal, the complexity of the problem remains high, thus reinforcing the need to reform intervention processes. The author also stresses the urgent need for a social management methodology based on a new creative social design (Santos, 2013).

In this new collaborative dynamic, there will always be unforeseen situations such as conflict of interests, values, breakdown of the project's progress development or ways of working that often threaten the collapse of projects, frequently for secondary reasons or differences in points of view among the actors (Emilson, 2014). Designers must also be aware of other factors that may condition the project, such as dealing with social statutes and political interests, and should bear in mind the possibility of developing processes of organizational change at a disruptive intervention level to reframe actions in order to benefit vulnerable communities (Nichols & Murdoch, 2012).

Participatory and joint action must be an evolutionary process of interdisciplinary interactions in which social coexistence is essential for the development of a community creative process which looks towards construction and transformation activities in society (Giaccardi, 2003).

Fuad-Luke (2009) also addresses this concept in his book *Design activism: beautiful strangeness for a sustainable world.*, adding the concept of activism, taken as a “personal internal transformation”. This expression refers to a personal and conscious development of a different state of being, with a mindset focused on the contribution that everyone can make to social cohesion and sustainability.

The author also organises several design approaches ranging from Meta-Design, Sustainable Design, User-centred, Empathic Design to Experience Design, in terms of their characteristics and issues, while underlining that a socio-cultural and political change focus is a pillar that is increasingly more connected to design. A design approach on the democratic agenda has its strategy based on a progressive sustainable vision that branches out into different directions. Referring to the Report of the World Commission on Environment and Development, *Our Common Future* (1987), the author highlights the relationship between citizenship and social sustainability and the commitment between present and future generations. He stresses the importance of designers’ awareness of good citizenship practices as creators of sustainable projects in social, economic, environmental and political priorities.

### **b1) The “designabler”**

At the time of Mesopotamia, some people, through observation, were able to predict the floods and droughts of rivers and indicate which channels to dig in the future, drawing lines on clay plates; these people were called prophets, today we refer to them as project designers (Flusser, 2010). The designers’ participatory approaches as “facilitators” and interlocutors who, along with the communities, articulate active methodologies, encouraging discussion and debate, result in increased knowledge and awareness of the common good. This is done by combining the convergent and divergent factors and power of influence of the parties involved, but also at a higher level of critical and mutually constructive thinking. In this context, the “facilitators” develop internal tools of resilience from these collaborative approaches, with diverse responses, that is, a

system with polycentric skills capable of creating distinctive tools. It is necessary to involve all the actors in a broad and open manner with the creation of models for discussion and platforms for interaction. The social responsibility instilled in the intervening actors by the Academies is reflected in the awareness of the need to change their patterns of behaviour and mentality in order to expand their knowledge bases. Different types and sources of knowledge must, together, achieve solutions through experimentation and commitment to a behavioural change so as to meet human needs in smart cities that will intensify the need for designers (Margolin, 2002) (Margolin, 2014). The synchronization of the entities involved is key to the success of each project. It is the designer's responsibility to conceptualize continuous infrastructures for co-creating a multidisciplinary partnership with responsible interdependence. Thus, designers must provide the structure, effective communication between the partners and communities and learnable social interaction, acting as the moderators and creators of a future vision of likely solutions for the realization of a project (Vellozi & Manzini, 1999) (Norman, 2011).

The designed organization is based on a social responsibility commitment to people, understanding and experiencing their daily life, culture, vulnerabilities and potential, responding to the diverse network of activities that fuels and generates dynamism in their territories.

The street becomes an educational laboratory, seeking to transform and promote new knowledge, mixing the agent's entire experience in a continuous process in places and communities that bring variety to the ecosystem, helping to instruct a resilient attitude where it will be possible for us and future generations to live comfortably (Sanders, 2002) (Manzini, 2015).

The knowledge acquired during the experimental process, by means of specific methodologies for working with and for communities with local stakeholders, raises awareness of the social and economic adversities in society and understands the restrictions of the other agents involved in the process, thus contributing to a more effective management and coordination of the complex creative exercises. The proposed procedures place designers at the centre of the action, structuring collaborative and sustainable methodologies, to awaken a broad view of replicable and sustainable entrepreneurship (Santos, Carvalho, & Salvado, 2013).

Reference tools and methods are being developed to achieve closer proximity with each case. These resources seek primarily to improve the skills involved in solving the real-world problems of people's daily habitat, needs, solutions and satisfaction in the perceptual and operational



dimension of the human enrichment experience, which will inevitably have repercussions in the microeconomic environment (Cross, 2006) (Ferreira, 2008).

### **c) Resilience and Sustainability**

The response of participatory citizenship envisions an approach to socio-economic adversities through resilience and sustainability-focused problem-solving. According to Frascara (2002), the response to society's vulnerabilities lies in bringing together different disciplines, including design, which must work together to investigate the causes of such fragilities and collaboratively pursue alternatives that can be developed to resolve them. The author himself proposes the need for interdisciplinary connections through tools that will allow the world to be observed more accurately, with a multidimensional perception where different types of analysis merge and confront each other, paving the way for a co-evolution of the understanding of the problem and the associated context (idem, 2002). This attitude of merging knowledge will foster approaches to social problems, thus increasing society's capacity for intervention to respond to the impacts to which vulnerable communities are subject.

#### **c1) Social Resilience**

According to David Alexander (2013), the term resilience and its derivatives have an extensive and diverse history. Its use has undergone changes and meanings over time. The author indicates that some of these descriptions are historically the most common, namely when referring to leaps, jumps or rebounds by thinkers, philosophers and teachers.

The meaning of resilience has undergone some changes in its connotations over the years. According to Alexander (2013), the person responsible for the first known scientific use in English is Sir Francis Bacon in his book *Sylva Sylvarum* (1625), referring to the strength of echoes. A few years later (1656) the first known dictionary definition of resilience emerged in *Glossographia*, a lexicographical work, compiled by the lawyer and antiquarian Thomas Blount (1618–79), who attributed a dual meaning to the word: to rebound and to go back on one's word. In mechanics, the

first serious use of the term resilience appeared in 1858, by William J. M. Rankine (1820–72) to describe material resistance in the modern use of the term in civil protection; in science, resilience was introduced in the 1970s by researcher and ecologist Crawford Holling, associated with environmental management, ecological economics and the human impact on global change. In his article “Resilience and Stability of Ecological Systems” published in 1973, Holling named two terms that refer to a balanced relationship between the system and an external element and those adjacent to that impact: - Stability and Resilience, defining the fundamental principles to maintain balance without developing resistance to the ecosystem, adapting to new environments or to phenomena that absorb shocks without great loss of form and function (Alexander, 2013).

*The whole sequence of environmental changes can be viewed as changes in parameters or driving variables and the long persistence in the face of these major changes suggests that natural systems have a high capacity to absorb change without dramatically altering. But this resilient character has its limits, and when the limits are passed ... the system rapidly changes to another condition. (Holling, 1973, p. 7)*

A report by CARRI (Regional and Community Resilience Institute) (2013) consists of a compilation of definitions of the term resilience, allowing for an overview of the term over time and by domain. In this report, the evolution of the term may be observed in the different areas to which it has been adjusted, namely in the domains of physics, ecology, urbanism, community, the economy and individual. The definitions within the area of individual, social and community development have descriptions associated mainly with states, namely adaptation, recovery or resistance through a reaction, response, assimilation or recovery to achieve the objectives of structural maintenance, functionality and sustainability. This reaction accentuates the weaknesses of the system but also identifies the potential of adaptation and transformation. By analogy, in his article *Resilience and disaster risk reduction: an etymological journey*, author David Alexander (2013) relates the term to human society and the way of reacting under stress, highlighting the ability to conceive ways to maintain one’s integrity and structure adapted to the circumstances. In 2014, The Stockholm Resilience Centre (SRC), an independent, non-profit research institute specialising in sustainable development and environmental issues, published seven principles in social-ecological systems: a) Maintaining diversity and redundancy to increase resilience, b)

Managing connectivity and well-connected systems, c) Managing slow variables and feedbacks, d) Fostering complex adaptive thinking systems, e) Encouraging learning and collaboration, f) Broad participation and a g) Polycentric Governance supporting the interaction of multiple bodies. These principles point to an emerging approach aligned with diversity, proximity, interaction and openness to communities, promoting advanced research into the governance and management of social-ecological systems to ensure ecosystem services for human well-being and resilience for long-term sustainability (Biggs, Schlüter, & Schoon, 2015).

In the 2018 OECD Regional Development Working Papers, resilience is referred to as being framed by the theme of the city. Here the impacts are translated into consequences involving a multidimensional area, such as the environmental sector, related to events of natural causes, the economic sector, related to markets and exchanges, and the health sector, related to epidemics and risk situations.

In response to this phenomenon, local authorities should design and implement urban resilience strategies to include economic, social, environmental and institutional factors. For such purpose, it is necessary to define the indicators that can measure resilience in these dimensions, with an approach geared more towards ensuring people achieve a better understanding (Figueiredo, Honideni, & Schumann, 2018) (Frascara, 2002).

A community that considers the needs of future generations and provides health to all members of the community has a sustainable conscience. Achieving this social equity implies preserving the various social and cultural systems, resolving tensions and distributing costs and benefits fairly (Flint, 2013).

## **c2) Activities for Resilience**

The term “communities” is understood as groups of people spatially or virtually connected that share common interests. “Empowerment” refers to the process by which people gain control over the factors and decisions that shape their lives, increasing their influence on building these capacities and increasing their dominance over external factors. People may not be “empowered” by others; only they, themselves, can promote the will to acquire and the effective acquisition of skills. However, the nominal process must be played by an outside agent, which will facilitate the

process (Labonté & Laverack, 2008). The designer has the profile to be assumed as the enabler of this will.

The strengthening of community action skills is therefore more than community involvement or participation. It implies the ownership of action that explicitly aims at social and political change. It is a process that seeks to renegotiate in order to gain more control over sharing the existing power (Baum, 2008).

*“If new roles for design have emerged here, this has not only been the result of any dramatic re-orientation of designers toward public service. It has also the resulted from the public sector bringing itself closer to the commercially oriented practices and norms to be found in design.” (Julier, 2017, p. 4)*

A new territory is being formed by mutual respect between the designer and other sciences and this phenomenon requires new tools for action (Sanders, 2002).

These interdisciplinary innovation centres, when integrated into the communities, generate opportunities and new economic and social skills, , through the combination of science and the “layman’s” knowledge, thus promoting collaborative learning and transdisciplinary knowledge among the interveners and the local community and their interlocutors.

By becoming involved in the complexity of this ever-changing world, knowing, doing and playing emerge as critical mechanisms of becoming and coalition (Thomas & Brown, 2009). The cross-cutting learning process by means of the experimentation of intervention in the community through an interdisciplinary model is transformative in the critical process of individual learning (Simonsen, et al., 2014), and building community capacity becomes a focus in the evaluation of shared responsibility and collective competence among all participants, including the community members (Mancini & Bowen, 2009).

According to OECD indicators for resilient cities (2018), the three approaches to achieving balance are as follows:

a) socio-ecological, which is described by Holling and Walker (2003) as a capacity that can be built or developed by different organizations, making them capable of responding to situations that

can destabilize their normal functioning; the capacity of the self-organisation system; and the ability for learning and adaptation;

b) sustainable livelihoods, such as a capacity that allows families and communities to maintain a minimum threshold condition when exposed to shocks and stresses. (Constas, et al., 2014).

c) reducing the risk of catastrophe as the capacity of a system, community or society exposed to risks to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, namely through the preservation and restoration of its basic structures and essential functions (International Migration Report, 2017).

Adger (2000, 2006), cited by Collier (2013), proposes that social resilience and ecological resilience can be essential for sustainable development programs, highlighting the importance of multiple perspectives in the analysis and management of complex systems, including local and non-specialized knowledge of communities used to link local stakeholders, and specialized actors to generate resilience against uncertainty and unpredictability, and this has been used to predict scenarios based on resilience with regard to collaborative planning (Collier, et al., 2013) (Selman, 2004).

By empowering communities and promoting citizen engagement, it is possible to promote meaningful partnerships among communities. Community-oriented development programs serve as an important laboratory for defining the indicators, and for witnessing the effects of resilience-building efforts that can contribute to the promotion of sustainable development.

The United Nations Agenda for Sustainable Development 2030 has set goals to respond to the human rights of all and achieve gender equality by integrating three dimensions of sustainable development: the economy and social and environmental factors (United Nations, 2015). Economic development is characterised by sustainable, inclusive and sustained growth with shared prosperity and decent work for all, considering different levels of development and national capacities. In social development, the aim is to extinguish poverty and hunger; to put an end to inequalities within and between countries; building peaceful, just and inclusive societies to protect human rights and promote equality between men and women and the empowerment of women and girls; and, finally, the purpose of environmental development is to ensure the protection of the planet and its natural resources.

It may be concluded that the approximation of the terms resilience and sustainability has also become their definitions. A dynamic interaction of persistence, adaptability and transformability may be added to their objectives of achieving balance, thus providing an advantageous framework to understand how socio-ecological interdependencies develop. This creates the opportunity to establish bridges among the various sciences and to develop a growing interdisciplinary dialogue and collaboration (Davoudi, et al., 2012).

### **c3) Methodological Approach**

The practice of Co-Design involving different scientific areas and local communities may be the answer to social needs and boost capabilities. This (re)discovery generates new forms of collaborative organizations, leading to a swifter achievement of the desired results. The construction of a network must be structured in order to maintain constant interaction and the collection of information and feedback through the intervention of a designer who is capable of producing skills as a social agent of the future, and through the construction of interaction systems that contribute to a better society in a multidisciplinary context with the collaboration of the stakeholders.

The participatory approach tends to trigger a set of intentions which depart from the internalization of daily experiences and skills with scientific knowledge (Thomas & Brown, 2009).

Through experimentation and connection, contact points are established within increasingly broad networks, generating an exchange of dialogues at a local, regional and global level where the intervention is complementary and surpasses itself (Manzini, 2015).

The need for cooperation does not reduce the level of demand but rather exposes the strengths and weaknesses in our scientific area, thus making the process personal and complex, where the main challenges are complementarity, the ability to synchronize and cross-learning (Norman, 2011) (Biggs, Schlüter, & Schoon, 2015) (Bernarda, Ferreira, Queiroz, & Silva, 2017).

The participatory approaches of designers as "facilitators" (Flusser, 2010) and interlocutors with communities, as well as the articulation of active methodologies, connect discussion and debate, resulting in the increased knowledge and awareness of common good, by combining the convergent and divergent factors and power of influence of the parties involved, but also at a higher

level of critical and mutually constructive thinking. The methodologies are designed to equip potential participants with the means to stop being spectators and become agents of a collective practice (Rancière, 2010).

In this context, "facilitators" develop internal resilience tools for collaborative approaches with a variety of responses, i.e., a system with polycentric resources capable of creating advantageous and distinct tools. The process is based on a commitment to people's social responsibility, understanding and experiencing their daily lives, culture, vulnerabilities and potential, responding to the diverse network of activities that foster and generate the dynamism of the territories with a positive impact on health and education, thus enabling and promoting public debate on the objectives of services and community resilience.

How can design generate new behaviours in society that result in its transformation towards integration and cohesion? New social forms of narrative, education and the development of behavioural patterns can reinvent new habits that generate new values when doing so. The designer is the trigger, developer and moderator of co-design networks and plans adapted to intervention methodologies (Manzini, 2015). Each context has its own characteristics and approaches, involving a deep analysis that takes the designer beyond appearances to the inner roots. The ability to anticipate a change in trends, risks and to enable recovery through adaptation, evolution and growth are actions that define a crisis-resistant approach while maintaining a functional dimension. This is only possible with a collaborative approach that allows for the development of synergies and an exchange of information during the optimization process, so that agents are able to respond to failures or other dynamic disturbances while maintaining a diversified, productive and sustainable system, which will result in increased knowledge and improved skills from a personal, civic and social perspective (MacIntyre, 1999). The city must be seen as a living system and a stage of pedagogical excellence. Having understood the needs, aspirations and beliefs it is possible to plan a change.

Through his capacity to adapt to different contexts, the designer develops the ability to be an alternative-tracker and an expansion effect generator. Cross-cutting collaboration among social agents (Simonsen, et al., 2014) with distinct but complementary scientific knowledge results in accelerated access to innovation processes, stimulation of the transfer of knowledge and rehabilitation of the social, economic and environmental resources of the communities. Consequently, a more sustainable existence through design methodologies, new perceptions of

speed, effectiveness and increasing access to the media, awareness and training are observed, with the designer as the mediator of these methodological and theoretical transformation dynamics (Vellozi & Manzini, 1999) (Koskinen, Zimmerman, Binder, Redstrom, & Wensveen, 2011). The impact of interventions that attract the interest of individuals and support a transformation of their mind-set enhances the empowerment of the rest of the community (Dorst, 2015).

In their Capacity Building report, Whittle, Colgan, & Rafferty (2012) defined the key approaches that support successful capacity building to achieve a sustainable society.

As far as process development is concerned, it is possible to identify the following features:

- a) Attention to context, where capacity building is a process of social experimentation;
- b) Investing time in establishing contact in order to generate partnerships, and awareness of schedule limitations for the programming of joint activities ;
- c) Sequencing planned change due to the possibility of reorganising the strategies and events that may influence the logical sequence of the intervention;
- d) Evaluating through participatory involvement and collaboration;
- e) Working processes with stakeholders;
- f) Absorptive capacity and managing new knowledge through the organizations' recognition and use of the new knowledge obtained;
- g) Implementing capacity building in the organisation by transferring knowledge through practice and assimilation;
- f) The role of the change agent and the potential complexity involved in deciding what to do and the design of the capacity-building intervention.

The designer is responsible for defining a collaborative model based on a set of new solutions, considering an interdisciplinary approach to react to the evolution of collaborative methodologies in response to the needs of society. His contribution is to develop a collaborative methodology in which the project's construction system is the result of operations and dependent responsibilities distributed across all the stakeholders, thus increasing the cross-fertilization of knowledge and the construction of an organizational system through the distribution of activity sectors and the redistribution of interaction flows (Whittle, Colgan, & Rafferty, 2012).

Embedding an approach within the government that is characterised by the creation of authorizing environments such as co-labs and creativity centres that will aid design in the foundation of its roots still proves to be a challenge. Moreover, ensuring funding, anchoring change in the



organization, accomplishing management buy-in and executing the new ideas and solutions are all added difficulties. Indeed, many initiatives are still struggling to find their place as a legitimate part of the policy-making infrastructure (Bason, 2013).

According to Guy (2017), an expert on design activism and social design, it has been possible to witness the creation of creative centres, foundations and institutions geared towards the construction of social policies. The birth of these spaces fosters the evolution and expansion of cross-disciplinary research, confirming the realization of a more research-oriented and user-focused approach to "complex problems" and the integration of design in public services, resulting in efficiency gains and greater effectiveness (Guy, 2017).

## **Chapter 1 summary**

This chapter provides an introduction to novel attitudes towards some of society's social issues based on innovation, evolution and integration. Relevant activities are introduced that promote collaboration and enhance the creative skills of agents, thus enabling a contribution to the enrichment of social cohesion. From a global perspective, it is possible to analyse several significant parameters in the context of cohesion and social development. The emancipation and participation of the citizen in the construction of society, as well as the integration of design in these collaborative activities have proven to be rewarding. They have allowed for the validation of prior approaches to human capacitation, social co-evolution and the development of activities that foster the prospective of new partnerships for social sustainability, the interdisciplinary evolution of each sector, increased social intervention effectiveness and constructive capacity.

## **Chapter 2 - Research Theoretical Design**

### **a) Research Background**

#### **a1) Philosophical Worldview - Advocacy and Participatory**

The research focuses on the relevance of integrating design methodologies in social services organizations. The co-creation of an approach in intervention planning, in collaboration in social intervention, in the capacity of multidisciplinary ventures in the construction and sharing of knowledge broadens the spectrum of intervention possibilities, as well as the knowledge of problems and the restructuring of a system that is capable of enhancing the skills of organizations that support communities with social and human vulnerabilities (Morin, 1999).

Based on the methodology proposed in the 1990s to understand the commutative nature of the problem and the construction of a solution through design, actions were planned to introduce design into the social context (Archer, 1979) (Cross, 1989, 1979).

In the development of these actions, points of contact and the confrontation between different sciences and design were established in the construction of the methodology and the resolution of the problem.

Research has assumed a mixed approach method, that is both qualitative and quantitative due to the need for data of both types in the analysis and understanding of problems of certain social groups, where it is the researcher's role to interpret the meaning of the results obtained as well as that of the measurable variables, through the introduction of tools that enable the statistical construction of quantitative data (Creswell, 2009).

The philosophical view of research falls within the scope of the advocacy and participatory approach. This position emerged in the 1980s and 1990s to respond to the laws and theories of post-positivism that did not accommodate marginalized and vulnerable communities. The literature references of this approach may be found in the works of Marx, Adorno, Marcuse, Habermas and Freire (Neuman, 2009). The development of research takes on contours and is designed to change the actors, whether they are participants through their behaviours and habits or institutions in their practices and planning.

The focus of this thesis is to solve social problems, including inequality and isolation in communities marked by social disinterest, by integrating design in intervention methodologies with a view to seeking collaboration with stakeholders and communities, emphasizing the need for change, while anticipating risks, minimizing impact and encouraging adaptability and evolution. The philosophical orientation in the analysis and understanding of the study is assumed by its advocacy/participatory essence, with its origins in the works prepared by Karl Marx and Freire, as it focuses on the theme of marginalized/disadvantaged groups in social and economic terms. This vision seeks to achieve positive changes and enhance the participation of the community in the construction of changes and reforms (Lewin, 1946), new intervention policies and new social and scientific alliances, which foster the collaborative context of the development of factual solutions in the comparison observed in the results following the intervention (Creswell, 2009).

In order to analyse collaborative practice, as well as its impact, three preliminary tests and one case-study were carried out as a result of the difficulty encountered in measuring the impact of design and collaborative practice, as well as the materialization of tools that complement the construction of data and the validation of applied design procedures and practices.

At the initial stage, with the inclusion and active engagement of the community, the methodology was participatory in collaboration with stakeholders where it was possible to plan, think of and develop more responsible projects for the needs of individuals from different communities through common principles of commitment and partnership in the planning, implementation, reflection and collective action to understand the situation from different perspectives at each given moment (McIntyre, 2008).

The second stage of the research followed the tradition of action research, where the value of the collaboration and articulation of different sciences became evident within a broader scope of individual progression, as well as in the connection and involvement of the researchers and participants (Lewin, 1946).

Two projects were initiated thanks to the establishment of a relationship of trust that gave rise to a partnership which subsequently sought opportunities for intervention. Children at risk and homeless people were the selected areas. In the first project, namely children at risk, collaboration was established between psychologists and social intervention services; in the second with engineers. Due to external factors that hindered the expansion of the project in terms of development, production and applicability, a third case study was necessary. Related to public

health in cognitive development, this project grew progressively following several more consistent meetings with the social intervention unit of the parish council of Estrela (Lisbon district), resulting in the design of a model. This project was noteworthy for its scope and dissemination to other organizations and institutions in the same or other fields of intervention, which also led to a broader gathering of potential data to support the intended premise that assertiveness is essential in the development of co-created social projects.

To access the impact of the third case study, a HCD (Human-Centred Design) approach allowed for a qualitative result of the impact on the two interveners in question– a health specialist and a patient.

With the combination of two methodologies, intervention in social work and design, as well as collaboration among experts in areas such as psychology, sociology, social intervention and design, it was possible to deepen knowledge in the different areas of this field – namely in Memory loss, Mental Dementia, Neurodevelopment, Therapeutics, Cognition, Early Intervention, Body Psychotherapy, Clinical Intervention in Disability and Educational Psychology.

## **b) Research Approach**

Due to its interventional, interdisciplinary and collaborative nature, with a focus on development and social sustainability, the research methodology adopted for this study was based on distinct but complementary research principles and methods.

The research sought to demystify a practical problem, finding solutions in partnership with associations, government entities and other organizations with social problems. It was of a practical nature, in other words, applied. According to Muratovski (2015), the application of research can be geared towards two main areas, namely practice-based or practice-led. During this specific process, these research approaches complemented each other, due to the plasticity of the project. The research model is based on the development of other projects, through the design of a new methodology based on collaboration. It is possible to highlight the multi methodological component due to the variants to which the research is subjected in its interventional and human component (Schutz, Nichols, & Rodgers, 2009).

Research becomes an integral part of social change projects that solve practical problems, focusing on a particular social group, organization, community, or even society. A striking feature of the project is its attempt to create something to differentiate real people, and research exists as the basic service of that effort.

Due to these characteristics, the research finally shifted towards Action Research, a systematic research approach that allows people to find effective solutions to the problems they face in their everyday lives, understanding what the explorations reveal, involving collaboration among experts in social research methods and local stakeholders more effectively in experimental studies to achieve a specific change. (Lewin, 1946) (Stringer, 2007) (Greenwood, 2008). We can assume that the research has a component of reflection on the practice - an analysis of the applied methodology. According to Schön (1983), the practice of design is a reflective activity, in which the whole process is analysed from the construction of the problem, the strategies or the process model to the final resolution. On such terms and while designing, a reflective conversation regarding the situation occurs, taking into consideration an evaluation of the project, awareness of the decisions to be made concerning a given situation, but also the divergent changes and unexpected restrictions that occur along the way.

These moments are constantly under analysis and affect the subsequent phases – a reflection in action and a reframing of the problem. This stage guides the redefinition and transformation of the methodology and consequently redirects the intervention. When referring to practice in society, the author mentions the need for improvement in the transmission of knowledge and protection of minority or vulnerable social classes. *Counterprofessionals* and *Counterresearchers* are the terms used to define the category of professionals and researchers that the author appoints as protectors of minorities, which may have an impact on social reform. It is possible to closely examine this proposal which indicates a concern with social cohesion but also a new area and new fields of study. From this standpoint, the author advances the following reflection:

*Professionals are more appropriately seen, I think, as participants in a larger societal conversation; when we play their parts as well, they help that conversation to become a reflective one. In the processes by which ideas of social problems and solutions come into good currency, descriptions of reality are socially constructed. Through our public institutions, through media, through the actions of intellectuals,*

*and through the processes of public debate, we construct ideas powerful for action concerning the issues and crises of our society, the problems to be solved, the policies to be adopted.* (Schön, 1983, pp. 346-347)

He identifies a new role in society, the citizen from an agent of action to an agent of change.

*When we act from these ideas, we change social reality. Sometimes we make our ideas real, but also thereby create new problems and dilemmas. The “we” who act in this way are agents of the society.* (idem, 1983, p. 347)

He also emphasizes the intervention of the designer and the collaborative action among different agents in public policies.

*The struggle to define the situation, and thereby to determine the direction of public policy, is always both intellectual and political. Views of reality are both cognitive constructs, which make the situation understandable in a certain way, and instruments of political power. In the larger societal conversation with the situation, problem setting, policy definition, and interpretation of the situation’s “back-talk” are always marked by intellectual inquiry and by political contention.* (idem, 1983, p. 348)

He ends his logical thinking by questioning the capacity for mutual reflection in action, to overcome institutional restriction and learning patterns, to surmount and transcend them. This transformation occurs in the designer’s identity, and in the intervention models and values that define it, when engaged in an interdisciplinary undertaking geared towards a change in society, by appropriately drawing from several disciplines to redefine problems outside the normal boundaries, and reach solutions based on a new understanding of complex situations (Naiman, Décamps, McLain, & Likens, 2005).

By conducting practice-based research and examining how to improve the design solution, it is also necessary to engage a wider range of individuals in the co-design project.

As a Participatory Action Research (PAR) project, practice is developed. A research method based on the construction of knowledge should be assumed regarding planning, action and the verification of facts in social action in partnership with users, including them in the research process as representatives of their chronology (Freire, 1971). The action will reflect the co-creation of knowledge and the promotion of awareness and self-criticism, leading to individual and/or collective social changes in a co-learning process in which researchers and participants plan, implement and draw their conclusions through the research project. Collaborative demand must be authentic and morally sound. As participants in this methodology, the interveners enhance their own enrichment and contribute to the knowledge of society by boosting the strength of the community in action and progressive change processes. (McTaggart & Kemmis, 2005) (McIntyre, 2008)

According to Selener (1997), and as synthesized by Macdonald (2012), participatory research may be defined by a set of main components and characteristics. According to the author, the first is the recognition of the problem by the community, which contributes to its analysis and resolution (Selener, 1997). Secondly, it fosters the transformation of social reality and the improvement of the lives of the individuals and stakeholders involved, namely the community members who are the main beneficiaries of the research. Thirdly, PAR involves the full and active participation of the community at all levels of the entire research process. The fourth component of PAR is the characterization of the target group, which generally includes vulnerable individuals. Its fifth component has the ability to create greater awareness on the part of individuals of the available resources with less of a focus on their self-sufficient capacity. As far as MacDonald (2012) is concerned, participatory action research is more than a scientific method, it is the process that facilitates a more accurate and authentic analysis of social reality, allowing the researcher to be an active participant, facilitator and apprentice in the research process (Macdonald, 2012).

It is important to define the meaning and typologies of participation. Participation can be categorized according to the transformations of society and its impacts. According to Cornwall (2008), participation typologies have been produced over the decades taking certain principles into consideration, such as intentionality and the associated approach.

In his analysis of Arnstein's (1969) citizen power and Pretty's (1995) citizen participation ideas, the author makes a distinction between the types of participation and their purpose.

Participation is characterized according to different typologies at the level of integration (internal vs. external), power in the decision process (active vs. passive) (shared vs. delegated), achievements (direct vs. indirect) and motivations (power and control vs. empowerment and engagement).

The relationship between action and joint participation with the stakeholders fosters the construction of a potential reality through the new knowledge built and an opportunity to induce social transformation based on open and multidisciplinary inclusion, ensuring a commitment to participatory decision-making and analysis (Arnstein, 1969) (Pretty, 1995).

In order to achieve the good practice of a Participatory Approach, Pretty defines a set of goals that should be determined, including a defined and periodically analysed methodology, the reliability of participants in their reports, interdisciplinary interaction, flexible approaches adapted to each participant or context and agenda flexibility to the priorities of local stakeholders. He further refers to transformation regarding the improvement of existing activities, the debate and analysis of change leading to sustainable action and the building capacity of local stakeholders to initiate self-mobilised action.

This process is best conducted when a collective, interdisciplinary and intersectoral approach shares and discusses several perspectives. Stoecker (2005), citing Patton (1997), proposes a form of participatory evaluation characterised by utilization-focused evaluation, including principles such as: (1) involvement ; (2) evaluation owning; (3) self-importance outcomes ; (4) working collectively; (5) understandable and meaningful evaluation ; (6) using the evaluation to support participants' accountability (7) developing the evaluator's role as a facilitator, collaborator, and learning resource; (8) developing participants' roles as decision-makers and evaluators; (9) recognizing and valuing participants' expertise and helping them to do the same; and (10) minimizing status differences among the evaluation facilitator, implementers and participants (Stoecker, 2005).

According to Guijt (2014), the potential benefits of using participatory approaches in impact evaluation may be ethical or pragmatic. In addition to the sense of ethical duty, the benefits have their meaning, although they are subject to being quantified in several domains such as through the provision of more detailed data to improve the authenticity of the reported impacts by: listening



to participants and local implementers, understanding the impact on the positive and negative aspects of the problem, validating findings, reflecting on lessons learned, synthesizing and conferring with different stakeholder groups, involving decision-makers in participatory data collection, analysis and feedback, improving project performance through active and adaptive implementation by way of involvement in asking locally relevant evaluation questions and setting a joint generation of recommendations in the data analysis to build on the emerging impacts.

To improve the interventions deemed to display accurate findings of changes and causal explanations, the theory of change should be validated and revised with the programme participants and implementers, and the intervention based on updated and robust knowledge to develop leadership, build team understanding and the local capacity to reflect critically (Guijdt, 2014).

*By understanding their practices as the product of particular circumstances, participatory action researchers become alert to clues about how it may be possible to transform the practices they are producing and reproducing through their current ways of working. (Denzin & Lincoln, 2005, p. 565)*

Participatory action research is socially geared towards reframing and restructuring social practices. Following the key features of Kemmis and McTaggart (2007), namely in relation to purpose and goal, a sequence of steps is proposed involving the planning and design of a change to redefine and improve, action, observation and the collection of information on these processes of change and reflection and reporting to re-plan the strategy in a cycle of repetition. This procedure will clarify the processes that can be adjusted to better adapt to producing more information and knowledge, thus providing the other co-participants with access to collaborate and add value to the re-structuring of the practices (McTaggart & Kemmis, 2005).

### **b1) Participatory design approach**

In the development of new collaborative approaches, Ehn (1992), a pioneer in what is now referred to as co-design, suggests in his paper, a new role for the designer and the importance of

communication between designers and users, the sharing of skills and the development of creativity in the design process.

In this theoretical reflection, the author describes some of the premises that define the participatory nature of design actions. According to his point of view, the interaction should result in a common learning process where both interveners learn from each other, sharing a social, cultural and language background. Design is given as a tool for the evolution of participatory action, challenging formal methods and thus empowering the interaction between tradition and innovation. The collaborative meetings, according to Ehn, should involve all the participants and the design practices should be fun and less formal. By introducing "design-by-doing" and "design by playing" approaches, designers and users discuss and express practical competences in meaning and involving activities. The use of artefacts to develop more enthusiastic meetings will establish the bridge for discussions in which users and designers become aware of the current position and are able to visualize a new point of view and condition which enhances their well-being (Ehn, 1992).

According to Fuad-Luke (2009), in 1999 these new approaches to design triggered new social dimensions for practice to increase the intervention of design in society and the participation of society in design processes with a focus on sustainability and ecological efficiency. New terms and perspectives have since emerged in the way design is related to the world and to people, most notably co-design, social design, meta-design and participatory design, which are based on the idea of sustainability, promoting the inclusion of several actors from different sectors in partnerships and creative communities for social development. These advances and new interactions have allowed for a comprehensive understanding and awareness of the society in which we are inserted, the context, needs and constraints. They have also sparked existing sectors in which there is space for design, according to Carrol (2006), as cited by Fuad-Luke (2009), in the fields of human activity, for stakeholders in design, types of shared design representations, the scope and duration of participatory interactions and the relationship of users with design activity concerning changes in their knowledge and skill (Fuad-Luke, 2009).

## **b2) Participatory Design Methodology**

In 2005, Clay Spinuzzi defined a Methodology of Participatory Design, in line with the ideas advanced by Ehn (1992). With tacit knowledge as the object of study, it can only be revealed and measured through practice by means of a “tool” to support the work. The knowledge obtained in collaboration with users will serve for the development and co-creation of new tools and work sessions that enable skills through practice and interaction (Spinuzzi, 2005). To achieve these objectives, according to the author, a collaborative methodology of co-creation with users is necessary at two stages, namely in the research design and methods. Research design is defined in three iterative stages with their corresponding methods: Initial exploration of work, Discovery process and Prototyping. In the first stage, the designers become acquainted with the workflow and users’ practices and perform on a day-to-day basis. At this stage the methods applied are ethnographic methods such as observations, interviews, guidelines, organizational visits and artefact examinations. In the second phase, some approaches are developed that are tailored to the current situation and also envisage future objectives; and, finally, the prototypes are developed accordingly and become an asset.

## **b3) From Participatory to Human-Centred Design**

Along with a human-centred focus, Spinuzzi's collaborative and co-creation approach explores the development of usable and useful solutions, focusing on users, their needs and requirements, and applying factors/ergonomics and usability centred on the human being. This approach enhances efficiency and effectiveness, improves human well-being, user satisfaction, accessibility and sustainability. Additionally, it neutralizes the potential adverse effects of its use on health, safety and human performance (ISO 9241-210, 2010).

The use of a Human-Centred Design approach (HCD) brings social benefits to users, patients and health technicians. Human-centred friendly systems and products tend to be more successful, both technically and in terms of obtaining better quality results. They increase the productivity of health technicians and the operational efficiency of organizations are easier to understand and use, thereby reducing training and support costs. They increase usability for people, thus enabling a wider range of utilities. They improve human experience by reducing tension and discomfort,

providing a competitive advantage and patient satisfaction, and contribute to social sustainability objectives by supporting inclusive growth and well-being (ISO 9241-210, 2010) (United Nations, 2015).

In 2018, UNICEF published a workbook entitled “Demand for health services”, which according to the organization is a summary of each step of the process of a human-centred approach and its associated tools. The organization refers to a problem-solving process with a human-centred approach that involves human factors and context understanding. By working directly with those who will use and be favoured by a service or product, new solutions can be developed that are consistent in their context - a research and design methodology that focuses on people and defining a problem combined with a holistic implementation strategy that distinguishes itself for taking the integration and adaptation process into consideration.

From the perspective of Norman and Spencer (2019), HCD must comply with four principles based on a bottom-up and community-based approach. The authors advocate an understanding of internal problems and not the consequences, focusing on people and the surrounding environment. The scope of an activity or product must be framed in each context and be consistent with a sequence of procedures already established and developed with the user. This intervention should be incisive and assertive to promote rapid application and testing through swift prototyping, testing refinements and successful adjustments to achieve greater use with users (Norman & Spencer, 2019).

According to IDEO, a prestigious international innovation design and consulting firm with an accurate awareness of user-centred products, and which embraces human-centred design (HCD), HCD should develop solutions collaboratively with the people who face a given problem every day. Developing human-centred design is to deeply understand the people and raise awareness. Creating innovative solutions together, rooted in people’s actual needs will develop trust and acceptance by all interveners (IDEO, 2015). In relation to human-centred design methods, the Luma Institute handbook (2012) organizes design skills into three processes: Looking, Understanding and Making to promote a better understanding, a deeper analysis of the challenges and opportunities, and to develop strategies envisioning the future in order to achieve the development and promotion of innovative and disruptive ideas (LUMA Institute, 2012).

Communities construct their cultural realities through interpersonal relationships within institutional structures. In modern industrial societies, designers play a pivotal role in transacting and shaping those cultural realities.

By 1992, Jill Grant and Frank Fox had already questioned the role of design and its contribution to cultural change and transformation towards a 'good society'.

According to the authors, this approach is related to social responsibility. By producing cultural meaning, they also promote awareness of sensitive subjects.

From a humanitarian perspective, designers must develop global empowerment for the most vulnerable communities.

Following their perspective of responsibility with regard to user-friendly development and good design in the development of reliable products, from the perspective of consumption, the authors refer to "social responsibility" as an approach that is absent from the market and close to the human being and his needs and vulnerabilities. Since these needs do not generate profit, the industry tends to distance itself, contributing to a delay in the response to social problems, as profit is indirect and time-consuming (Grant & Fox, 1992).

### **c) Research Methods**

The research methods adopted are mixed due to their transformative and emancipatory component, and priority is given to an action-oriented approach to ensure greater consistency in the study through the collection, analysis and interpretation of the information from a more panoramic perspective of the research scenario, visualizing the phenomena from different points of view with the collaboration of community stakeholders (Shorten & Smith, 2017).

These interpreters contribute to the success of the initiatives by investing their resources and time but, in turn, may also be affected and benefit from a project's success and outcomes. The relationship between stakeholders and designers is corroborated by the sample of reviewed studies on field research and mixed research methods. The objective of this relationship is to seek a more in-depth understanding of the connections and contradictions of the problem's qualitative and quantitative data, thus providing a better learning experience regarding implementation and impact effectiveness (Creswell, 2009) (Creswell & Wisdom, 2013).

#### **d) Research Questions and Hypothesis**

The present study is based on the principle of collaboration, whereby different actors from different scientific areas participated in the project process. The methodology was based on the construction of interdisciplinary bridges in the social sector through design. The identification of an absence of designers in the units and organizations of intervention and social action to which we had access, raised the following question:

- . Is it possible to establish a collaborative model based on a set of interactions considering an interdisciplinary approach?
- . Can the implementation of design in social services methodologies bring more effectiveness to their results?
- . Do interdependent operations and responsibilities distributed across all the stakeholders increase the sharing of knowledge?

#### **Hypothesis**

*Collaborative design methodologies promote the effectiveness of social services practices.*

#### **Objectives**

The objectives of this study lie within the scope of the areas of knowledge of social co-design, collaborative practices and social intervention. The main objective of the research is to integrate design methodology in the construction of interdisciplinary bridges. The research seeks to understand the development of social projects. Following developments in social design and HCD, this study proposes to contribute to:

- a) clarifying design practices and methodology with social development departments;
- b) enhancing collaboration practices through design;
- c) integrating design (methodologies and practices) in the context of social policy intervention;
- d) increasing intervention capacities and effectiveness, thus deepening the existing knowledge on this subject.

The contact developed with social agents in the Lisbon district, among which, parish councils, NGOs, Associations for social and environmental development provided clues to formulate a set

of objectives to be achieved for the main purpose that guided the research: to contribute to the improvement of the intervention process through collaborative practice with design, resulting in greater efficiency of the intervention with citizens and users and its sustainability. Thus, departing from the reflection around the observed reality, the possibility of integrating design as a facilitator of sustainable practices is brought into question. The motivation behind this study made it possible to identify the features that justify the development of this methodology so that it can be adapted to other realities, in different social contexts.

### **Holistic approach**

*Why?*

The opportunity to demonstrate design can surpass potential impasses and give rise to deeper knowledge about individuals, the purview of social services such as communities vulnerable to risk situations such as the elderly, the population at risk of poverty and lack of information.

*To accomplish what?*

A recognition of the discipline, its ability to adapt to social issues and consequently to enhance the value of the profession in a context of interdisciplinary collaboration.

The purpose:

Design in the context of social intervention.

Collaborative design methodology, when engaged in collaboration with social intervention, adapts and reorganizes itself, defining the connection axes among various methodologies, thus identifying the main stages of collaborative action.

Collaborative design methodology consists of the creation of linking processes, connections and interactions among methodologies, fostering the performance and consequent effectiveness of social services through the construction of strategic moments that can potentially favour the intervention.

## **e) Research Design Structure**

The research process (see Attachment 2) was organised on the basis of 3 methodological stages.

In the first methodological stage, information was collected in the context of Social Design, more specifically on the collaborative practices that can be introduced and oriented through design, aiming to add more knowledge to the social area through the introduction of practices and strategies that can foster dynamic interdisciplinary interaction throughout the methodological development.

The analysis aimed to seek answers to the main research questions as well as to consider the reflections of some authors on the issues raised:

*. Can the implementation of design into social services methodologies make them more efficient?*

*. Do interdependent operations and responsibilities distributed across all the stakeholders increase the sharing of knowledge?*

*. Is it possible to establish a collaborative model based on a set of interactions considering an interdisciplinary approach?*



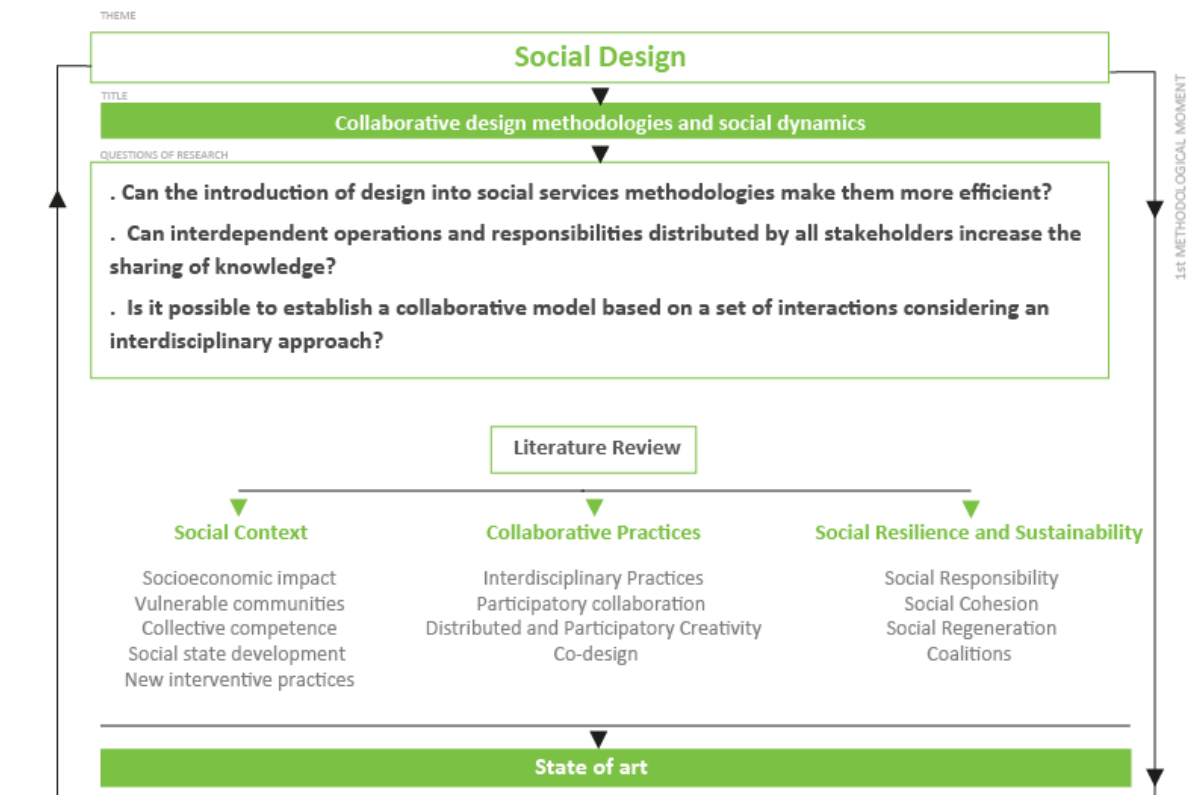


Figure 2 - Organogram (1<sup>st</sup> Methodological Stage)

In the first stage of information collection by means of the literature review, an analysis of the current state of society and social context was conducted, more specifically its position in terms of how it acts in the face of the constant challenges that plague the most vulnerable groups (Fig.2). This analysis refers to a series of new procedures through collaborative movements and strategies and the construction of new values. The explored collaboration and its added value, marked by diversity and organization, are identified as being fundamental to the collective creative process geared towards innovation and transformation. A participatory design focused on the human being. These actions are a driving force for the development of resilience, social sustainability and constructive capacities in the individual's environment of social maintenance and structure, functionality, and sustainability of the community.

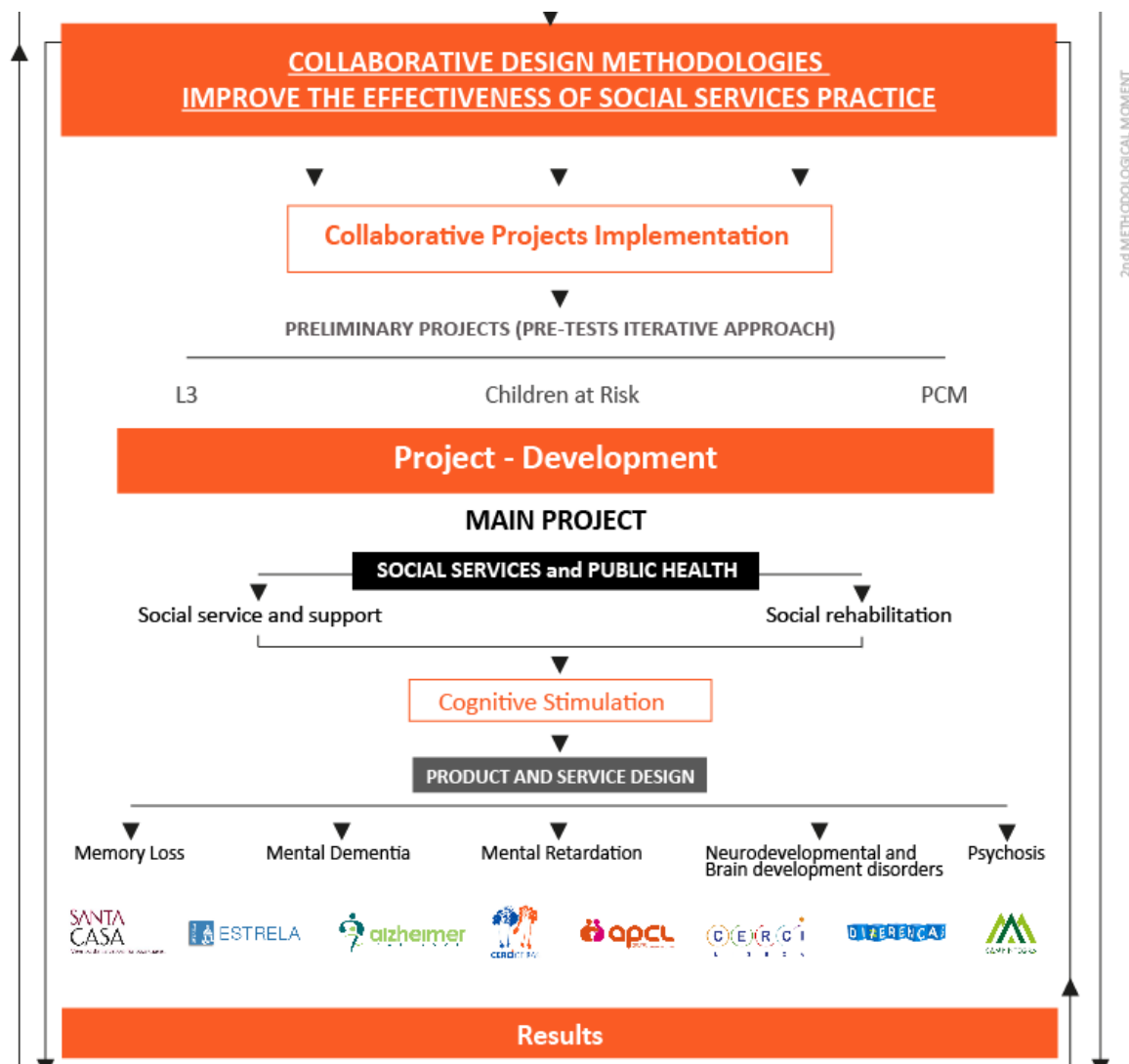


Figure 3 - Organogram (2<sup>nd</sup> Methodological Stage)

In the second stage of the research, the proposal to be defended was defined as "Collaborative design methodologies empower the effectiveness of social services practices", on the basis of which a sequence of procedures for validation was elaborated (Fig.3).

It began by making a characterization of the system in which the intervention was intended, to understand the working methods of the entities in question, with a focus on social action and the way they organized and intervened in the community. The interventions focused mainly on: a) development of knowledge, through discovery, developing and sharing to solve existing problems; b) capacity building and skills development in organizations and individuals to strengthen their

capacities; c) behaviour change programs developing activities for the benefit of social sustainability and d) enabling systems and developing infrastructures by establishing procedures that facilitate interaction. The activities developed allowed for an understanding of the different contexts in which the research was involved. In the context of mapping, the goal was to obtain as much useful and in-depth information as possible about the people and the community for which the solutions were to be developed. With the collaboration of the users and stakeholders participating in the design process, a satisfactory match between the design and the users was established. Although there is always a desire to push forward with projects, one should bear in mind that the structuring and coordination of the working methods will be called into question, which may lead to a possible confrontation of intervention systems. A consensus must then be reached during the participatory actions that promote communication and the discussion of ideas. Upon the accomplishment of an agreement, the next step is to generate the conditions, space and time in order to move forward with a new approach to achieving actions that promote social sustainability.

Such actions were integrated into the design ecosystem of this study, where the main goal was to maximize the resolution of situations. At this stage, all the processes that enable the design process and forecast solutions may be included such as workshops, discussion platforms, peer-to-peer processes, joint activities, participatory design and the free cooperation of individuals from distinct scientific areas and social knowledge with a view to a common resolution.

After defining a working basis and achieving the objectives, the preliminary case studies were developed in which this collaborative process was tested, in order to solve different situations with different types of communities and stakeholders.

During this phase, it was possible to collect a set of data related to the preliminary interventions that were decisive in the development of later activities which were considered in the case study. The connection between the various stages of the different methodologies made it possible to correlate the phases by their degree of complementariness. As an external agent of social intervention practices, it was possible to integrate, engage with and address the purpose of the study, namely to integrate design. By doing so, the development of the case study occurred in a more organized manner and with fewer interferences.

Throughout the various preliminary case studies, in which it was possible to integrate design, a tendency to solve a common problem with a higher standing was observed, more specifically

public health. In an analysis of the social services and social rehabilitation applied by the social partners and stakeholders, it was possible to identify the impact on a common issue: cognitive stimulation.

This theme gave rise to the development of a project under the format of a product capable of being integrated into therapeutic and clinical follow-up activities.

The validation of its application allowed for an expansion of the activity in similar areas of social intervention: Memory Loss, Mental Dementia, Mental Retardation, Neurodevelopmental, Brain development disorders and Psychosis.

Regarding the case study, the goal was tailored to the subject and a strategy was developed allowing for more organized involvement in terms of time and more integrated in the intervention action with social agents and users. These two factors were paramount to ensure the evolution of the project, its continuity and expansion.

To correlate the different areas of intervention (Social Intervention, Social Development and Design) the different methodologies were organized and, thus, it was possible to interconnect them at different stages of the project.

The organization of the three methodologies enabled the collaborative management of the organized project, such as Data Collection and Analysis; Action and Implementation and Evaluation and Reporting (Lawson, 2005) (Serrano, 2008) (Robertis, 2011) (LUMA Institute, 2012) (Flint, 2013) (Dorst, 2015)( IDEO, 2015). The theoretical framework presented by these authors was essential to define the conjugation and co-relationship of the different intervention approaches in their differences and similarities in the development of the case study.

The second methodological stage ended with the collection of the quantitative and qualitative data of the activity developed, as well as the potential for interdisciplinary collaboration.

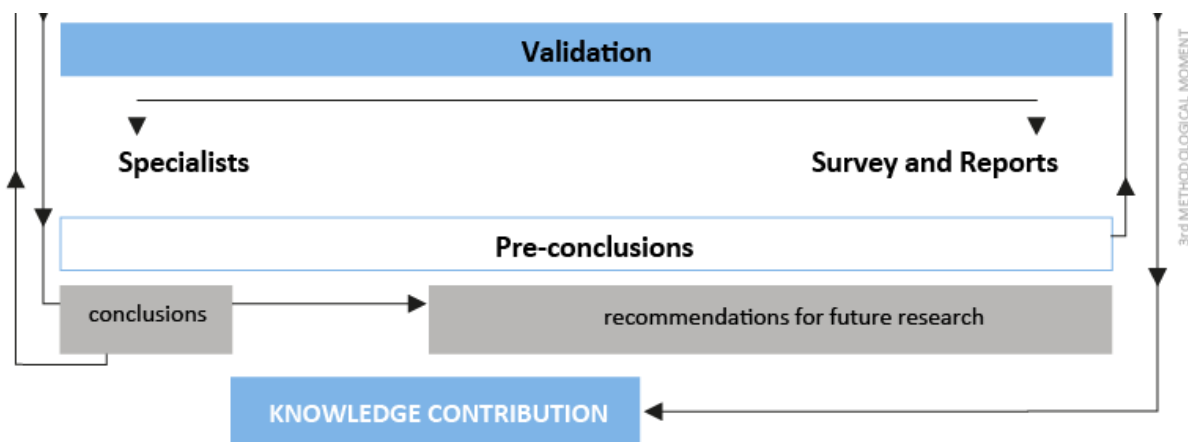


Figure 4 - Organogram (3<sup>rd</sup> Methodological Stage)

In the third and final methodological stage, the data collected in the surveys and reports prepared by the specialists were analysed, with a view to their validation to determine the conclusions that contribute to the understanding of the integration of design in the activities of social services' collaborative processes and of the collaborative development procedures of activities that contribute to the resilience, training and empowerment of communities (Fig.4).

The analysis undertaken consisted of collecting information related to observation surveys and reports prepared by the social partners, who at different times of the project's development agreed to be part of the case study.

The research presented is an evolutionary and transformative process (see Attachment 2) in its dynamics of collaborative construction processes, from the literature review and analysis of projects with the same social objective, to the preparation of the fieldwork, the development of methods and application and the construction of qualified partnerships for the development of a project funded by the Calouste Gulbenkian Foundation, namely the L3 Project (see Attachment). This project was the driving force behind a set of contacts that facilitated integration in the work with a community vision and social response. It was possible to bring working groups together with the social commission of the parish council of Estrela (Lisbon) and a partnership based on multifunctional learning and project development was established, by aligning and influencing management practices.

The following year, the development of various project and debate activities arose from the construction of several approaches to collaborative and social action, in which the vision of

intervention was evaluated according to the different social terms. The number of stakeholders set to join the collaborative activities increased as relationships of trust were progressively established and made known to the wider community. Thereafter, the development of actions focused more on rigorous implementation and were validated as a result of the potential of the social partners' areas of intervention. Building a network of partners that give priority to the most vulnerable communities inevitably became the core of the project and the objective to be achieved. A theoretical framework for interdisciplinary collaboration was also being developed and, in the following two years, a case study was implemented which, in two distinct phases, allowed for a deeper analysis of collaborative action and the impact of this collaboration on the social partners and users to whom the developed project was applied. The development of the project was based on the theme of cognitive stimulation that was initially geared towards the senior community. Its validation in obtaining new data that fostered the generation of more knowledge on senior citizens led to it being expanded to other communities with special needs, thus increasing the target audience that was able to inform us about this project, which is the materialization not only of a new work methodology but also a new form of collaboration and intervention. At the end of the interventions, information was collected on the analysis of the procedures and the co-created tool, thereby giving rise to a general analysis of the research and all its constituent parts. Finally, and following what had been witnessed, the most remarkable and essential processes of collaborative practice were identified due to their co-construction and cooperation.

## **Chapter 2 Summary**

In this chapter, the research framework was established, in addition to the appropriate holistic view which, given its social nature, falls within the scope of participatory advocacy, with an approach focused on political assumptions, empowerment, collaboration and guided change. Following the guidelines of this worldview, it was possible to design the appropriate methodology and its processes. The analysis and identification of the methodology for an improved planning of actions allowed for a better definition and understanding of the results. The literature review of the themes associated with the research favoured the possibility of increasing the knowledge related to all the disciplines involved, enhancing its implementation more effectively for the development of collaborative practices on the ground with the social partners.



## **Chapter 3 - Social Design and Collaborative Methodologies**

### **a) Literature Review**

Nowadays, society is analysed according to its constant development and adaptation to new events that define new eras, new behaviours and new ways of acting. The enthusiasm involved in the increasingly rapid accomplishment of results is characteristic of a methodology that accompanies the evolution of a society marked by the constant transformation of its systems and social policies. However, a progressive distance has been observed between economic and social progress, as corroborated in the figures that point to a society with increasingly more vulnerable groups exposed to a myriad of risks, an exacerbated problem in a climate of austerity (European Anti-Poverty Network, 2015).

Following the revolution of April 1974, the need to establish a welfare and social assistance state was acknowledged in Portugal. Since 1977, according to the European Anti-Poverty Network (Portugal) (2015), recessive policies have generated a resurgence of poverty in Portugal, as deduced by the first systematic studies on this phenomenon back in the 1980s. "Poverty in Portugal" outlines the prerequisites for a policy of poverty eradication: awareness of the problem and more active participatory action on the part of the less prestigious (Costa, Silva, Pereirinha, & Matos, 1985).

In the 1990s, several events and programmes were developed that triggered many important initiatives such as the creation of the New Directorate-General for Social Action (1992) and the Social Employment Market Program, established to combat exclusion and boost development of the social economy. In 1999, the Social Network emerged, as part of the Institute of Social Development, with a strategic dimension in the social intervention panorama. This network sought multi-institutional cooperation in order to respond to poverty and social exclusion in a collaborative manner (European Anti-Poverty Network, 2015).

Although in 2005 the European Commission, as part of its Social Agenda 2005-2010, sought to combat poverty and social exclusion by strengthening collective and individual responsibility, promoting solidarity campaigns and actions and greater political commitment, it was not sufficient for a European strategy to emerge. This was only the case in 2010 with the creation of the Europe 2020 strategy, which defined the five main objectives expected to be accomplished by the EU by



the end of 2020. These objectives are related to employment, research and development, climate/energy, education and social inclusion and poverty reduction.

Acknowledging the limited progress in social inclusion, in 2013 the European Commission launched the Social Investment Package by guiding Member States to define more effective and efficient social policies in response to challenges. Bearing in mind the vast social differences, this project focused on the capacity to respond to needs in critical phases, and the implications of social policies, sustainability and inclusion.

In this regard, the role of community initiatives and social commissions in encouraging integrated social support networks at a local level is particularly noteworthy. By combining the efforts of the different local and national entities involved, they contribute to equitable coverage in the country. Their objectives are to diagnose and plan, to promote interventions at a municipal and parish level, and to find solutions for citizens in situations of poverty and social exclusion (Social, 2020).

### **a1) Sustainable development in society**

Sustainable development can be defined as a form of habit mentality resulting from the interconnection of our future generations, living within the limits of nature and equal opportunities, a multidimensional way of achieving recovery and improving everyone's quality of life (Manzini & Vezzoli, 2010) (Flint, 2013).

Society depends on the long-term functioning of the ecosystems, in their quality and productive capacity and in both environmental and social sustainability there are some concerns that can compromise the well-being of modern and future generations.

Focusing on social sustainability, Vallance, Perkins, and Dixon (2011) seek to clarify what the term may mean as the conceptual field is rather confusing, resulting in uncertainty as to its many meanings and applications. Proceeding with the interpretation of previous definitions of Sachs' political and cultural vision (1999), the conflicting and undesirable sustainability results of Godschalk (2004) and Chiu's types of social sustainability (2002, 2003) – the authors defined their social sustainability typology: a) development sustainability, targeting social capital, justice and equity; b) bridge sustainability, concerning behavioural changes to achieve biophysical environmental goals; and c) maintenance sustainability, referring to the preservation of socio-cultural characteristics in the face of change, and how people embrace or resist changes. However,

despite the resistance to change that still occurs in the social context, the authors conclude that with a better understanding of how technical aspects of sustainability resonate daily, it is possible to witness a more equitable transition to a more sustainable future (Vallance, Perkins, & Dixon, 2011).

Social impacts for human populations, according to The Interorganizational Committee on Guidelines and Principles for Social Impact Assessment are defined as the consequences of any public actions or projects that change the way people live, interact and organize themselves as constituent members of a specific society, which has its traditions and values. It also declares that cultural impacts involve a change in patterns that guide their condition in and with the society in which they operate. (The Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, 1994).

In this study, however, the social impact assessment was defined to evaluate and estimate in advance the social consequences that were likely to result from the collaborative actions and project development between design and social action, seeking a work structure with the user through the effective involvement of affected communities in participatory processes of identification, evaluation and the management of social impacts.

The suggested Impact Assessment is a type of evaluation that aims to provide evidence of the impacts produced or expected to be produced to detect elements to prove that the impacts were, at least in part, generated by the design project, programme, policy or business, establishing a cause-and-effect relationship between the intervention and its impacts. (Vanclay, Esteves, Aucamp, & Franks, 2015) (Fabiani, Rebehy, Camelo, Vicente, & Mosaner, 2018)

According to Vanclay, Esteves, Aucamp and Franks (2015), the Social Impact Assessment (SIA) was created in conjunction with the Environmental Impact Assessment (EIA) in the early 1970s, to relate the inputs of a development intervention with its medium and long-term results. SIA is an interdisciplinary and transdisciplinary social science incorporating many fields that contribute to the development process with communities in order to achieve better development and wider results.

Vanclay and Esteves defined the principles for good SIA practice and, focusing on the development of collaborative projects, the associated benefits are as follows: assertiveness in the projects that increase the guarantee of their success, reduction of social and environmental risks, cost analysis and planning of physical and social infrastructures, the involvement of all social

partners, projecting relationships of trust and cooperation, favourable conditions for the maintenance of workers and evolution of the project developing new capacities that will result in enhanced social performance and corporate reputation. (Vanclay & Esteves, Current issues and trends in social impact assessment., 2011) (Vanclay, Esteves, Aucamp, & Franks, 2015)

To understand the definitions and procedures, it is necessary to establish a comparison of the phases of each definition of evaluation. In the measurement process, indicators are created and analysed to monitor the activities that the project has carried out to generate an impact. Indicators are also needed to analyse the impact itself, whether for the measurement of quantitative or qualitative aspects.

It is possible to identify 4 phases in this process: the first phase focuses on understanding problems, the second predicting, analysing and evaluating possible impact paths, in phase3, developing and implementing strategies, and in the final phase, creating and implementing monitoring programs. (Fig. 5)



Figure 5 - The Evaluation Phases of Impact Analysis adapted from Vanclay, Esteves, Aucamp, And Franks (2015)

From the perspective of Vanclay, Esteves, Aucamp and Franks (2015), the evaluation of SIA should be determined in 4 phases: Phase 1 -: Understanding problems, Phase 2 -: Predicting, analysing and evaluating possible impact paths, Phase3 -: Strategies development and implementation, Phase 4 -: Creating and implementing monitoring programs.

In the analysis of a project, the tasks of each phase under the evaluation of the study's subject are highlighted.

In phase 1, Understanding problems comprises the tasks of providing a good clarification of the project and its complementary activities, a definition of the actors' responsibilities by task, the social area of influence, a description of the community profile, communication, the project's development in collaboration with stakeholders and the community in a participatory and inclusive manner, determining the scope of the issues to be resolved and, finally, the collection of data.

In phase 2 based on predicting, analysing and evaluating possible paths or chains of impact, the possible changes and social impacts are considered, as well as the potential response of the affected parties. A prediction of possible behavioural change is made and the significance of this is assessed. Finally, the last task of this phase is to anticipate alternatives in the case of a failure.

Developing and implementing strategies is the next phase, where the potential negative impacts and benefits are addressed and compared, as well as support for the communities dealing with change. Opinion collection tools are established to facilitate stakeholders' data collection and an intervention plan is drawn up. Finally, the implementation of these plans will enable other stakeholders to integrate the same activities in an organized and responsible manner to ensure sound monitoring.

In the final stage, phase 4, monitoring programs are created and implemented which, through the development and shared selection of indicators can validate the change. This process is carried out in collaboration with stakeholders, thus allowing for the realization of periodic evaluations.

In the varied and potential SIA procedures for local development, the purpose of supporting the development and maintenance of communities is highlighted, where the partnership in the collaborative project instigates positive social changes and beneficial social development. Social development must be a participatory process of planned social change to improve the well-being of the community as a whole and especially the vulnerable groups. The change in the intervention methods of social services in institutions and in society, through a collaborative methodology with design, seeks to generate greater effectiveness in the reduction of social exclusion and fragmentation, to promote social inclusion, and to strengthen institutional capacity and effectiveness in the response to the needs of both users and society.

*Efficiency is central to design discourse. Why to design, otherwise, if not to increase the efficiency of something? To facilitate the satisfaction of needs, to multiply force, to increase comfort, to extend our abilities, design is conceived as the way to bring efficiency to our lives. (Frascara, 2002, p. 38)*

From the perspective of Fabiani, Rebehy, Camelo, Vicente, & Mosaner (2018), SIA must follow specific steps to collect evidence on the impacts produced by the project: Needs Analysis; Process Evaluation, Evaluation of Results and Economic Evaluation. On the subject of Needs Analysis, the criteria for the project to succeed is to identify and prioritize the needs of the target population, providing a global principle for success. In Project Evaluation, the implementation and changes resulting from the problem to be resolved are monitored. The evaluation parameters include two main objectives: implementation and intended impacts. Both are subject to analysis and a failure in one of these parameters may compromise the program. In Evaluation of Results, data collection and trend analysis will demonstrate the complete process development, providing the inputs and results that will be quantitatively analysed, estimating the impact of the project.

## **a2) Social Impact Assessment Methodologies – Theory of Change**

The transformation of society will depend on our ability to change our ideas about change itself as it is manifested, and how it can be implemented. Social change must be formed by the ideas, theories and methodologies of varied disciplines for the development of new approaches to problem-solving. Therefore, some of the methodologies that served as the basis for structuring the activity in order to guarantee the results that validate the designer's intervention in social intervention will be presented.

Patricia Rogers, an expert in public sector evaluation, with a specific focus on humanitarian policies, refers to the importance of the Theory of Change in explaining how interventions such as a project, an event, a strategy or an organization, is understood to produce results that contribute to achieving strategic impacts. The results obtained identify the current situation (needs and opportunities), the intended situation and what needs to be done to move from one to the other, providing more detail on the different levels of change, actors and strategies (Rogers, 2014).

This theory describes how the activities of an intervention contribute to a chain of inter-medium results which, in turn, produce an impact. Its construction contributes both to the identification of gaps in the logic of the project - which can be prioritized in the Impact Assessment - and the survey of results, impacts and learning that will be applied to future interventions (Fabiani, Rebehy, Camelo, Vicente, & Mosaner, 2018).

## **Procedures and Benefits**

To begin a theory of change process, an assertive and detailed situation analysis is required. This will allow for identification of the problem, what the intervention aims to address and the causes and consequences of the problem. It will also expose the opportunities and potential synergies that can be developed with strategic partners and resources that may be an asset to increase the impact of the intervention.

The change should be planned, where the parameters to be improved in the different sectors are defined. According to Rogers (2014), it is possible to organize the change process as follows:

a) individual change, training sessions or workshops to develop awareness and personal development; b) health relations and connections, to promote relationship-building processes and dialogue; c) root/justice causes, for social and structural change in institutions; d) institutional development based on reliable equity and justice fundamentals; and e) mobilization of the grass roots community to make a statement through campaigns.

The benefits of the Theory of Change depend on the purpose, the approach and the situation. According to Cathy James' (2013) research report, the most mentioned benefits are: a) developing a common understanding of the work; b) strengthening the clarity, effectiveness and focus of programmes; c) providing a framework for monitoring, evaluation and learning; d) improving partnerships; e) supporting organisational development; f) clear communication and reporting and g) empowering people to become more active and involved in programmes (James, 2013).

### **a3) Social Design Development**

The definition of social design is based on a set of concepts and activities that exist in many fields of application, including local and central administration and policy areas such as healthcare and

international development. However, and according to the definition developed by Armstrong, Bailey, Julier, & Kimbell (2014), all design practices may be understood as social.

Social design highlights the participatory approach in the process; for such development, the practices of research, creation and realization of new ways to make change are elaborated collaboratively with the community for a social purpose.

The origins of the emergence of new design methods in the 1950s and 1960s lie, according to Cross (1993), in the application of new 'scientific' methods to the new and urgent problems of World War II - where decision-making techniques came from decision and management - in the development of creativity techniques in the 1950s.

The new 'Movement of Design Methods' ,developed through a series of conferences in the 1960s and 1970s, coincided with the publication of the first design methods or design methodology books by Hall (1962), Asimow (1962), Alexander (1964), Archer (1965), Jones (1970), Broadbent (1973) Gordon (1961), Osborn (1963).

In 1962, the “Conference on Systematic and Intuitive Methods in Engineering, Industrial Design, Architecture and Communications” was held, also known as the “Conference on Design Methods” (Cross, 2001), which involved the participation of names such as Jones, Alexander and Archer. This conference may be considered one of the turning-points that triggered the awakening for a more in-depth analysis of methodologies and their development, as well as of the transition of the designer as an individual designer to a constituent element of a multidisciplinary team.

In the following year, 1963, along with Alexander, Archer and Jones, Rittel (1997) helped found the Design Methods Group (DMG) in Berkeley, and the DMG Journal (Dubberly, 2004). Their purpose was to attempt to use the techniques developed during the war to make design more 'scientific' in areas such as industrial design, architecture and urbanism (Langrish, 2016).

In the 1970s, a reaction against design methodology was observed, characterised by a rejection of its underlying values, mainly by some of the movement's pioneers. Alexander (1964), who created a rational method for architecture and planning, disassociated himself from the field and the ideas he idealized (Alexander, 1971). Jones (1977) also reacted against design methods, against machine language, behaviourism, the continuous attempt to fix all aspects of life in a logical structure (Cross, 2006).

Cross (1997) citing, Rittel and Webber (1973), emphasized the need to define and contextualize the complex problem and its resolution. The authors refer to the need to understand the problem

and its context, stating that one cannot look for deformations without the guidance of a solution concept. The approaches proposed by these authors indicate the requirement of a planning model as an argumentative process, during which an image of the problem and the solution gradually appears among the participants, as a result of judgement and critical argumentation.

Rittel and Webber (1973) introduced some basic ideas for the construction, development and tracking of fundamentals for the challenges of the approach to planning and social policies. During the design process that marked the second generation of the planning model, an awareness of the integration of other extra-design elements in order to collect different perspectives on the problem to be worked on may be observed. Indeed, an opening for multidisciplinary collaboration is already visible and shared with different types of participants, directly or indirectly related to the problem, to create a solution.

In essence, the principles for circumventing the complexity of planning due to the lack of clarity in its objectives and solutions, referred to by the authors as “wicked problems”, stem from some basic ideas related to: its definition; the perception and point of view of all the potential interveners that may or may not lead to an agreement as to the action to be taken; the ability to innovate by reorganizing perverse problems; the capacity to deliberate and discuss as a group with different skills, to look at the problem from different angles, perspectives and arguments, all duly discussed beforehand to reach a political consensus (Rittel & Webber, 1973).

These ideas created a space for a new generation of designers for two main reasons. First, they fostered an articulation between science and design, refuting the restrictions of design processes based on the rational view of science in the 19th century, and due to the principles created to deal with the constraints.

This period is referred to by Cross (1984) as the design methods movement, during which period several design methods or methodology books emerged.

In the same decade, Viktor Papanek, one of the 20th century’s most influential pioneers of a socially and ecologically oriented approach to design in the 1960s, kept alive the belief that design could make a better world. He was against the rational approach and procedural design systems. He criticised this approach, pointing to “reductionism and often results in sterility and the sort of high-tech functionalism that disregards human psychic needs at the expense of clarity”.

In his book “Design for the Real World” (1971), Papanek calls for inclusion, social justice, ecology and sustainability – topics of greater relevance to design than ever before. The book also points to



the idea of the designer's responsibility beginning before the creative action. He must analyse the project in which the action will be inserted and put into perspective its result and impact on society, bearing in mind the improvement of livelihood and social well-being. Through their adaptability and restructuring and situation resolution skills, designers are team players in an equalitarian group of professional experts whose only objective is design planning. The very task of a design team is not simply to solve problems, it is also to seek, isolate, and identify the relevant needs of people around the world.

*We may summarize social design in general as 'participatory approaches to researching, generating and realising new ways to make change happen towards collective and social ends, rather than predominantly commercial objectives.*

(Armstrong, Bailey, Julier, & Kimbell, 2014, p. 15)

Design, to be ecologically responsible and socially responsive, must be revolutionary and radical in the truest sense. It must dedicate itself to simplicity procedures for maximum diversity, doing the most with less. Maeda's Simplicity concept "*openness simplifies complexity*" accentuates the sharing and cooperation among the actors that address each other's weaknesses making the whole stronger (Maeda, 2006).

#### **a4) Interdisciplinary and Participatory Collaboration**

The work in multidisciplinary teams advocated by Rittel (1973) was also analysed in the field of psychology to understand the effects that could be obtained from this practice.

J. Richard Hackman, a specialist in performance-oriented teams and groups in organizations, discusses in his book "The Interaction of Task Design and Group Performance Strategies in Determining Group Effectiveness" (Hackman, Brousseau, & Weiss, 1976), the relevance of contributing to the context of the activities in which the groups are involved, in addition to learning a structure that develops the process of communication techniques and practices and a coordination that surpasses itself with its performance in daily situations. The following year, in "Design of team groups", a model was proposed for the design and maintenance of working groups, highlighting the importance of three design factors in the formation of such groups: the design of

the group's task, the composition of the group, and the structure of group norms in performance processes (Hackman, 1987). The latter can be influenced by technology and the interpersonal relationships that are developed among the group members, but also by departmental changes, overlapping projects, the timeline and external factors such as health or personal/family issues. This premise was also considered relevant in the formation of multidisciplinary teams and in the sharing of knowledge in social work. According to Cheong (1990), there are benefits in the relations between social work and other disciplines, namely the sharing of knowledge among the different areas which guarantees its validity and more confident applicability. The second added value is the impact of this same sharing that results in the acquisition of knowledge of each participant through the reciprocity of information (Cheung, 1990). Diversity in multidisciplinary work teams was analysed by Jackson (1998) who noted repercussions in problem-solving and decision-making processes, in status hierarchies, in participation and communication patterns, in the development of cohesiveness, in team performance, and stability achievement. According to Jackson's perspective, diverse perspectives are presumed to improve decision processes, namely a variety of alternative interpretations and the generation of creative solutions. However, she suggests that better decision-making and problem-solving should occur when team members have overlapping domains of expertise, rather than a single expert for each area of knowledge.

In *Design when everybody designs* (2015), Ezio Manzini, an expert on sustainable design, focused on environmental and social quality. One's work is essentially concentrated in innovation processes and collaborative organizations, particularly when planning design strategies and environmental policies from the perspective of sustainable development. The author refers to the need for collaborative and multidisciplinary practices in the development of a global, diverse and resilient culture.

Collaboration is a dominant theme in his discourse, which values and enhances the activities of independent groups of individuals who seek to circumvent day-to-day problems on a local scale, and who end up seeing their ideas replicated by other groups, becoming islands in a new civilization with sustainable concerns, as the author himself explains. This new culture of resilience demonstrates the creative skills of communities to reorganize and adapt. In the process, the development of new relationships and alliances unleash new social innovation and co-design practices.

He typifies these processes as highly dynamic, creative and proactive activities and complex design activities. The main difference in these activities is the role of the designer in the development of the project. In an intervention, where the designer contributes as an active participant to a more mediating position, where he assumes a managing position to guide the emergence of creative debates and creative ideas and to finally become responsible for conceiving and creating a solution for sustainability. The designer's role evolves and gains a position in society where he begins to take a more active stance in social innovation and in building partnerships. According to Cheong (1990), there are benefits in the relations between social work and other disciplines. Sharing the different areas of knowledge guarantees its validity and a more confident applicability. The second added value is this very sharing practice that results in the expansion of knowledge through the reciprocity of information.

According to Phills, Deiglmeier, and Miller (2008), in order to be considered an innovation, a process or outcome must expose two criteria, namely novelty and improvement. Innovations must be new to the user, in context or application and be either more effective or more efficient than pre-existing alternatives (Jr., Deiglmeier, & Miller, 2008).

Bronstein (2003), in *A Model for Interdisciplinary Collaboration*, uses multidisciplinary theoretical literature and conceptual and research pieces of social work literature to support the development of a model. The author defines the construction of the collaboration model according to an interdisciplinary approach and to the influences that can define the practice of collaboration. According to Cabot (1915), this collaborative practice has been used in healthcare since 1905, when social services were established in Massachusetts General Hospital. These collaborations, according to Bronstein (2003), were also observed at the time by Deutsch (1940) among social workers and psychiatrists in mental health, currently verifying their active participation in a contextual understanding of the person-in-environment. This finding had already been exposed by Berg-Weger and Schneider (1998) in their definition of interdisciplinary collaboration where they refer to its added value in the search for common goals, and in a more radical sense by Bruner (1991), as an effective interpersonal process that facilitates the achievement of common goals, that are unreachable when working individually.

As a result of her research, the author developed a general model to improve the relationship between social services and experts from other areas.

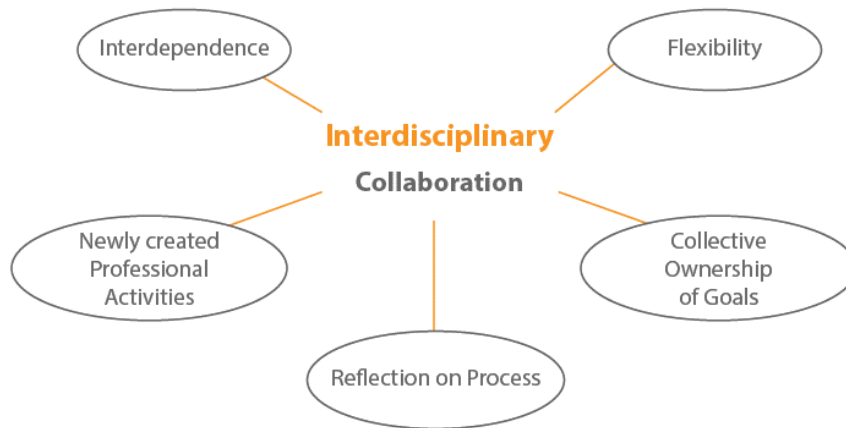


Figure 6 - Components of an Interdisciplinary Collaboration Model adapted from Bronstein (2003)

These work-related activities should follow five core components: a) interdependence, that is, a mutual dependence on different knowledge for the resolution of common objectives; b) newly created professional activities, related to the impact of collaborative action on each participant in achieving objectives that can only be achieved through collaboration; c) flexibility, concerning the ability to not create disciplinary limits in the intervention and to allow different areas to overlap and suggest alternative points of view in areas with less knowledge d) collective ownership of objectives, referring to the responsibility, organization, development and management in all steps up to the achievement of the objectives, and e) reflection on the process, moments of validation by the agents involved, thus being able to perceive the flaws to improve interdisciplinary relations and the efficiency of the process (Bronstein, 2003). (Fig. 6)

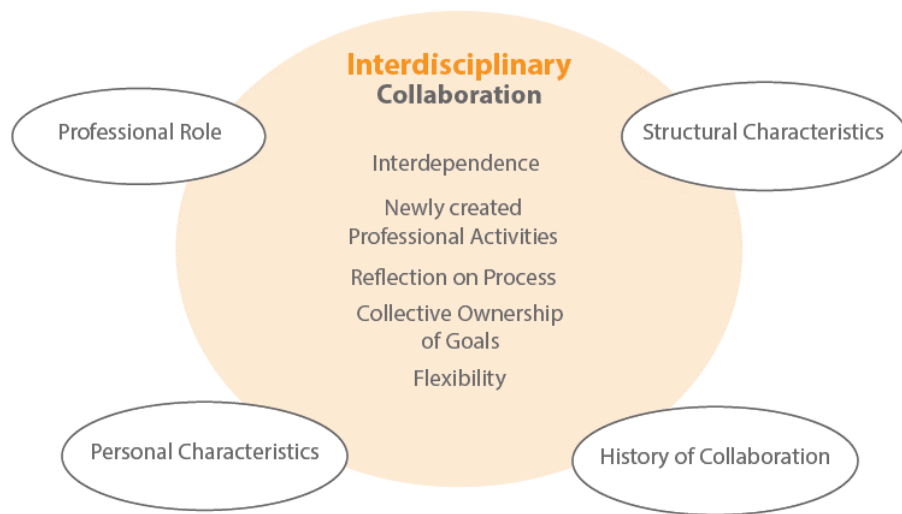


Figure 7 - Influences on Interdisciplinary Collaboration adapted from Bronstein (2003)

To contextualize collaborative action, it is also necessary, according to Bronstein, to identify the type of influences that are generated in this process and which, when absent can compromise its realization. (Fig.7) Professional role, holding the values and ethics of the social work profession; an allegiance and commitment to the social cause and all that is reflected in human values; interdisciplinary respect, a holistic and complementary view of the practice and the total contribution to a mutual purpose. The structure is, according to Gulick and Urwilk (1937), cited by Bronstein (2003), the capacity to co-ordinate the process and the ability to generate connection points to keep the information up to date and avoid the overlapping and duplication of work. In personal characteristics, the main basis is trust and commitment regarding personal ambitions versus the objectives of the cause.

The history of collaboration highlights the relevance of previous experiences in collaborative work and the social services tradition of diffuse methodologies and procedures as obstacles.

#### **a5) Creativity as a participatory and distributed process**

The creative process is characterized by the confrontation of different ideas that tend towards the synergistic resolution of objectives through the sharing of knowledge and skills in a coordinated and interactive manner, as stated by Edward Clapp (2016), an expert on creativity and innovation, citing Albert Bandura (2000), referring to the importance of creativity and its social framework. The means of creativity have been transformed, and this process is reflected in the community and its individuals by a greater delivery and the awareness of their role and social capacities, cultivating personal and collective forms (Rancière, 2010) (Glăveanu & Clapp, 2017). Motivated and action-oriented social forms tend to drive social change capable of generating institutionalized social forms and cooperative communities open to participation with other stakeholders.

*It is our responsibility, as researchers, as educators and, most of all, as citizens, to stand up to these powerful forces and cultivate creativity as cultural empowerment, give voice to difference, and foster meaningful collaboration.*  
(Glăveanu & Clapp, 2017, p. 8)

Through identifying and positioning the role that each and every individual can play within these systems due to their differences, it is possible to find opportunities for change through collective and contributory engagement, favouring the production of changes in culture (Csikszentmihalyi, 2003) (Clapp, 2016) (Manzini, 2017) (Glăveanu & Clapp, 2017). From a collaborative perspective of the field roles, Clapp (2016) points to some of the key producing roles mentioned previously by Gloor (2007), that defend the importance of these actors to motivate and ignite creativity. These actors may be defined as visionaries, who can idealize and invent potential ideas to respond to a particular problem, as collaborators, who are part of the network that structures the development and realization of the idea, and finally as communicators who look at ideas with a business-oriented sense, considering the lifetime of the idea. Adding to the human role of the agents involved, the author refers to Hanchet Hanson, a psychologist and expert in Creativity and Innovation, from Columbia University in the USA, who advocates the introduction of tools in the creative

development phase, reinforcing that they play an important role in the construction and development of creative stimulation (Clapp, 2016).

The participation and collaboration of various actors contribute to the development of ideas and the scope of the intervention. In different terms, Clapp (2016) and Sawyer (2017) advocate collaborative action and its added value for creative development. Clapp (2016), in his definition of participatory creativity, emphasizes the importance of a network of actors from different areas that contribute in ways to the development of an idea or solution that fulfils a certain purpose involving all actors, whether directly or indirectly. Sawyer (2017), in his book *The creative power of collaboration*, identified seven characteristics of effective creative teams, namely a set of ideas that favour creative capacity, as well as a sequence of situations that arise during collaborative action. This section has highlighted the relevant analytical and observation capabilities, the development of synergies in the internal structures of organizations, evolutionary co-construction, the reinterpretation of ideas and emergence of new problems, the reflection on failed attempts and potential reforms for future actions, the generation of details that can generate creativity and when grouped together can generate a common response with greater impact and more effectiveness.

## **b) Community Resilience and Co-Design**

The term Resilience has several connotations in different areas of knowledge. This approach is related to the ability to live with change through sustainability, social development and human capabilities, improving the quality of life without compromising the needs of actual and future generations.

The participation of communities in the design process, in which the activities carried out have an immediate relevance to their lives, boosts their willingness to be part of the defined processes. However, the learning process is reciprocal, and the expansion of abilities and choices can contribute to overall well-being and a new collaborative methodology (David, Sabiescu, & Cantoni, 2013).

Meroni, Selloni and Rossi (2018) argue that participatory events and programs should be developed at a corporate and governmental level, since, according to these authors, the practice of collective creativity is considered promising in overcoming social challenges (Meroni, et al., 2018). The complexity observed in the problems that may arise in this project call for a

heterogeneous analysis and, thus, the integration of multidisciplinary allies. Frascara (2002), in his analyses of interdisciplinary connections, had already recommended the contribution of design for the development of new knowledge in order to refine and reformulate problem-solving processes in services, intervention programs and social innovation (Frascara, 2002).

As far as Mulgan (2012) is concerned, social innovation can meet recognized social needs more effectively and create new social collaborations that are both good for society (Mulgan, 2012). According to Bardauskiene and Pivoriene (2016), social workers still have difficulty in providing effective social services and in using resources rationally due to a lack of interinstitutional cooperation. It is still possible to observe factors that interfere with the effectiveness of social work, such as deficiencies in social service infrastructures, the inaccessibility of social services, the complicated and lengthy process of receiving financial support and the retainment of various resources required by social workers (idem, 2016).

### **c) Design Responsibility and Processes in the Public Sector**

The sense of responsibility and citizenship instilled in the designer has evolved, as has the integration of the designer in the social and public sector. The term responsibility, when allocated to the design process, has already undergone various definitions, the most prominent of which are associated with ethics and moral values, environmental issues and within the scope of social awareness and citizenship. Heller and Vienne (2018) in *Citizen Designer* discuss the role of the designer in contemporary society. Designers have been called to a new domain, the public sector, and the application of their capabilities is now increasingly evident in areas related to social action, human rights and environmental policies. Attention is drawn to a sense of responsibility and honesty and the ability to contribute as designers to the improvement of social well-being (Heller & Vienne, 2018). Margolin (2012) also underlines the implications of the relationship between design and democracy and delineates 4 ways in which they can merge: Design as democracy, Design for democracy, Design in Democracy, Design of Democracy (Margolin, 2012). This assumption addresses Design for Democracy in different areas. In Design as democracy, the vision of the emancipated spectator (Rancière, 2010) is addressed, where the stage is occupied by new actors who are also dedicated to acting and collaborating democratically for the formation of a more sustainable world. In Design of Democracy, Margolin refers to the engagement of the



designer with institutions or governmental organizations and procedures that cover a democratic system to facilitate the on-going affairs of democratic governance and the provision of services to citizens. In *Design for Democracy*, the purpose is to involve citizens through civic engagement in governmental processes and influence decision-making policies (Selloni, 2018). This has become possible since the information is accessible to the public, leading to higher involvement in collaborative participation in various formats and distinct platforms. As for *Design in Democracy*, the author refers to the contribution of design initiatives such as creative communities, where people cooperatively invent, enhance and manage innovative solutions for new ways of living, thus contributing to resilience and sustainability in democracy.

Design intervention in social services can achieve innovation at three levels, namely incremental, institutional and disruptive. In the case studies, it was possible to work at all three levels in products and services (incremental), markets (institutional) and in political and system changes (disruptive) (Nichols & Murdoch, 2012). The association is made according to the authors' definition of the terms. It may then be assumed that there are practices that promote incremental innovation, thanks to the development of goods and services that allows for a more effective or efficient response to the social needs identified in the various audiences and communities. In the case of institutional innovation, the generation of new social values may be observed, where intellectual capital is repositioned for social and not exclusively economic purposes. Finally, in the scope of design intervention, disruption is characterised as the reformulation of intervention practices and methodologies with a view to benefiting the patient/user.

These interventions were implemented in the present project. However, the emergence of several factors hindered their development and were thus taken into account allowing the case study to be better prepared and applied. In the article “Capacity building” (Whittle, Colgan, & Rafferty, 2012), the reasons for the failure of planned change by the United Nations Development Program (UNDP, 2006) are specified, which have been considered and stated in the following preliminary case studies. In the extended list of reasons, those that were witnessed in the case studies were mainly related to institutional and organisational contexts, including power and individual motivations. In two specific collaborative processes, the failure in the change of management supported by the key stakeholders and influencers prevented the project's implementation and diagnosis due to the internal agenda and human resources. Finally, and also witnessed in the preliminary case study, the document refers to the failure to create a sense of urgency amongst potential industry

partnerships which have demonstrated disinterest or the inability to create a partnership with the scientific and academic area.

### **Chapter 3 summary**

In the following chapter, it is possible to review the terms that underlie the basic ideas of project development, as well as to gain some understanding of the evolution of the terms by different authors with distinct fields of knowledge in areas of the social sector. In this chapter, it was possible to define guidelines to understand how the impact assessment methodology and its procedures should be organized. It was also possible to take note of the added value of this type of resource to draw more consistent conclusions and show how relevant this is to the practice of social design. The development of this area of study was also described to provide an understanding of the values that formalized its origin, the way it evolved, its objectives and its involvement and influence in the sector of innovation and social intervention in politics and its expansion to interdisciplinary collaboration.



## Chapter 4 - Field Research Design and Implementation: Puzzle for Cognitive Stimulation Project Case Study

### a) Fieldwork Research Design

#### a1) Design integrative Process

The interaction and development of joint activities following the initial contact fostered the creation of bonds of trust for new joint activities and a space for debate sessions on the state of the parish. The plenary sessions of the Social Commission of the parish council of Estrela were characterized by the exhibition of active initiatives in the field. The participation of local partners in the construction of several joint actions from a perspective of collaborative participation foresees a future for the strategic planning of local socio-cultural interventions, seeking to promote social inclusion and collective commitment. The creation of common spaces for discussion and the participation of various social agents facilitates the development of creativity in the social sector, characterized by constant processes of internalization and externalization, of appropriation and self-expression (Glăveanu & Clapp, 2017).

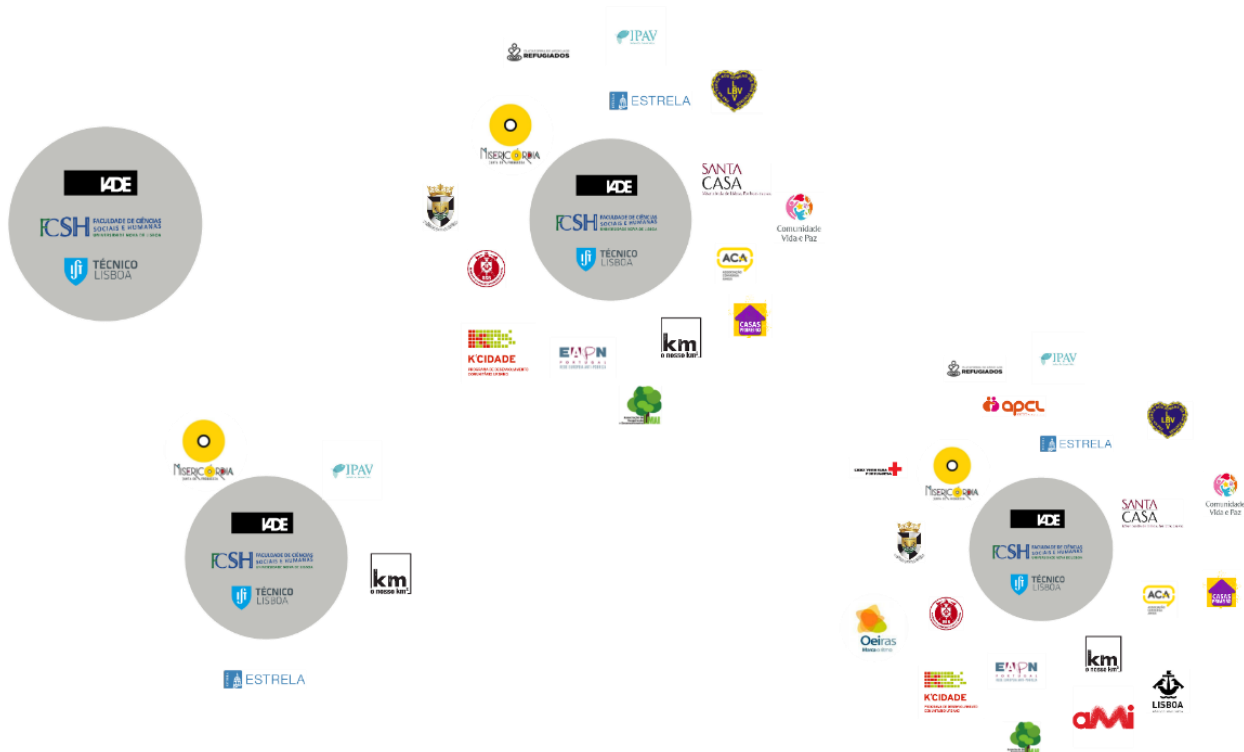


Figure 8 - Development of collaborative partnerships

The active participation of various social agents accentuates the development of an integrative and creative culture, already explored by Rancière (2010) in his emancipatory vision of the active citizen geared towards a mutually desired objective, but also a new culture of openness at the organizational level that leads to co-learning and co-sharing (Pahk, Self, & Baek, 2017). (Fig. 8) The field research allowed for the collection of qualitative and quantitative data, focusing on a community as the beneficiary of design and as the agent of local change, during which information was collected on the procedures to be adopted to support the communities targeted by the potential intervention being developed.

### **Methodology development**

Methodology, according to Herrman (2009), is defined as a set of methods, procedures or principles used to perform a particular activity by providing structures which, by helping to organise the analysis, also increase the clarity with which a position regarding any presumption may be formulated, once the facts are confronted. It is necessary to conduct specialized thinking and carry out external validation, but also to understand what has already been done by organizing each step to achieve a certain objective. In the words of the author:

*“Methodology: A (usually) conceptual structure that, both because coherent and internally consistent, and because comprised of a template of putative and/or accepted principle, is employed to analyse and/or organize data from which to discern or reasonably impute a common core principle within the analysand that may enable either the development or logical validation of theoretical postulates.”*  
(Herrman, 2009, p. 13)

According to Novikov & Novikov (2013), methodology is considered the theory of the organization of activity. Organizing an activity means arranging it as an integral system, with clearly defined characteristics of a human being's active behaviour, a logical structure and the process of its realization. Following Leont'ev's (1978) definition of activity as the active interaction of a human being with an external environment, where the former acts as a subject who

exerts a purposeful impact on an object to satisfy his/her own needs, the authors also define the basic notions of activity as being underpinned by philosophical, psychological and systematic foundations. In the philosophical description, the activity covers practical and material operations in thought, in the process of cognition and human behaviour, revealing its role in the world, asserting itself as a social being. The physical description of the activity is inevitably related to the psychological component since it complements its development. In system analysis, the activity is seen as a complex system designed to prepare, validate and execute solutions to multifaceted problems of a different nature (Novikov & Novikov, 2013).

In the social sector, the term methodology dates back to 1914, in the post-war period (1914-1918). The experimentation and foundation of the social work profession emerged during this period. The steps that followed fostered the development of methodologies and social research methods, the analysis of the tasks of the service itself in groups and communities and the introduction of social action devices (Robertis, 2011). Intervention in social work aims to respond to the needs of individuals or communities in the face of problematic circumstances through analysis and prior knowledge of the situation. Therefore, it is valued at several levels in a continuous and evolutionarily manner throughout the development of the practice.

Within the framework of Portugal's social cohesion, the desired objectives to be achieved fell within the recommendations of the European Council, which highlighted the lack of income and sufficient material resources to live with dignity, as a consequence of poverty at work, inadequate access to basic services such as health care, housing and education and finally exclusion from the job market and the poor quality of work (Pereira, Honório, & Godinho, 2015).

To address the diversity of responses to problems, Edgar Morin's (1999) analysis of an interdisciplinary, complementarity and multidisciplinary response would cover different points of view in the resolution of a given situation.

In response to these challenges, a social program was developed, the Rede Social program, a participatory structure of a social nature. Its aims included the eradication of poverty and social exclusion and the promotion of social development at a local level, by implementing strategic guidelines and principles involving multidimensional approaches to problems and responses, methodologies for creating networking through collaborative partnerships and the development of actions in a participatory manner.

With the specific objectives of diagnosis and participatory planning, promoting the coordination of interventions at the municipal and parish level, this program sought to develop solutions for the problems of families and people in poverty and social exclusion.

The Rede Social program (Núcleo da Rede Social do Instituto para o Desenvolvimento Social, 2001) integrates innovative perspectives by promoting inter-sectoral cooperation and collaboration for the integration of territorial policy between the State and civil society; various humanitarian and territorial planning and intervention organizations are included in an integrated approach, thus allowing for greater knowledge about the population and a greater response capacity. It may be considered a strategic partnership based on broad participatory democracy that facilitates procedures for co-creation and co-evolution (Cross & Dorst, 2001). The development of this collaboration aimed to combine three distinct but complementary methodologies, Social work, Social Intervention and Design.

The relevance of interdisciplinary collaboration and its acknowledgement by social sector organizations has enabled advances in the practice of methodological conjugation and interaction. In the case study, the inclusion of different social partners was reflected in the different stages of the project. As may be observed in the figure, the evolution was progressive due to the consistency and validation of the stakeholders, thus facilitating the integration of more partners from several areas. The adherence to and methodological exposure of the activities were a key factor in building a response resulting from the sum of the field and project experiences.

## **a2) Collaborative Design Methodology**

The collaboration process was based on the relationship between the different stages of the three methodologies, Design, Social Intervention and Development of Social Projects. In a definition based on the similarity of methodological procedures, they may be organized into three stages: a) Data Collection and Analysis, b) Action and Implementation and c) Evaluation and Reporting (Lawson, 2005) (LUMA Institute, 2012) (Dorst, 2015) (IDEO, 2015). The co-relationship stems from the pursuit of greater assertiveness in the intervention, thus accelerating the collection of data (Fig. 9). To this end, during the case study, co-relationship and interconnection skills were identified, which appear to have been determinant in the final solution. The sequence of actions is organic as the stages can overlap or even alternate, even if they are geared towards the same end.

It is a collaborative problem-solving process that can provide a useful structure capable of overcoming complex community issues (Ayres & Silvis, 2011).



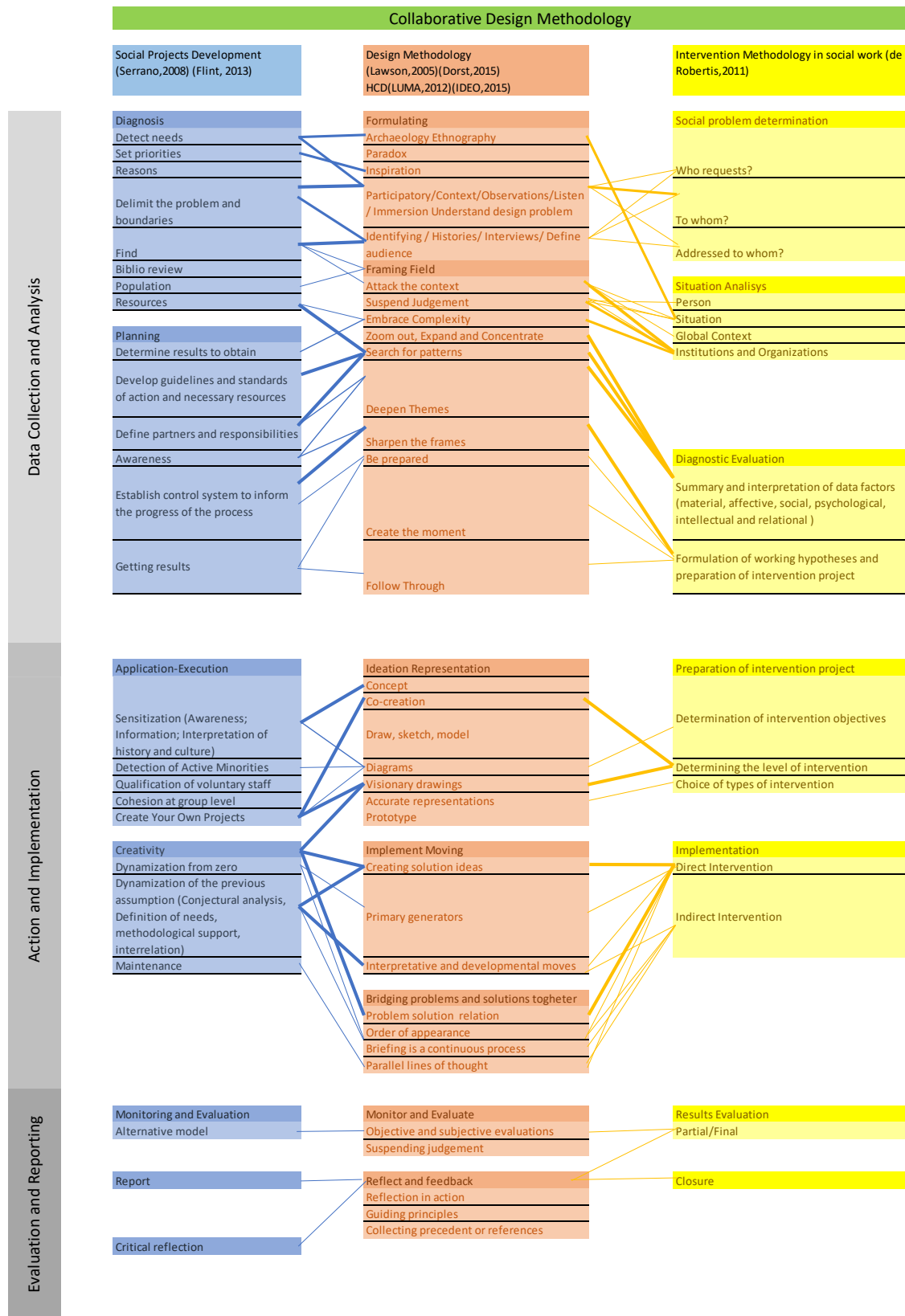


Figure 9 - Collaborative Design Methodology

By means of a comparative analysis of the stages, a possible reason for this finding will be exposed and justified, according to the experience.

In the Data Collection and Analysis phase, assuming that there is prior awareness of responsibility and social awareness, the investigation of the problem and the situation, is processed.

In this process, before formulation of the problem, Serrano (2008) refers to the need for a prior diagnosis to describe the reality of the problems. The author refers to Espinoza (1986) and Ander-Egg (1989) to describe the diagnosis process. Both references characterize diagnosis as fundamental for the projection of action since the recorded data and past history will enhance the project and predict the impact, its effects and potential recurrences. These data will produce indispensable information within the scope of needs, in the preparation of an inventory of available resources, in the possible response alternatives, as well as in the construction of a hierarchy of procedures to be applied through a viable strategy.

In the phases of social intervention methodology on determining the social problem, De Robertis (2011) highlights the clarification of the intervention request and the characterization of the actors to which the request is subject (a situation, global context and institutions). This recognition will make it easier for the social agent to define the areas of intervention to which the user will be subject to evaluation, whether psychological, therapeutic or any other type deemed relevant for future procedures.

In design methodology, this stage is defined as formulation of the problem (Understanding, Looking, Inspiration or In-depth Investigation) where deep immersion in the problem is carried out in order to understand its origins and reasons.

According to the LUMA Institute's Manual of Human-Centred Design Methods (2012), this stage refers to the observation phase, which the authors group as Ethnographic, Participatory and Evaluative research. By establishing three stages with different objectives, it is possible to generate deeper knowledge and a close relationship with the actors that will facilitate acceptance of the intervention.

In the case study, the process developed at a stage where the social intervention teams had already identified the at-risk cases. This evaluation is performed through the direct analysis of the health technicians of the situation and needs of the global context.

At the time of Diagnosis, the most urgent priorities were established, with an emphasis on the interdisciplinary relationships that assess a range of factors from materials to emotional and social states, correlating them with the objective to achieve a holistic perception of the situation.

The information obtained was decisive for the next stage, which is difficult to dissociate from the diagnosis. The hierarchy of priorities defined the type of intervention since they were classified precisely on the basis of their urgency.

Serrano (2008) identifies some strategies to classify objectives by their priority and the gap between the current state and the state to be achieved. The author also mentions Juste (1992), who suggests prioritization criteria in other terms.

As far as Juste (1992) is concerned, the evaluation must be prepared according to the relevance and severity of the situation, the profitability and evolutionary capacity, priorities for the potential and speed of the effect and for effectiveness in the ease of achieving objectives and responsibility in the direct role that each technician has. As a second set of criteria, the author highlights interest, motivation and personal expectations as sources for potential change (Serrano, 2008).

As a consequence of the evaluation, the authors consider that there is an opportunity for potential creative development regarding the need to diversify alternative responses.

The diagnostic evaluation serves, therefore, to unveil the potential actions that led to the emergence of the problem, the internal or external factors, as well as the central core that does not allow the individual to continue his life healthily. The diagnosis can be determined according to the content and time, enabling, according to Robertis (2011), an evaluation of the subjects' capacities through a pattern of behaviours or situations that hinder their evolution (Robertis, 2011).

To elaborate a diagnosis according to the content, the author refers to Perlman's (1973) book *L'aide psychosociale interpersonnelle*, in which the author classifies three types of diagnosis: dynamic, clinical and etiological. Dynamic diagnosis focuses on the identification of the factors (social, emotional or psychological) responsible for a given state and personality of the individual. The content of the diagnosis comprises a set of variables such as the institution to which it belongs, the application and the problem to be solved, the definition of the user and the theoretical references that will allow for the diagnosis.

Thus, an attempt will be made to delimit the problem through increased proximity where the aim is to understand the context through observation and by listening to all the players involved, thus immersing in and deepening knowledge of the "reality of the situation". Understanding the design

problem by focusing on the difficulties will allow the social agent to plan a set of possible practices and scenarios to be applied in their resolution.

This stage is followed by the questioning phase in order to understand and define the problem. Concrete questions of a temporal, local, strategic and planning nature should be formulated in order to collect detailed data on the resources available to plan the intervention. It is an understanding procedure and working hypothesis formula that will define the type of intervention, based on the framing process where a series of procedures are defined for a better understanding and approach to the problem, in line with the framing field inspired by Dorst's (2015) *Frame Innovation*.

This set of principles allows for a new approach to the problem. Following the logic defined by the author, each principle was framed by the design stages and their importance was highlighted. In the attack judgement, it was possible to obtain a better understanding of the core and essence of the problem. It was possible to find some resistance to expressing feelings and emotions which led to concentrating the conversations on the trivial themes of daily life. It was necessary to construct a bond to build up the confidence of the entities in question to consider more in-depth discussions, a kind of playful component to relieve the tension of therapeutic accompaniment.

Suspending judgement and embracing complexity are two moments in the practice of creating frames that are accomplished through openness and acceptance of what surrounds the problem. These two moments allowed for a more comprehensive and global view. Possible preconceptions can result in projective blockages that influence the project in a less profitable and effective manner.

The involvement of other actors from different scientific fields and practices increases the knowledge of the reality and will also contribute to the collection of a set of data and thus generate patterns of behaviour. After acknowledging and focusing on the actions, the analysis should be carefully examined to establish a clear vision of what is intended to be achieved. It is a time for consensus among all the involved stakeholders, who will play an active role in the process of expanding the action to other potential social agents with similar needs. In the case study, this was a decisive moment that allowed for the possibility of new stakeholders, thanks to the credibility of those already involved, through the reports and testimonials confirming favourable feedback on the process. Finally, the monitoring of the action culminates in the comments and report of the stakeholders and the impact the action has had on their organization and work methodology.

After defining what is intended to be achieved, the Action and Implementation phase comes into play, where procedures are developed to define the intervention as a design opportunity. To this end, in the case study it was necessary for information on the problem and the solution to be exchanged between the designers and social services in order to plan the intervention with its different timings. The planning of the action defines the objectives and the results to be achieved, identifies the user and the actors in the processes and the materials applied to the field at different times (Dorst, 2015). The level of intervention and the construction of possible alternatives, as well as a system of control and registration of the results achieved at different times were established. This phase determined a concrete moment in which the conceptual and still visionary idealization began with the formulation of concrete solutions focused on ensuring production and implementation. This moment, characterized by the construction of bonds of trust with potential stakeholders, is of crucial importance for the execution of the project and determinant in its viability. The different prototyping phases make it possible to reduce the risk of failure and non-acceptance, which is also the result of moments of integration (Lawson, 2005).

The planning of the case study gave rise to a readjustment and updating of the practices, with attention to the need to record qualitative and quantitative data in order to cover and combine different information in the same activity. It also ensured the participation of stakeholders from different types of social intervention spheres, which further contributed to the development of the activity (Brest, Roumani, & Bade, 2015). (Fig.10)

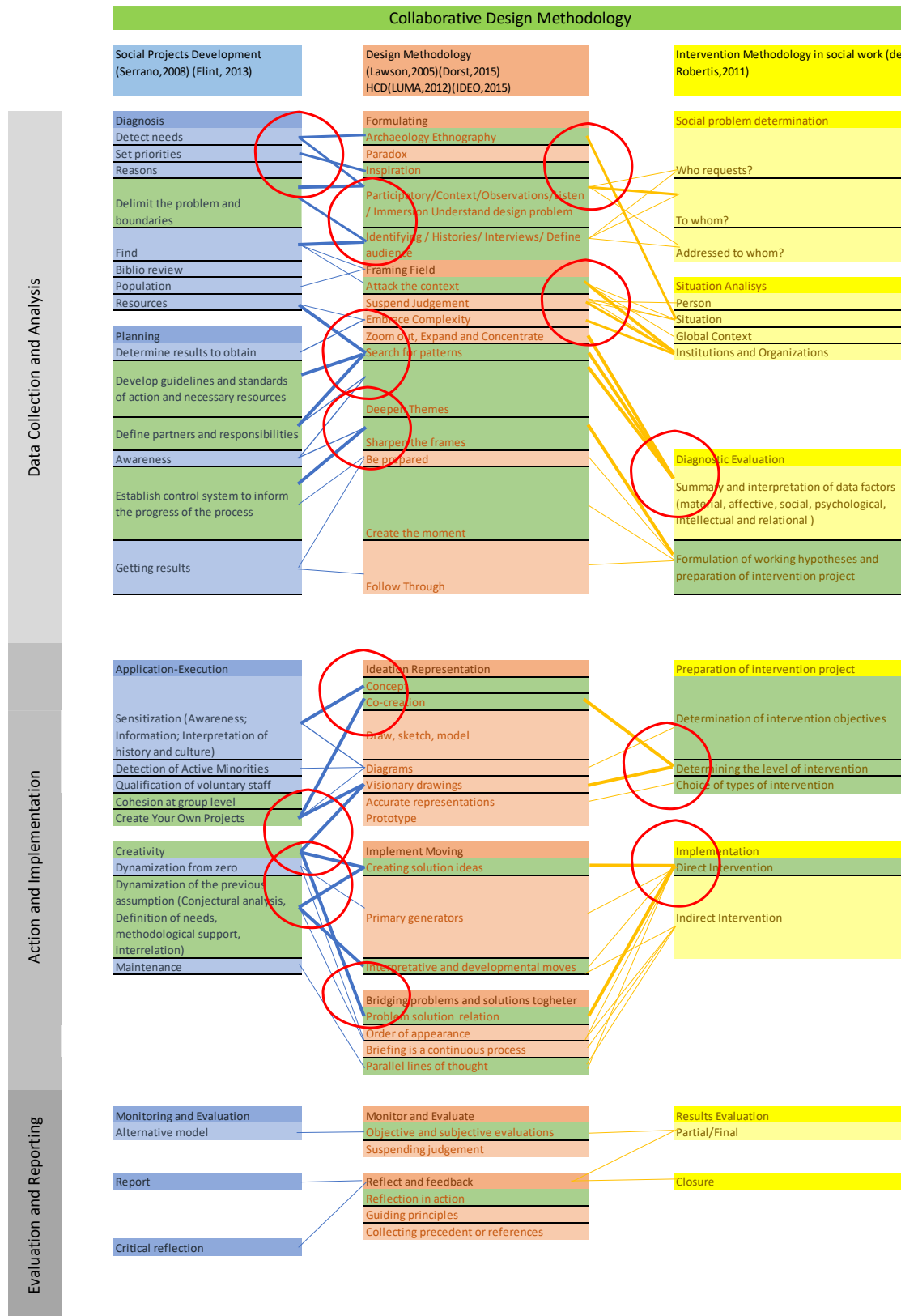


Figure 10 - Collaborative Design methodology - Interdisciplinary connections

In order to connect the different methodologies, a case study was developed, which focused on the creation of a tool of therapeutic utility, through which an analysis was conducted of the interdisciplinary interactions at different times. Thus, it was possible to understand in which processes there was greater predisposition and collaborative capacity.

Analysing the highlights of the interdisciplinary interaction framework, it is possible to identify direct collaboration essentially at moments involving the discussion of conceptual ideas and brainstorming.

In the Collection and Analysis of Data, the entire process of recognition and delimitation of the problem had already been carried out by the social agents and health technicians from the intervention units of the parish council of Estrela who, within their specialty, analysed individuals, their needs and a set of priorities to achieve the goals, which contributed to the formulation and understanding of the social problem. This information was transmitted to the designer responsible for organizing the information. When organizing the information, it was possible to identify a set of patterns related to the user, the group to which he belonged and the habits that served as a guide for the in-depth study of the information. These data were essential to define the types of working hypotheses, given the physical, human and organizational restrictions that were brought to light. Moreover, they contributed to defining the responsibilities of each intervener within the scope of the case study.

In the second Action and Implementation stage, the interaction is geared towards the construction of a project. This second moment is dependent on the first phase from which it gathers essential information within the process of generating conceptual ideas. This stage, also shared with the other partners, allowed for an understanding of their perspective and ambition for the intervention. This stage is also marked by an awareness of the type of resources available and the extent to which they will influence the actual materialization of the project.

Creative development was guided by objective information from the health and social technicians. This information made it possible to gear the creative development towards the objectivity of the action and the potential for implementation and applicability. These are essential elements that were taken into account as a result of prior experiences with preliminary studies that focused on social issues in which this objective was not achieved. The form of intervention, due to its proximity to the processes, is identified by the term defined by Robertis (2011) as "*Welcome-*

*Support-Accompany*", given its relational characteristics. This monitoring makes it easier to welcome the user and to become aware of his situation. This intervention can be carried out in five ways, *Welcoming, Clarifying, Supporting, Understanding oneself and Monitoring*.

This project was integrated into the post-welcoming stage. The ideation phase enjoyed collaborative moments in the construction of the activity concept as well as in the co-creation of the proposals developed through brainstorming sessions and the exposure of ideas on the theme "Affections", which was explored in the prototype approach. As for the Clarifying stage, the aim was to understand the nature of the problem, the situation of the person and the social and affective repercussions, and awareness of the situation. This process manifested itself in the discourse and the body language when describing human relationships and the exposure of feelings and allowed the social agent or health specialist to contextualize the assumption and help the patient understand the needs to be met. This exposure usually has a liberating effect, which makes room for the health specialist to register specific information to support the patient in his treatment. Finally, the "Monitoring" stage which, according to the author, implies proximity, active participation, evolution, individualization and passage, took place.

With such a broad spectrum of actors, different processes were encountered that were addressed by their characteristics and objectives.

According to Morton and Glasgow (2011), health is a new challenge for community development. In their research, they recognize that community-level interventions can respond to population health problems and proactively sustain the population's well-being. They believe that partnering with social support institutions can be the key to increasing the resources available to meet the goals of a healthy population due to their skills, infrastructures and partnerships with health technicians.

Flint (2013) describes this challenge as practices of *Sustainable Community Development*. From his perspective, creating and improving the processes and activities of well-being and empowerment maximizes the human potential to develop the full potential of a community. The author highlights the importance of community (civic) training capacity building, defining it as the basis for a foundation to make good decisions about the management of a region's natural, human, and cultural resources, so the community's way of life can be maintained and improved. In his opinion, social development is due to three interconnected components, namely Community Capacity Building, Economic Development, and Stewardship. This case study falls essentially



within the scope of human capacity. According to the author, this characteristic promotes collaborative capacities among citizens who, together, will make well-thought-out decisions as a result of the diversity of participants and organizations within the community. Knowledge sharing strengthens the capacity of community groups and organizations to work in collaboration with active citizens to achieve changes in their practices.

Flint also recognizes a set of "beliefs" that can accentuate openness to engagement and collaborative relationships, leading communities to achieve critical community capacity and maximum participation in sustainability, namely; a) Commitment to placement, promoting activities that strengthen the sense of community and collaborative work; b) Vitality, developing progress to reach a sustainable ecosystem; c) Resilience to external disturbances and overcoming capacity; d) Stewardship, encouraging interaction between members of the community, development; e) Making connections, and f) Equity in the entire process, from decision making to benefits (Flint, 2013).

In the Action and Implementation phase, once again, there were creative co-construction activities and moments of greater interdisciplinary interaction with increased responsibility, since from that moment on, patients or users of institutions would be involved and the degree of commitment and respect for their availability was intransigent. The concept ideation phase was the first moment where two entities were involved, one focusing on social accompaniment at home and the other on institutional reception and monitoring. Both participated actively in the process, in the two distinct moments of ideation and concept and in the creation and resolution of the subsequently defined activity. It was here that the first objective approach emerged to what was the intended achievement, namely a new activity stimulating verbalization and the exposure of emotions. The first activities were subject to interpretative and developmental moves due to the different evaluations and suggestions on the usability of the product.

The second approach, with an update of the tool's usability and properties, increased the potential for its use, thus also increasing the number of institutions and participants involved.

In the creative process, several ideas for a new activity were discussed, which brought all actors closer together, thus facilitating the user's knowledge. The follow-up stage was subject to moments of exposure and mental state recognition.

The last phase was the Evaluation and Reporting of the experience. This moment was used to evaluate the activity and collaborative action. The construction of the evaluation methods was

conducted according to the expectations of each social partner and adjusted to the participants. The monitoring of the activities allowed for the identification of distinct parameters of effectiveness and health improvement.

#### Process review

The activities were developed in the follow-up stage of the previously established processes, based on the diagnosis and definition of the problem of the different target audiences. However, the technicians and health specialists responsible for the intervention activities reinforced the relevance of the activity in their intervention sessions.

In light of the results obtained, prior integration of design methodologies in the diagnosis, determination of the social problem and situation analysis may determine the impact of the consequent steps and the results themselves. (Fig.11)

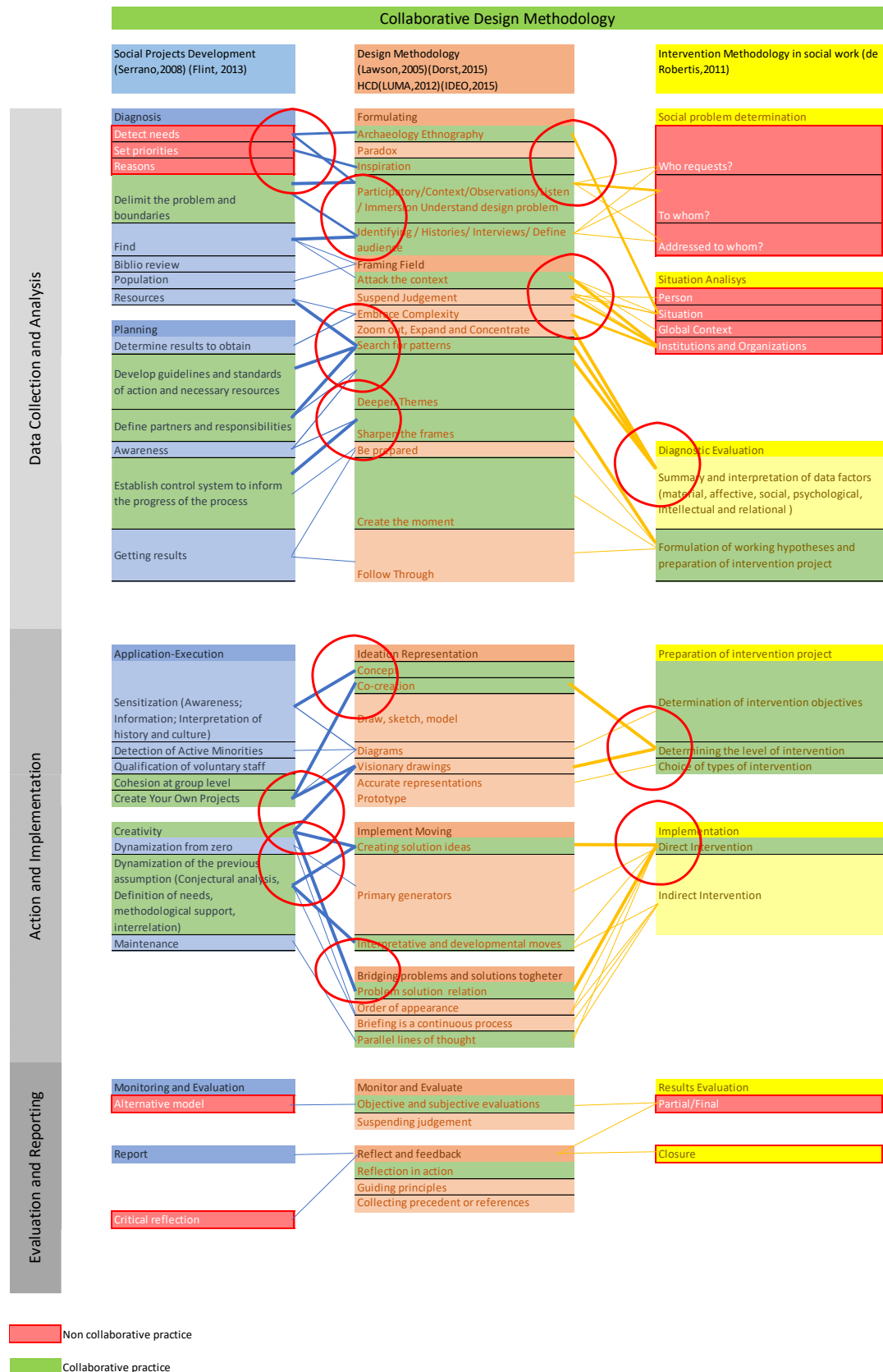


Figure 11 - Collaborative Design Methodology – Interactions Analysis

At the initial stage of the project, and in the follow-up analysis of the intervention, a reduction in collaboration was noted. This corresponds to the diagnostic phase of the patients in the former case, and in the drawing up of the report in the latter. The fact that the project ended prematurely is directly related to the current pandemic, which has restricted the possibility of gatherings for evaluation and reflection. Nevertheless, and in view of the above, it may be said that there is a clear need for more collaborative actions and the implementation of potential reforms to the current intervention methodologies. (Fig.12)

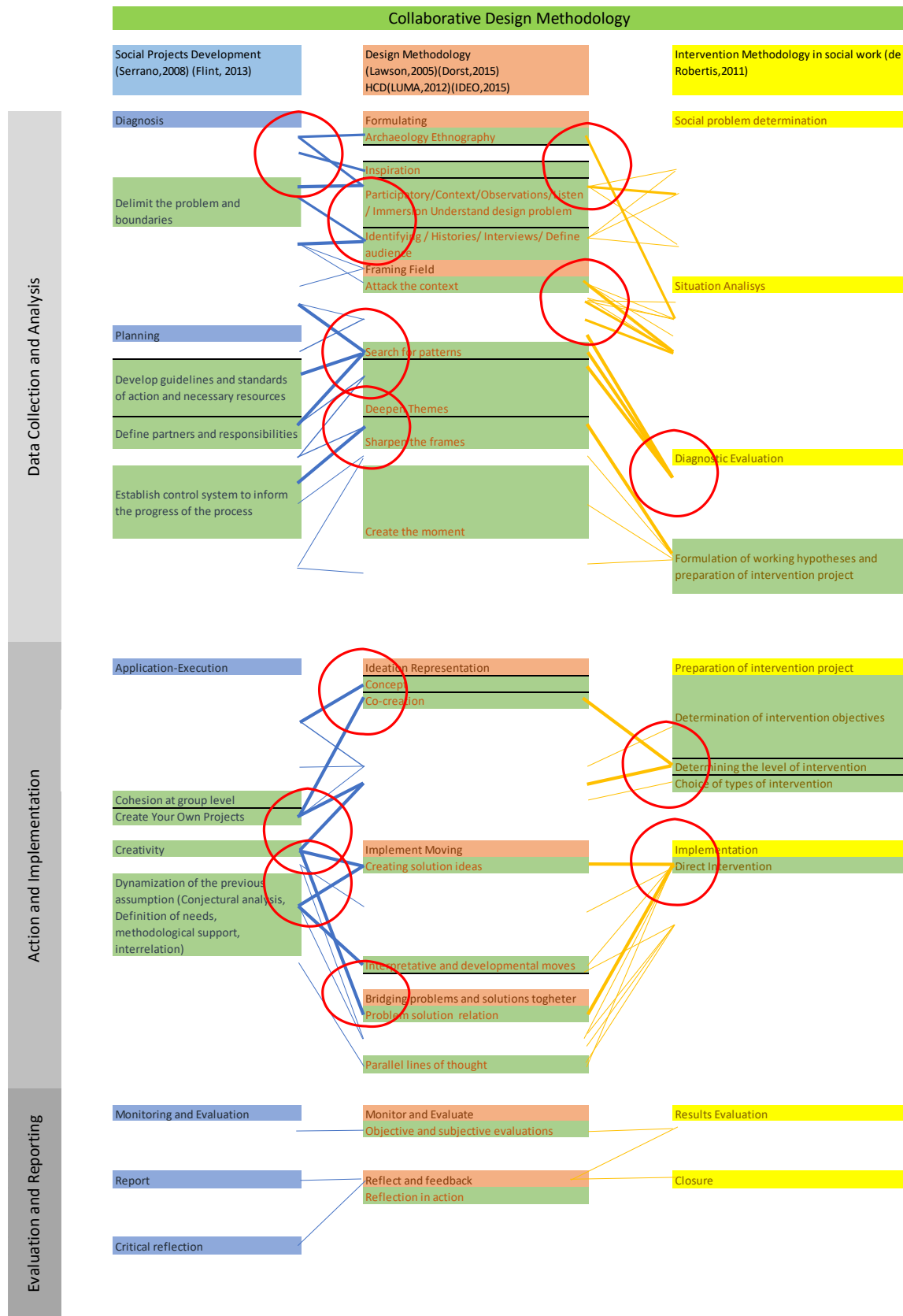


Figure 12 - Collaborative Design Methodology – Interactions

On a final note, the integration of the designer in all the decisive stages of the process could enhance the success of the outcomes in what would certainly be a totally collaborative and participatory approach.

### **a3) Distributed and Participatory Creativity**

Creativity, according to Glăveanu and Clapp (2017), is a vision that respects individual contributions while placing itself within the broader frame of community and society. The authors define it as a perspective of cultural engagement that promotes collaborative activity and collective efficacy where all members of society are integrated. Diversity and difference are considered a central role in the creative and cooperative process. A re-description of the theory of creativity is required by the very different and global world in which we live today, but needs to consider the renewed challenges of racism, populism, isolationism, exceptionalism and exclusion. By cultivating creativity in society and demonstrating potentialities such as cultural and social empowerment, new tools that can be used by social agents in the most vulnerable communities will emerge.

The case study focuses on an inclusive design approach to the design of a puzzle for cognitive stimulation in home support for elderly people in isolation in the Lisbon district, with the involvement of art therapists and psychologists. The co-creation of an upgraded version of a sliding puzzle with increased exploratory potential was implemented to help the health professionals collect insights for a mental health diagnosis among the elderly.

Following rather cautious consultations with several health professionals, a hand scale sliding puzzle was designed for elderly individuals with MCI (Mild Cognitive Impairment), with a view to stimulating their memory, language, thinking and judgement. A total of 2 researchers, 2 health professionals and 8 patients were involved in the development of the project. The first activities led to the redesign and final version of the project involving 2 researchers, 4 health professionals and 17 patients. The game was consequently expanded across a further 5 social care organizations, and its viability tested with the cooperation of 50 patients evaluated in several sessions, including elderly individuals with MCI, children with a cognitive deficit, patients with mental disorders, patients with a history of psychotic episodes and a diagnosis of Alzheimer's disease. The case study reinforced the importance of collaborative methodology with design. This process led health

experts to gather more information about their patients' problems, needs, and strengths and provided an appropriate solution for a diversified field of intervention in social care.

#### **a4) Collaborative and Interdisciplinary Practices**

Interdisciplinary collaboration was present in the development of this case study, and all the stakeholders were invited to participate in the co-creation of the design outcomes to achieve the mutual benefits and solution to the problem. This process involved correlating individual, organizational and societal factors beyond the sole fulfilment of individual needs (Pahk, Self, & Baek, 2017).

Collaboration among social agents facilitates the applicability of an intervention geared towards changing the situation of a person or group, through the construction of an alternative solution that will trigger their emancipation from the current psychological or physiological state, since there is already a closeness and trust within the group.

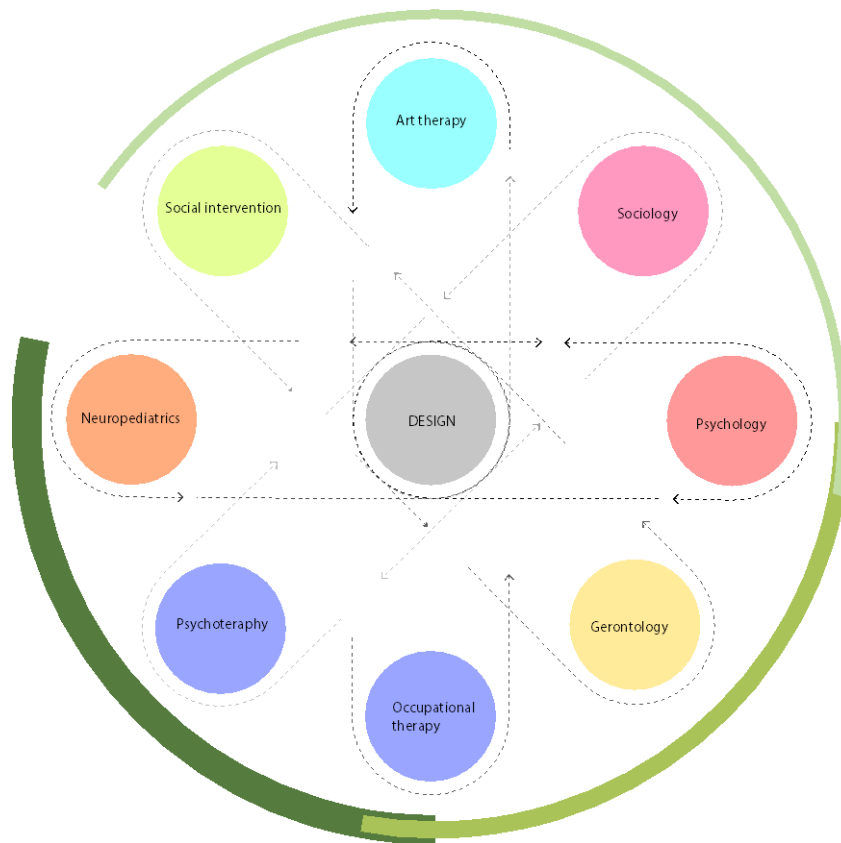


Figure 13 - Interdisciplinary interactions

The defined intervention approach for the development of a project that responds to the needs of the most vulnerable socially excluded groups and communities is based on a pragmatic and participatory approach, with the collaboration of different sciences supported by an advanced overview of the problems regarding the development of a proposal.

This type of activity aims to ignite a behavioural change in all the stakeholders, favouring new practices of interaction, applicability and combination of knowledge, improvement of intervention, state progress and development (Manzini, 2019). Participatory action research favours the designer's commitment to the cause, turning him into an actor, an agent of change and a facilitator of practices, and it was in this sense that the present case study was developed, optimizing the interventions in cross-cutting and articulated procedures in the incidence of different types and sources of knowledge to finally attain solutions for human needs (Margolin, 2002) (Cross, 2006) (Macdonald, 2012) (Bernarda, Ferreira, Queiroz, & Silva, 2017).



The work carried out previously with some of the entities that operate in the field enabled the development of a sequence of procedures to create a new perspective of intervention. The collaborating entities in the application of the game belong to different areas of Social Development, thus indicating the relevance of the study which seeks to demonstrate that the design discipline is a relevant tool for organizations with a significant role and unavoidable engagement with the field of social action. (Fig.14)



Figure 14 - Working group “Dar Voz” session at Lisbon Municipal Police Department (IADE, Estrela parish council, Telecomunicações Museum, Santa Casa da Misericórdia (Lisbon), Aga Khan Foundation and Municipal Police Department)

The design approach to the decision process was participatory action research, in order to describe and understand the phenomena. The collaboration of a researcher in the process was approved by the stakeholders and members of the organization who are looking to improve their patients’ condition. Embracing the creation of knowledge as an active process, the design researcher, stakeholders and patients, together, contributed to the acquisition of knowledge in all phases of the research (Macdonald, 2012). With practice-led research, new and open understandings are expected regarding the practice of design, on its own, and with the other disciplines involved, in a collaborative environment (Muratovski, 2015). The phases of the design process were defined in a multidisciplinary process, following the essential procedures of interdependence, flexibility, common objectives and collective ownership of goals (Bronstein, 2003). The review and analyses

of some of the processes integrated into the intervention practices and the preparation of social projects by the stakeholders highlighted strategic moments of openness for the integration of design (Serrano, 2008) (Robertis, 2011) (Reznick, 2016).

In collaboration with the stakeholders, it was possible to identify local situations of social vulnerability, especially among the elderly. A pattern of cognitive and memory dementia was identified in some of the residents, who were accompanied by psychologists and therapists in home visits, which may be a result of a depressed state due to their isolation (Nunes, 2017). This process was developed with social intervention units from the parish council of Estrela which presented the determining factors underlying their community practice of home monitoring.

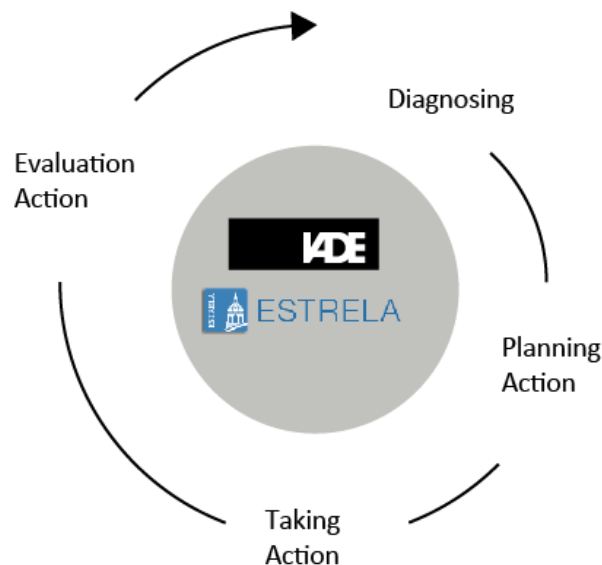


Figure 15 - Collaborative Development - Estrela parish council (Lisbon)

The trust previously established with JF-Estrela gave rise to the acceptance of other stakeholders to participate and intervene directly in some projects and to the project being accepted by the target population, facilitating the introduction, practice and analysis of the new co-developed tools. (Flusser, 2010) (Fig. 15)

The promotion of experimental research activities with community support units proposes to encourage the development of new methods and intervention practices such as product, system or

service projects and new partnerships. Collaborative practices were implemented to guarantee a collaborative and evolutionary intervention dynamic, a common ground for discussion, even when participants have different cultural and social backgrounds.



Figure 16 - Collaborative Development - Frei Contreiras Day Centre (SCML)

These actions were materialized as follows: presentation of creativity tools, development of collaborative practices for needs' assessment, communication methods supporting the design process, planning of the intervention and co-creation project, contributing to the collective actions (Bernarda, Ferreira, Queiroz, & Silva, 2017) (Heller & Vienne, 2018).



Figure 17 - Stakeholders' collaboration

By establishing contacts with a view to collaborative actions, reasons were identified that prevented collaboration. The reasons it was not possible to go any further were predominantly found in the applied strategy. Some were related to planning and management positions, which did not allow for integration and monitoring, such as the inability to manage the activity due to the extensive number of users and activities already established in the calendar; a change of profession when the work was about to begin; unavailability to be contacted or integrated in the project. Nevertheless, in twelve contacts, seven accepted this collaboration which made it possible to collect significant data on the importance of design in the construction of a solution to improve their intervention in the social sector through the development of new practices applied to their users. (Fig. 17)

## **b) Fieldwork Research Implementation - Product Design**

### **b1) Puzzle for Cognitive Stimulation Project**

According to the National Statistics Institute (INE), almost half of the Portuguese population will be over the age of 65 years within the next 60 years, at a time when Portugal has been classified by the World Health Organization at the bottom of Europe's list regarding the treatment of its elderly people. This is particularly alarming since more than 45,000 elderly people were identified last year as living alone or in isolation, and the data relative to 2016 show that approximately 40% of the Portuguese population over the age of 65 years spend at least 8 hours alone per day. In other words, almost one million elderly people are in solitude or isolation, which potentially leads to a disinterest in life and depressive states that can be fatal.

As we get old, we experience physiological changes which are usually characterized by a decreased ability to respond to biological stress, such as failures in the brain functions; that was why most of the research focused on memory and ageing since a decline in different types of memory has been increasingly observed.

Mild Cognitive Impairment (MCI), corresponds to a phase of pre-dementia in most cases. This intermediate phase between normal ageing and dementia is associated with an increase in the prevalence of chronic diseases, including cognitive impairment and subsequent dementia, associated with behavioural and psychosocial factors, the identification of mild cognitive impairment, calling for the adoption of therapies and the monitoring of its evolution over time (Petersen, et al., 2009). In this case, MCI is amnesic if the main complaint is only related to the memory domain and the patient keeps the domains of language, executive functions and other domains intact (Petersen & Negash, 2014). This is the most common form of MCI and the one with the highest risk of progressing to Alzheimer's disease (Magalhães, 2007 cited by Neves, 2012).

This specific research is related to the elderly population in isolation and their subsequent feelings of loneliness, sadness and depression. The growing number of elderly individuals in isolation, around a quarter of the population of Lisbon, calls for the creation of support and recognition programs in order to obtain viable and factual data on their needs and risks in a comprehensive

and equitable manner at the territorial level. The strategies that have been used, mainly in occupational therapy, are cognitive stimulation activities with the characteristic of a game to maintain the skills, cognitive health and socialization of these elderly individuals in order to guarantee their quality of life. The challenge of games helps to keep the mind active, thus reinforcing the relevance of perceptive factors in proposals that involve games and recreational activities (Gonçalves, 2012). In this context, this study presented some considerations regarding the relationship between human ageing and social affective cognitive aspects. Thus, it was decided that a playful and compensatory activity would be created. A game was developed to analyse and identify cognitive impairment.

## **Related Work**

In 2002, the World Health Organization (WHO) addressed the concept of active ageing as the process of optimizing health, participation and safety opportunities to enhance the quality of life of individuals and population groups. Active ageing allows people to realize their potential for physical, social and mental wellbeing throughout their life course and to participate in society according to their needs, desires and capabilities while being provided with adequate protection, security and care when required.

Active ageing should contribute to an increase in the quality of life of all those who experience the ageing process, even the most vulnerable, physically disabled and in need of care, through education and training policies and programmes that support lifelong learning and opportunities to develop new skills as they age (WHO, 2002).

The literature suggests that the exercise of games and mental stimulation with ludic activities and the use of images and photography are fundamental to maintain a healthy life, potentiating and awakening the mind (Gonçalves, 2012).

Cognition is defined as the term used to describe the whole involvement of mental functioning, which implies the ability to feel, think, perceive, remember, reason, form complex structures of thought, as well as the ability to produce responses to external requests and stimuli (Pires, 2012).

Pires also argues, citing Molina and Tarrés (2004) and Zimmerman (2000), the potential of games to develop mental agility, spatial and temporal perception, to optimize attention and concentration and to develop and recover cognitive functions. It is through the cognitive functions that the processes by which the individual receives, stores and uses the information of reality as well as of himself are established, which challenge an aged mind and promote an increase in the quality of life.

In essence, Zimmerman (2000) points out that training programs usually involve the creation of playful games, which work in order to triplicate stimulation in the individual, at a physical, psychological and social level, since besides stimulating the mind, reasoning and memory through the handling of objects they promote the physical involvement of the elderly in the task and creative reminiscence, aiming to entertain while challenging the ageing mind, becoming a useful tool for professionals in contact with the elderly (Zimmerman, 2000).

The purpose of this study was to test the effectiveness of a game developed in collaboration with sociologists and psychologists in order to collect more information so as to improve and update the work sessions and to analyse the impact of design intervention on the development of new tools to improve social services practices and patients' health. (Bernarda & Ferreira, 2020)

## **Preparation**

Following the ISO 9241-210 definition of a human-centred design approach by focusing on human factors, ergonomics, knowledge and usability techniques (ISO 9241-210, 2010), an activity to promote interaction and communication was conceived. To establish improvements in the interaction between two key actors, the patient and the health specialist, it was necessary to obtain information about the activities already developed and integrated into the follow-up sessions. According to the experience of the agents involved, these sessions sought to provide diverse art experiences for the elderly of the parish who are unable to leave their home and/or are bedridden, with a view to stimulating their physical, mental and affective abilities, through the realization of artistic activities, such as theatre, fine arts, music and literature.

These actions aim to provide well-being and, consequently, trigger a process of improvement of people's quality of life and socialization. The use of techniques that favour stimulating, communicating, interacting and empathizing with the people involved allows for a deeper

understanding of their needs, emotions and cognitive state which can often transcend the information that stakeholders and social intervention units have about their patients (Giacomin, 2014).

The project was framed within the scope of the work of the VisitARTE service, which focuses on the at-home intervention of the elderly population in the parish of Estrela. This service operates through close monitoring, customized and adapted to the needs, tastes and interests of each elderly person. To cover several areas of interest, the service uses different artistic languages to explore the interaction: plastic expression, music, theatre, literature and cinema.

The co-creation of the game and consequent application was developed with Carina Figueiredo (Psychologist, Effective Member of the Portuguese Psychologists Association) and Teresa Vaz (Sociologist, Art Therapist, Art-Psychotherapist, Member of the Portuguese Art Therapy Society). Both health specialists participated and were part of the team that developed the activity, providing the main inputs for an understanding of the study's context, routines, health status and the capabilities of the main target for which the tool would be developed. (Fig.18)



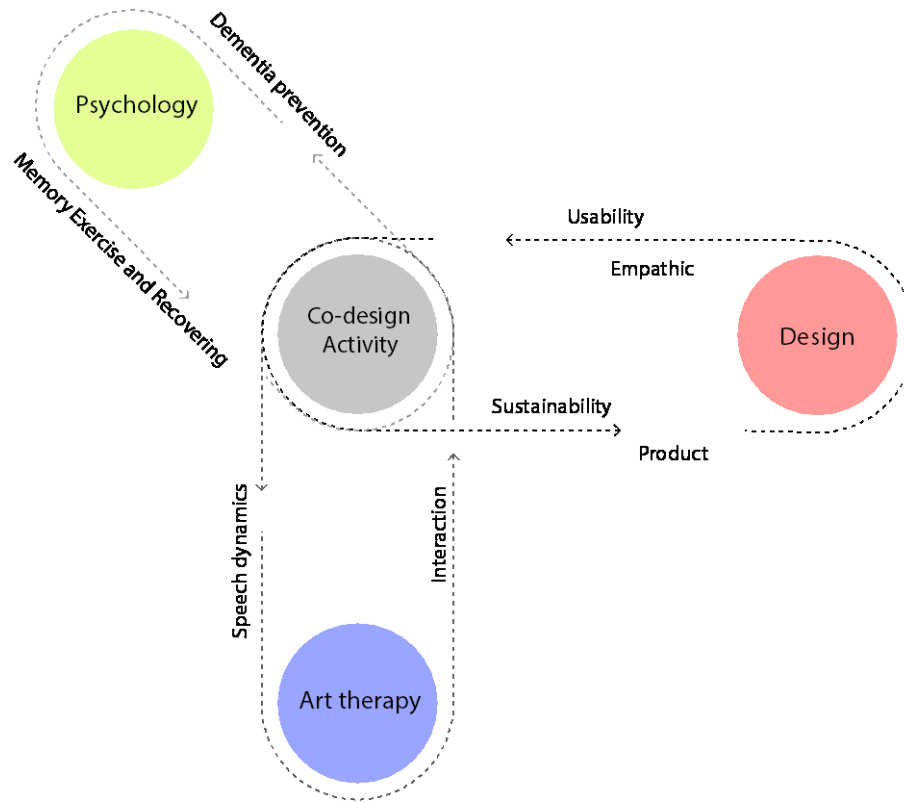


Figure 18 - Interdisciplinary interactions – Design – Psychology – Art Therapy

The co-design process of the activity enabled the combination of different inputs from each area of knowledge. Art therapy sessions have provided favourable information on the added value of the tool's contribution to stimulation and to the dynamics of discourse and dialogue. In the case of Psychology, the inputs focused on the need for an activity that would exercise memory and help in the recovery of data related to the user's past. The contribution of design was to meet the partners' objectives by adding the creation of a product tailored to the usability criteria, with an empathic approach, to understand the situation, perceptions and feelings of the other party. The designer should also have the ability to develop a product in consideration of its sustainability and environmental impact. The first activity was defined based on the use of images and photography, where the user and the therapist in an average of a 15-minute interaction engaged in a questions and answers strategy, which involved reducing the possibilities, but also exploring visual memory

to stimulate new topics of discussion and conversation, providing greater dynamics in the oral communication. (Fig. 19)



Figure 19 - Memory Game Quiz

The procedure began with the patient looking at photos of familiar faces and placing them on a support base. Following this selection, a photo was chosen by one of the participants. The game unfolds through questions that help the inquirer to uncover, through a process of elimination, which figure was chosen by the partner. Additionally, as the game develops, the specialist unveils and explores more profound topics that could provide useful information to better understand the ageing process.

Table 1 - Description of The Sample

Variables	Results (n°/%)
Genre	Females: 6 (100%)
Age group	70-79: 3 80-89: 2 90+: 1
Education / schooling	No education / schooling: 2 Basic : 2 Higher Degree: 2
Family typology	Living alone: 3 Couple: 1 Living with Relatives: 2
Severe changes in cognitive functions	Yes: 4 No: 2
Total number of times the game was played	21
Average per elderly person	3,5

The elderly individuals under study were characterized in two distinct groups:

Group A – elderly individuals without changes in cognitive functions;

## Group B – elderly individuals with severe cognitive impairment

In both groups, the elderly individuals were asked to choose photographs of relatives or other significant people, places or objects. In the specific case of the elderly person in group B, the relatives were asked to collaborate since the elderly individual had forgotten to look for the photographs.

In group A, the details (people, places and objects) of each photograph functioned as a summoning of personal meanings about themselves and their experiences, serving as a starting point for dialogue and for sharing aspects of their life story. The visualization and description of a single photograph served as a motive for conversation, in which visual memories were elicited that simultaneously evoked emotional memories of human and temporal relationships, allowing the therapist to better understand the reality of the individual. This activity also enabled the elderly person to talk about subjects in a more connected and detailed manner, as never before. This remembrance of the past gave rise to some uncomfortable situations that were easily managed as they were framed within the scope of psychological monitoring. Sometimes, one photograph triggered many other extended descriptions/stories, which prevented other photographs from being shown.

When using the parallelepipedal base, as a support for the game, turning the photographs backwards, two different methodologies were used: the elderly participant asked questions until they were able to guess who was in the photograph or which photograph it was, or the therapist referred to some of the data from the photograph so that the individual could try to guess who was in the picture or what the place described was. The elderly females who were part of this group were found to err occasionally, however with the repetition of the exercise, the number of correct answers increased.

In group B, initially, in the first description of the photographs, the elderly females shared information about their life history which they had never done before during the therapeutic follow-up. Although the descriptions of the chosen photographs were not very detailed, photography was clearly an important strategy to trigger the reminiscence of features in the personal life histories of these ladies who had suffered a serious impairment to their amnesic capacities.

In this group, the number of photos viewed during a session was quite large, between 1 to 15 or 20 photographs, since in most cases these elderly females only synthetically described who was in the photograph, repeating the same description they had given the first time. In carrying out this methodology over several sessions, the elderly ladies were observed to begin to remember details related to some of the photographs, usually those with a strong affective impact, which triggered the evocation of emotional memories, temporal memories and human relationships. It was also noted that memory failure, such as forgetting a person's name, the place where the photograph was taken or who had taken the photograph, tended to occur with photographs where the elderly females showed no affective connection.

After several sessions in which a description of each photograph was repeatedly requested, a proposal was made to put the Memory Game into practice using the parallelepiped basis as a support, turning the photographs with their backs towards the elderly participant, so that only the therapist was able to visualize their details. Only one methodology was used: the therapist asked the elderly person questions about the details of the photograph until the individual was able to guess who was in the photograph or which photograph it was. Sometimes the therapist had to refer to more specific data from the photograph so that the elderly person could try to guess who was in the photograph and the place where it had been taken. Although the participants in this group had some difficulties, as they needed time to think and also some clues from the therapist, the number of correct answers was very encouraging (average of 8/7 in 10).

As stated by Teresa Vaz (Occupational Therapist) and Carina Figueiredo (Psychologist), the implementers, the collaboration with design gave rise to a new practice that was considered a good tool to train the cognitive functions of the elderly, namely to stimulate, particularly emotional memory and human relations, as well as to increase the topics of conversation between the elderly participants and the therapists. This interaction not only provided the therapists with better knowledge of these individuals and their life histories and daily habits, but also gave the elderly participants the possibility of recovering topics for conversation, thus facilitating their therapeutic process. It was also stated that considering the neuroplasticity of the human brain, the capacity and potential of this game to exercise and stimulate the recovery of different types of memory of elderly people encourages its use in a logic of prevention and simultaneous intervention in terms of training and cognitive stimulation (Ballesteros, 2009).

The first activities demonstrated that the photographs served as an effective bridge to their intimacy and past; however, the substance of the exposed details was still peripheral. The practices aimed to recover different types of memories using photography, but also to stimulate new topics of discussion and conversation, providing a greater dynamic in oral communication.



Figure 20 - Photographs at “Places and Emotions Workshop” in Estrela (Lisbon)



Figure 21 - Participants at “Places and Emotions Workshop” in Estrela parish council (Lisbon)

In a second preliminary approach, workshops were held, in which photos were used with a view to exploring the theme of ageing with the elderly through the visualization of images, so that the need to talk about changes in time and habits arose naturally, stimulating conversations around the values of neighbourhood and community, promoting dialogue, enhancing the relationship between people and the co-construction of community life through the creation of actions that promote encounter and conversation.

The meeting was attended by 33 elderly people and the following topics were highlighted: Insecurity, accessibility, charlatans, mobility difficulties, loss of neighbourhood ties, the need to be active, being dependent, loneliness, lack of companionship and abandonment by their descendants. (Fig. 28) The use of photographs proved to be a success, as they served as a bond through which psychologists were able to enter the elderly person's intimacy to uncover their worries and fears, which helped to increase the population's knowledge of self-protection measures that may contribute to their quality of life. The information gathered in these types of actions is fundamental for closer feedback to the population and inhabitants.

This report led to the development of a more multifaceted game, the Cognitive Stimulation Sliding Puzzle.

This new approach activated a transdisciplinary circulation of concepts where specialists and patients actively participated in the development of the prototype and allowed the user to explore the use of photography in a more detailed and broader manner, thus increasing the interaction with the specialist and with the game itself (Pizocarro, 2000). Following the implementation of each project, the results had to be evaluated to identify potential changes in the various factors (material, emotional, social, psychological, intellectual and relational) that were fundamental to the planning of the next activity.

### **Case Study: Cognitive Stimulation Sliding Puzzle**

The co-development of the previous projects led to the construction of a more operative solution due to its complexity, design, adaptability and versatility that was materialized in a game for therapeutic purposes and cognitive stimulation within the scope of social intervention, initially geared towards a target population of over 70 years of age. The Cognitive Stimulation Sliding

Puzzle, with national design patent nº 5741, was approved on February 25, 2019 by the National Intellectual Property Institute of Portugal (see attachment 10).



Figure 22 - Cognitive Stimulation Sliding Puzzle Prototype (Version 1)

The practice of the game is intended to be a psycho-motor incentive for elderly persons' recovery of different types of memories, the stimulation of new topics of conversation, providing a greater dynamic in oral communication, from the perspective of prevention and simultaneously intervention at the level of training and cognitive stimulation. The game consists of the interaction (omission-disclosure) of variably sized sliding pieces with a background image or photo. (Fig.22)

This game differs from the previous objects in the practice of exploring an image that consequently triggers verbalization and a more detailed description. Only one part of the image is presented at a time and it is up to the user to slide the pieces to add information to all the visible spaces, step by step, thus stimulating the capacity to combine and construct separate elements to build a total image in his mind. This activity which takes approximately 15 minutes per image, enhances a more careful analysis of each part (1/6) of the image and can even stimulate the mental ability to spatially enlarge the display of a single detail. Essayist and philosopher Roland Barthes (1980), whose focus of study and intellectual production was semiotics, refers to this as “the Punctum”, in other words



a "detail" that attracts or provokes, a partial object which transports the individual to another dimension (Barthes, 1980).

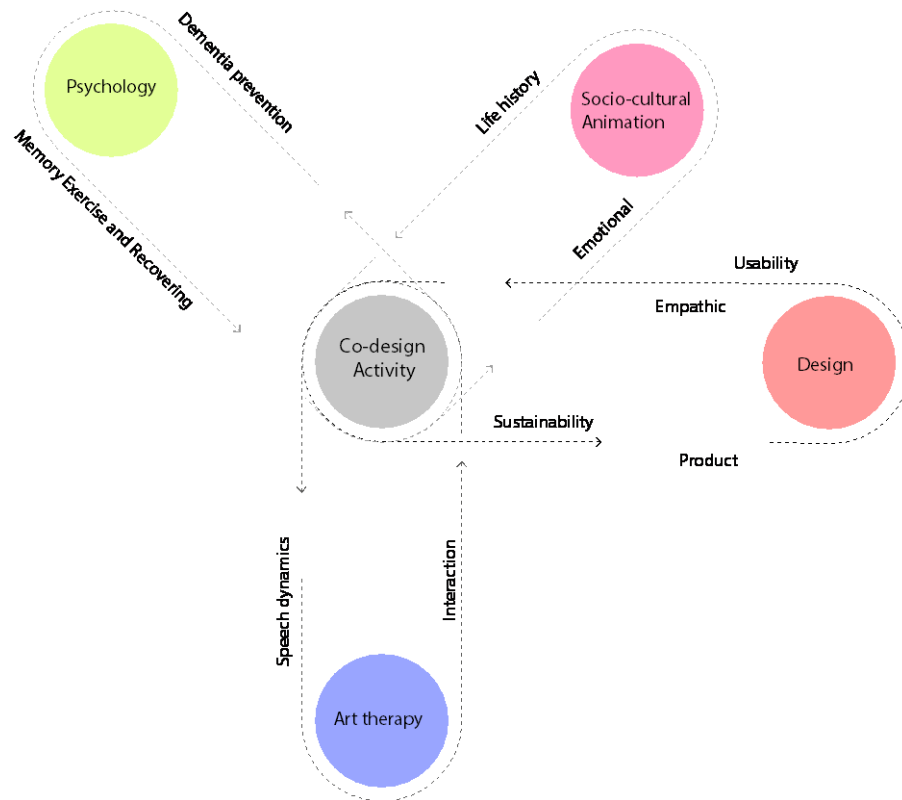


Figure 23 - Interdisciplinary Interactions – Design – Psychology – Art Therapy – Socio-Cultural Animation

The co-conception process of the activity was subject to a new intervention on inputs from the sociocultural animation sector, which contributed to the indication of themes that fostered interaction with the patients of the day centre. The same activities led to an evolution of the raw material with which the first prototype was developed, namely the cardboard construction aimed at reusing products whose function would have ended, mainly the packaging. Furthermore, the ease of access to the material and the ability to work with it favoured this choice.



Figure 24 - Cognitive Stimulation Sliding Puzzle Prototype (Version 2)

However, when it was used, the material proved to be fragile which accelerated its replacement by a more robust material which was also in line with the sustainability values of production and recycling. (Fig. 24)



Figure 25 - Cognitive Stimulation Sliding Puzzle 3d Model



Figure 26 - Cognitive Stimulation Sliding Puzzle 3d Model (Full Pieces)

The second version tested in 3D modelling (Fig. 26) software was produced in PLA using a personal 3D printer. The polylactic acid (PLA) is a polymer made of lactic acid molecules, an organic acid of biological origin, which is obtained from renewable, therefore recyclable resources. The decision was made to opt for this material for reasons related to proactivity, independence in production (time-efficient and cost-efficient). (Fig. 27)



Figure 27 - Cognitive Stimulation Sliding Puzzle (Final Version)

The improved version was developed in collaboration with the social partners of Santa Casa da Misericórdia de Lisboa, Ana Guarita, a technician in socio-cultural animation, under the supervision of the social caseworker and Director of the day centre, Ana Simas, where the action was integrated. (Fig.28)

The first analysis of the use of the game (9 users) revealed that the practice of searching triggered the interest to play. The game itself, including its mechanics and usability, was positive, only occasionally requiring the intervention of the designer or the therapist. All the players liked the game and considered it a novelty in the daily activities of the day centre. The photos that were used were divided between medium-sized and close-up images. The medium-sized photos showed part of the background, although they were close enough for facial expressions to be seen, while the close-up shots displayed more detail, excluding the wider scene, and in most cases one single element, the head.

A tendency was observed in the case of long-shot images, to search for the individual's face, without giving relevance to the surrounding environment, which was validated as a key element for identification.



Figure 28 - Workshop at Frei Contreiras Day Centre (SCML) (Lisbon)

After identifying the person and location in the image, the elderly person embarked on a conversation related to these features. In the case of images of people, they reported on the relationships and the proximity they shared with these characters and, in some situations, pointed out the husband/wife and children. When they were shown photos of other users and staff, it was also possible to observe their empathy and degree of proximity, which resulted in different moments of motivation and enthusiasm towards the game.

The procedure explores the aptitude of inductive reasoning, measuring how the patient can identify a similar information pattern on the basis of a certain amount of data, following logics when deducing principles from a gathering of facts. Inductive reasoning games are a common form of aptitude assessment, perhaps the next most common after numerical and verbal reasoning. The objective is to determine the continuity or pattern of an image that follows logically in the sequence. The importance of the practice is also a factor to stimulate the abstract reasoning skills of cognitive functions.

Norman (2004) introduced three different levels of cognitive and emotional processing responsible for what we refer to as an emotion, on visceral, behavioural, and reflective levels (Norman, 2004). (Fig. 29)

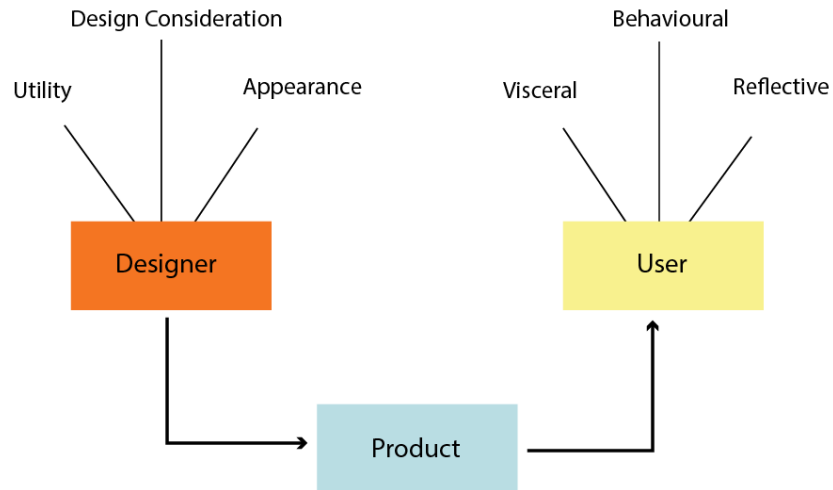


Figure 29 - Cognitive Stimulation Sliding Puzzle Partnerships adapted from Norman (2004)

Visceral design is related to the appearance and first impact, the perceived appearance of the object and how it makes the user/observer feel in the initial sensorial verification and analysis.

The behavioural level essentially refers to the emotions we feel as a result of either accomplishing or failing to complete the game's objectives. There is a positive impact when the product is of a low difficulty level and with little need for conscious effort, however, when it restricts or makes us pay more attention, we are more inclined to experience some negative emotion.

The reflective level is the layer of conscious thought, where we consciously approach design, reflection capacities according to our most rational side and extracting information to determine what it means to us as an individual. All these levels combined form the entire product experience, that is expected to be analysed, making it possible to understand how relevant and favourable the implemented tool is to participants for different purposes. (Norman, 2004)

To understand the true impact of the action, a report was prepared with information related to each individual activity. The analysed data are divided between the physical-temporal analysis of each photograph. Users' ability to sort out and understand the images with the number of pieces used is reported and the analysis or description of the image is quantified.

### **Expansion of the activity**

The activities as well as the case studies presented made it possible to extend the implementation of this tool to other organizations, thus increasing the data for the statistical analysis of the potential for collaboration between design and other sciences in the construction of more effective tools in obtaining favourable results for improving the quality of life of its users (Cross, 2006). (Fig. 30)



Figure 30 - Cognitive Stimulation Sliding Puzzle Prototype Workshop at Santa Casa da Misericórdia

The implementation of the game arose from needs related to the cognitive stimulation of the elderly and the evolution of dementia, however, following the presentation of the first insights, further

interest was shown by other social development organizations, whose mission is geared towards the development of projects that promote the recovery and autonomy of psychosocial disadvantaged citizens in the community and the work context through psychotherapy, thus pointing to the potential of this product for other fields of social intervention.

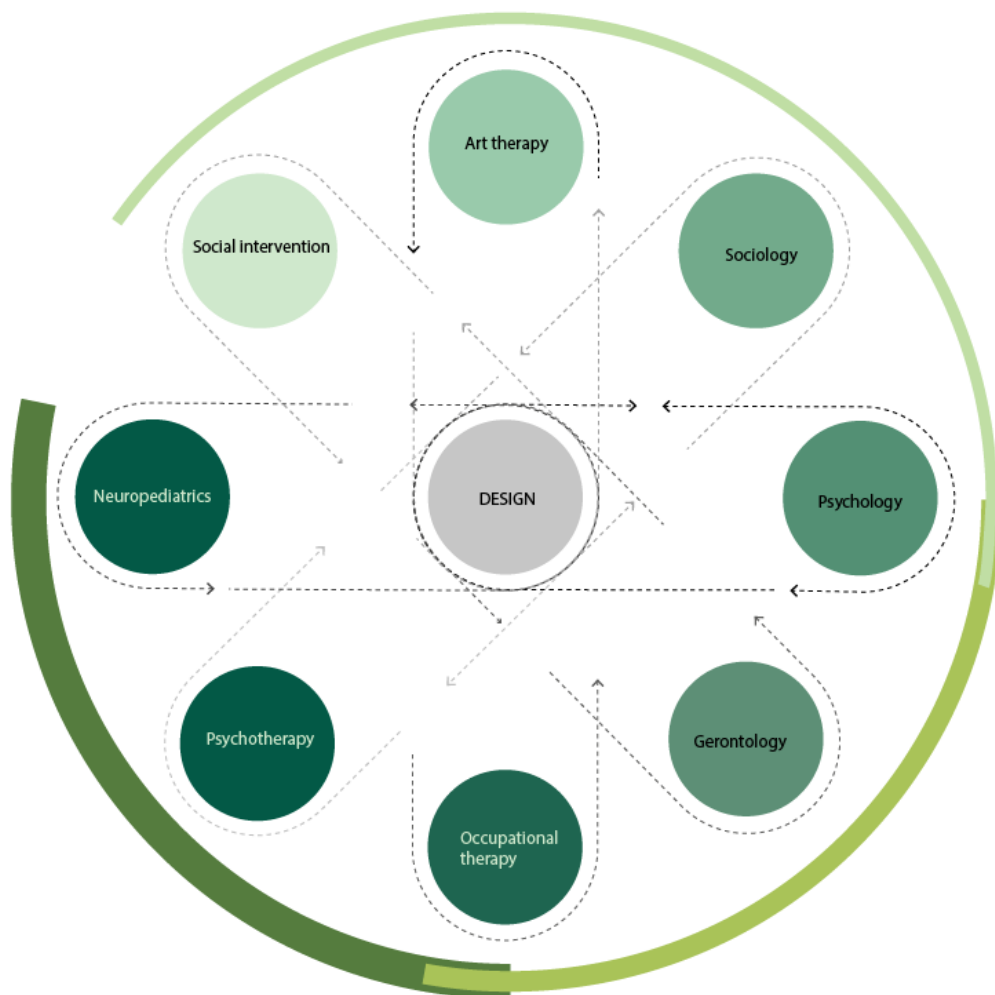


Figure 31 - Evolution of Interdisciplinary Interactions (elaborated by the author)



The first application aroused the interest of other day centres, such as nursing homes and retirement homes, which welcome the elderly. Here, the search for cognitive stimulation and the study of the ageing process were the indicators that were possible to verify and quantify with the prototype, which led to the interest of these institutions in the game. In the field of social support, it was possible to collaborate with community centres, integrating the project with the same target audience. Subsequently, it was applied in different categories: Mental health rehabilitation, neurological and brain development disorders, behavioural and emotional disorders, neuro-paediatrics, psychiatry, pedopsychiatry, psychology, social work and therapies (occupational, speech therapy and physiotherapy). (Fig. 31) (Fig.32)

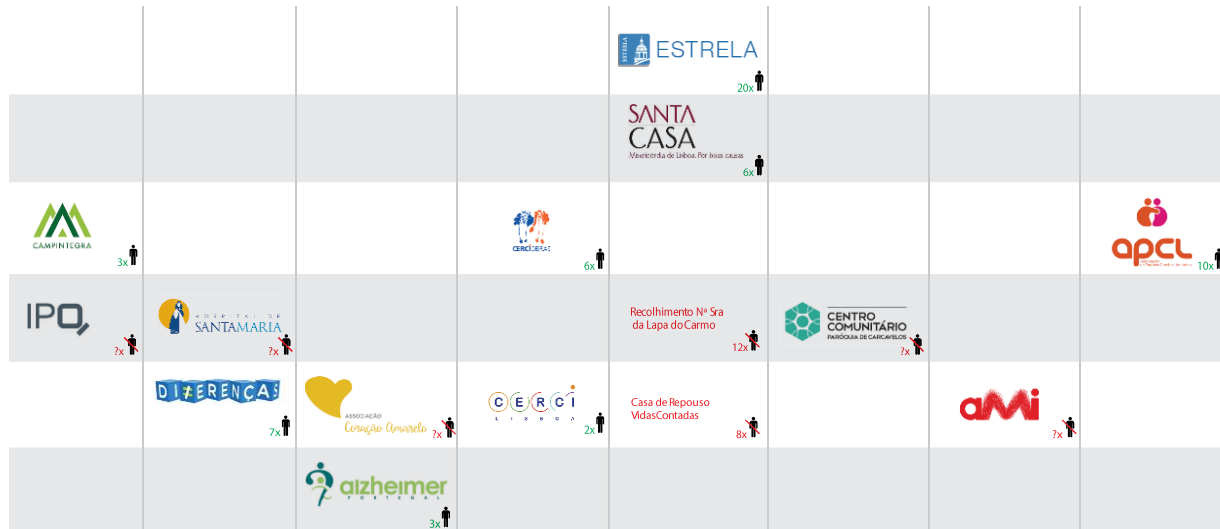


Figure 32 - Evolutionary Approach to Stakeholders (elaborated by the author)

During its development, the case study revealed some indicators of the impact of design on the activities that are a part of daily life in these institutions. Over a 6-month evaluation period, some of the indicators defined by UNISDR for Resilient Cities (Figueiredo, Honideni, & Schumann, 2018), Human Development Indices and Indicators (United Nations Development Programme, 2018) and the 2030 Agenda for Sustainable development (United Nations, 2015) (Fig. 40) (see attachment 2) were used, focusing on the following features:

- a) Adherence (Collaboration acceptance), which can be defined as the integration and acceptance ability of users/Organizations. To this end, collaboration with stakeholders that are well integrated in society reduces the potential presence of conflicts and resistance to change. The preliminary case studies were important for engaging with influential people in the community, creating a space for social acceptance and the adoption of practices (Cumbula, Sabiescu, & Cantoni, 2013) as they helped bring together different perspectives and incorporate the multi- dimensionality of the problem to be solved (Figueiredo, Honideni, & Schumann, 2018).
- b) Integration of design in the Wellness and Inclusion sector; A reformulation of public policies and services by promoting relationships between designers, civil servants and citizens and co-developing broader capacities to increase equal access to health care and inclusion (Selloni, 2018).
- c) Resilience: by adopting a dynamic that will balance the differing elements of the structure, ensuring an adaptation to changing conditions (Meerow, Newell, & Stults, 2016).
- d) Capacity building (Empowerment); by developing collective activities for mutual learning, it is also possible to develop mutual understanding from each other's point of view to build consensus. This leads to an achievement and improvement of participants' awareness, knowledge and skills (Stoecker, 1999) (Aryana, Naderi, & Balis, 2019) with less entropy (Spraul, 2019).
- e) Collaboration (synergistic contributions) and system change (interaction); by creating synergies to take the initiatives further with expectations of a change in the re-conceptualization system, allowing platforms to develop a favourable context for creative communities (Selloni, 2018).
- f) Coalition (recall for collaboration) to order the production of coordinated activities that, together, will promote the achievement of common goals and a set of operations that will define a co-design process (Manzini, 2017).

Variables								
INDEPENDENT VARIABLES					DEPENDENT VARIABLES			
Collaborative design methodologies					social services practices effectiveness.			
Bryan Lawson		Kees Dorst Framing		HCD IDEO Toolkit LUMA Institute	improve	Social services	practices	effectiveness.
Productivity, Operational efficiency, Usability, User experience		Multidisciplinary team; Complement Existing Activities; Activate knowledge		Interdependence, newly created professional activities, flexibility, collective ownership of goals, and reflection on process		Task optimization, Performance, Automatic development, Satisfaction, Number of individuals assisted (Sample).		
Indicators	Adhesion	Proximity Perspectives	Encourager	Strategic Collaboration	Participation	Emotional Motivational	Organization Structuring	Empowerment
	Integration	Motivational	Promoter	Facilitator	Enabler Insights	Inclusive	Comprehensive	Distinctness
	Resilience	Weighting	Problem ID	Embracing Efficiency	Strengthen	Adaptation	Innovation	Evolution
	Capacity building	Educational Strategy	Developer Materialization	Materialization Creativity	Constructive	Productivity	Achievement	Benefits
	Collaboration	Co-construction Learning	Simplifier	Visualization	Transformation	Exchange	Differentiation	Alliances
	Coalition	Progression	Productivity Efficiency	Improvement	Evolution	Inclusive	Competent	Concretization
CLUSTERS								

Figure 33 - Variables and Indicators (see Attachment 1)

### c) Intervention Model Analysis

The analysis was subjected to the various levels of intervention of design, namely the intermediate user (health specialists) and the final user (patient). Both users exposed their judgement in different interpretations. The health experts, above all, evaluated the effectiveness of the tool in collecting more information about the patient's clinical condition. This information was related to the different levels of cognitive and emotional processing, the visceral referring to appearance and first impact, the behavioural response to the emotions felt as a result of either accomplishing or failing to complete the game, and reflective levels, reflection capacities according to our most rational side and extracting information to determine what it means for us as an individual. Finally, the analysis considered their involvement with the collective action and the practice of reaching resolutions through experimentation (Norman, 2004) (Cross, 2006) (Heller & Vienne, 2018) (Manzini, 2019).



Figure 34 - Activity Development

The experience and activity were analysed by seven partners which, at different implementation periods, integrated the process within the scope of a 3-month activity. In addition to the collaborative process from the diagnostic phase to the evaluation phase, there was an increase of partnerships which, solely by considering their diversity, demonstrates the ability to adapt the project to social partners from different areas of intervention. (Fig. 34) The average period of usability of the tool and the development of the activity was 15 minutes in an estimated average of five times per user. An individual assessment table was used to evaluate the health of each patient participating in the sessions. The report revealed the conclusions of the practice and the intervention of design by means of a qualitative methodology.

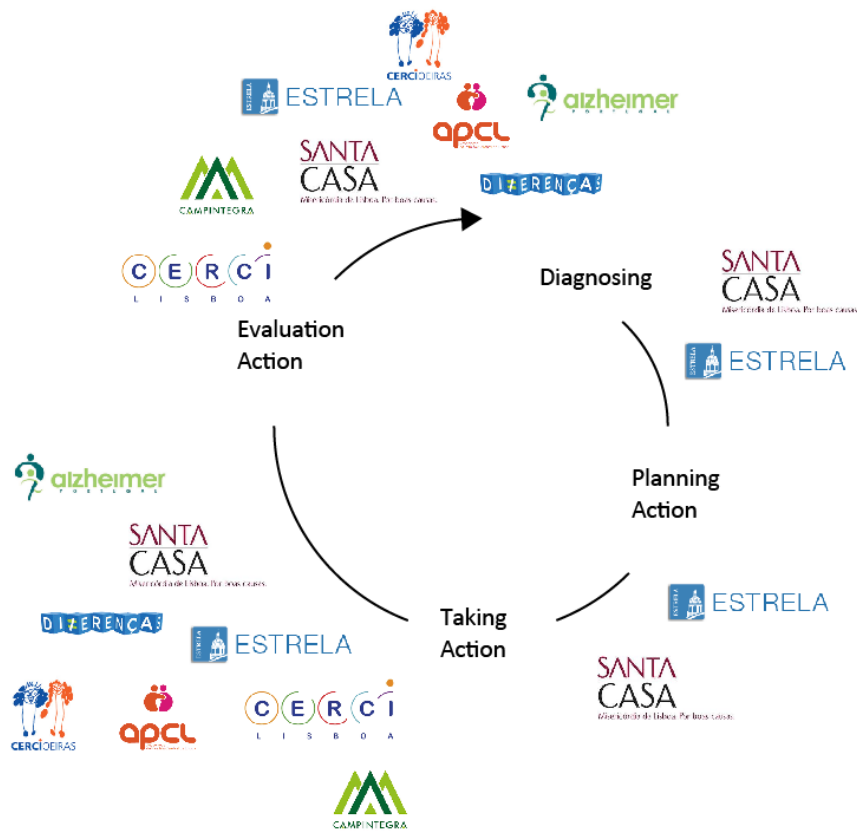


Figure 35 - Cognitive Stimulation Sliding Puzzle Partnerships

From the first design approach, the experts decided that it would be mandatory to develop a report to analyse the impact of the action. To this end, several topics within the theme of memory were selected and organized in a table with qualitative and quantitative data, which helped to keep a record of the activity and understand how relevant the impact of the action would be in the next sessions.

To fulfil this objective, a database table was developed by the health experts and the designer. The collected data would allow for the analysis of the state of memory and the evolution of the state of dementia, the degree of participation, satisfaction with the activity and the effectiveness of this new procedure.

Jogo Puzzle da Memória

Nome: AMELIA (S/DEMÊNCIA)

Idade: 95 DIFÍCIL LOADE VISÃO

Data: 8/2/2019

	-	1	2	3	4	5	+	Notas
Descrição Temporal						B E D C A		
Descrição Física / Local								N/APLIC.
Figura A <u>PATIMA</u>								N REC.
Figura B <u>AMÁLIA</u>					* RECONHECE FADO			RECONHECE ASSOCIA A ERMÍNIA SILVA
Figura C <u>SOARES</u>				*				N RECONHECE 1 VULTO
Figura D <u>CAVACO</u>								1 VULTO N RECONHECE SENHORA (?)
Figura E <u>EUSEBIO</u>					* EUSEBIO ✓ vs PELE			
Gostou								R NR
Jogabilidade				* "DEPOIS N CORREM"				
Informações Adicionais p/ Terapeuta		S/ INTERESSE PROBLEMAS VISÃO	BOLETICO		VIVE C/ NETO			

Figure 36 - Evaluation Table with entries (see Attachment 13)

The table is organized at the top with a numerical scale to identify the number of puzzle pieces used (1-5) to achieve image recognition and comments. On the left side of the table, the health expert has evaluated different subjects, such as a) temporal and b) physical/local description, c) the names of the figures, d) satisfaction, e) gameplay feedback and f) additional information obtained during the session.

#### d) Stakeholders' Design Overview

The 8 reports prepared by the institutions indicate that the potential for collaborative constructive capacity with design was clarifying in terms of effectiveness and results. (Fig. 36) The method of analysis was used to validate the pertinence and relevance of this tool.

Table 2 - Stakeholders List and Design Procedures

Entity	Collaboration	Duration	Patient	Category	Participants
Parish council of Estrela – Social Development Unit	First insights, Preparation, Incubation, Illumination, Validation and Report	6 months	Elderly w/ dementia (+75 years old)	Habits, Lifestyles, Memory, Life stories, Emotions and Affections	8 patients (1 sociologist and 1 psychologist)
Frei Contreiras Day centre (SCML)	First insights, Preparation, Incubation, Illumination and Validation	6 months	Elderly w/ dementia (+75 years old)	Memory, Cognitive and Language stimulation, Perception (Visual, temporal, spatial), Concentration, Logic, Emotions	9 patients (1 social agent, 1 occupational therapist)
Campintegra - Association for Social and Environmental Development	Validation and Report	6 months	Mental health rehabilitation (Adults)	Cognitive Functions; Memory Stimulation; Emotional States and Human Relations	3 patients (1 psychotherapist)

APCL - Lisbon Cerebral Palsy Association	Validation and Report	3 months	Mental health rehabilitatio n (Adults)	Perception (visual and temporal), Verbal (identification, naming, use of concepts), Reasoning (discrimination, association, categorization)	10 patients (1 psychologist, 1 occupational therapist)
Associação Diferenças	Validation and Report	3 months	Neurodevel opmental and brain developmen t disorders (Children and Teens)	Reasoning, Temporal Structuring, Speculation and Argumentation as well as Visual Attention, Perception and Visual Memory. Comprehensive and Expressive Language	7 patients (2 psychologists)
Cerci - Cooperative for Education Rehabilitation Unadapted Citizens, C.r.l (Barcarena and Lisboa)	Validation and Report	3 months	Mental health rehabilitatio n (Children, Teens and Adults)	Perceptual ability, Memory; Verbal Cognition / Non- Verbal Cognition; Comprehensive and expressive language; fine motor skills (eye- hand coordination)	8 patients (2 occupational therapists)



Alzheimer Portugal	Validation and Report	3 months	Alzheimer disease (Adults and Elderly)	Attention / Concentration; Appointment; Fluency; Memory / Reminiscences; Problem solving;	3 patients (1 occupational therapist)
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According to the 11 health specialists and the 50 users who participated in this activity, it was possible to collect the following data (Table 2):

- a) Regarding adherence to the activity by the patients, 58% adhered with considerable receptiveness and the remaining 42% adhered with full receptiveness.
- b) The main qualitative achievements reported by the specialists were the increase in descriptive capacity, memory stimulation, the development of visual perception, eye/hand coordination, greater dynamics in oral communication, ability to concentrate, enabling the capacity of a combinatorial construction - inductive reasoning aptitude, personal exposure of life and emotions. (Fig.44) (Fig.45) (Fig.46)

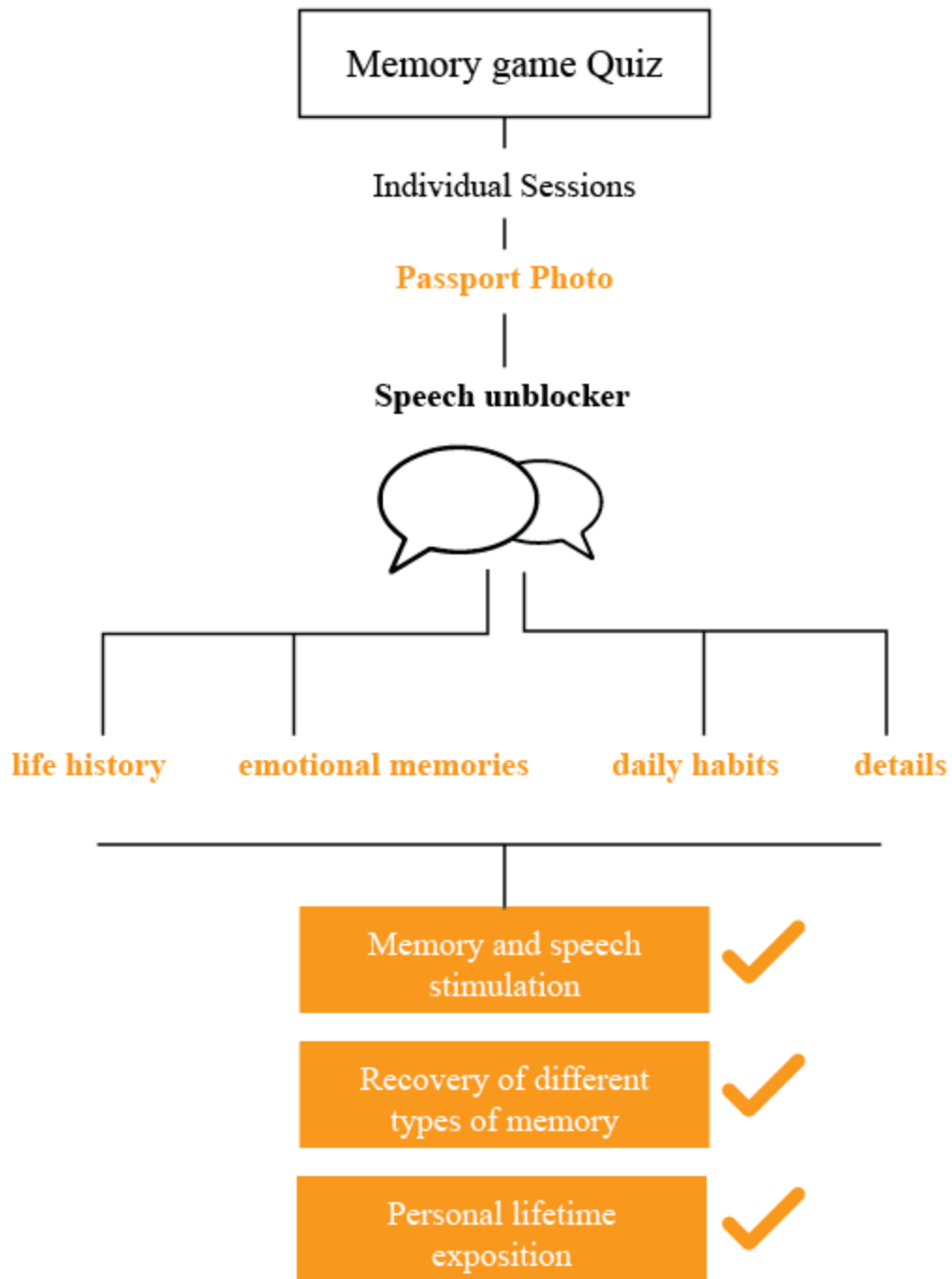


Figure 37 - Memory Quiz Analyses and Results

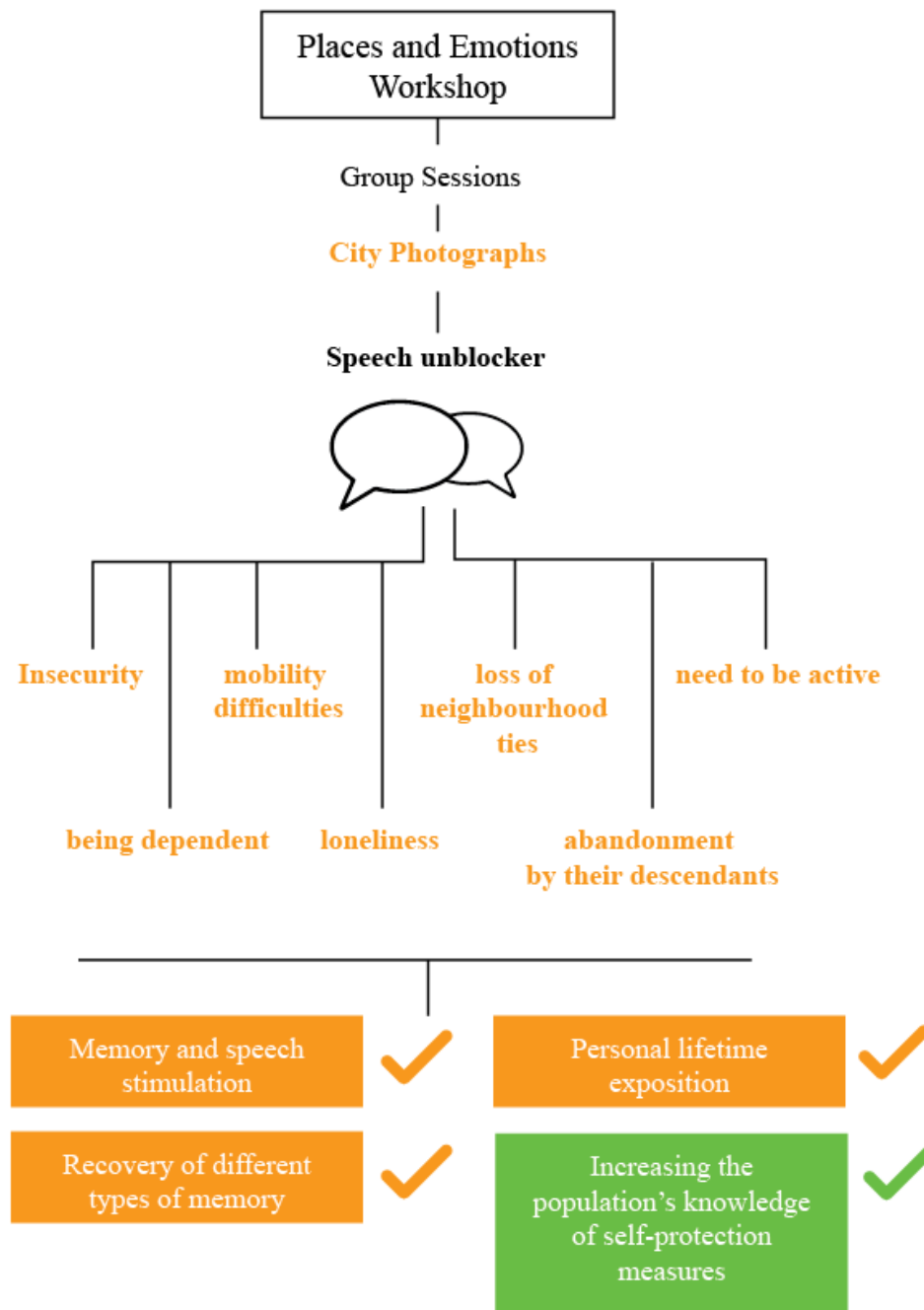


Figure 38 - Places and Emotions Workshop Analyses and Results

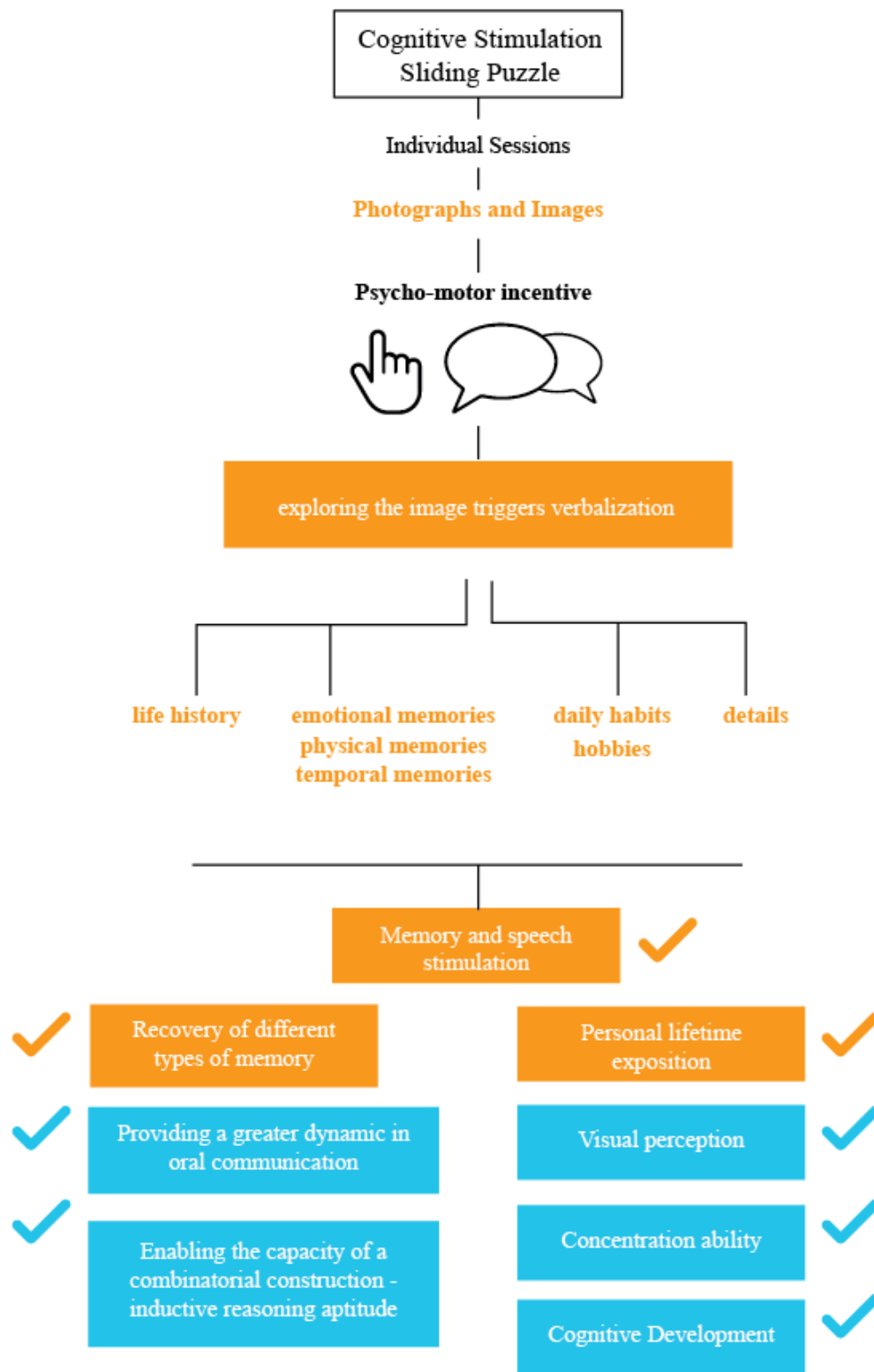


Figure 39 - Game Analysis

c) Approximately 92% of the health specialists considered that, through this tool, it was possible to collect new relevant data on the users' capacities.

d) Taking the activity as an example, around 82% of the health specialists agreed on the potential for relevant design intervention (16%), some of whom found this potential highly relevant (66%) in the construction, development and preservation of capacities and resilience in the social sector.

e) Following the proposed activity, 75% considered further development of partnerships/activities/projects resulting from a collaborative methodology to be highly relevant.



Figure 40 - Cognitive Stimulation Sliding Puzzle

From a more specific perspective, the social partners prepared a report in order to clarify the data that were described as being relevant to new findings on the patient's state. In matters related to obtaining new data, a significant increase of new data was noted by the social partner Associação Diferenças, whose area of intervention falls within the Autism Spectrum Disorder (AWS); Language Disorder (PL); Intellectual Development Disorder (IP) and Hyperactivity Disorder and

Attention Deficit (ADHD). According to psychologist Mafalda Antunes within the scope of Intervention in Neurodevelopment, the application of the game allowed for the evaluation and creation of objectives in different areas of Neurodevelopment, such as fine motricity, verbal and non-verbal cognition and comprehensive and expressive language. With fine motricity, the game made it possible to work areas such as eye coordination, manual dexterity and handling. As for verbal and Non-verbal cognition, the game enabled further work on the neurodevelopmental sub-areas of Reasoning, Temporal Structuring, Speculation and Argumentation as well as Visual Attention, Perception and Visual Memory. Finally, the game also stimulated further work development in the area of Comprehensive and Expressive Language - syntax, semantics, lexicon and elaboration of discourse. With a similar percentage of 18%, Campintegra and the parish council of Estrela also encountered new data. In the case of Campintegra, which intervenes in Psychosocial Rehabilitation and Psychotherapy, by means of different themes such as Points Organization, Spatial Orientation, Comparisons, Analytical Perception and Family Relationships, according to Isabel Nascimento, the new data focused essentially on the Emotional Area in terms of memory development, thus fostering greater knowledge of the life history of each user.

According to the health specialists from the Social Intervention Unit of the parish council of Estrela, in its home support actions for the elderly diagnosed with pre-dementia and dementia, significant data were collected for the training of these elderly individuals' cognitive functions, particularly at the level of memory stimulation, namely emotional memory and human relationships. According to the health specialists, Teresa Vaz (Occupational Therapist) and Carina Figueiredo (Psychologist), it promoted an increase in conversational themes between the elderly individuals and the therapists, leading to better knowledge of these people, their life histories, habits and the possibility to recover themes for conversation, consequently facilitating their therapeutic process. In terms of psychology, the capacity and potential of this game was evident in the exercise of communication and reflection on the selected theme, thus encouraging its use in a logic of prevention and intervention and simultaneously in terms of training and cognitive stimulation.

At Frei Contreiras day centre (SCML), the observations of the socio-cultural animator pointed to the contribution of this game to the stimulation and maintenance of the user's cognitive, affective and social abilities.

In the case of Cerci, according to occupational therapists António Gonçalves and Joana Amorim, the new data shed light on the enthusiasm generated among the clients and the benefits brought to the stimulation of cognitive functions, such as memory, attention and visual perception.

At the APCL centre, according to Alexandra Gentil and Occupational Therapist Vilma, the new data were essentially relative to Perception (visual and temporal), Verbal (identification, naming, use of concepts) and Reasoning (discrimination, association, categorization).

This project aimed to demonstrate the assets of design as a tool to be integrated into social care policies for the construction and materialization of viable and organic solutions, namely in terms of their practicality and ability to achieve greater effectiveness and results. It also demonstrates the potential for innovation established through the interaction of the various disciplines in the project. According to the experience, collaborative design methodology, engaged with health services and social intervention, appears to adapt and reorganize itself by defining the axes of connection between methodologies, identifying the key moments for collaborative action. It consists of the creation of processes among methodologies that favour the performance and consequent effectiveness of social services practices, through the construction of linking processes, connections and interactions in strategic moments promoting the intervention.

## **Chapter 4 Summary**

This chapter aimed to demonstrate the development of a case study elaborated through collaborative and interdisciplinary processes of methodologies from different fields of science. An interdisciplinary analysis of a problem related to social isolation and dementia made it possible to plan an approach to the problem. This collaboration allowed for the co-creation of a product design project to be implemented in the actions of monitoring and social intervention. The benefits of its application, as well as the construction of consequent partnerships, validated the opportunity for design integration and interdisciplinary collaboration in the social sector. This case study also demonstrated the openness of social agents to collaborate with design, and the consequent interest in partnerships where creative construction is an integral part of the process.

## Chapter 5 - Data Collection and Analysis

In the following chapter, the analysis of the collected contents is presented, indicating where the data is segmented in the research process.

According to Muratovski (2015), data collection in action research in design is closely related to the design process itself and can often be participatory, engaging the stakeholders involved in the proposed solution. As the participatory action was also subject to prior research, it was necessary to evaluate both the collaborative activity and its results. According to Charmaz (2008), a constructionist approach encourages researchers to make measured assessments of their methods and, consequently, of their impact on the research.

The collected data refer to two distinct stages of the research. The first analysis was conducted for a sample of mostly social partners that participated directly and indirectly in collaborative actions with the intervention of design. This served to obtain an overview of the terms of the meaning of design and the relevance of collaborative action for social partners with a focus on solving problems in the most vulnerable communities. In *Collaborative Design Methodologies*, the notion of collaborative action and design was examined in response to the needs of the most vulnerable communities in general. The sample consisted of 105 participants from different social sectors, but aware of their impact on the community and on social action.

The second analysis was based on the development of a case study. Data collection was performed through a survey, as well as the composition of reports within the context of the case study, thus allowing for a more reliable analysis of the results.

The case study method enabled the quantification of two independent variables related to collaborative design methodologies and three dependent variables corresponding to the quantification of the effectiveness of social services practices in vulnerable communities.

In the second phase, framed in the case study, information was also collected on the collaborative practice and the influence of Design in specific sectors where the intervention took place. This sample consisted of 11 technicians and specialists from the health and social action sector and 50 patients who participated directly in the activity. In this process, several interactions were developed (direct contact in the activity development and meetings, indirect contact via telephone and e-mail) that were accounted for to understand the impact of interactions in line with the development and implementation of the project.



To assess the case study's collaboration process in terms of its potential and results, surveys and requests communicated to social agents were applied, thus allowing for the formulation of a qualitative analysis of the interdisciplinary interactions among the different actors and each methodology (Design, Social Project Development and Social intervention) practiced in the project development.

In the dependent variables, "Social services practice effectiveness", the results of the impact of the co-creation project applied to a group of communities with social assistance and special needs, were analysed.

The outcome covers several parameters, including data on the user's responsiveness to integrating the activity, relevant post-project data on the users' capacities and the health specialist's increased knowledge about the patient. Data were also collected as a result of the activity on the potential of design for the building, development and conservation of capacities and resilience in the social sector and the development of more partnerships /activities/projects resulting from a collaborative methodology among different fields of science with design.

The evolution of the activities over time, compatibility and adaptability to all areas of the social sector involved were also analysed. The data collection was used in conjunction with a qualitative computer data analysis program to assist in the data analysis. By encoding the information, it was possible to store and organize the data according to areas and content groups. This process proved to be an efficient procedure to quickly locate all passages and segments of the encoded text (Creswell, 2009) (Kuckartz, 2014).

Following the suggestions of Creswell (2009) with regard to the process, the information underwent a series of steps to achieve a reliable relationship and data conjugation.

The initial post-case phase of the study was based on the organization of the data by format, since the information was delivered through online information and reports. This information allowed researchers to have a general notion of the case as well as a perception of the potential of the analysis to be achieved.

To obtain more data, coding and categorization were carried out by segmenting sentences and paragraphs. The labelling of categories with terms, often based on technical language and the frequency of specific terms of the stakeholders and health specialists, provided multiple perspectives from individuals supported by different citations and specific indications on the subject. According to Kuckartz (2014), there are fundamental arguments in the context of

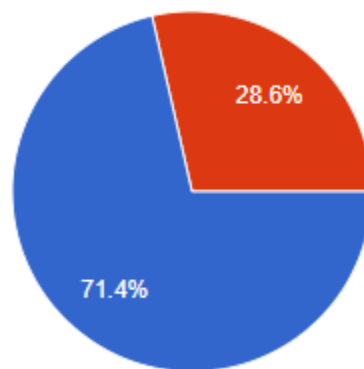
qualitative text analysis; the context created, the prejudices and assumptions and the interpretative process ensure the proper triangulation of different data sources to potentially maximize the credibility of the findings (Guijdt, 2014).

## **a) Data Collection**

### **a1) Data Collection – Collaborative Practices and Design – Online Survey**

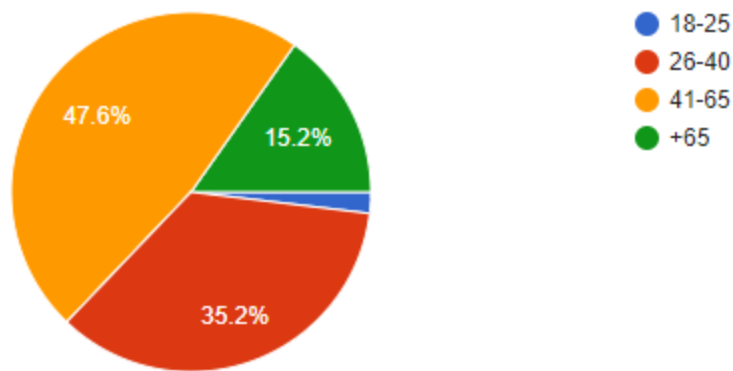
In the first phase, a survey was made available on Google Forms, to collect information about the perception of a diverse audience in Lisbon (Portugal) regarding the design discipline and the collaborative process entitled "Collaborative Methodologies and Design". The survey was developed to understand the perception of how design is or can be integrated into the response to social support. A set of questions related to this theme were drawn up with a view to a more concrete analysis of the three main themes: partnership, design and communities.

The survey's results made it possible to determine 105 responses of which, in terms of demographic data, 71.4% were female and 28.6% were male. (Graph 1)



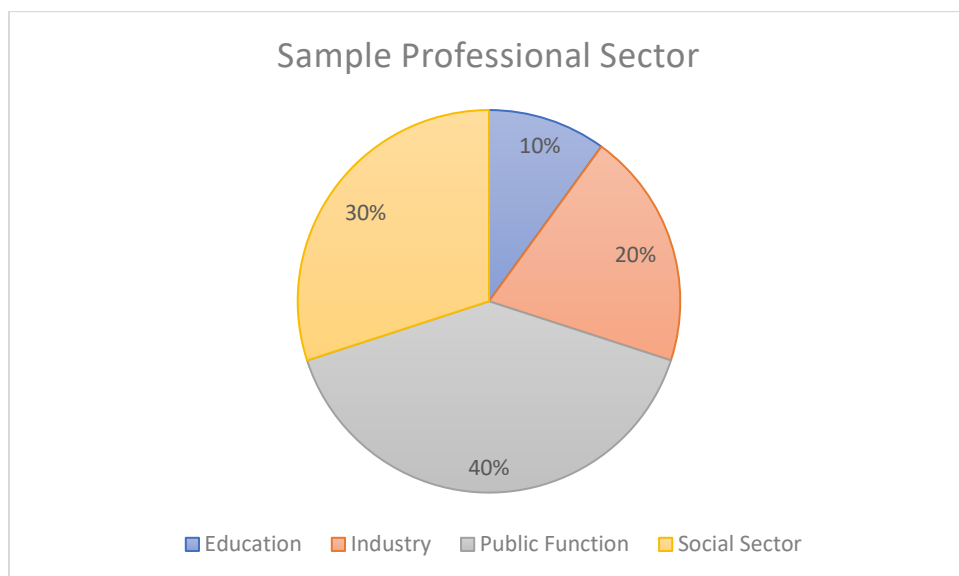
Graph 1 - Gender Sample

Age group was segmented into 4 levels: 18-25 years (1.9%), 26-40 years (35.2%), 41-65 years (47.6%) and over 65 years (15.2%).(Graph 2)



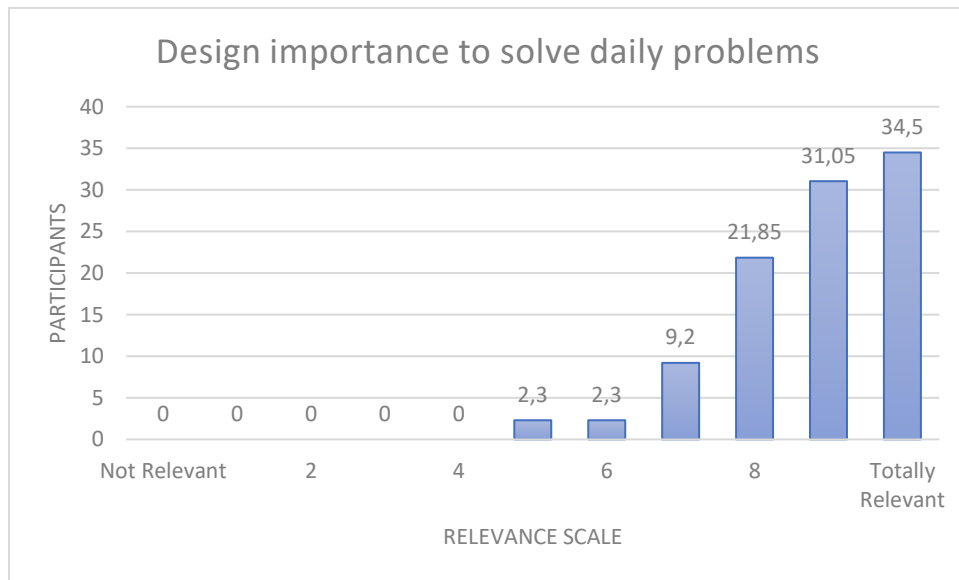
Graph 2 - Age Group Sample Chart

To understand the respondents' professional sector, this issue was also included, providing an overview of the type of social agents linked to the different sectors of the social sector, but with active participation. The sample revealed that, of the 105 respondents, 40% were in the public service, 30% in the social sector, 20% in industry and 10% in Education or educational institutions. (Graph 3)



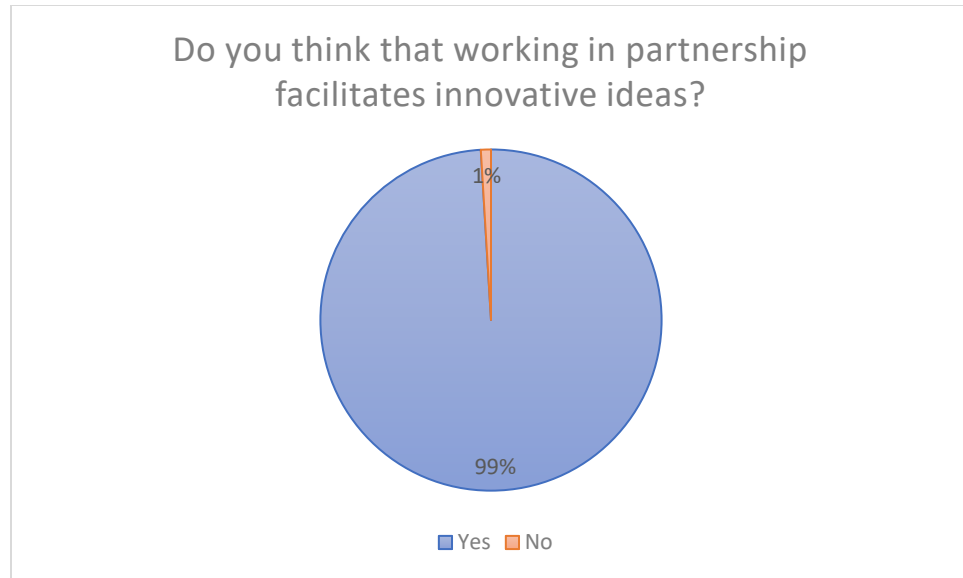
Graph 3 - Audience Professional Sector Chart (105 Individuals)

As for the importance of collaboration in solving daily problems, on a scale of 0-10 ranging from “*Not at all relevant*” to “*Totally relevant*”, the results (103 responses) were all above 5, with an emphasis on an increasing evolution. (Graph 4)



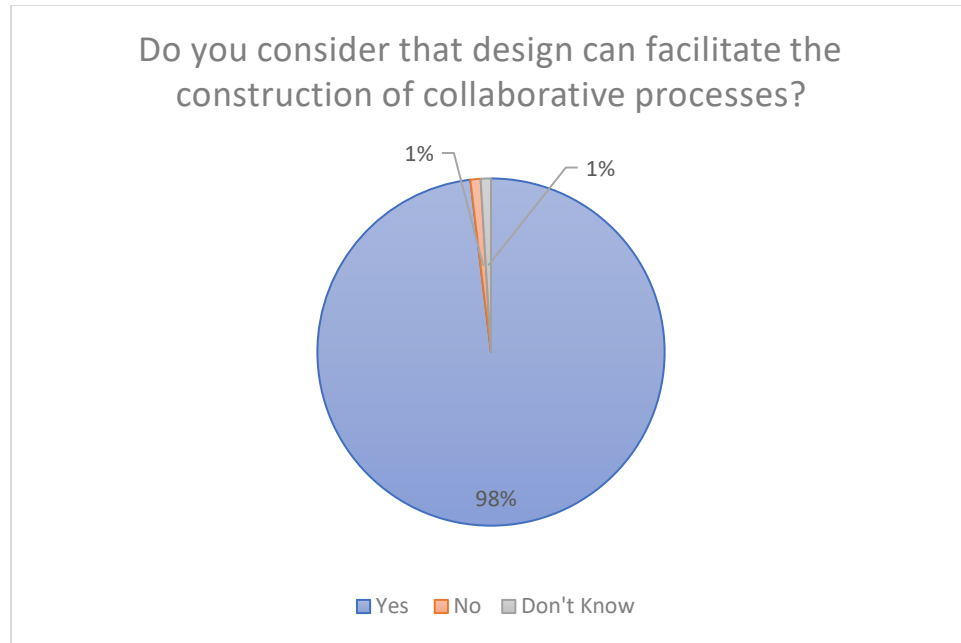
Graph 4 - Design Relevance for Daily Solutions Bar Chart

The next question (Graph 5) sought to analyse, with a binary response, the opinion on the ability to generate innovative ideas in partnerships. It was clear that there was total consensus on the potential of working in partnership to generate innovation (99%).



Graph 5 - Partnership Impact on Innovative Ideas

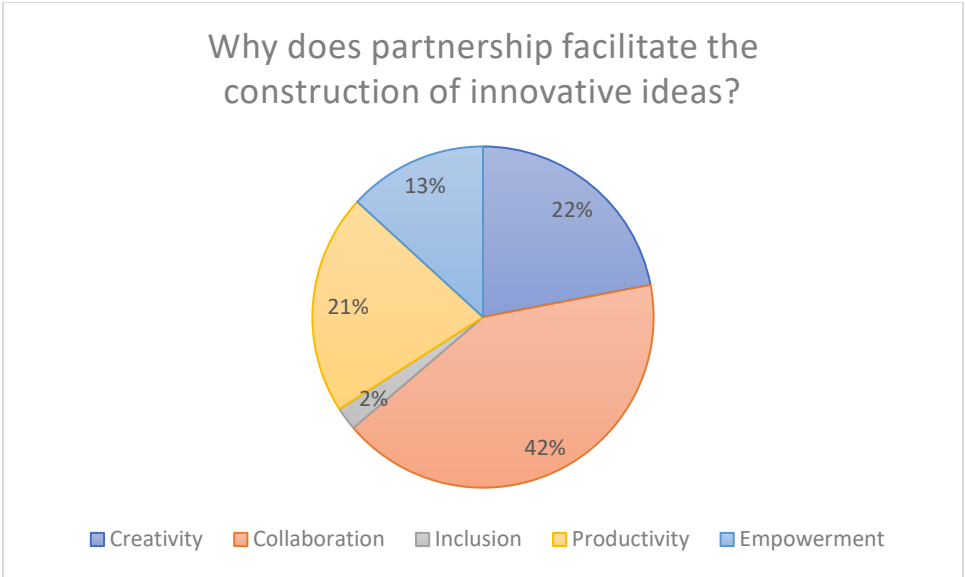
In the next question (Graph 6), *Do you consider that design can facilitate the construction of collaborative processes?*, a third option (don't know) was intentionally added to test whether the choice was the same when the influence of design was added to the collaborative processes. The result was surprising as 98% gave a positive response and only 1% a negative answer. The fact that only 1% fell under the "don't know" responses suggests that 98% were aware of design practices and their potential results.



Graph 6 - Audience Perception of Design Influence in the Construction of Collaborative Processes

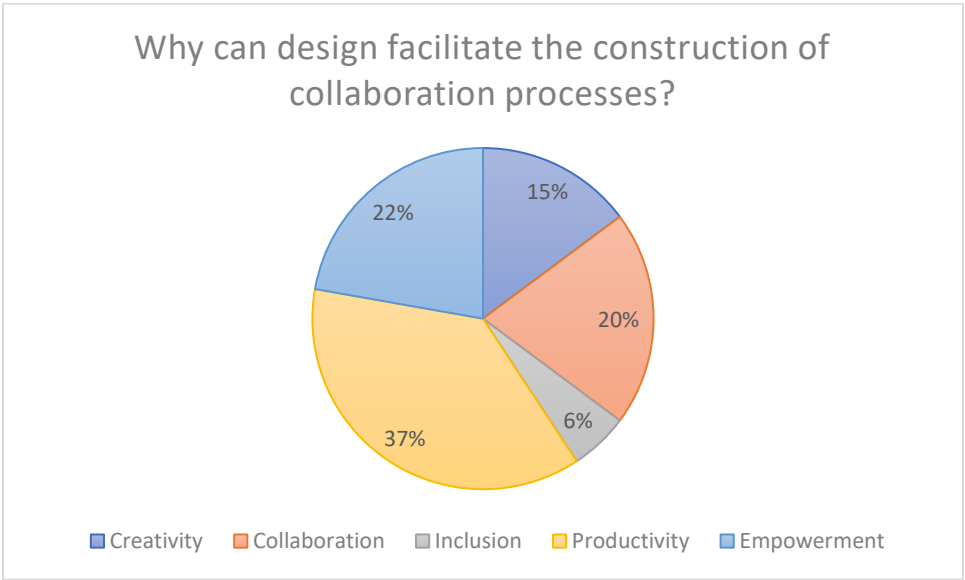
After each direct response, a descriptive justification was requested. Only 40% of the total sample provided this. Nevertheless, the data were recorded, and 5 characteristics were noted as having most weight in the responses due to the proximity of the terms used: Creativity, Collaboration, Inclusion, Productivity and Empowerment.

In the question related to the partnership, the responses to its justification were essentially based on the collaborative added value (42%) of sharing different perspectives and the creative potential resulting thereof. The very low value in the collaborative action approach attributed to inclusion should be noted. (Graph 7)



Graph 7 - Audience Perception about Partnership

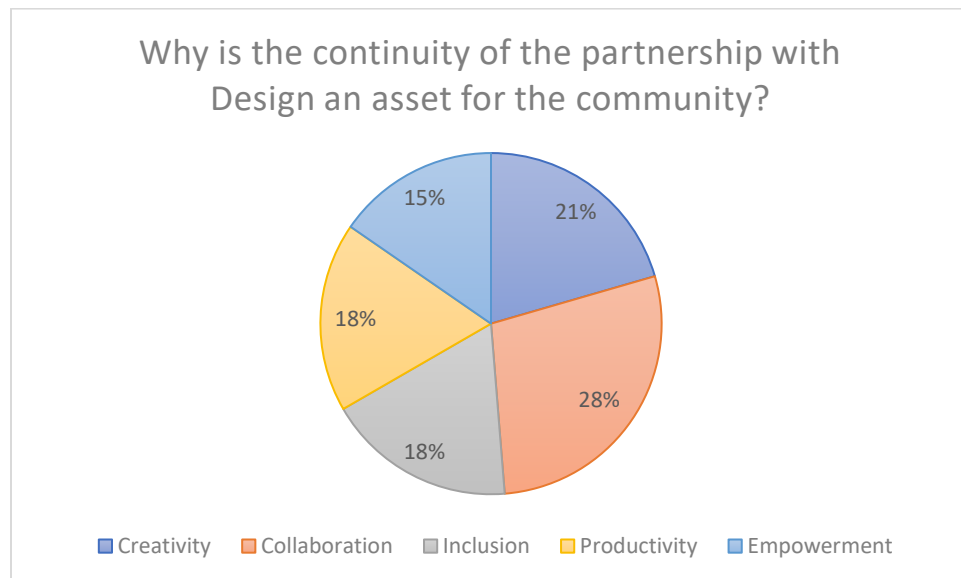
When asked about the relevance of Design to facilitate the construction of collaboration processes, the majority selected the Productivity asset (37%) in the development of synergies and project development. (Graph 8)



Graph 8 - Audience Perception about Design

In the last question, where the intention was to discern the perception of the potential impact of the continuity of the partnership between communities and design, the most significant change

was noted in the inclusion segment. This percentage increase (18%) may be explained by the way the question is presented as it specifies the two subjects (design and community) (Graph 9).



Graph 9 - Audience Perception about the Potential Partnership of the Communities with Design

The purpose of this survey was to obtain a holistic overview of a diverse audience's perception of the breadth and potential of integrating design into community support services. For this purpose, independent but inter-connected questions were elaborated, thus allowing for an interconnection of indicators in all the questions.

An analysis of the data compiled from the survey made it possible to draw some insights on how collaborative action and design participation are seen by a diverse audience with an interest in social sustainability.

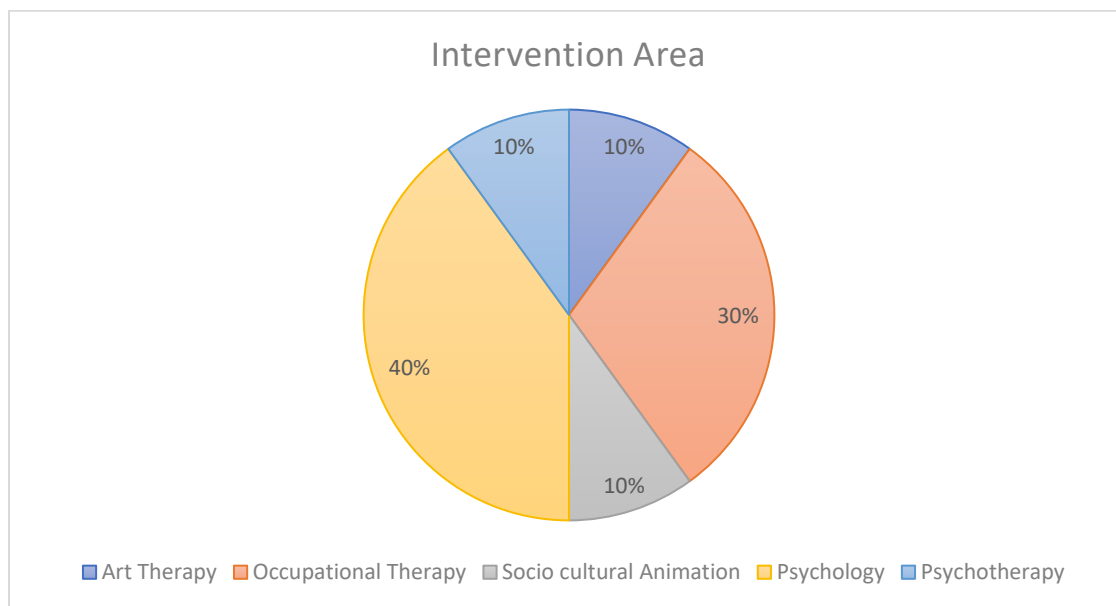


## a2) Data Collection: Case Study: Puzzle for Cognitive Stimulation

In the case study, a survey was made available on Google Forms to collect information on the perception of the health specialists regarding the exercise of collaboration with design. Moreover, the collection of reports added useful information to be analysed and choreographed.

A set of questions related to the activity sought a more concrete analysis of four main themes: adherence to the activity, integration in the activities already carried out, the range of areas and sub-areas in which it was possible to work with patients throughout the activity, the new and relevant data collected. Two more questions were also prepared with Likert scale-type responses, focusing on design intervention in the social sector.

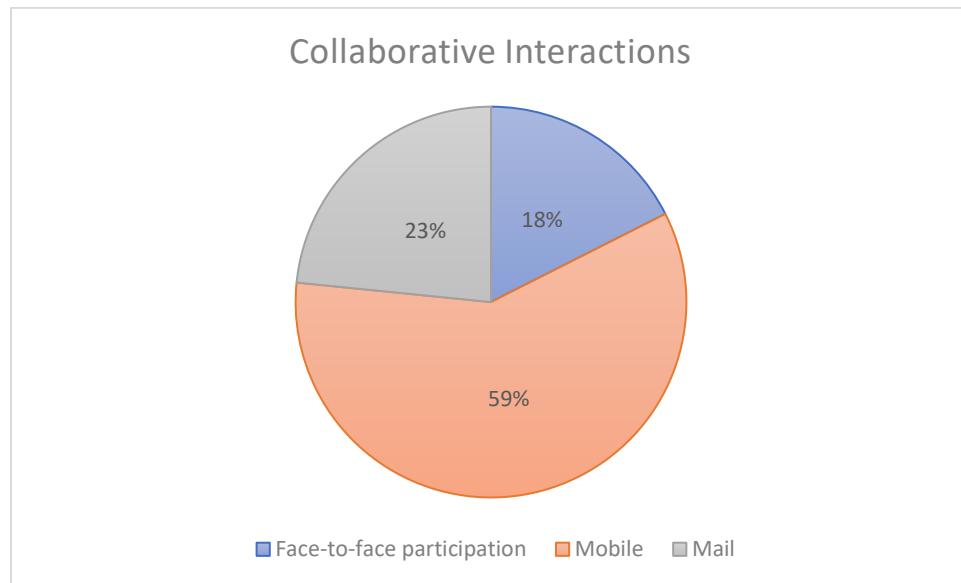
The results obtained in the survey made it possible to determine 11 responses from the different stakeholders that participated in the activity. It is possible to observe that the area of intervention has a greater incidence in the area of psychology (40%) and the area of occupational therapy (30%). (Graph 10)



Graph 10 - Health Technicians (11) Sector

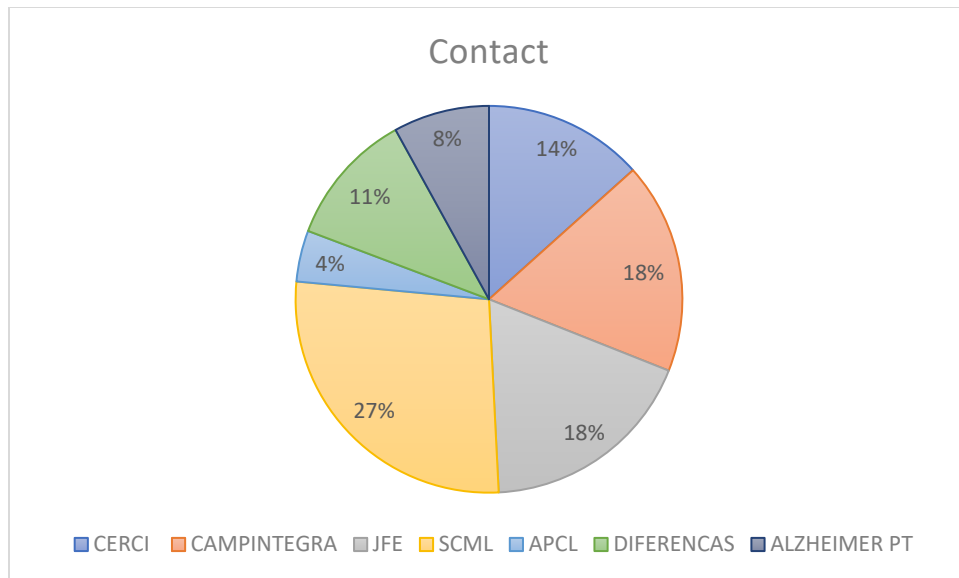
To estimate the interdisciplinary interaction, data were collected from the different types of contact established where the collaborative action took place, namely direct contact, telephone contact

(voice and SMS) and e-mail. It is possible to observe in the graph below that of a total of 272 interactions, most of the contacts were made via mobile phone, through messages and telephone contact. (Graph 11)



Graph 11 - Collaborative Interactions Method (Sample: 272 Interactions)

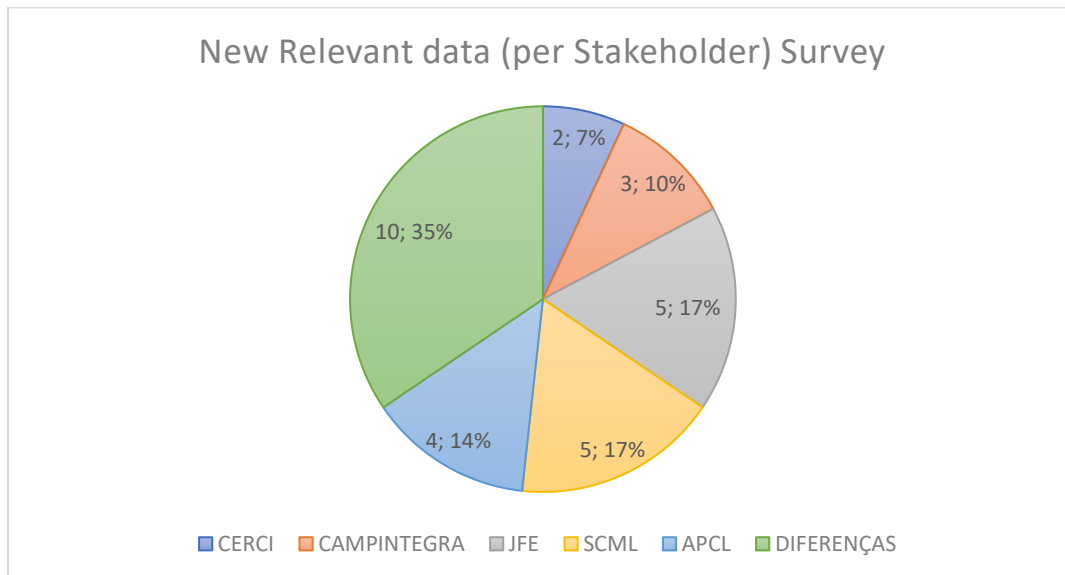
An analysis of the interactions by partners was also carried out to understand the impact of the number of contacts established in the development and implementation of the activity.



Graph 12 - Collaborative Interactions per Stakeholder (Sample: 272 Interactions)

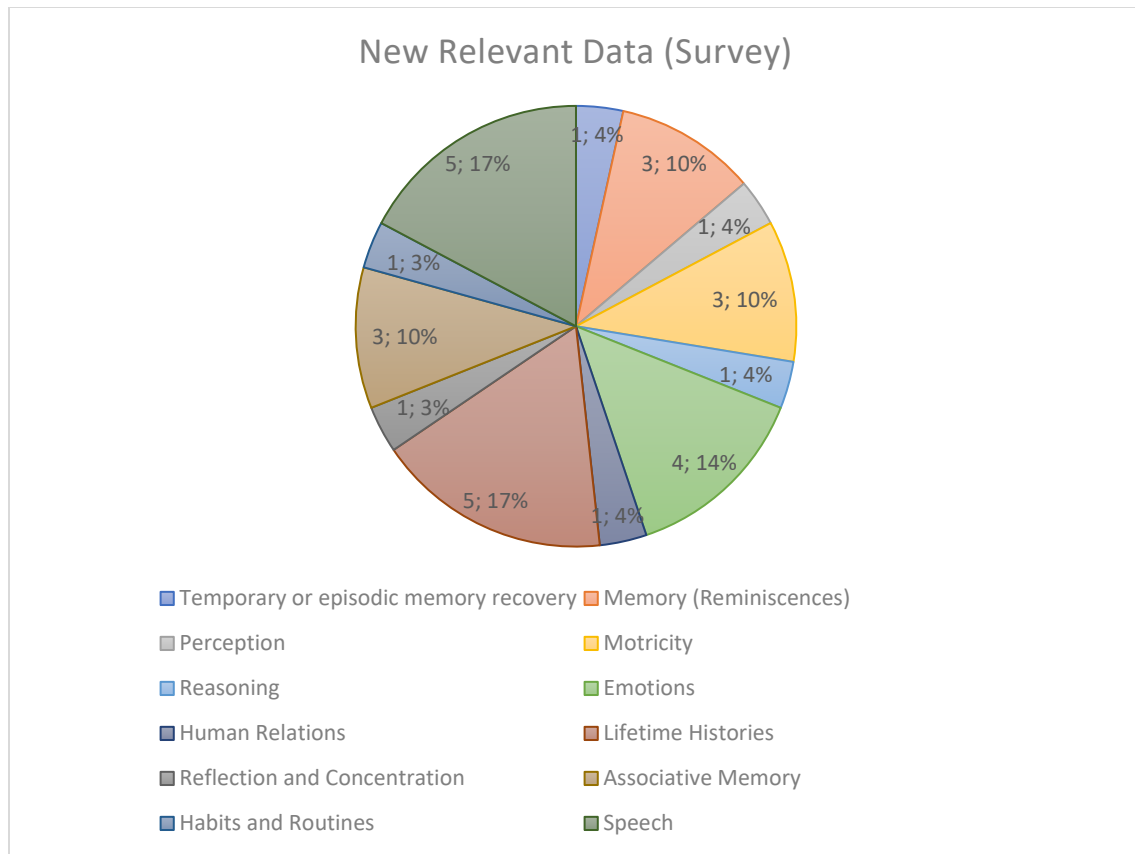
The higher value of contacts with Frei Contreiras day centre (SCML – Santa Casa da Misericórdia de Lisboa) was due to the fact that they were the social partner where the final form of the project was developed and which was applied to the collaborations that followed. Regarding the results obtained in the activities with the game, it was up to the health technicians to report a set of data that demonstrated their added value. (Graph 12)

## Survey Data Collection



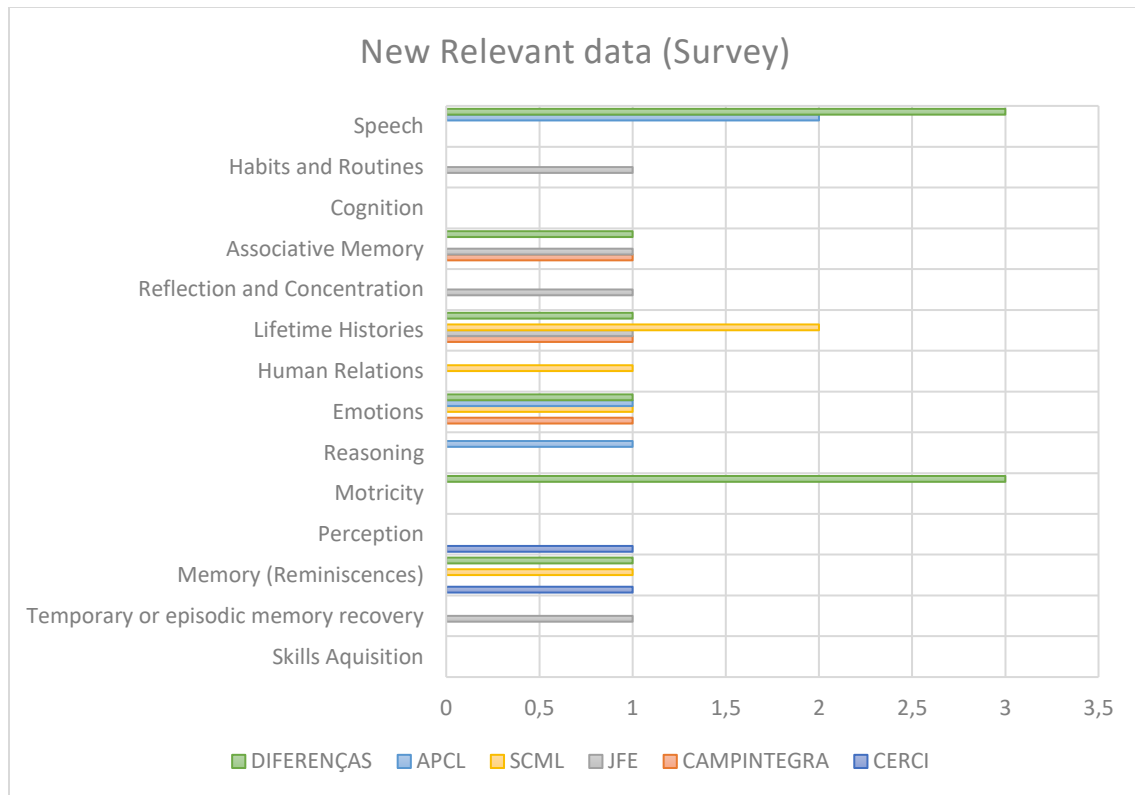
Graph 13 - New Relevant Data per Stakeholder

In matters related to the collection of new relevant data, the significant increase in new data by the social partner “Associação Diferenças” was evident, possibly also influenced by the specific nature and scope of the areas of intervention with patients. (Graph 13) The Frei Contreiras day centre (SCML) and Estrela parish council also shared the same percentage values (17%) of new data. The remaining stakeholders with reduced values can be explained, as in the case of Cerci (Cooperativa de Educação e Reabilitação dos Cidadãos com Incapacidade, CRL) and APCL (Associação de Paralesia Cerebral de Lisboa), by the increased handling difficulties, and in the case of Campintegra by the small number of samples obtained (3).



**Graph 14 - New Relevant Data Themes**

In the new relevant data, specific descriptions were given and respected, even when the proximity of the deadlines was tight. In this diverse and multidisciplinary set of data, for organizational purposes, 3 groups were distinguished (high, average and reduced). The groups with the highest number of data singled out the theme of Speech and Lifetime Histories (17%). The second maximum estimate was Emotions (14%). Memory, Motricity and Associative Memory (10%) stood out in the average frequency of the data. In reduced frequency of the data, Human Relations, Reasoning, Perception and Temporary or Episodic Memory Recovery (4%) were the most prevalent. Reflection and Concentration, together with Habits and Routines, had the lowest value for the new relevant data (3%). (Graph 14)



Graph 15 - New Relevant and Specific Data (F=29)

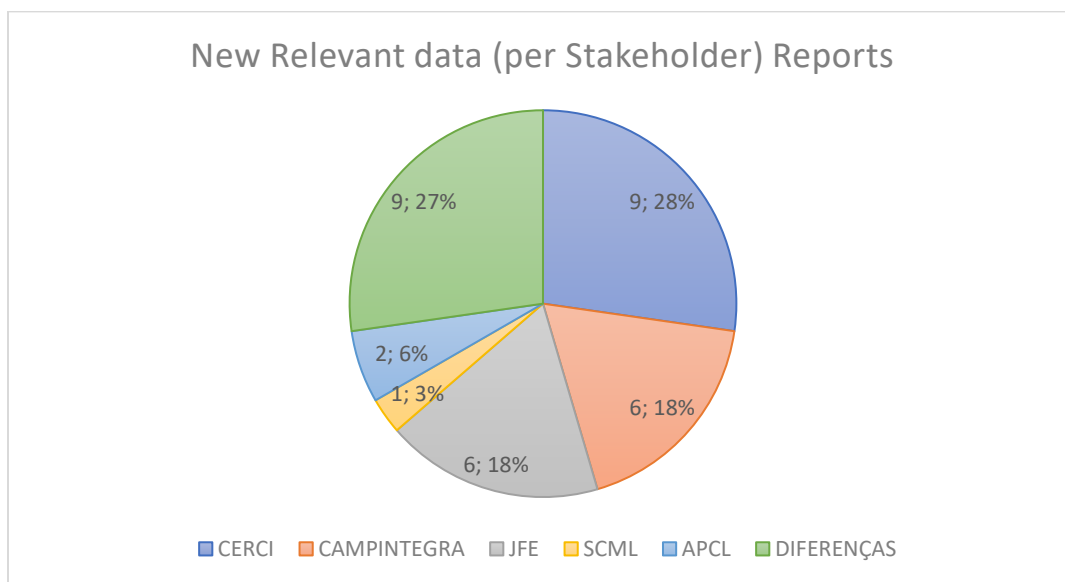
It is possible to observe (Fig.15) that there is a consistency in the distribution of the new data by the interested parties according to two characteristics: concentration of stakeholders by area and frequency of new data from stakeholders.

The most prominent cases with a high frequency (f) of data per stakeholder focused on the value of Speech (Associação Diferenças – F=3) (APCL - F=2), Motricity (Associação Diferenças - F=3) and Lifetime histories (SCML - F=2).

It is also possible to observe the area with new data with a larger number of stakeholders related to Emotions and Lifetime histories (4 stakeholders), followed by Memory (Reminiscences) and Associative Memory (3 stakeholders). The areas showing just 1 stakeholder are Habits and Routines, Reflection and Concentration, Human Relations, Reasoning, Motricity, Perception and Temporary or Episodic Memory Recovery.

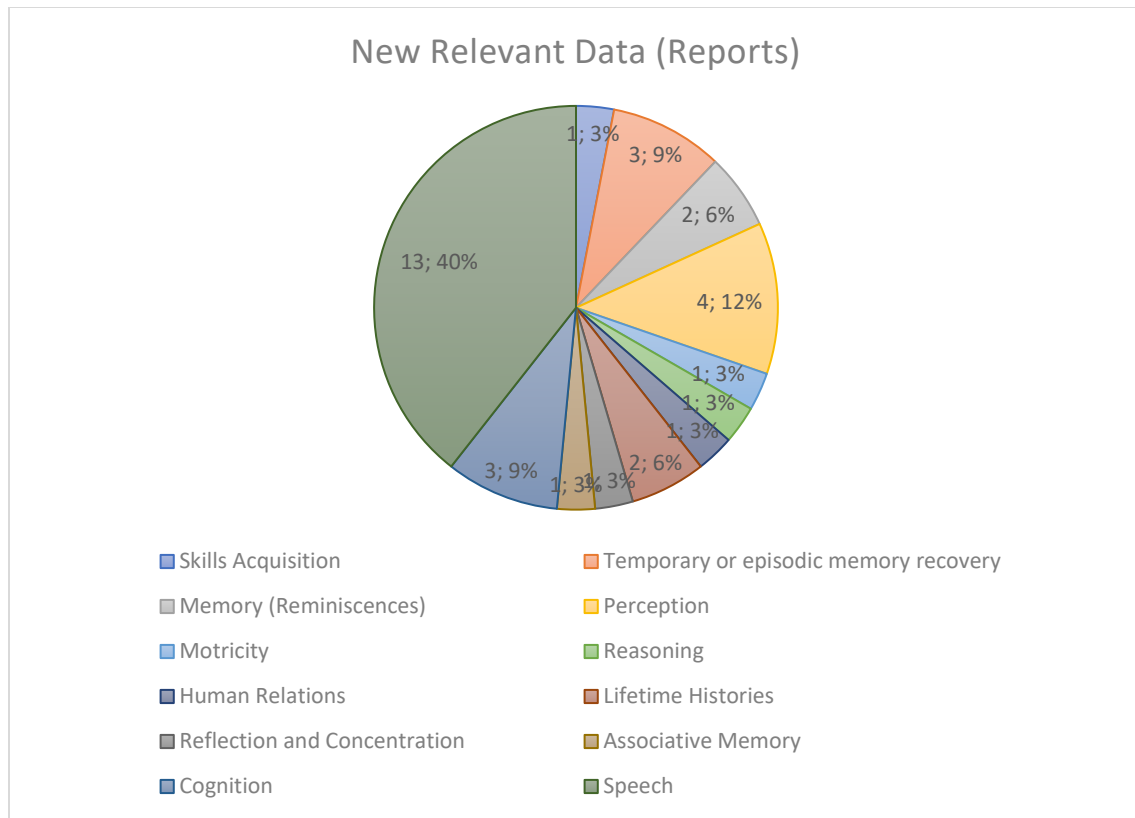
## Reports' Data Collection

To perform a more detailed analysis of the actions, the social workers were asked to report their activities. In the report, information such as that presented in the questionnaire was requested, but without limits in the description.



Graph 16 - New Relevant Data per Stakeholder

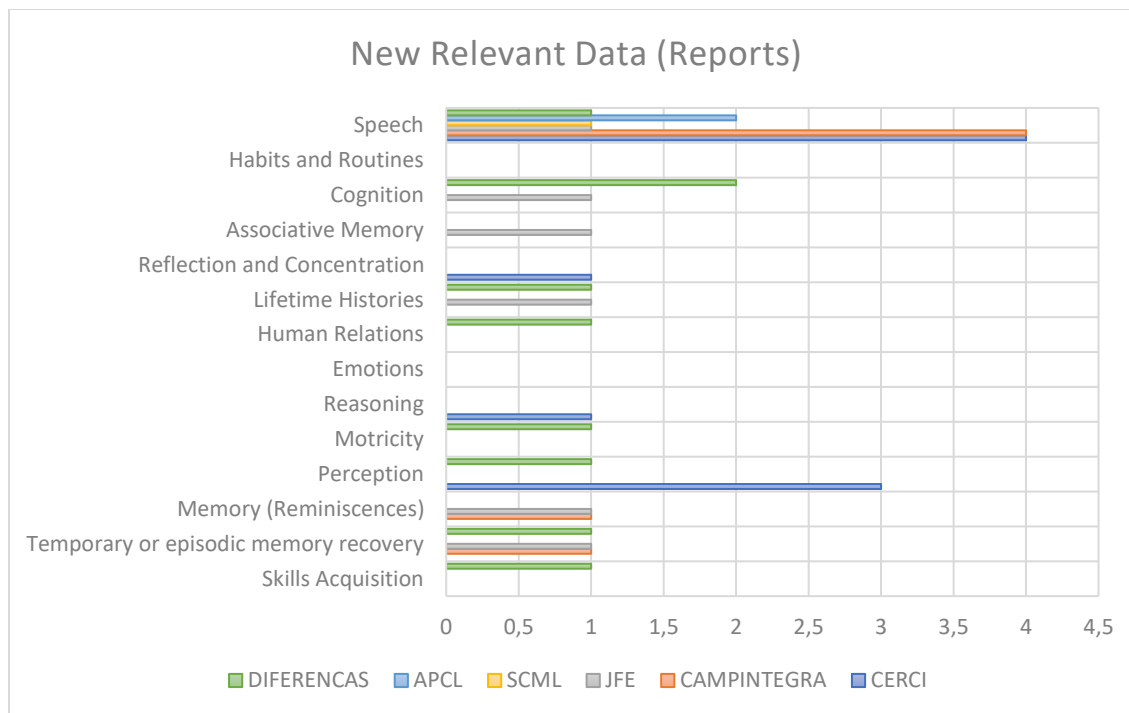
According to the analysis, within the interinstitutional relationship it was possible to detect a group with a high quantity of new relevant data, including the Cerci Cooperative (28%) and the Associação Diferenças (27%), and a group with an average value of new data, including the parish council of Estrela and Campintegra (18%). APCL (6%) together with Frei Contreiras Day Centre (SCML) (3%) presented the lowest values. (Graph 16)



**Graph 17 - New Relevant Data Themes**

In this diverse and multidisciplinary set of data, again for organizational purposes, 3 groups (high, average and reduced) were distinguished. The group with the highest amount of data singled out Speech (40%). In the average number, which is still far from the maximum value, Perception (12%), Temporary or Episodic Memory Recovery (9%), Cognition (9%), Lifetime Histories (6%) and Memory and Reminiscences (6%) may be observed. In the reduced number of new data, Skills Acquisition (3%), Motricity (3%), Reasoning (3%), Human Relations (3%), Reflection and Concentration (3%), Associative Memory (3%) may be noted, and with no relevant data, Habits, Routines and Emotions descriptions. (Graph 17)





Graph 18 - New Relevant and Specific Data (F=33)

According to the frequency of new data per stakeholder, Speech (Cerci -  $f=4$ ) (Campintegra -  $f=4$ ) is once again highlighted. Regarding the remaining areas, the data were uniform and remained with only one reference ( $f=1$ ). No reference was made to Emotions and Habits and Routines. Speech was the area with new data for a larger number of beneficiary stakeholders (all stakeholders), as was Temporary or Episodic Memory Recovery (3 stakeholders). The areas with the lowest amount were Skills Acquisition and Associative Memory. (Graph 18)

## b) Theoretical and Methodological Assumptions of Evaluation

Methodological assumptions consist of the expectations made by the researcher regarding the methods used in the process of qualitative research (Creswell & Wisdom, 2013). The procedures used by the researcher are inductive and are based on the researcher's own experience in collecting and analysing data and specific information.

Through an inductive approach, links are established between research objectives and findings, and text data within its context are condensed into a summary format, thus giving rise to a structure/model.

The evaluation methodology of the study was based on the approach of social constructionism that refers to an epidemiological position advocating the attainment of a co-construction of knowledge as the result of interactive processes between individuals and a given situation within a specific context (Palincsar, 1998) (Gerstenmaier & Mandl, 2001). This view has proved remarkably fruitful in several psychological fields, including the analysis of cognitive development.

According to Wertsch (1991), Vygotsky's (1981) perspective indicates that human action at the social and individual level occurs through tools and instruments (signs) that facilitate the co-construction of knowledge, producing changes in daily activities (Vigotsky, 1962) (Wertsch, 1991). Creating new experiences, designs also incorporate and generate knowledge about people when interacting with them (Cross & Dorst, 2001).

Participation in the design process must also be analysed. According to Frauenberger, Good, Fitzpatrick and Iversen (2014), it should include 4 main targets: Epistemology, Values, Stakeholders, Outcomes. In Epistemology, the aim is to gather data on the knowledge obtained through involvement in the activities, knowledge co-built and transferred between stakeholders. In Values one seeks to identify data related to empowerment and empathy; according to the authors, the generation and discussion of values have the potential to mediate and generate constructive relationships between stakeholders. Stakeholders' involvement and participation can give a broader perspective of design's magnitude in the communities due to their role as intermediaries. Their collaboration can be decisive in the unveiling of results that can be significant, within organizational structures or public policies on programs and actions to develop social sustainability. Outcomes can present different typologies, both direct and indirect, regarding changes and benefits according to the collaborative activity of the participants involved (Frauenberger, Good, Fitzpatrick, & Iversen, 2014).

## **b1) Variables Analysis**

The proposal's definition was designed after the research process. To quantify its validity, it was necessary to analyse the terms and group them into the different variables in order to make an assertive judgement of their validation.

The proposition *Collaborative design methodologies empower social services practices' effectiveness* was divided into groups of variables (independent and dependent).

### *Independent Variables - Collaborative design methodologies*

To analyse the independent variables, three Design methodologies that complement each other at different moments were considered.

The organization of the process was based on the methodology of Lawson(2005), Dorst 's (2015) Frame Innovation and the human-centred design of the Luma Institute(2012) , IDEO (2015) and the model of interdisciplinary collaboration of Bronstein (2003). To combine the 4 methods, some stages were grouped given their close relationship in terms of purpose.

The organization consisted of 3 phases: a) Data Collection and Analysis, b) Action and Implementation and c) Evaluation and Reporting.

Upon establishment of the contacts, the integration of design into the projects did not fully occur in the first phase where the diagnosis of the social problem had already been defined, as had all the processes of identification and characterization of users and potential beneficiaries.

However, although integration was not possible, the necessary information was shared so as not to compromise a decontextualized understanding of the situation at hand. Therefore, the data provided by the social partners on the needs, the definition of the problem, the person, the situation and the context were received and organized to formulate a project vision that was in keeping with the defined purposes. In the second phase of the data analysis, it was possible to outline a joint working plan. The independent variables that could be analysed were therefore part of the set of processes that were carried out from this moment on.

Collaborative action was observed at certain moments of the case study, which served to identify and characterize the method of analysis.

The dependent variables that could be analysed and quantified regarding the indicated process focused on the organization methodologies and their public achievement expectations.

In the first collaborative action of the Planning and Implementation strategy, the contacts and partnerships were seen to increase over time.

By further exploring the emerging themes, which offered a variety of working possibilities, the breadth of the fields of intervention for potential inclusion in a common intervention project became evident.

In the second Action and Implementation phase, the concrete objectives of the intervention that determine the process of ideation were defined in detail. At this stage, the total involvement of all the partners and users already involved was witnessed, which was decisive in the design and co-creation of a proposal. Commitment to the project was also analysed, and was clearly evident in the analysis and presentation of the observed and recorded facts.

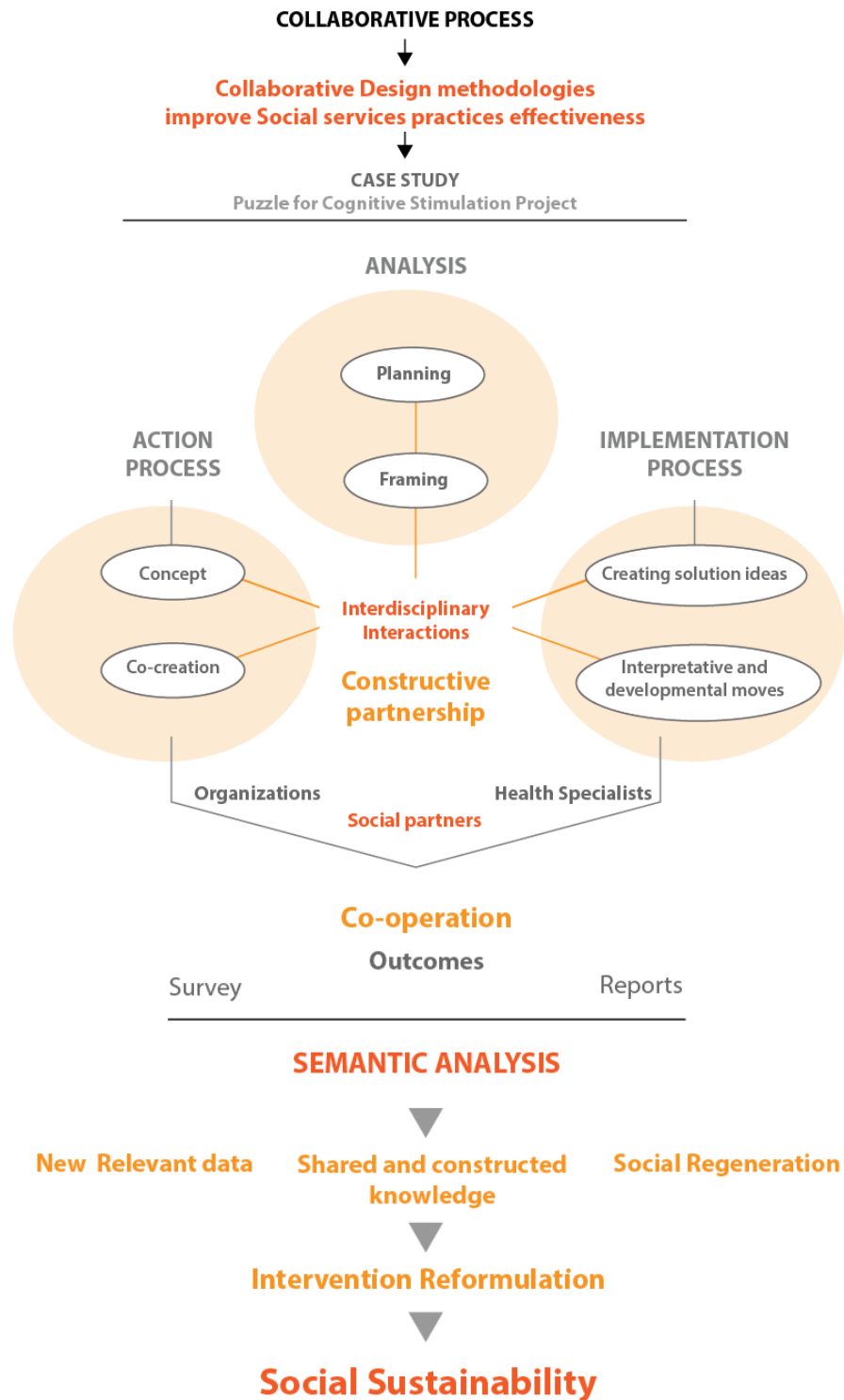


Figure 41 - Collaborative process (elaborated by the author)



Figure 42 - Collaborative process part 1

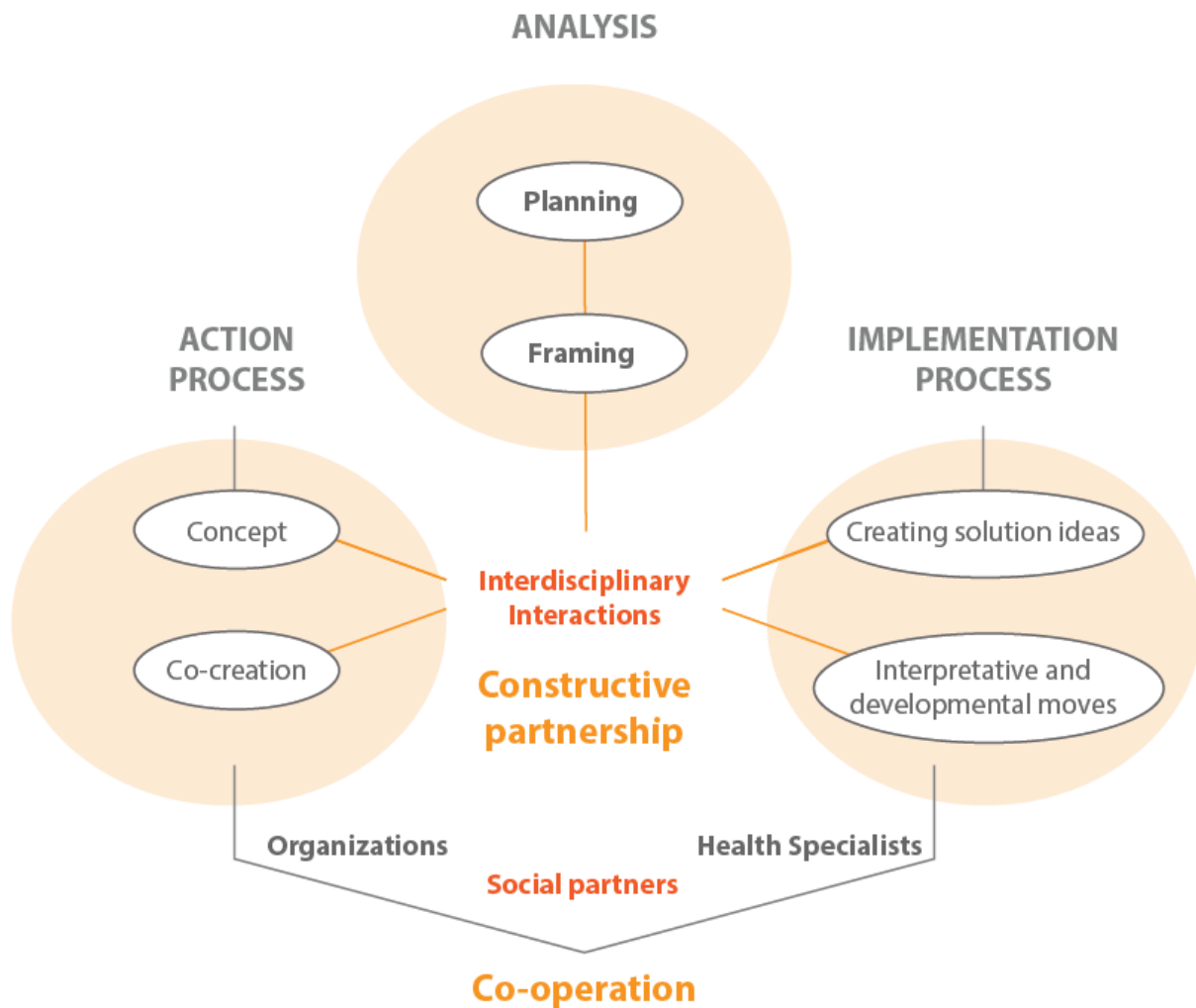


Figure 43 - Collaborative process part 2



Figure 44 - Collaborative process part 3

In line with a collaboratively elaborated evaluation method, the third and final Evaluation and Reporting phase allowed for data comparison and consequent analysis and validation.

It should be noted, however, that the most frequent interactions occurred in the Planning and Framing (Analysis) and Concept, Co-creation, Creation of ideas for solutions and Interpretative and Developmental Moves (Action and Implementation) processes. (Fig. 42) (Fig. 43) (Fig. 44)

## **Dependent Variables – *Social services practices' effectiveness***

### **b2) Identification of Social Impact Assessment Variables**

To identify and understand the variables of social impact assessment (SIA), it is necessary to consider a measurable change in the human population, communities and social relations resulting from the project. After investigating the change in the local community, a list of social variables was determined at the request of different authors.

According to Biswas and Modak (1999), the several steps used to analyse SIA are divided into 5 distinct areas: a) Population Characteristics, b) Community and Institutional Structures, c) Political and Social Resources d) Individual and Family Changes e) Community Resources.

Framing the object of study with these variables, it is possible to determine that the variable a) Population Characteristics, defines the population of the study in terms of its characteristics (age group, gender, among others) and frames it in time and space (durability of the intervention and location), and expected change.

b) Community and Institutional Structures refer to the size, structure and level of organization of the local government, the size and level of activity of the voluntary associations, stakeholders and, finally, how these institutions relate to each other and their patients or citizens.

c) Political and Social Resources refer to the distribution of the authority of power, the actors and those affected, and the capacity for leadership concerning the wellbeing of the community.

d) Individual and Family Changes refer to factors that influence daily life, regarding politics or family and friendship networks with the perception of risk, health, and safety.

e) Community Resources include patterns in the use of natural resources and land, the provision of housing and community services to include health facilities, police, and protection.

According to Malley and Fernandez (2010), effectiveness is an essential component of a high-quality service. This can be linked to the way care is provided and aspects of the process, such as having the opportunity to judge what is provided, when and how the service is delivered, being valued and treated with respect, which are fundamental features of the quality of social care according to Qureshi & Nicholas (2001).

The debate around the relative merits of focusing on process indicators or quality outcomes is also mentioned by the authors. Both are direct measures of the care activity's performance. Beckerman



(1979) mentions effectiveness in terms of implementing the actions (Rodrigues, Figueiras, & Junqueira, 2012) and the maximization of collaborative work to increase effectiveness (Bronstein, 2003).

According to the definition describing social care services, the attempt to maximise the quality of life of individuals who cannot access long-term self-care may be highlighted, with the aim of compensating them for the impact of the impairments in their physical and mental functioning (Malley & Fernández, 2010).

The measurement of effectiveness in social services still poses many challenges to researchers due to the adaptability of the tools to each context with unique properties. The effectiveness of social work can be analysed by the achievement of objectives, which change according to the situation in question. Effectiveness in social services can be organized into three levels: a) Individual, b) Family and Environment and c) Social system. Within these three levels, a number of factors may be identified that enable an evaluation of effectiveness, such as the benefits of a specific activity, task optimization, achievement of goals, motivation, number of individuals assisted, resources, cooperation, detailed information (outputs) and performance (results), user satisfaction and self-development, social worker skills and inter-institutional cooperation (Bardauskiene & Pivoriene, 2016) (Vanclay, 2002) (Clarkson & Challis, 2006) (Persson & Westrup, 2015) (Terziev, 2019).

### **b3) Indicators**

The indicators selected according to their social and community development framework were defined after their correlation with the objectives to be achieved was checked.

Accordingly, a bibliographic review was prepared that aided the selection of some of the indicators referenced by renowned authors in the areas of performance and social development. In an analysis organized chronologically and by distinct areas of knowledge, the social indicators were defined to obtain an assessment that was consistent with the applied case study, to analyse the potential for readjusting strategies and reviewing objectives in the intervention in social work (Bilodeau, 2005). According to Noll (2004), the term and basic concept of ‘social indicators’ was invented by Bauer (1966). In his definition, social indicators are referred to as “statistics, statistical series, and all other forms of evidence that allow us to assess where we are and where we are going concerning our values and goals” (Noll, 2004).

The work of Otis Dudley Duncan, Professor of sociology and one of the most influential sociologists of the 20th century, contributed greatly to the development of rigorously effective indicators within the scope of social work which, coupled with adequate quantitative methods, provide a framework for cumulative scientific work on social work. In his article *Developing Social Indicators* (1978), he argues that significant indicators can be developed serving as baselines for measures of social attitude change through quantitative descriptions of social conditions and trends to inform and improve the conduct of public affairs (Duncan, 1974). In 1990, the International Bank for Reconstruction and Development published *Social indicators of development 1990*, providing data for the assessment of human welfare. This report summarized information that non-governmental organizations, such as the WHO, UNICEF, UNESCO and other unspecified organisations collected on health, education, nutrition and other socio-related characteristics. The indicators were organized by Human Resources, Natural Resources, Income and Poverty, Expenditure and Investment in Human Capital. According to Noll (2004), the use of social indicators and social reporting contributes to a rationalisation of the intervention process to define goals and priorities, used as instruments of description and monitoring. However, their application and use in socio-political fields, such as in the evaluation of impact and efficiency, are still insufficient or problematic. This observation may be interpreted as an opportunity to integrate design in the development of the process, to complete the intervention more efficiently.

Another way to assess health quality is to look at output indicators, such as healthy life expectancy, which provides information on whether the years lived are expected to be in good health, and the expected health loss, which is the relative difference between life expectancy and healthy life expectancy, expressed as the percentage of life expectancy (United Nations Development Programme, 2018).

The indicators identified in the context of social and participatory action in social services, which promote the improvement of the quality of life in the urban context, were as follows: Adherence (Collaboration acceptance) (Cumbula, Sabiescu, & Cantoni, 2013) (Figueiredo, Honideni, & Schumann, 2018); Design Integration in the Wellbeing and Inclusiveness Sector (Selloni, 2018); Resilience (Meerow, Newell, & Stults, 2016); Capacity building (Emancipation and Empowerment) (Spraul, 2019) (Stoecker, 1999) (Aryana, Naderi, & Balis, 2019); Collaboration (Synergistic Action and Interaction) (Selloni, 2018) and Coalition (re-call for collaboration) (Stoecker, 2005) (Frauenberger, Good, Fitzpatrick, & Iversen, 2014); (Manzini, 2017).

### **c) Data Analysis**

The impact analysis and evaluation sought to provide evidence on the impacts produced in order to prove that, at least in part, they were generated by the project. Establishing a cause-and-effect relationship in the measurement process, indicators and variables were established according to the literature review. The activities were monitored and measured with a view to uncovering results on how impactful the intervention had been.

In Cree, Jain and Hillen's (2019) critical paradigm, evaluation should be co-created from the outset, where service users and academic researchers design what and how the evaluation should be, reflecting the idea of valuing different and multiple perspectives and experiences, becoming part and parcel of a self-reflective and critical practice (Cree, Jain, & Hillen, 2019).

As the research progressed, some relevant data were obtained for analysis. In the first phase, a survey was prepared based on the preliminary study cases, and later a second one accompanied by technical reports on the case study. In the first phase of interpretation, the questionnaire prepared for the community was analysed in order to understand this population's perception of the collaborative methodologies, design, and their contribution to responding to social problems. The categories for evaluating the responses to the questionnaire were defined according to the process of selective coding. In order to analyse the different intervention areas, the terms highlighting the impact of these different areas were placed into main and sub categories (Strauss & Corbin, 1998, cited by Kuckartz, 2014). The categories defined for evaluating responses were: Creativity, Collaboration, Inclusion, Productivity and Empowerment.

In the case study, the data collection was exploratory, under a mixed interventionist methodology, using the data analysis method of surveys and reports with paraphrased precision in the semantic meaning of the original text and organized into the categories of the variables defined without compromising the original meaning of the terms (Kuckartz, 2014) (Kuckartz & Rädiker, 2019). The analysis was developed through the collection of qualitative data on the frequency of terms and their semantic analysis. The data analysis sought to verify whether the collaborative action within the social sector had increased the efficiency of its practices in the different parameters of the entire process: Adherence, Design Integration in the Wellness and Inclusion Sector; Resilience, Capacity building; Collaboration and Coalition.

The collection of different types of data made it possible to understand the impact of the activity carried out in different fields. It was possible to analyse data in the field of collaborative practice, such as the evolution of the interdisciplinary relationship, the frequency of interactions.

Through the relationships between the different data, it was possible to draw some conclusions regarding the progress of the activity from influences related to the duration of the activity and the evolution of the number of stakeholders, health specialists and patients involved.

It also allowed for a combination of the different data and to identify the trend of their evolution (Linear and Polynomial).

The data analysis sought to ascertain whether the collaborative action framed in the social sector enhanced the efficiency of its practices, in the different parameters that define the entire process: Adherence; Design Integration in the Wellbeing and Inclusiveness Sector; Resilience, Capacity building; Collaboration and Coalition.

The evaluation of the case study was influenced by Patton's (1997) method, "Utilization-focused evaluation" (1997), referred to by Stoecker (2005) in "Research methods for community change", a participative evaluation with the involvement of agents participating in the project. According to Patton, quoted by Stoecker (idem), an assessment must be subject to a set of principles that respect and include the actions of all the participants involved (Patton, 1997) (Stoecker, 2005)

A set of principles for the practice includes:

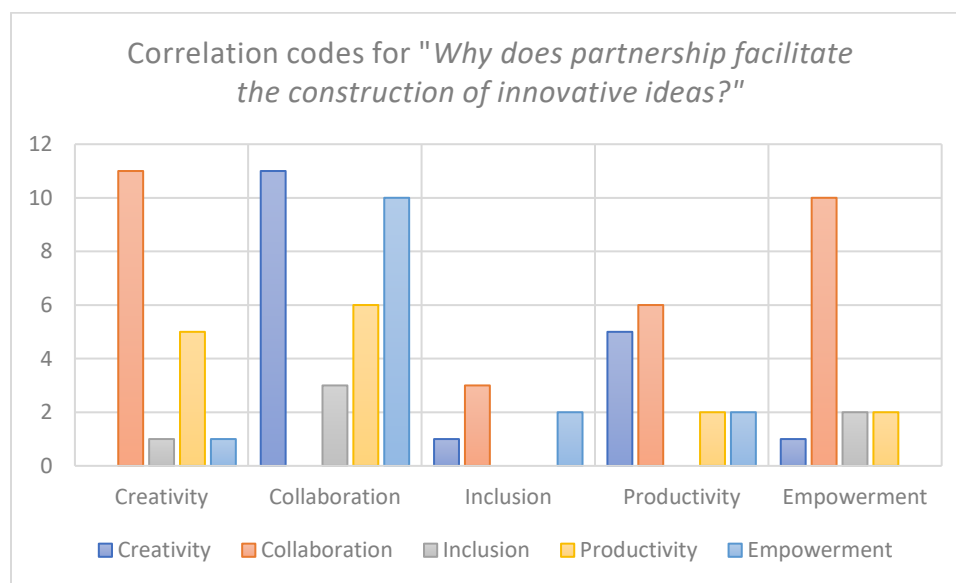
- a) participants' involvement in each phase of the research;
- b) assessment's ownership;
- c) results assumed as most relevant;
- d) allowing participants to work cooperatively;
- e) organizing the assessment to be globally understandable;
- f) sharing assessment data to support stakeholders and the community;
- g) developing the role of facilitator, collaborator, and resource;
- h) the relevance of participants as decision-makers and evaluators;
- i) recognition and appreciation of the participants' expertise;
- j) minimizing status differences.

### c1) Descriptive Analysis and Results from the Collaborative Methodologies and Design (survey)

Through the questionnaire survey, it was possible to grasp an understanding of the differentiated sample's perception of collaborative action in society for the development of new ideas and the impact of design.

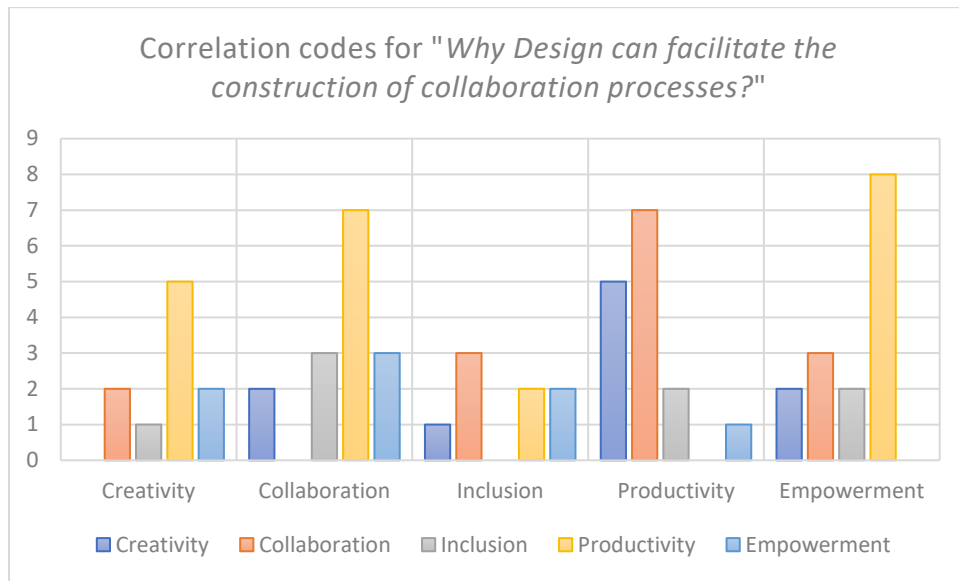
The questionnaire was designed to explore the sample's perception of collaborative action and design. The coding of terms to describe each response was organized in 5 terms: Creativity, Collaboration, Inclusion, Productivity and Empowerment.

Initially, an understanding of the relationship between partnership and the generation of innovative ideas was sought by means of the question: *Why does partnership facilitate the construction of innovative ideas?* (Graph 19)



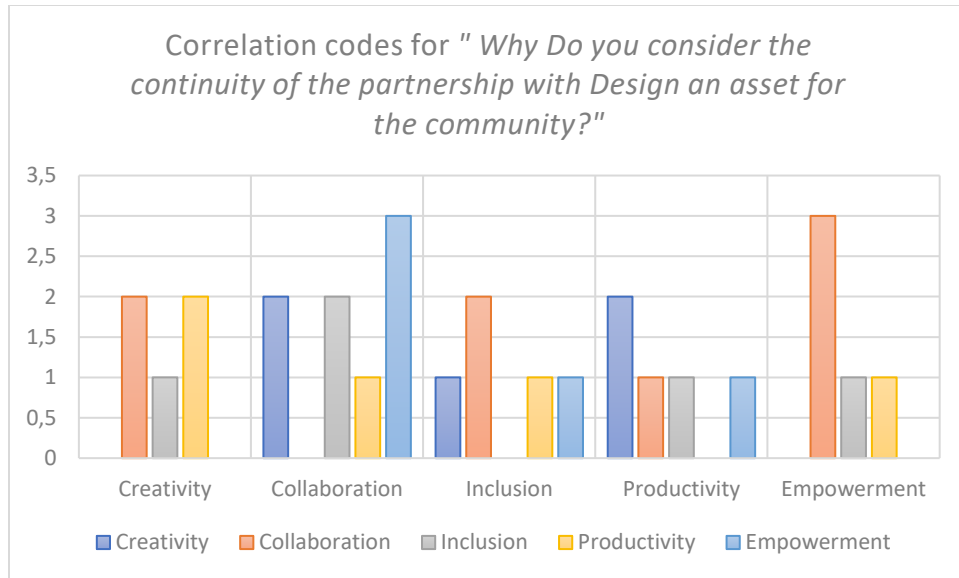
Graph 19 - Correlation Codes Frequency on Partnership Influence in Innovation (Average Values)  $\mu$ : Creativity (3,6); Collaboration (6); Inclusion (1,2); Productivity (3) and Empowerment (3)

By correlating the data, it was possible to verify the relationship and dependence between the defined terms and their meaning and average. In the data correlation, collaboration was found to be the most frequent term with a very strong association with the term's definition of creativity and empowerment.



Graph 20 - Correlation Codes Frequency on the Perception of Design's Influence in Collaborative Processes (Average Values)  $\mu$ : Creativity (2); Collaboration (3); Inclusion (1,6); Productivity (4,4) and Empowerment (1,6)

As for the relationship between design and collaborative processes, the following question was posed: *Why can Design facilitate the construction of collaborative processes?* In the correlation of the data, the term productivity was the most frequently written term and strongly associated with the term's creativity and collaboration. (Graph 20)



Graph 21 - Correlation Codes Frequency of the Potential of Partnership between the Communities and Design (Average Values)  $\mu$ : Creativity (1); Collaboration (1,6); Inclusion (1); Productivity (1) and Empowerment (1)

Finally, for the relationship between Community and Design, the question: " Why do you consider the continuity of the partnership with Design an asset for the community?" was established and in the data correlation, the term productivity was found to be the most frequently written term and was more strongly associated with the term collaboration. (Graph 21) The term's inclusion should be noted as the least referenced term. Collaboration was the term most referenced by respondents.

## c2) Descriptive Analysis and Results from the Case Study

### c2.1) Analysis and Quantification of the Independent Variable *Collaborative Design Methodologies*

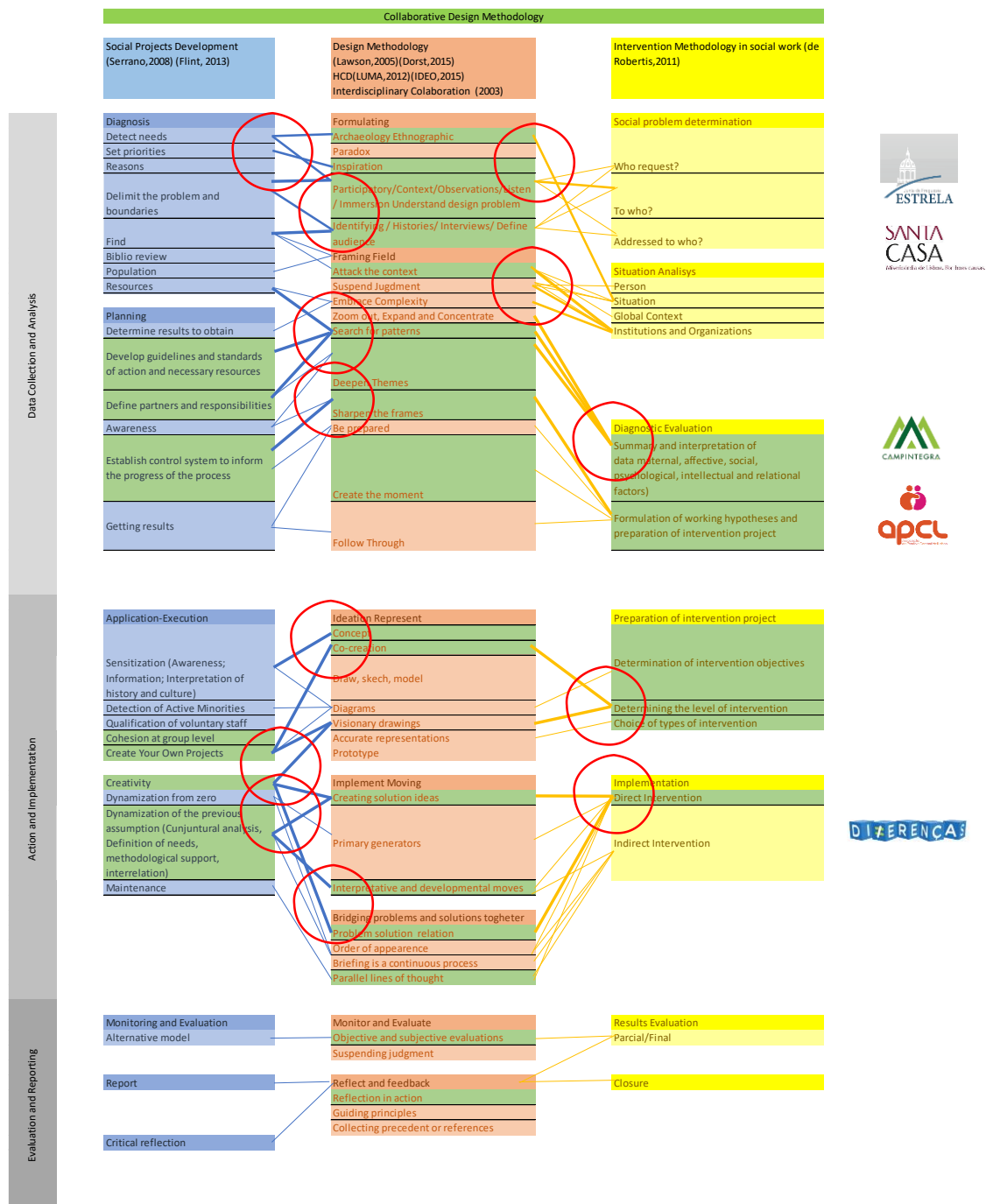
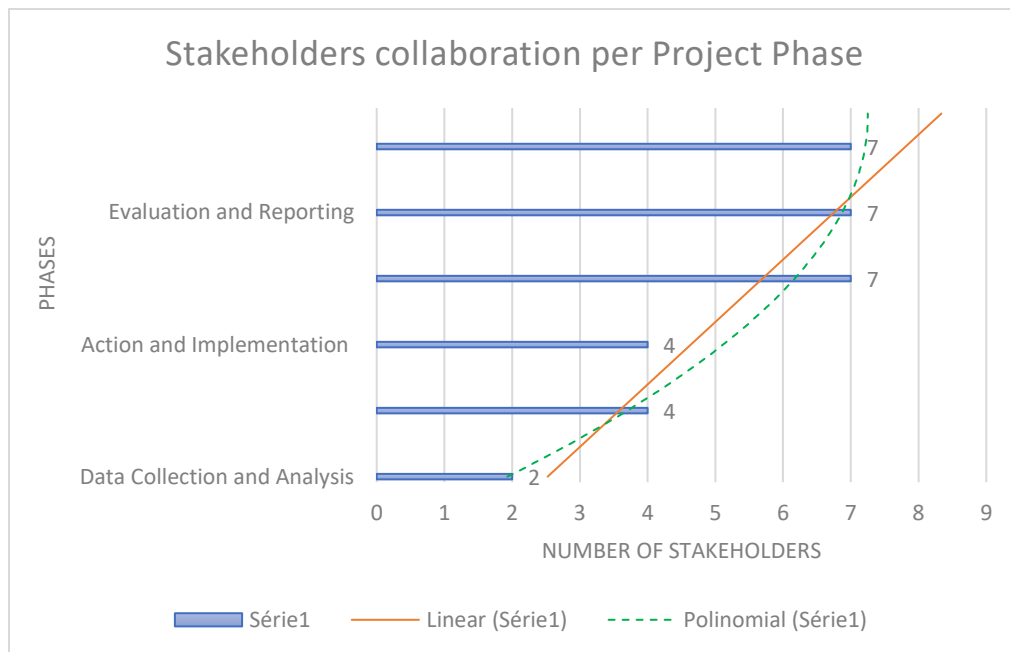


Figure 45 - Collaborative Design Methodology - Interdisciplinary Connections

The analysis conducted for the collaborative and interdisciplinary action was prepared according to the participation with the designer in the development of the process, as well as its impact on the project. For the analysis of the variables *Collaborative design methodologies*, the evolution of

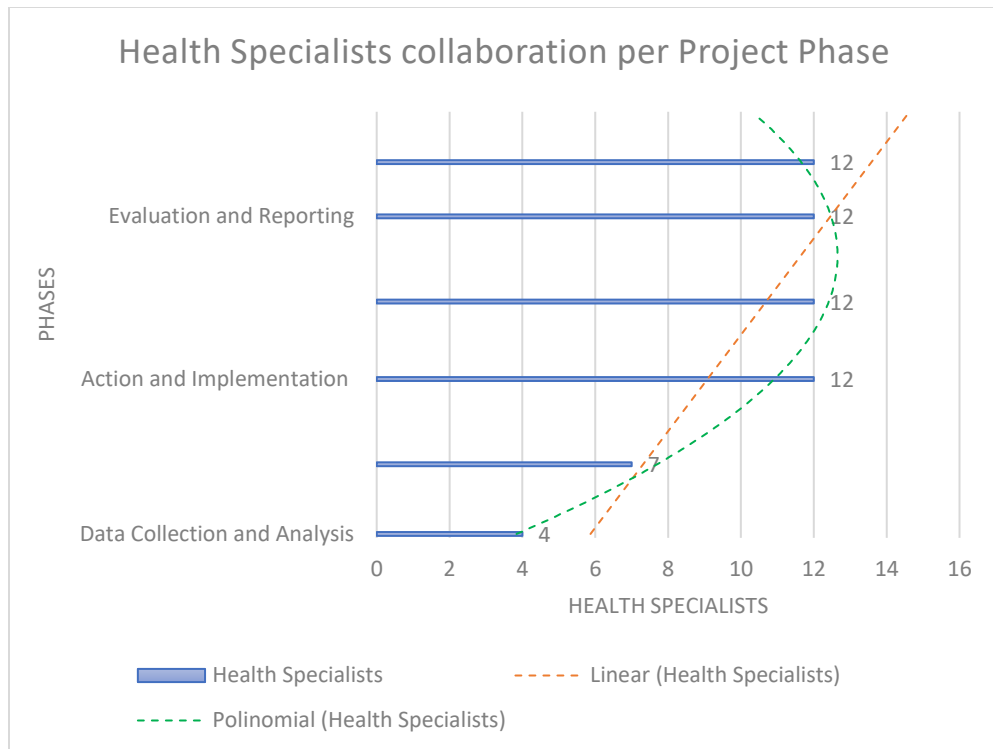


the number of partners in the 1st phase and at the end of the 3rd phase was taken into consideration. (Fig. 51)

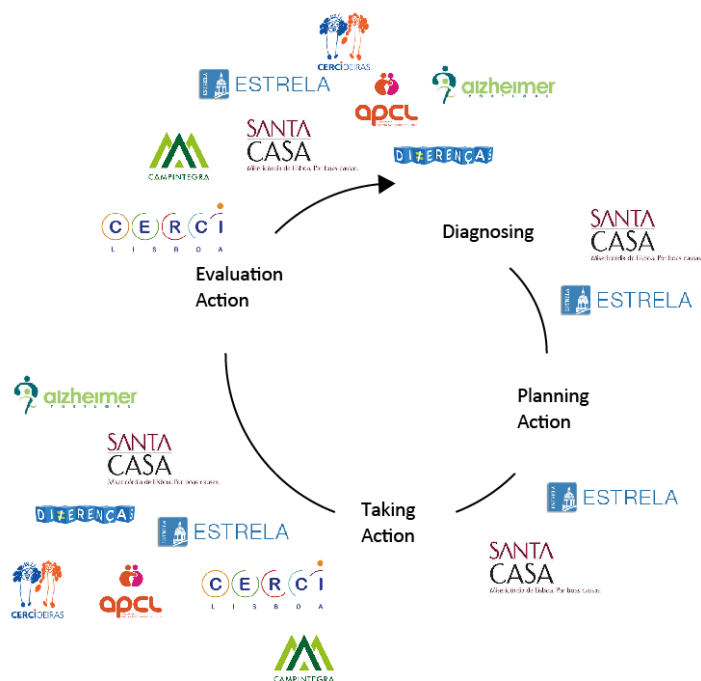


Graph 22 - Stakeholders Collaboration per Project Phase

Following the activities, it is possible to observe an increase in the number of stakeholders (350%), health specialists (400%) and patients (380%) who took part in the activity. This figure shows that the first cases were decisive in their assessment and collaborative action in a project which, from the very outset, adapted to different organizations with specialties in social action and others geared towards a population with special needs. (Graph 22)

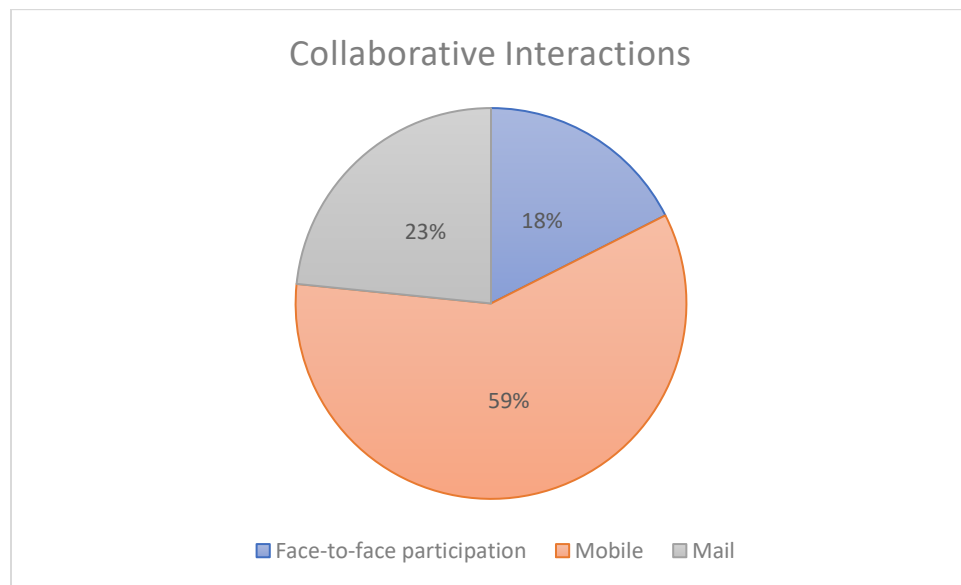


Graph 23 - Health Specialists (12) Collaboration per Project Phase

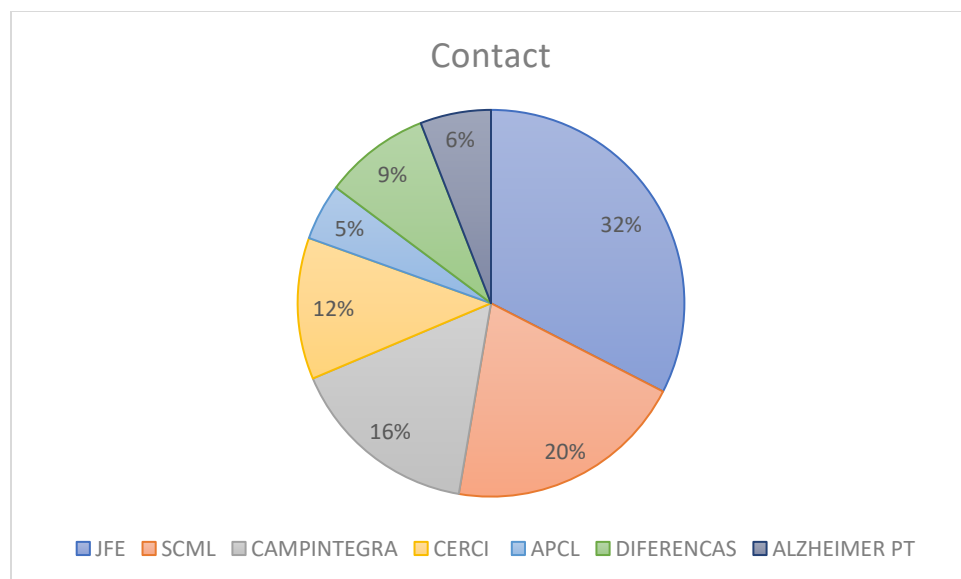


Graph 24 - Case Study Evolution and Sequence

The evolution of collaborative action (Graph 23) followed an upward trend throughout the development of the project, as well as the response to the request for collaboration (Graph 24) and the existence of already quantifiable data which, in the view of the potential partners, may have been decisive from the researcher's point of view for the acceptance of integration into activities. (Graph 25)

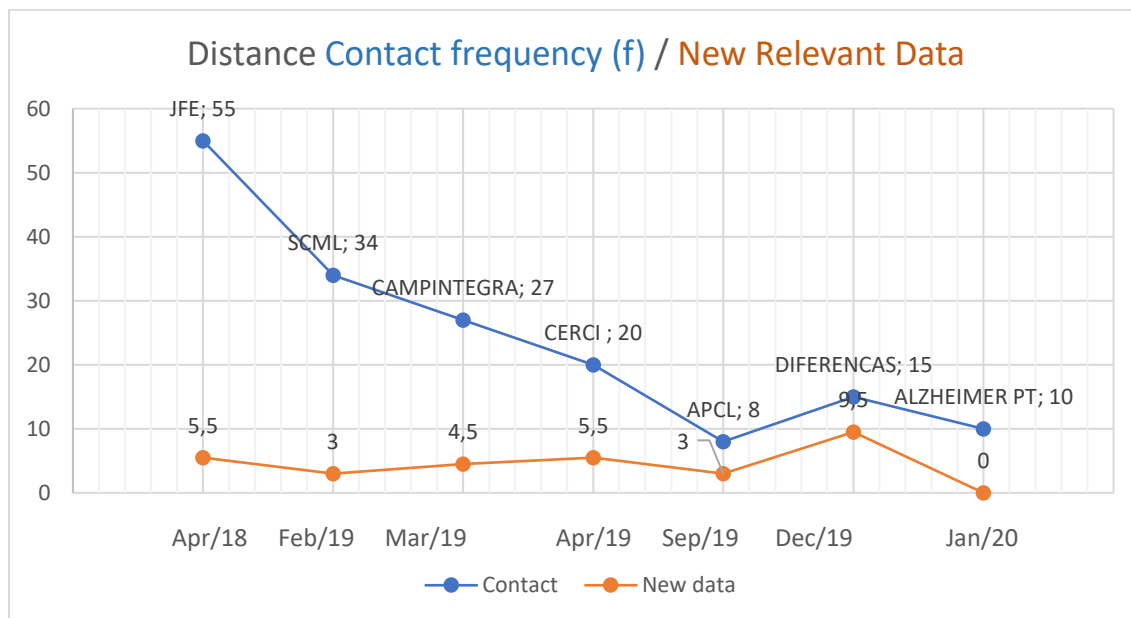


Graph 25 - Collaborative Interactions (F = 272)



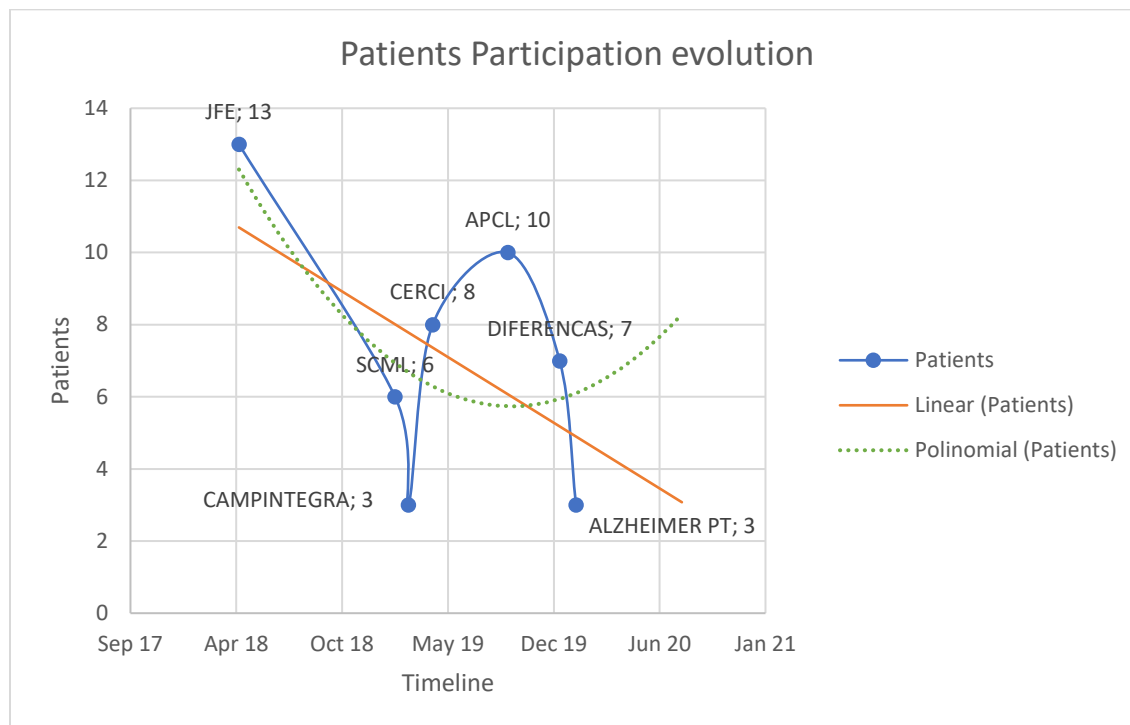
Graph 26 - Frequency of Contacts

In the relationship between the frequency (f) of contacts between the designer and the associations, the relationships were related to the familiarity of the project and the maturity of the experience, which led to greater ease of interaction and less dependency to clarify potential doubts already resolved in the first actions. (Graph 26) As can be seen in Graph 27, the frequency of contacts decreased over time by the social partner and has no significant variation in the new data.



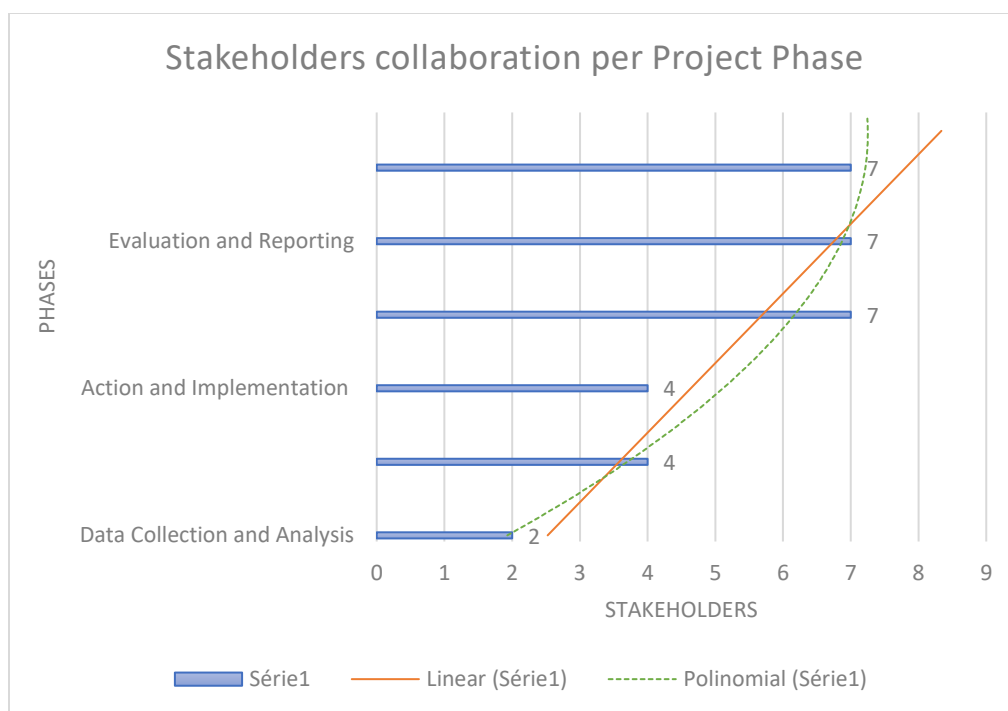
Graph 27 - Frequency of Contacts and New Data

## c2.2) Analysis and Quantification of the Dependent Variable “Social Services”



Graph 28 – Patients’ Participation Evolution

With the dependent variable *Social Services*, the number of institutions/bodies that accepted collaboration and integration into the collaborative process at the different phases should be noted. The graph itself shows the time and number of patients per institution who participated in the activities. The collaboration of stakeholders was welcomed by 7 institutions, which integrated the game into their activities with patients. However, it should be added that some of the institutions applied the activity under the responsibility of more than 1 specialized technician, this being the case of the parish council of Estrela with an occupational therapist and a psychologist, the case of Cerci with 2 occupational therapists, the APCL with a psychologist and an occupational therapist and the Associação Diferenças with two psychologists. Campintegra and Alzheimer Portugal developed this collaboration under a psychotherapist and an occupational therapist respectively, which is reflected in their position on the chart as may be observed.

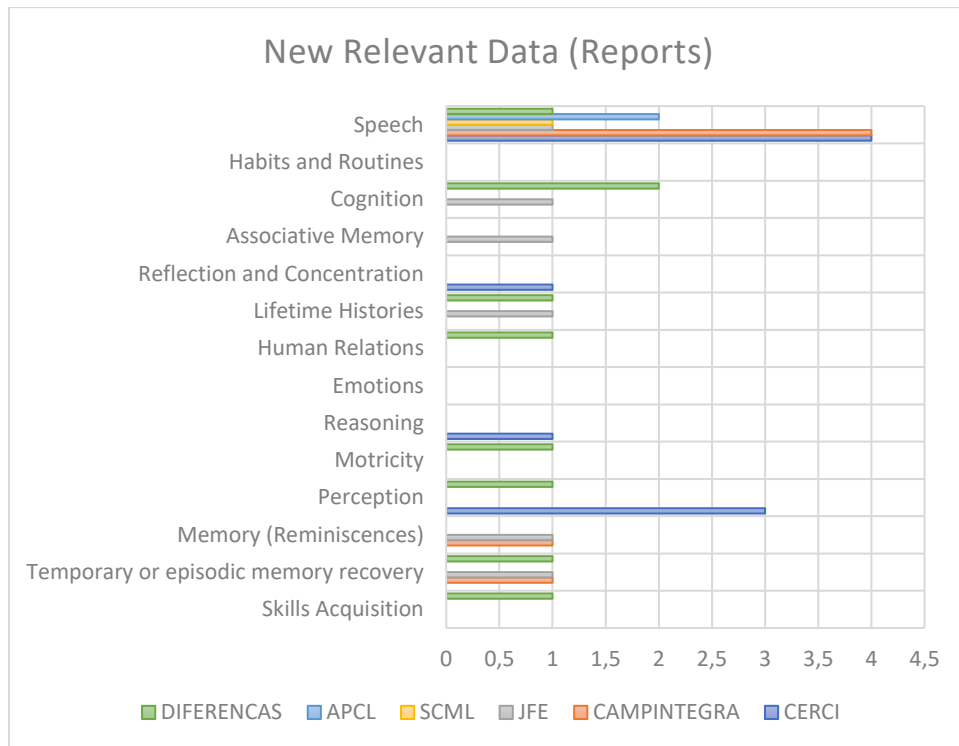


Graph 29 -Stakeholders Participation Evolution

### c2.3) Analysis and Quantification of Dependent Variable - Practices Effectiveness

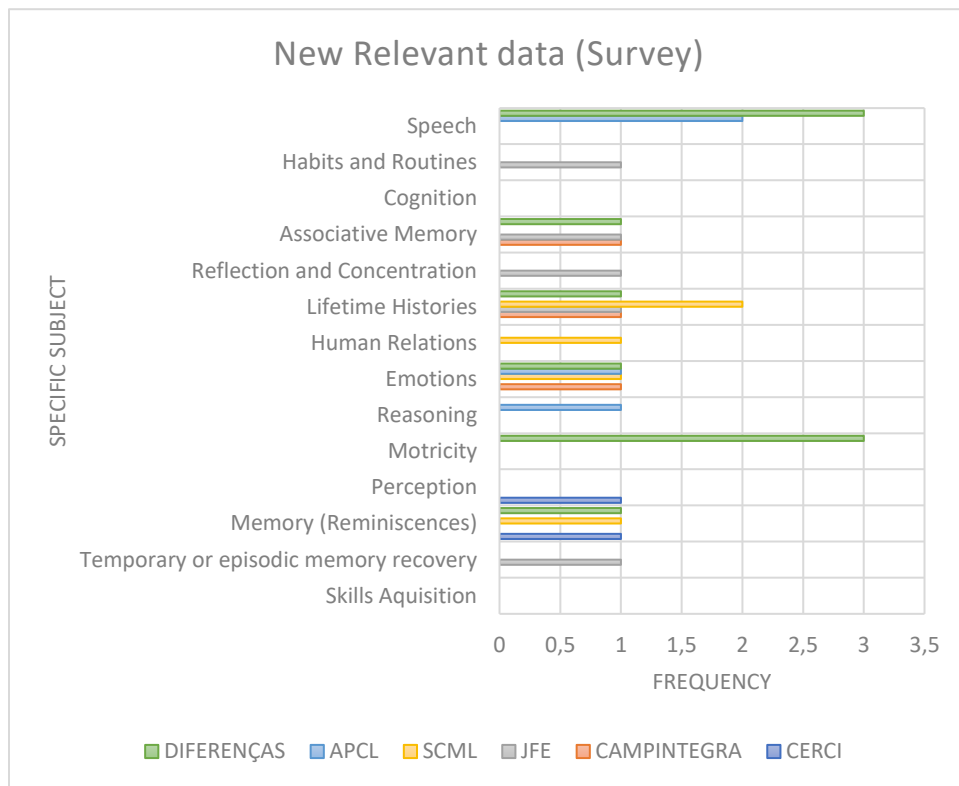
In the case study, 2 types of evaluation of collaborative practice were requested: an online questionnaire and a report. To formulate a rigorous evaluation, a comparative analysis of the data collected was carried out on both the questionnaire and the report. In this evaluation, the Alzheimer Portugal Association could not be included due to the absence of the Report. The data under analysis were as follows: New relevant data (general and specific) described by the health specialists and through the semantic analysis of terms; The evolution of the data in the time/expertise area according to the health specialists.

Table 3 - New Relevant Data (F Total=33)



The data were compared as there was a slight variance in the final results of each type of collection. In the case of the new data recovered from the report, there were around 33 (f) new references of Relevant Data while in the survey there were 29 (f). In addition to this data, the existence of different data between the questionnaire and the report was also found. For a more comprehensive analysis, the data were grouped, thus allowing for the inclusion of all the potential information.

Table 4 - New Relevant Data (F Total=29)



The result of the data collection through 2-way data enabled the collection of relevant data identified by the health technicians. This method allowed for the identification of some non-coincidental data between the methods, and the fact that two collections were performed allowed for their recognition in at least one of the routes. While complimenting each other, they also served to highlight flaws in the descriptions.



Table 5 - Word cloud Frequency (1 Word) Report (New Relevant Data)  
(Memories and Memory F =68)

Palavra	Comprimento da palavra	Frequência	%
mais	4	46	0,83
imagem	6	40	0,72
descrição	9	38	0,68
memória	7	38	0,68
fotografia	10	31	0,56
memórias	8	30	0,54
fotografias	11	29	0,52
idade	5	28	0,50
cerebral	8	23	0,41
participante	12	23	0,41
utilização	10	23	0,41
atividades	10	20	0,36

Memory (F=68) as the most frequent term in the descriptions in the Report on the activity followed by image (F=60).

In the relationship between two words, the term human relationships (F=15) was identified with marked proximity to the term cognitive functions (F=14). The relationship between these two terms may also be relevant.

Table 6 - Word Frequency (2 Words) Report (New Relevant Data)

Combinação de palavras	Palavras	Frequência	%
relações humanas	2	15	1,85
funções cognitivas	2	14	1,72
mais valia	2	9	1,11
boa ferramenta	2	8	0,98
cognitivas desta	2	8	0,98
conhecimento sobre	2	8	0,98
conversação permitindo	2	8	0,98
desta população	2	8	0,98
longo prazo	2	8	0,98
maior conhecimento	2	8	0,98
permitindo ter	2	8	0,98
ter maior	2	8	0,98

Table 7 - Word Frequency Survey (New Relevant Data) (Memory F = 11)

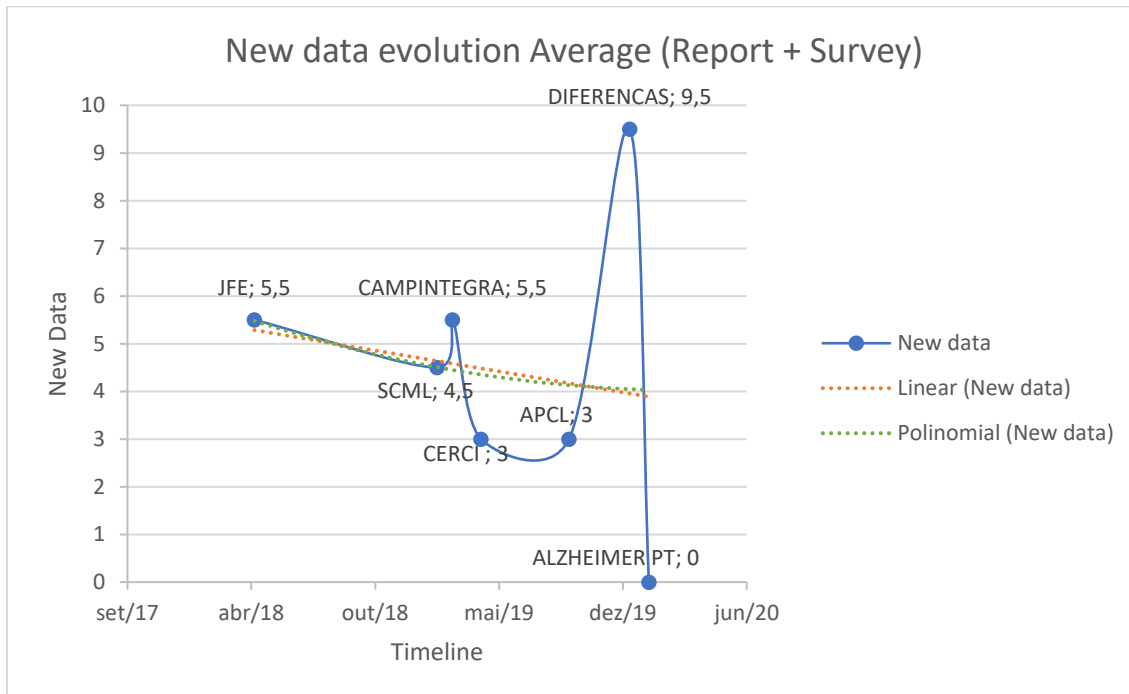
Palavra	Comprimento da palavra	Frequência	%
memória	7	11	5,61
vida	4	8	4,08
verbal	6	6	3,06
cognição	8	4	2,04
emoções	7	3	1,53
estimulação	11	3	1,53
história	8	3	1,53
mais	4	3	1,53
nomeação	8	3	1,53
percepção	9	3	1,53
psicologia	10	3	1,53
raciocínio	10	3	1,53

Memory (11) emerges again as the most frequent term in the descriptions in the Report on the activity, followed by life (F=8).

In the relationship between two words, cognition and verbal (F=24) were identified. That relationship between the two themes may be relevant to explain that the practice of the game could have a direct influence on stimulating speech articulation.

Table 8 - Word Frequency Survey (New Relevant Data) (Cognition F= 24)  
(Verbal F = 16) (Ocular F = 16)

Combinação de palavras	Palavras	Frequência	%
foram importantes	2	13	2,99
que foram	2	13	2,99
cognição não	2	8	1,84
cognição verbal	2	8	1,84
coordenação óculo	2	8	1,84
linguagem compreensiva	2	8	1,84
motricidade fina	2	8	1,84
não verbal	2	8	1,84
óculo manual	2	8	1,84
verbal cognição	2	8	1,84
algo mais	2	7	1,61
alguns problemas	2	7	1,61



Graph 30 - New Relevant Data Evolution (Report + Survey)

The relationship between the data obtained by the two methods quantified an amount of newly generated data, thus making it possible to evaluate the evolution organized by social partner and time of the activity's development.

In the graph, an exponential increase of actions developed may be observed in the chronology, especially between February and April 2019 and again in September 2019, December 2019, and January 2020. It is important to note the seasonality of the events under the responsibility of each institution and the window of opportunity available in each for the implementation of the activity. The collaborative action developed within the scope of the case study with a view to the project action enabled the researchers to identify potential factors that triggered the evolution and integration of design in social action in a more strategic manner.

In an analysis of the processes integrated into each participatory methodology, it was possible to identify 4 clear stages of greater ease of constructive project discourse, of an interdisciplinary conjugation of terms that are more accessible to the general public and greater ease of sharing and consequent understanding.

These moments were integrated into the second phase of the collaborative design methodology, namely the Action and Implementation phase, corresponding to: Concept; Co-creation; Creating Ideas for Solutions and Interpretative and Developmental Moves. The generation of the highest and meaningful number of interactions in these phases and the sequential development of actions led to greater openness among all the participants, possibly due to the neutral moment in the process that favoured intervention and contribution to the project's evolution.

## **Chapter 5 Summary**

In this chapter the descriptive analysis of the data was conducted to indicate the order of magnitude of the results and to compare the areas of intervention.

In the analysis, it was necessary to take into account the diversified conditions to which the process was subjected. The action was evaluated according to the added value of the activity within the scope of its efficiency in obtaining new information related to users or patients with different characteristics, framed in organizations of a different social nature. The increase in the diagnosis of users is noteworthy, accomplished through a qualitative analysis of the number of the frequency of terms, referring to new data (report (F=33) and the survey(F=29), which consequently added

value to the work of monitoring and intervention of the technicians and specialists. (Fig. 32) The evolution of the number of patients who were involved in the activity and the number of technicians and institutions that agreed to collaborate is also noteworthy, enabling the implementation of the innovative activity, which in their view had a positive impact on the technicians, patients and users of the institutions. An important observation regarding the production of the developed project should also be noted: since production may become a factor that prevents progress in the case studies, an independent form of production has been guaranteed. This decision has proven to be a determining factor for the timely application and implementation of the product for all the partners who have requested it.

## Conclusions and Future Developments

### Conclusions

This study sought to highlight the importance of collaborative actions to construct a vision of social cohesion and a sustainable society. The literature review considered persons of reference in design who, in different areas, are notable for the sector's development in the field of social sustainability and its socio-political roles, such as Victor Papanek, Nigel Cross, Victor Margolin, Kees Dorst and Ezio Manzini who, in their journey, have emphasized the social commitment of design in the construction of civil society principles.

This vision served as inspiration to contribute, by means of the experience described herein, with entities that work directly with communities that are a major concern and to which little attention has been paid by the government. To this end, a partnership quota and greater intervention in the development of project construction processes were developed with a view to improving the community's well-being through the integration of design in social projects in a more operational and integral manner. The analysis focused on the development of collaborative actions which, during the research process, eventually materialized into a tool to support the social assistance of vulnerable communities.

The initial analysis of the vision of design by a sample of social partners clarified some ideas related to the vision of a potential majority of society. It was possible to highlight some ideas related to:

- . the capacity to handle a heterogeneous collaborative sentiment in sharing distinct knowledge with associated added social value.
- . the ability of design to promote collaborative processes due to its aggregating ability to combine different sectors for a common good.
- . design as an operating specialist in the visualization of conceptual ideas for consequent materialization, favouring the triggering of concrete activities.

In this set of identified ideas, it may be concluded that design is always seen as an external agent in responding to society's problems, and its application is mainly geared towards the production of synergies with a view to development. Designers are seen as enablers who may have the ability to collaborate with people to project a visionary future. This perspective is described as co-design,

when people seek to make sense of their current situation by re-distributing power to disadvantaged groups within society (Zamenopoulos & Alexiou, 2018).

A second analysis was carried out on the development of the case study. The case had a direct assessment of the actions taken together. At this stage, data was collected through a report and questionnaire applied to health technicians, based on the application of a case study, and the properties that validated the applicability, receptiveness and effectiveness of the project were evaluated.

Quantification of the empowerment process was based on the analysis of the relationship between the independent variables related to collaborative design methodologies and the dependent variable on the consequence and effectiveness of the intended social services practices.

To analyse the collaborative action of design methodologies and human centred design, a comparison of processes was conducted, (Lawson, 2005; LUMA, 2005; Dorst, 2015; IDEO, 2015) in which a set of procedures with a high degree of similarity can be identified. In the event of an analysis of the processes, similar actions were synthesized and grouped. The synthesis of actions between the design methodologies was associated and equated to methods of social intervention and project development methods (Serrano, 2008; Robertis, 2011), thus aiming to find processes capable of interconnecting and, consequently, developing an interdisciplinary relationship between the different methodologies. The search for this pair of procedures led to the identification of key moments in which availability and neutrality facilitated active collaboration processes. It was possible to verify the reasons for the availability and internal structuring of organizations where the action and implementation phase favoured the process of design co-creation, the generation of ideas and movement development according to interpretative and consistent process analysis.

The interventions that characterised our initiative to create a desired change shed light upon the willingness of organizations to integrate design in their internal processes. This was even more evident when they verified the improvement of the effectiveness of the actions applied by their health specialists in generating more knowledge on the state of the patients under their care. The report of such initiatives provided information that was able to validate the indicators which measured the results of the project's performance and the interactions developed.

Effectiveness was analysed in different layers, seeking mainly to improve the work of the technicians who used the finished product and who were able to try an innovative method of

diagnosis and, additionally, gather more valuable data from the patient himself in the process. The evolution of collaborative actions with diversified institutions, reflected in a product/activity lasting an average of 15 minutes in 5 sessions per patient over approximately 3 months, allows one to reflect on the potential of design for integration and participation in the social sector. The principal results demonstrated a higher capacity to collect information mainly to enhance Speech Capability, Lifetime Histories, Emotional state, Memory, Motricity and Associative Memory.

When developing some of the ongoing partnership activities, the public health environment was severely affected by the current pandemic, which led to an interruption of all the activities that were already underway. This event (Coronavirus or Sars Cov-2) led to the suspension of the collaborative actions that were in the process of being carried out and the beginning of effective work.

Participatory action was one of the influences sought in this project. Its constructive guidelines should be followed for the creation of alternative futures for less privileged communities in society, in order to contribute to institutional and democratic changes.

This collaborative exercise is merely an initial contribution which may lead to high impact interdisciplinary projects for the whole of society since it demonstrates the capacity of design in the social sector when integrated into intervention plans, and not as an external agent. The willingness to adapt to the calendars of each social partner demonstrated the challenge of being able to execute a project from start to finish. It also showed availability and acceptance through collaboration, which suggests that the act of opening up to new fields that are not always part of one's daily practices is an asset. This evidence demonstrates that the capacities of design practices are attentive to all kinds of people and communities and to the challenges they are confronted with, as well as the technicians who accompany them in their joint work.



## **Future Developments**

All the events that occurred throughout this research process pointed to an openness to opportunities that allow for collaborative action. The work developed encountered numerous obstacles on the way. Given the essence of its collaborative foundations, the ability to make it feasible was dependent on the confrontation of several parameters that determined whether or not it would move forward. The development of collaborative action turned out to be a complex process, with constant flexibility and adaptation, ensuring that the interests of each of the involved parties did not collide, thus making joint practice possible. Interdependence was also crucial both for the project and for the disruption and reach of directions.

Interdisciplinary and institutional interactions enabled the reciprocal learning of social intervention and design work. Nevertheless, the opinion of the stakeholders and some of the organizations regarding design aiming for cooperation in social sustainability projects came as a surprise, possibly due to its innovative nature. The exposure of internal processes and the availability to absorb external knowledge into their practices were essential for the construction of a set of activities geared towards a common objective and for a response to the needs of communities with a higher potential for at-risk social situations. This was the link between all the agents and areas of knowledge that initiated the research process, and which, on many occasions, led to learning and recognizing the work of social agents, humanitarian awareness and connection.

For the study's continuity, some themes may be relevant to unveil new knowledge to promote areas of design research integrated into social policies and in the creation of new workspaces framed in the vision of design and social sustainability.

The potential areas for further research may be framed in two fields:

- . Design as a service integrated in social response services, including social intervention or civil protection units.

- . Integration of Design in social policies in a more operational and integral manner.

For research in the area of social intervention, civil protection calls for studies that deepen procedures and internal structures to understand in which framework its integration may be more suitable.

- . Rapid prototyping and visualization of solutions. Rapid prototyping increases the potential to perform the idealized activities. The production phase, when subject to external

partnerships, can lead to a breakdown of relations. When joint activities were promoted, their implementation was mainly due to the independent production capacity, thus allowing the applicability of the tools developed.

. Implementation of design at the beginning of an intervention, from the determination of the social problem and follow-up until the end of the action. Analysing the problem from the very beginning of the intervention process may allow for a more assertive and conscious approach.

. Planning of teams and projects protected by a dedicated contracting system. The dynamics of changes in manpower by the agents proved to be an extra challenge in the implementation of the tasks.

For a more operational and integral integration of design in social policies, the following studies are proposed:

A deepening of the network of contacts in the area of social intervention and social support programs where there is a clear need for answers and where design can generate solutions and tools adapted to a resolution. From the experience acquired in this research process, in the local and social context of Lisbon, most contact was established with: elderly people in social isolation, extreme poverty, individuals with a drug addiction and groups of children at risk. When collaborative action was developed, viable solutions were created to improve their states of vulnerability. The integration of design in social policies and social intervention structures still appears to be distant, but as it becomes more effective in solving the identified problems, the sector's credibility in social policies will be taken into consideration and its integration will become a valid option.

As seen in the analysis of methodological collaboration (fig. 49), only in the Action and Implementation process was it possible to verify an increase of new and relevant information on the patients in the results. This phenomenon raises a question regarding the temporality of the design intervention, asking whether integration at an initial phase of data collection and analysis would lead the intervention in a different and more effective direction.

The collaborative methodology proposed, based on the importance of interdisciplinary action between the different social agents and the designer, demonstrates the viability of the latter's integration in the social sector. The widespread view of the designer's added value to the community envisions a general improvement of social conditions, however, according to the study, still far from full inclusion.

The activity proposed as an example has clearly demonstrated that there is an opportunity for integration, for resilience, for implementation, for training, for collaboration and alliances.

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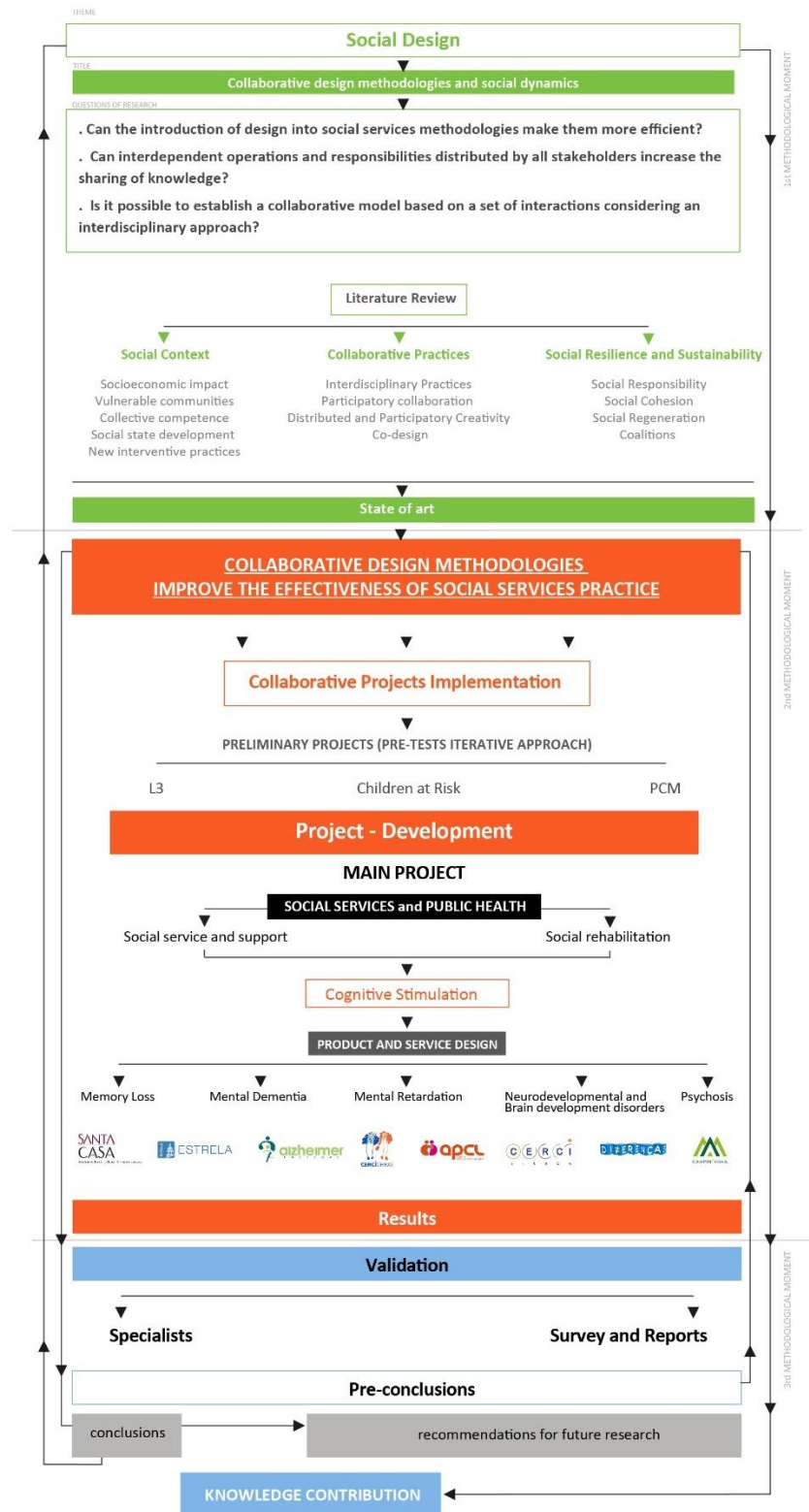


## Attachments

## Attachment 1 - Variables and Indicators

Variables							
INDEPENDENT VARIABLES				DEPENDENT VARIABLES			
Collaborative design methodologies				social services practices effectiveness.			
Bryan Lawson	Kees Dorst Framing	HCD IDEO Toolkit LUMA Institute	empower	Social services	practices	effectiveness.	
Productivity, Operational efficiency, Usability, User experience	Multidisciplinary teams: Complement Existing Activities; Activate knowledge	Interdependence, newly created professional activities, flexibility, collective ownership of goals, and reflection on process		Task optimization, Performance, Automatic development, Satisfaction, Number of individuals assisted (Sample).			
Adhesion	Proximity Perspectives	Encourager		Collaboration Strategic	Participation	Emotional Motivational	Organization Structuring
Integration	Motivational	Promoter	Facilitator	Enabler Insights	Inclusive	Comprehensive	Distinctness
Resilience	Weighting	Problem ID	Embracing Efficiency	Strengthen	Adaptation	Innovation	Evolution
Capacity building	Educational Strategic	Developer Materialization	Materialization Creativity	Constructive	Productivity	Achievement	Benefits
Collaboration	Co-construction Learning	Simplifier	Visualization	Transformation	Exchange	Differentiation	Alliances
Coalition	Progression	Productivity Efficiency	Improvement	Evolution	Inclusive	Competent	Concretization
				CLUSTERS			

## Attachment 2 - PhD Organogram



### Attachment 3 - PhD Timeline

[illegible]

## Attachment 4 - Estrela parish council report

### Avaliação do Projeto em Parceria

#### Jogo da Minha Memória

##### Enquadramento |

A aplicação do *Jogo da minha Memória*, surge a partir de uma proposta de articulação entre o IADE – Universidade Europeia e a Junta de Freguesia da Estrela (JFE), em que o Professor João Bernarda apresenta como instrumento de trabalho uma base de madeira criada especificamente, para facilitar o uso de fotografias como estímulo para a recuperação e estimulação da memória de histórias, vivências e sentimentos da pessoa idosa.

O Jogo foi enquadrado na intervenção da Junta de Freguesia da Estrela, mais especificamente, no âmbito de trabalho do serviço VisitARTE, que tem como foco de ação, a intervenção no domicílio da população idosa da freguesia da Estrela e que se operacionaliza através de um acompanhamento de proximidade, personalizado e adaptado às necessidades e aos gostos e interesses de cada idoso. A sua metodologia de ação recorre a diferentes linguagens artísticas: expressão plástica, música, teatro, literatura, cinema, fotografia, etc.

As alterações cognitivas próprias ao processo de envelhecimento, nomeadamente ao nível da perda de memória podem interferir com a autonomia do idoso. Assim, tanto numa lógica de prevenção, relativamente a idosos que apresentam défices cognitivos ligeiros, como numa lógica de estimulação cognitiva para os idosos com grave deterioração das funções cognitivas ou diagnóstico de demência, fez-nos todo o sentido a aplicação do Jogo de memória, a alguns idosos já em acompanhamento psicológico ou arte-terapêutico.

##### Objetivo |

O projeto desenvolvido teve como principal objetivo a recuperação das memórias através de um jogo interativo onde a capacidade de descrição, de assimilação e interpretação foi testada e trabalhada entre dois intervenientes, o idoso e a terapeuta.\*

### Metodologia |

A prática do jogo pretendia a recuperação de diferentes tipos de memórias que fossem sendo despertadas durante o desenvolvimento do jogo por relações:

- Memórias Emocionais.
- Memórias Físicas (Visuais, Táteis, Auditivas, Degustativas, Olfativas ...).
- Memórias Temporais.
- Memórias de relações humanas.

### Especificações técnicas |

Base paralelepípedica (190x125x25 mm) de madeira.

Rasgos longitudinais para inserção de imagens (fotografias)

Fotografias (tamanho 7,5cm x 5,5cm ou em caso de graves dificuldades visuais 13 cm x 8cm)

### Resultados Esperados |

Os resultados que se pretendem alcançar são a recuperação de memórias, a estimulação de novos temas de discussão e conversação, proporcionando uma maior dinâmica na comunicação oral.

### Descrição dos aspetos gerais da aplicação do jogo | Resultados alcançados

Variáveis	Resultados (nº/%)
Género	Mulheres: 6 (100%)
Faixa etária	70-79: 3 80-89: 2 90+: 1
Escolaridade	Sem escolaridade: 2 1.º CEB: 2 Ensino Superior: 2
Tipologia agregado familiar	Vive sozinho: 3 Casal: 1 Com outros familiares: 2
Graves alterações das funções cognitivas	Sim: 4 Não: 2
N.º total de vezes em que o jogo foi aplicado	21
Média por idoso	3

Em relação aos idosos abrangidos salientamos dois grupos distintos:

Grupo A – idosos sem alterações das funções cognitivas

Grupo B – idosos com graves alterações das funções cognitivas

Em ambos os grupos foi solicitado aos idosos que escolhessem fotografias de familiares ou outras pessoas, de lugares ou objetos significativos. No caso específico dos idosos do grupo B, foi necessária a colaboração dos familiares, uma vez que os idosos se esqueciam de procurar as fotografias.

#### **Grupo A**

No grupo A, os detalhes (pessoas, locais e objetos) de cada fotografia funcionaram como evocações de significados pessoais acerca de si próprio e das suas vivências, servindo de ponto de partida para o diálogo, e a partilha de aspetos da sua história de vida.

A visualização e descrição de uma única fotografia serviu de mote para uma conversa, suscitando memórias visuais que simultaneamente, evocaram memórias emocionais, de relações humanas e temporais, tornando possível ao terapeuta, um melhor conhecimento da realidade do idoso. Permitiram ao idoso falar de assuntos de forma mais emotiva e pormenorizada, não referidos anteriormente. Este relembrar do passado, provocou algumas situações desconfortáveis que foram facilmente geridas, por estarem enquadradas no âmbito do acompanhamento psicológico. Uma fotografia, por vezes, originava muitas outras descrições/histórias, não sendo possível por esse motivo, apresentar outras fotografias.

Quando utilizada a base paralelepípedica, como suporte ao Jogo, virando as fotografias de costas para o idoso, para que seja o terapeuta a visualizar os detalhes das mesmas. Foram usadas 2 metodologias diferentes: a idoso ia fazendo perguntas até adivinhar quem estava na fotografia ou de que fotografia se tratava; ou o terapeuta ia referindo alguns dados da fotografia para que a idosa tentasse adivinhar quem estava na fotografia e o local. Verificou-se que as idosas que compõem este grupo, erraram poucas vezes e que com a repetição do exercício foi aumentando o número de respostas corretas.



### **Grupo B**

No grupo B, verificamos que inicialmente na primeira descrição das fotografias, as idosas compartilharam com a terapeuta informações acerca da sua história de vida que nunca tinham feito até ao momento, durante o acompanhamento terapêutico. E apesar de as descrições das fotografias escolhidas serem pouco pormenorizadas, foi salientada a importância da fotografia como estratégia para despoletar a reminiscência de aspetos sobre a história de vida pessoal de idosos com grave comprometimento das capacidades mnésicas.

Neste grupo o número de fotografias visualizadas durante uma sessão é grande entre 1 a 15 ou 20 fotografias, uma vez que a maioria das vezes as idosas apenas descrevem sinteticamente quem está na foto, repetindo exatamente a mesma descrição inicial da primeira vez que o fizeram.

Ao realizar esta metodologia durante varias sessões, percebemos que as idosas começam a relembrar-se de pormenores relativos a algumas fotografias, geralmente fotografias com forte impacto afetivo, possibilitando a evocação de memórias emocionais, temporais e de relações humanas.

Percebemos também que as falhas de memória, como o esquecimento do nome de uma pessoa, do lugar onde a fotografia foi tirada ou de quem tirou a fotografia, acontecem perante fotografias em que as idosas demonstram não ter ligação afetiva.

Após a realização de várias sessões em que foi solicitada repetidamente a descrição de cada uma das fotografias, foi realizada a proposta de colocar em prática o Jogo da Memória com recurso à base paralelepípedica, como suporte ao Jogo, virando as fotografias de costas para o idoso, para que seja o terapeuta a visualizar os detalhes das mesmas. Foi usada apenas uma metodologia: o terapeuta colocava perguntas ao idoso sobre pormenores da fotografia, até o idoso adivinhar quem estava na fotografia ou de que fotografia se tratava. Por vezes era necessário o terapeuta referir alguns dados da fotografia para que o idoso tentasse adivinhar

quem estava na fotografia e o local. Apesar de demonstrarem dificuldades, as idosas deste grupo necessitam de algum tempo para pensarem, e de que a terapeuta lhes dê algumas pistas, o número de respostas corretas é muito positivo (media de 8/ 7 em 10).

Podemos concluir que esta metodologia é uma boa ferramenta para treinar as funções cognitivas dos idosos, nomeadamente ao nível da estimulação da memória, especificamente da memória emocional, e de relações humanas, assim como possibilita o aumento de temas de conversação entre as idosas e as terapeutas, permitindo por um lado, ao terapeuta um melhor conhecimento do idoso, da sua história de vida, e por outro ao idoso, a possibilidade recuperar temas para conversação e consequente facilitação do seu processo terapêutico. Gostaríamos assim de salientar que tendo em conta a neuro plasticidade do cérebro humano, a capacidade e potencialidade deste jogo em exercitar a recuperação de diferentes tipos de memória do idoso, incentiva a sua utilização numa lógica de prevenção e simultaneamente de intervenção ao nível do treino e estimulação cognitiva.

Junta de Freguesia da Estrela, Lisboa 20 de abril de 2018

**\* Carina Figueiredo** | Psicóloga, Membro Efetivo da Ordem dos Psicólogos Portugueses

**Teresa Vaz** | Socióloga, Arte-Terapeuta, Arte-Psicoterapeuta, Membro da Sociedade Portuguesa de Arte-Terapia

## Attachment 5 - Frei Contreiras Daycentre (SCML) Report

### Avaliação do Projeto em Parceria

#### Quebra cabeças interativo de estimulação cognitiva

##### Enquadramento |

O presente jogo, apresentado ao grupo tem como grande objectivo estimular as funções cognitivas (atenção, concentração, memória, orientação no espaço e no tempo, imagem corporal, linguagem, conhecimento, expressão corporal, psicomotricidade fina, capacidade de comunicação), e analisar quais as contribuições do mesmo para socialização, entretenimento e aprendizagem dos participantes.

-

Este jogo que trabalha essencialmente a memória fotográfica ajudando assim a aprimorar e exercitar as funções cognitivas através da estimulação visual como a fotografia (dos próprios e/ou pessoas com quem lidem diariamente ou personalidades famosas (políticos, cantores, atores, apresentadores)) e constitui-se num recurso útil e relevante para o estímulo cognitivo de idosos. Podemos destacar a contribuição deste jogo para o estímulo e manutenção das habilidades cognitivas, afectivas e sociais dos participantes e detectar como os mesmos solucionam problemas ocasionais que surjam no jogo.

##### METODOLOGIA |

Esta experiência determina-se como descritiva de abordagem qualitativa a fim de gerar informações acerca dos participantes através da observação participante tendo em vista a descrição das percepções dos participantes perante o jogo e identificar e explicar os factores que determinam as acções dos mesmos.

-

Os participantes foram 8 idosos (7 senhoras e 1 senhor) do Centro de Dia Frei Miguel Contreiras, equipamento da Santa Casa da Misericórdia de Lisboa. A participação foi voluntária, contudo a selecção dos participantes passou pelo facto de todos apresentarem um quadro demencial diagnosticado e em graus diferentes. Participante 1 – Feminino, com 84 de idade, viúva, vive sozinha; participante 2 – Feminino, com 84 de idade, viúva, vive com o filho; participante 3 – Feminino, com 71 de idade, viúva, vive sozinha; participante 4 – Feminino, com 73 de idade, divorciada, vive sozinha; participante 5 – Feminino, com 88 de idade, viúva, vive sozinha; participante 6 – Masculino, com 77 de idade, casado, vive com a esposa (participante 7); participante 7 – Feminino, com 74 de idade, casada, vive com marido (participante 6); participante 8 – Feminino, com 96 de idade, viúva, vive com o neto.

-

Foram realizadas 5 sessões entre Novembro de 2018 e Fevereiro de 2019, com a utilização do jogo como um recurso e algumas estratégias associadas para estimular a

participação envolvendo as dimensões cognitivas, afetivas, motoras e sociais. A recolha dos dados foi feita através de uma ficha de registo de observação, construída pelo professor e preenchida conjuntamente com a técnica de animação sociocultural no final de cada sessão.

### **1ª Sessão**

**Participante 1, 2, 3, 4.**

**2ª sessão (20 Novembro 2018)**

**Participante 5, 6, 7**

Todos os participantes foram chamados para a apresentação individual do jogo. Após uma breve apresentação do professor ao participante e de como o jogo funcionava foi iniciado o jogo em 2 etapas.

Na primeira etapa foi colocada uma foto do próprio participante, sendo que quase todos os participantes ao explorarem o jogo, já com a fotografia mistério, iam directamente à peça do meio para ver o que estava escondido. Nenhum demorou mais de 5/6 minutos a descobrir a própria fotografia, contudo algumas participantes (mulheres) ficavam horrorizadas com a sua imagem e o seu envelhecimento. O participante masculino apesar de falar fluentemente tem dificuldade em se expressar nas palavras corretas, contudo foi perceptível que o mesmo se reconheceu ao descobrir a sua fotografia.

Numa segunda etapa foi colocada uma foto de um outro utente do centro de dia com o qual tivessem alguma afinidade. Apesar de ser mais demorada a exploração e descoberta da pessoa da foto, e por vezes recorrermos a retirada de outra peça (para ter mais imagem à vista), os participantes reconheciam as pessoas da foto mas não sabiam o nome. O grupo de participantes tem toda uma afinidade devido as suas rotinas no centro de dia, nomeadamente a proximidade física nos locais que partilham e nas dinâmicas estabelecidas, tais como, o transporte diário na carrinha, o lugar onde costumam permanecer durante o dia e as diferentes interacções que se estabelecem diariamente.

A descoberta das fotografias mistério davam origem a algumas perguntas (feitas pelo professor e pela técnica) que serviam também para dar mote a uma conversa:

- Quem é a pessoa que aparece na fotografia?
- Costuma falar com essa pessoa?
- Onde foi tirada a fotografia?
- Em que altura/ data foi tirada a fotografia?
- Gosta de se ver na fotografia? Ou a pessoa está bem na fotografia?

No fim da sessão foi concluído que o jogo tinha sido muito fácil de explicar e os participantes demonstraram vontade de jogar mais vezes com outras fotos.

**3ª Sessão (11 de Janeiro)**

**Participante 1, 2, 3, 4**

**4ª Sessão (14 de Janeiro)**

**Participante 5, 6, 7.**

**5ª Sessão (8 de Fevereiro)**

#### Participante 8, 6

Nas 3ª, 4ª e 5ª sessões apesar de todos os participantes já conhecerem o jogo das sessões passadas foi necessário rever os objectivos do jogo bem como apresentar o professor. Contudo o manuseamento das peças do jogo foi mais intuitivo e mais uma vez observamos que os participantes ao procurarem a fotografia “mistério” foram de imediato as peças centrais para descobrir a fotografia.

A participante que foi apenas na última sessão foi bastante perspicaz na percepção do jogo.

Apos observar que os participantes já conheciam os fotografados e apesar de não saberem nomeá-los souberam dizer de onde os conheciam ou onde fora tirada a foto o professor optou por sugerir que nestas sessões fossem colocadas fotografias com personalidades famosas (Fátima Lopes (apresentadora), Marcelo Rebelo de Sousa, Mário Soares, Cavaco Silva, Eusébio, Amália Rodrigues e Cristina Ferreira). Os participantes não conheceram as apresentadoras Fátima Lopes e Cristina Ferreira, alguns disseram que as caras não eram estranhas mas não souberam nomeá-las; relativamente aos políticos souberam nomear Mário Soares e inclusive todos souberam qual a sua função/profissão, no entanto nenhum se lembrava que já tinha morrido, o Cavaco Silva reconheceram mencionaram a sua função como primeiro-ministro e uma participante disse que era o actual presidente da república; no que concerne não ao actual presidente da república, Marcelo Rebelo de Sousa reconheceram mas ninguém soube dizer o seu nome ou função actual, apenas confirmaram-no apos ser colocada a hipótese de outro nome: - é o professor Marcelo Rebelo de Sousa ou outra personalidade politica? Relativamente a fadista Amália Rodrigues só apos ver a cara dela é que a reconheceram e inclusive alguns dos participantes souberam trautear um fado dela, exceptuando o participante 6; o futebolista Eusébio foi a única personalidade que reuniu consenso relativamente ao reconhecimento, surpreendentemente apesar da sua disartria o participante lembrou e verbalizou o nome ao olhar para a face, mesmo não estando destapada, as restantes participantes adivinharam contudo não foi tão imediato e foi necessário remover uma peça para tornar-se mais perceptível.

## Attachment 6 - Campintegra report

### Relatório- Avaliação do Projeto em Parceria “O Jogo da Minha Memória”

#### Enquadramento

A aplicação do *Jogo da minha Memória*, surge a partir de uma proposta de articulação entre o Professor João Bernarda e a CAMPINTEGRA (Associação para o Desenvolvimento Social e Ambiental), em que o Professor João apresenta como instrumento de trabalho uma base acrílica criada especificamente, para facilitar o uso de fotografias, imagens e recortes como estímulo para a recuperação e estimulação da memória de histórias, vivências, emoções e sentimentos da pessoa com doença mental (depressões graves e psicopatias) inseridas no Programa de Reabilitação Psicossocial.

O Jogo foi enquadrado na intervenção da CAMPINTEGRA, mais especificamente, no âmbito da temática Programa de Enriquecimento Instrumental (PEI), que tem como foco de ação, a intervenção ao nível das Funções Cognitivas e que se operacionaliza através de um conjunto de instrumentos específicos, adaptado às necessidades dos utentes. A sua metodologia de ação recorre a diferentes temáticas Organização de Pontos; Orientação Espacial; Comparações; Percepção Analítica; Relações Familiares, etc.

As alterações cognitivas são inerentes ao processo da doença mental, nomeadamente ao nível da perda de memória podem interferir com a autonomia de cada utente. Assim, tanto numa lógica de prevenção, relativamente a utentes que apresentam défices cognitivos ligeiros, como numa lógica de estimulação cognitiva para os que têm acentuada dificuldade ao nível das funções cognitivas, faz-nos todo o sentido a aplicação do Jogo de memória, a alguns dos nossos utentes, já em acompanhamento psiquiátrico e/ou psicológico e/ou arte-terapia.

#### Objetivo

O projeto desenvolvido teve como principal objetivo a recuperação das memórias através de um jogo interativo onde a capacidade de descrição, de assimilação e interpretação foi testada e trabalhada entre dois intervenientes, o utente e a terapeuta.\*

## **Metodologia**

A prática do jogo pretendia a recuperação de diferentes tipos de memórias que fossem sendo despertadas durante o desenvolvimento do jogo por relações:

- Memórias Emocionais.
- Memórias Físicas (Sentidos - Visuais, Auditivas, Olfativas, Táteis, Degustativas, e Celulares....).
- Memórias Temporais.
- Memórias de relações humanas.

## **Especificações técnicas**

Base paralelepípedica (190x125x25 mm) em acrílico.

Rasgos longitudinais para inserção de imagens (fotografias)

Imagens e fotografias (tamanho 7,5cm x 5,5cm ou em caso de graves dificuldades visuais 13 cm x 8cm)

## **Resultados Esperados**

Os resultados que se pretendem alcançar são a recuperação de memórias, a estimulação de novos temas de discussão e conversação, proporcionando uma maior dinâmica na comunicação oral.

#### Descrição dos aspetos gerais da aplicação do jogo | Resultados alcançados

Variáveis	Resultados (nº/%)
Género	Mulheres: 1 (33,3%) Homens: 2 (66,7%)
Faixa etária	20-29: 1 30-39: 40-49: 50-59: 2 60+:
Escolaridade	Sem escolaridade: 1.º CEB: Ensino Secundário: 1 Ensino Superior: 2
Tipologia agregado familiar	Vive sozinho: Casal: 1 Com outros familiares: 1
Alterações das funções cognitivas	Sim: 3 Não:
N.º total de vezes em que o jogo foi aplicado	30
Média por utente	10

Em relação aos utentes abrangidos salientamos que:

Têm doença mental e apresentam algumas alterações ao nível das capacidades cognitivas específicas, nomeadamente ao nível da memória, atenção, reflexão e velocidade de raciocínio. Estão integrados no Programa de Reabilitação Psicossocial.

Foi solicitado aos utentes que escolhessem fotografias de familiares ou outras pessoas, de lugares ou objetos significativos. Como os utentes se esqueciam, e outros referiram que não tinham fotografias de familiares ou outras. Perante esta situação, usamos imagens de pessoas conhecidas publicamente, de situações do dia a dia (atividades diárias, relações humanas, etc.), de acontecimentos divulgados nos meios de comunicação, paisagens, etc.

Para cada utente, os detalhes (pessoas, locais e objetos) de cada imagem/fotografia funcionaram como ponto de partida, para um diálogo com significados pessoais acerca de si próprio e das suas vivências, servindo para a partilha de aspetos da sua história de vida.



A visualização e descrição de cada imagem serviu de tema para uma conversa, suscitando memórias visuais que simultaneamente, evocaram memórias emocionais, de relações humanas e temporais, tornando possível ao terapeuta, um melhor conhecimento da realidade do utente. Permitiram ao utente falar de assuntos de forma mais pormenorizada e emotiva, não referidos anteriormente. Este relembra do passado, provocou algumas situações de maior emotividade e algum desconforto mas facilmente gerido. Uma imagem, por vezes, originava muitas outras descrições/histórias, da vida do utente até então pouco conhecidas ou mesmo desconhecidas.

Na aplicação do jogo foram usadas duas metodologias diferentes:

- 1 – Numa primeira fase do processo, as imagens/fotografias eram mostradas na totalidade ao utente, este descrevia o que via.
- 2 – Na outra fase do processo, as imagens/fotografias eram colocadas pela terapeuta na base do jogo, em que o utente via apenas fragmentos das mesmas.

Quando a imagem 1 é mostrada ao utente (A) na totalidade, isto é, sem ser aplicada no jogo este identifica a personalidade “é o 1º Ministro” usando apenas um termo.

Numa outra sessão, quando utilizado como suporte a base do Jogo, o terapeuta coloca a imagem 1 na base de suporte sem a mostrar ao utente. Entrega o jogo ao utente (A), este vai mexendo as peças e vai descrevendo o que vê em cada fragmento da imagem “tem cabelo branco”/”é um idoso”/”usa óculos”/”está a ler”/”parece o 1º Ministro”, depois de mexer as peças, observando a imagem em fragmentos, identifica o 1º Ministro, usando quatro termos .

A imagem 13 mostrada na totalidade ao utente (B), este descreve “o pai e o filho estão na cozinha a preparar uma refeição”.

Numa outra sessão, quando a mesma imagem é integrada no jogo, pelo terapeuta, em que o utente (B) apenas vê fragmentos da imagem, vai descrevendo o que vê “uma criança e um adulto....”/”....peixe e legumes”/”parece que estão na cozinha”/”podem ir preparar o almoço”. Só depois de mexer as peças todas é que identificou a cozinha. No jogo o utente descreve a imagem, utilizando seis termos.

Quando a imagem 16 é mostrada na totalidade ao utente (C), este refere “a mãe está a ler uma história à filha”.

Noutra sessão, em que a imagem foi integrada no jogo pela terapeuta, o mesmo utente (C) refere “uma menina”; “está a pensar”; “tem um boneco na mão”; “a mãe está a olhar para a filha”; “a mãe está sentada e a segurar... parecem papéis”; “está um livro aberto em cima da cama”; “a menina está sentada na cama”. A imagem inserida no jogo é descrita pelo utente, usando sete termos.

Podemos concluir que, quando a imagem é mostrada na totalidade, esta é descrita de uma forma mais sintética, isto é, na descrição são utilizados um número menor de vocábulos/termos, podemos dizer que a descrição é menos rica de conteúdo. Quando a imagem é inserida no jogo, os utentes observam a imagem em fragmentos, estão mais atentos aos pormenores, tornando o discurso mais rico em vocábulos/termos, e em emoções que vão apresentando através da linguagem não verbal.

Ao longo das várias aplicações do jogo, verificou-se que os utentes que participaram neste estudo, erraram poucas vezes na descrição das imagens no jogo e com a repetição do exercício foi aumentando o número de respostas corretas (12/13 em 16), foi aumentando também a utilização de diferentes vocábulos/termos o que é muito positivo.

Verificou-se também a manifestação um forte impacto afetivo, possibilitando o recurso a memórias emocionais, temporais e de relações humanas.

Podemos concluir que esta metodologia é uma boa ferramenta para treinar as funções cognitivas de pessoas com doença mental independentemente da idade, nomeadamente ao nível da estimulação da memória, especificamente da memória emocional, e de relações humanas, assim como possibilita o aumento de temas de conversação entre os utentes e as terapeutas. Permitindo por um lado, ao terapeuta um melhor conhecimento da história da vida do utente, e por outro aos utentes, a possibilidade de recuperar temas para conversação e consequente facilitação do seu processo terapêutico. Gostaríamos assim de salientar, do que conhecemos sobre a neuro plasticidade do cérebro humano, a capacidade e potencialidade deste jogo em exercitar a recuperação de diferentes tipos de memória, incentiva a sua

utilização numa lógica de prevenção e simultaneamente de intervenção ao nível do treino e estimulação das capacidades cognitivas.

CAMPINTEGRA – Associação para o Desenvolvimento Social e Ambiental

Oeiras, 20 de dezembro de 2019

\* **Isabel Nascimento** | Psicoterapeuta

## Attachment 7 - Cerci Barcarena Report

### Relatório Jogo

A aplicação do Jogo da minha Memória surge a partir de uma proposta feita pelo Professor João Bernarda ao Centro de Atividades Ocupacionais da CERCIOEIRAS, onde apresentou como instrumento de trabalho uma base branca com peças sobrepostas criada numa impressora 3D, para facilitar o uso de fotografias como estímulo para a recuperação e estimulação da memória de histórias, vivências e sentimentos da pessoa idosa. Apesar do jogo ter sido desenvolvido com vista a ser aplicado à população idosa, o professor João Bernarda, fez a proposta à CERCIOEIRAS, de aplicar à população de pessoas com deficiência como forma de analisar a sua utilidade e valor na intervenção terapêutica com estes clientes.

O jogo foi aplicado pela terapeuta ocupacional, em sessões individuais, a 5 clientes distintos, expondo-os a duas/três imagens diferentes, como forma de poder explorar imagens de momentos reais relacionados com eles próprios, assim como imagens de acontecimentos/espacos/lugares.

A utilização deste jogo nas sessões, foi recebida por parte dos clientes com curiosidade e interesse, tendo aumentado automaticamente o estado de alerta dos mesmos, por ser um estímulo/atividade completamente novo. A utilização do jogo promoveu a estimulação da memória (reminiscências), da percepção visual (atenção detalhada aos pormenores da imagem) e da capacidade de atenção/concentração dos clientes. Este jogo estimulou também a comunicação verbal de alguns clientes, que por vezes são mais inibidos e tímidos, mostrando mais dificuldades em desenvolver um discurso contínuo, pois necessitam de orientação constante (ou seja, a comunicação funciona numa base de pergunta-resposta). Este jogo permitiu assim uma maior liberdade na produção efetiva e espontânea do discurso, uma vez que foi dado incentivo e mais tempo aos participantes de poderem expressar verbalmente tudo o que tinham vontade, relativamente à imagem mostrada, incentivando à iniciativa dos mesmos (promoção da linguagem). Por estes motivos enunciados, considera-se que o jogo foi uma mais-valia. Permitiu também que a técnica recolhesse mais dados relativos à avaliação dos clientes que participaram, ajudando-a a ter uma percepção melhor de funções cognitivas como a orientação temporal e espacial.

Este jogo continuará a ser implementado nas sessões individuais, dado ao entusiasmo que gerou nos clientes e os benefícios que trouxe para a estimulação das funções cognitivas, como a memória, atenção, percepção visual, orientação e linguagem.

Joana Amorim

Terapeuta Ocupacional

## Attachment 8 - Associação Diferenças Report 1

### Relatório Jogo

A aplicação do Jogo da minha Memória, surge a partir de uma proposta feita pelo Professor João Bernarda ao Centro de Desenvolvimento Infantil Diferenças, onde apresentou como instrumento de trabalho uma base de madeira criada especificamente, para facilitar o uso de fotografias como estímulo para a recuperação e estimulação da memória de histórias, vivências e sentimentos da pessoa idosa.

O Jogo foi enquadrado na intervenção terapêutica por 2 técnicas do Centro de Desenvolvimento Infantil Diferenças, que visa a prestação de cuidados a crianças de crianças e jovens com Perturbações do Desenvolvimento Intelectual. Para além da realização de Consultas de Neurodesenvolvimento, dinamiza a administração das mais modernas metodologias de avaliação, a formulação de diagnósticos e a execução de Programas de Intervenção específicos para as Perturbações do Neurodesenvolvimento Infantil, a maioria deles com um pendor marcadamente social.

Fez-nos sentido a utilização deste jogo na nossa população, apesar de não serem idosos os primeiros sinais de deterioração cognitiva iniciam muito mais cedo, a partir dos 30 anos já é possível observar declínio cognitivo.

A prática do jogo pretendia a recuperação de diferentes tipos de memórias que fossem sendo despertadas durante o desenvolvimento do jogo por relações:

- Memórias Emocionais.
- Memórias Físicas (Visuais, Táteis, Auditivas, Degustativas, Olfativas ...).
- Memórias Temporais.
- Memórias de relações humanas.

A utilização do jogo em jovens com Perturbações do Desenvolvimento tem sido uma agradável surpresa. Foi aplicado o jogo a 2 utentes 1 vez por semana durante 3 meses.

Uma utente do sexo feminino com 37 anos com uma Perturbação do Desenvolvimento Intelectual, e um utente do sexo masculino com 20 anos com Trissomia 21 e uma Perturbação do Desenvolvimento Intelectual.

Em ambos os grupos foi solicitado aos utentes que escolhessem fotografias suas, de familiares ou outras pessoas, de lugares ou objetos significativos.

É notório que quando o utente descreve a imagem na totalidade faz uma descrição menor do que quando a descreve no jogo(fragmentada), pois toma mais atenção a cada parte da imagem e tenta descreve-la da melhor forma possível, tanto que vão surgindo recordações acerca da mesma e a descrição é muito mais detalhada.

Quando um utente descreve a fotografia normalmente, a informação dita é muito pouca, não mais de 6 palavras tendo em conta a minha amostragem. Quando iniciamos o jogo e é apenas mostrada parte da imagem e pedido para que fale sobre o que está a ver e o que acha que é, o que faz lembrar, se traz alguma recordação, o número de palavras evocadas passa para pelo menos o dobro.

Quando se vão retirando peças vão surgindo novas lembranças, suscitando memórias visuais que simultaneamente, evocaram memórias emocionais, de relações humanas e temporais e vão surgindo assuntos que são falados de forma mais emotiva e pormenorizada, não referidos anteriormente.

A tendência é com a retirada de peças que o aumento de número de palavras também aumente como consequência. Mesmo com pessoas com perturbações do desenvolvimento intelectual tem resultado muito bem, superou as minhas expectativas, e trouxe momentos muito positivos e que vieram agregar às nossas sessões.

Em suma, a experiência com o jogo é muito mais proveitosa, os utentes são capazes de evocar muito mais memórias, até de cheiros se conseguem lembrar, em consulta chegamos a debater alguns assuntos e desconstruir situações importantes que nunca tinham sido faladas nem trabalhadas. É uma mais valia a utilização do jogo não só para ajudar a recordar algumas memórias mas também como alavanca numa sessão com o utente, é muito mais fácil quebrar o gelo e conseguir chegar ao íntimo da pessoa, que por vezes de forma consciente ou inconsciente nos veta a entrada. Esta metodologia é uma boa ferramenta para treinar as funções cognitivas desta população, nomeadamente ao nível da estimulação da memória, especificamente da memória a longo prazo e emocional, e de relações humanas, assim como possibilita o aumento de temas de conversação permitindo ter maior conhecimento sobre a história de vida do utente e

sobre o estado da memória do mesmo. Além da memória foi trabalhada a linguagem e a cognição do utente.

Laura Bastos

Psicóloga – APPT21



## Attachment 9 - Associação Diferenças Report 2

### Relatório

O jogo foi aplicado a crianças entre os 6 e os 12 anos de idade com diagnósticos de Perturbação do Espectro do Autismo (PEA); Perturbação da Linguagem (PL); Perturbação do Desenvolvimento Intelectual (PDI) e Perturbação da Hiperatividade e Déficit de Atenção (PHDA).

No que diz respeito à Intervenção em Neurodesenvolvimento o jogo permite avaliar e trabalhar objetivos em diferentes áreas do Neurodesenvolvimento, tais como a Motricidade Fina; Cognição Verbal e Não-Verbal e Linguagem Compreensiva e Expressiva, entre outros.

No que diz respeito à motricidade fina, o jogo permite serem trabalhadas áreas como a coordenação óculo-manual, destreza manual e manipulação. Quanto à Cognição Verbal e Cognição Não-Verbal, poderemos trabalhar e pôr em evidência as sub-áreas neurodesenvolvimentais de Raciocínio, Estruturação Temporal, Especulação e Argumentação bem como de Atenção Visual, Percepção e Memória Visual. Por último, umas das áreas que podemos trabalhar através da utilização do jogo, é a área da Linguagem Compreensiva e Expressiva - sintaxe, semântica, léxico e elaboração do discurso.

Em todas as diferentes sub-áreas é possível retirar informações sobre capacidades e limitações da criança, de forma lúdica e interativa.

Através da manipulação do jogo e na interação adulto-criança/jovem podem ser exploradas todas estas áreas, dirigindo o mesmo para temas do interesse e motivação da criança/jovem, fatores estes, de extrema na aprendizagem de novos conceitos e aquisição de competências.

Tendo em conta a idade e perfil de neurodesenvolvimento e comportamento de cada criança/jovem, é necessário realizar adaptações à forma como é apresentada a imagem, o tipo de imagem, perguntas diretas ou mais abstratas, bem como o tempo de manipulação do jogo – variando consoante atenção que a criança/jovem apresenta perante a tarefa.

Janeiro de 2020

Mafalda Antunes – Psicóloga Educacional – APPT21/Diferenças – Centro de  
Desenvolvimento Infantil

## Attachment 10 - INPI - National Model Design Patent nº5741

### DESENHO/MODELO NACIONAL Nº 5741

#### JOGO, INCLUINDO JOGOS EDUCATIVOS.

##### Síntese do Processo

Nº do Pedido	2000690076
Data de Apresentação	23-10-2018
Data do Pedido	23-10-2018
Nº de Objectos	1
Fase Actual	REGISTO CONCEDIDO
Data de Início da Fase	25-02-2019
Data de Fim Previsto	23-10-2043
Situação de Taxas	TAXA INCLUÍDA NO PEDIDO
Data de Início da Sit.	30-11-2018
Data de Fim Previsto da Sit.	24-04-2023
Taxas Pagas	1
Taxas Devidas	0
BPI 1ª Publicação	04-12-2018
Data do Despacho	19-02-2019
BPI do Despacho	25-02-2019
Data de Início de Vigência	23-10-2018
Data Limite de Vigência	23-10-2043
Titulares	JOÃO NUNO GAGO BERNARDA
Mandatário	---
Classificação de Locarno	21-01 JOGOS E BRINQUEDOS
Processo em Tribunal	NÃO
Tribunal	---
Data de Envio	---

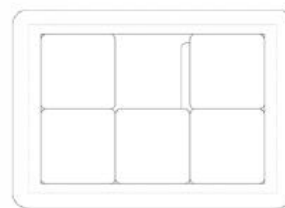
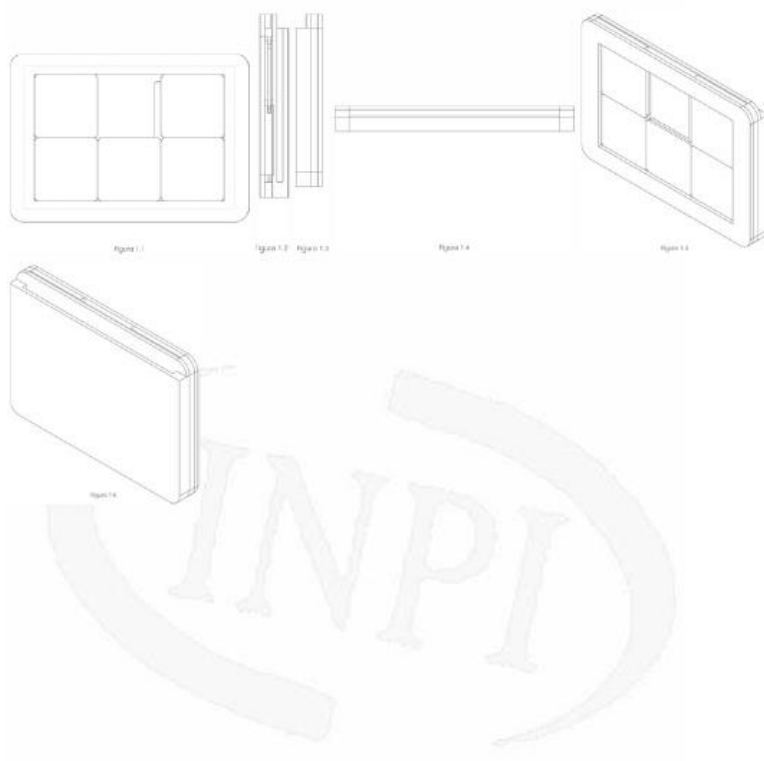


Figura 5.1

**Nota**  
Ver os restantes objectos no separador de figuras.

## Figuras



#### Texto do Resumo

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OBJETO DE VOLUMETRIA PARALELEPIPÉDICA COM RANHURA NO TOPO E ABERTURA NA ZONA FRONTAL E TARDOZ. A ABERTURA FRONTAL É COMPOSTA POR PEÇAS PARALELEPIPÉDICAS DESLIZANTES DE DIMENSÃO INFERIOR. NA ABERTURA TARDOZ É POSSÍVEL O ARMAZENAMENTO DE ALGUMAS DESSAS PEÇAS.



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## Classificação de Locarno

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Edição 9

Classe	Descrição
21-01	JOGOS E BRINQUEDOS



## Fases Jurídicas

Fase	Data de Início	Data de Fim Previsto	Data de Fim Efectiva	Boletim	Entidade
54000000 - PEDIDO-APRESENTADO NO INPI	23-10-2018	—	25-10-2018	---	---
54110000 - PEDIDO-AGUARDA EXAME FORMAL	25-10-2018	—	30-11-2018	---	---
54120000 - PEDIDO-PUB.REGULAR	30-11-2018	04-12-2018	04-12-2018	04-12-2018	---
54140000 - PEDIDO-OPOSIÇÃO POSSÍVEL	04-12-2018	04-02-2019	04-02-2019	---	---
54160000 - ESTUDO-AGUARDA DESPACHO	04-02-2019	—	19-02-2019	---	---
54200000 - CONC. TOTAL-PUB.DE DESPACHO	19-02-2019	25-02-2019	25-02-2019	25-02-2019	---
54305000 - REGISTO CONCEDIDO	25-02-2019	23-10-2043	—	---	---



## Taxas Periódicas

### Situações de Taxas

Situação	Data de Início	Data de Fim Previsto	Data de Fim Efectiva	Boletim
54T00000 - PAGAMENTO N/ APLICÁVEL	23-10-2018	—	30-11-2018	—
54T01000 - TAXA INCLUÍDA NO PEDIDO	30-11-2018	24-04-2023	—	—



Nota: Não existem registos de taxas efectivamente pagas em PT.





## Entidades Intervinentes

Entidade	Nome	Morada	Localidade	Intervenção	Data de Início	Data de Fim
2398890	JOÃO NUNO GAGO BERNARDA	RUA DR. ANTONIO JOSE ALMEIDA Nº8 - 9 C	2780-041 OEIRAS - PORTUGAL	REQ./TITULAR	23-10-2018	—
2398890	JOÃO NUNO GAGO BERNARDA	RUA DR. ANTONIO JOSE ALMEIDA Nº8 - 9 C	2780-041 OEIRAS - PORTUGAL	INVENTOR	23-10-2018	—



## Documentos Relacionados

Número	Data de Entrada	Acto Requerido	Requerente	Acto Executado	Data de Execução	Despacho
2000690076	23-10-2018 às 16:24:02	5499 - PEDIDO DE DESENHO/MODELO NAC.	JOÃO NUNO GAGO BERNARDA	540001 - INCLUSÃO DE PEDIDO PENDENTE	25-10-2018	DEFERIDO
15307	28-11-2018 às 12:28:50	5465 - PED.D/RECTIFICAÇÃO-DES/MOD.NAC	JOÃO NUNO GAGO BERNARDA	540172 - JUNTAR DOC. DEFERIDOS DIVERSOS	28-11-2018	DEFERIDO



#### Boletins Relacionados

Boletim	Motivo de Publicação	Situação do Boletim	Nº do Documento	Texto
04-12-2018	02 - PUBLICAÇÃO DE PEDIDOS	PUBLICADO (BPI JÁ PUBLICADO)	—	---
25-02-2019	10 - DESPACHOS DE CONCESSÃO	PUBLICADO (BPI JÁ PUBLICADO)	—	---



## Prioridades

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Nota: Não existem registos de prioridades.



## Países Designados

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Nota: Não aplicável a esta modalidade.



## Classificação de Viena

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Nota: Não existem registos de classificação de Viena.



## Attachment 11 - Online Survey Design and Collaborative Practices

### Metodologias colaborativas e o Design

Questionário sobre as práticas colaborativas e a intervenção do design.

Email address \*

Valid email address

This form is collecting email addresses. [Change settings](#)

Género \*

☐ Feminino

☐ Masculino

Idade \*

☐ 18-25

☐ 26-40

☐ 41-65

☐ +65

Setor



Considera que o design pode facilitar na construção dos processos de colaboração? \*

- ☐ Sim
- ☐ Não
- ☐ Other...

Porquê?

Short answer text

Considera uma mais valia para a comunidade a continuidade da parceria com o Design? \*

- ☐ Sim
- ☐ Não
- ☐ Other...

Porquê?

Long answer text

## Attachment 12 - Online Survey Design and Social Intervention (Case Study)

Responses cannot be edited

### Metodologias colaborativas entre Design e Intervenção Social

Questionário elaborado no sentido da recolha de informação relativa ao caso de estudo aplicado através de um jogo que visa a Estimulação cognitiva e Linguagem.

\* Required

Área de Intervenção \*

Psicologia Educacional

Especialidade \*

Perturbações do Neurodesenvolvimento

Número de participantes (utentes) \*

5

Qual a receptividade dos utentes na integração da atividade? \*

☐ Nenhuma

☐ Pouco

☐ Muita

☒ Total

Quais as áreas/sub-áreas que conseguiu trabalhar com os utentes através do jogo? \*

Memória; Cognição Verbal/ Cognição Não Verbal; Linguagem compreensiva e expressiva; motricidade fina (coordenação olho-manual)

Com este exercício foi capaz de recolher novos dados relevantes sobre as capacidades dos utentes? \*

☒ Sim

☐ Não

Quais as áreas onde conseguiu obter novos dados do estado do utente? \*

Em todas as mencionadas

Attachment 13 - Evaluation Table

Evaluation Table

Name: \_\_\_\_\_  
Age: \_\_\_\_\_  
Date: \_\_\_\_\_

	-	1	2	3	4	5	+	Comments
Temporal Description								
Physical / Local Description								
Figure A								
Figure B								
Figure C								
Figure D								
Figure E								
Satisfaction								
Gameplay								
Additional Information								

## Attachment 14 - Protocol of ethical principles in research

### Declaração de Consentimento

Eu, Alexandra Gentil, declaro que dou o meu consentimento, de forma positiva, informada e esclarecida, relativamente à autorização de divulgação e publicação dos meus dados pessoais, de acordo com as normas descritas na lei nº58/2019 publicada no Diário da República n.º 151/2019, Série I de 2019-08-08, na Tese de Doutoramento - "Collaborative Design Methodologies and Social Dynamics: a Portuguese Social and Public Health Case Study", de João Nuno Gago Bernarda, pelo IADE/ Universidade Europeia.

Lisboa, 9 de dezembro de 2020

  
(Dra Alexandra Gentil)

## Declaração de Consentimento

Eu, Celso José dos Santos Antão, declaro que dou o meu consentimento, de forma positiva, informada e esclarecida, relativamente à autorização de divulgação e publicação dos meus dados pessoais, de acordo com as normas descritas na lei nº58/2019 publicada no Diário da República n.º 151/2019, Série I de 2019-08-08, na Tese de Doutoramento - "Collaborative Design Methodologies and Social Dynamics: a Portuguese Social and Public Health Case Study", de João Nuno Gago Bernarda, pelo IADE/ Universidade Europeia.

Lisboa, 24 de novembro de 2020

Celso José dos Santos Antão

(Celso José dos Santos Antão)

### **Declaração de Consentimento**

Eu, Laura Rodrigues Pinto de Bastos, declaro que dou o meu consentimento, de forma positiva, informada e esclarecida, relativamente à autorização de divulgação e publicação dos meus dados pessoais, de acordo com as normas descritas na lei nº58/2019 publicada no Diário da República n.º 151/2019, Série I de 2019-08-08, na Tese de Doutoramento - "Collaborative Design Methodologies and Social Dynamics: a Portuguese Social and Public Health Case Study", de João Nuno Gago Bernarda, pelo IADE/ Universidade Europeia.


Lisboa, 24 de novembro de 2020

Laura Rodrigues Pinto de Bastos

### **Declaração de Consentimento**

Eu, António Manuel Simões Nobre Gonçalves, declaro que dou o meu consentimento, de forma positiva, informada e esclarecida, relativamente à autorização de divulgação e publicação dos meus dados pessoais, de acordo com as normas descritas na lei nº58/2019 publicada no Diário da República n.º 151/2019, Série I de 2019-08-08, na Tese de Doutoramento - “Collaborative Design Methodologies and Social Dynamics: a Portuguese Social and Public Health Case Study”, de João Nuno Gago Bernarda, pelo IADE/ Universidade Europeia.

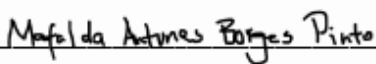
Lisboa, 24 de novembro de 2020

\_\_\_\_\_  
  
\_\_\_\_\_  
(António Manuel Simões Nobre Gonçalves)

## Declaração de Consentimento

Eu, Mafalda Godinho Maia Antunes Borges Pinto, psicóloga a exercer funções na área do Neurodesenvolvimento, declaro que dou o meu consentimento, de forma positiva, informada e esclarecida, relativamente à autorização de divulgação e publicação dos meus dados pessoais, de acordo com as normas descritas na lei nº58/2019 publicada no Diário da República n.º 151/2019, Série I de 2019-08-08, na Tese de Doutoramento - "Collaborative Design Methodologies and Social Dynamics: a Portuguese Social and Public Health Case Study", de João Nuno Gago Bernarda, pelo IADE/ Universidade Europeia.

Lisboa, 24 de novembro de 2020

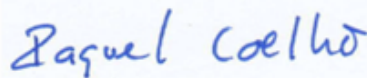
  
Mafalda Antunes Borges Pinto  
Psicóloga  
OPP 12389



### **Declaração de Consentimento**

Eu, Raquel Maria Azevedo de Oliveira Coelho, declaro que dou o meu consentimento, de forma positiva, informada e esclarecida, relativamente à autorização de divulgação e publicação dos meus dados pessoais, de acordo com as normas descritas na lei nº58/2019 publicada no Diário da República n.º 151/2019, Série I de 2019-08-08, na Tese de Doutoramento - “Collaborative Design Methodologies and Social Dynamics: a Portuguese Social and Public Health Case Study”, de João Nuno Gago Bernarda, pelo IADE/ Universidade Europeia.

Lisboa, 8 de dezembro de 2020



\_\_\_\_\_  
(Raquel Maria Azevedo de Oliveira Coelho)

### Declaração de Consentimento

Eu, Joana Rodrigues Amorim, declaro que dou o meu consentimento, de forma positiva, informada e esclarecida, relativamente à autorização de divulgação e publicação dos meus dados pessoais, de acordo com as normas descritas na lei nº58/2019 publicada no Diário da República n.º 151/2019, Série I de 2019-08-08, na Tese de Doutoramento - “Collaborative Design Methodologies and Social Dynamics: a Portuguese Social and Public Health Case Study”, de João Nuno Gago Bernarda, pelo IADE/ Universidade Europeia.

Lisboa, 24 de novembro de 2020

Joana Amorim

(Joana Rodrigues Amorim)

### **Declaração de Consentimento**

Eu, Ana Carina da Rocha Figueiredo, declaro que dou o meu consentimento, de forma positiva, informada e esclarecida, relativamente à autorização de divulgação e publicação dos meus dados pessoais, de acordo com as normas descritas na lei nº58/2019 publicada no Diário da República n.º 151/2019, Série I de 2019-08-08, na Tese de Doutoramento - "Collaborative Design Methodologies and Social Dynamics: a Portuguese Social and Public Health Case Study", de João Nuno Gago Bernarda, pelo IADE/ Universidade Europeia.

Lisboa, 27 de novembro de 2020



(Ana Carina da Rocha Figueiredo)

### Declaração de Consentimento

Eu, Ana Lúcia de Barros Guarita, declaro que dou o meu consentimento, de forma positiva, informada e esclarecida, relativamente à autorização de divulgação e publicação dos meus dados pessoais, de acordo com as normas descritas na lei nº58/2019 publicada no Diário da República n.º 151/2019, Série I de 2019-08-08, na Tese de Doutoramento - "Collaborative Design Methodologies and Social Dynamics: a Portuguese Social and Public Health Case Study", de João Nuno Gago Bernarda, pelo IADE/ Universidade Europeia.

Lisboa, 24 de novembro de 2020



(Ana Lúcia de Barros Guarita)

### Declaração de Consentimento

Eu, Teresa Maria da Silva Vaz, declaro que dou o meu consentimento, de forma *positiva*, informada e esclarecida, relativamente à autorização de divulgação e publicação dos meus dados pessoais, de acordo com as normas descritas na lei nº58/2019 publicada no Diário da República n.º 151/2019, Série I de 2019-08-08, na Tese de Doutoramento - "Collaborative Design Methodologies and Social Dynamics: a Portuguese Social and Public Health Case Study", de João Nuno Gago Bernarda, pelo IADE/ Universidade Europeia.

Lisboa, 24 de novembro de 2020

Teresa Maria da Silva Vaz

(Teresa Maria da Silva Vaz)

## **Attachment 15 - Preliminary Case Studies**

### **a) Preliminary Case Study 1 - L3 Project (Lisbon community-based Learning Laboratory)**

#### General Context

Active collaboration allows for the development of synergies and tools to maintain a diversified, productive and sustainable system. In the framework of an ongoing research project with a case study (L3 Project) and the results of activities, it was possible to retain the following data: increased knowledge through the exchange of skills and improved competencies from a personal, civic and social perspective. The objective was to outline a strategic plan by mapping the network of interactions among all the social agents that fostered the construction and rehabilitation of social cohesion. The methodology is organized into three phases. In the initial phase, an ethnographic research method, literature review and case studies were adopted; in the second, a characterization of the system, strategic actions and the design of a sustainable ecosystem inserted in the urban context. In the third phase, methodologies in the form of surveys and statistics and validated by the local community and social and human sciences experts were used. The purpose was to give continuity to the research project that already had its methodological expression, by including case studies that may or may not corroborate the main conclusions, and improve the data collection tools for a successive iteration process to attain the most reliable results.

#### Spatial characterization and Population characterization

L3 The Lisbon community-based Learning Laboratory was a collaborative project that brought together the academic community and civil society, thus stimulating the transfer of scientific and secular knowledge and promoting new forms of knowledge in the context of contemporary history. The project was conducted within the scope of a consortium of 3 Universities led by Professor Ana Margarida Ribeiro Dias Fernandes Gomes Ferreira, from IADE, Professor Maria Inês Pires Soares da Costa Queiroz, from FSCH-IHC and Professor Carlos Augusto Santos Silva, from IST-IN+. This multidisciplinary team ensures a comprehensive and wide range of actions, with an emphasis on the areas of design, engineering, social sciences and humanities at the level of initial higher

education and post-graduation. This consortium brings together skills in product, interior and communication design areas, sustainable development and urban metabolism, science technology and education policies, as well as the study of contemporary history. It has research centres that combine a strong presence in terms of scientific production, participation in advanced training and promotion of active collaboration in social and cultural activities, including designs for sustainable innovations and social entrepreneurship. The project promoted a collaborative approach and the inclusion of higher education students in vulnerable communities on the BIP/ZIP program, fostering their interaction and forms of mutual learning. According to the Lisbon City Hall Council, the BIP-ZIP Program - Districts and Areas of Priority Intervention in Lisbon- was created in 2011 by the municipality as a municipal public policy instrument, seeking to stimulate partnerships and small-scale initiatives to improve the "habitats" by supporting projects carried out by local associations, communities and non-governmental organizations, thus contributing to a strengthening of social and territorial cohesion in the municipality.

The motive behind this action was to improve life in the neighbourhood, namely by: improving the image of the neighbourhood by the residents and society, beginning with its visual appearance and progressing to overcome social prejudices, promoting a sense of co-responsibility towards the common heritage through recreational and cultural activities; developing leisure activities, fostering cohesion within the neighbourhood. The students were asked to carry out joint projects with each other and with people from different communities to solve real problems affecting the previously identified vulnerable communities in Lisbon (Portugal). In this laboratory, while the city was naturally a valuable pedagogical resource, it also emerged as an educational agent and partner in a collaborative learning process. Students were able to develop competences and self-confidence skills to design and use data acquisition, processing and visualization tools, including emerging communication systems that help mitigate energy, environment and social urban problems. The project placed particular emphasis on creative processes based on scientific knowledge to meet and positively impact real socio-cultural needs.

## Project Development

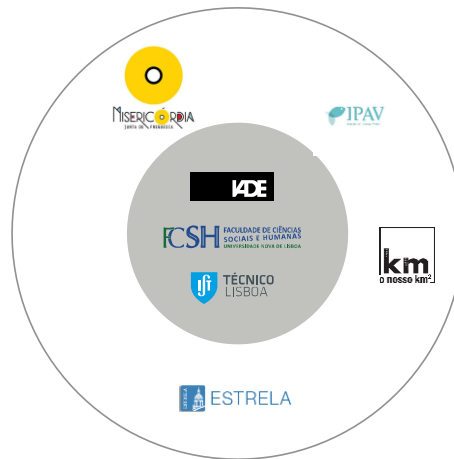


Figure 1 – L3 partnerships

The promotion of the relationship among communities, stakeholders and university students through the application of a collaborative and transdisciplinary learning methodology was one of the objectives of a project created by an association of three Universities, guaranteeing a wide range of interventions in Lisbon (Portugal), with particular emphasis on the areas of engineering, design, social sciences and humanities – the L3 Lisbon Common Learning Laboratory, a project that was financed by the Calouste Gulbenkian Foundation. (Fig. 8)

The case study aimed to define a collaborative model based on a set of solutions to make communities more sustainable and resilient when confronted with socio-economic impacts that affect the basic needs of the human being. By encouraging students to learn in extra-academic environments, they become aware of the society in which they operate, acting responsibly in a context of uncertainty, providing answers to the real problems affecting communities, thus improving and developing their intrinsic cognitive processes and skills (Cross, 2006).

The “city” became an educational partner in this collaborative project. By means of this project, the learning spaces merged with the city itself, which, in turn, assumed the role of an informal agent of education, a source of training and a socialization process.

The main purpose was not only to generate solutions, but for the participants to understand why this happens, as a means to developing their problem-solving skills with local stakeholders



through, for example, the construction of alliances between researchers and planning participants, and through the implementation and dissemination of the research process (McIntyre, 2008). They are a fundamental bridge to facilitate the interaction process and understand the social challenges with precision.

While the project was in progress, historical, sociological and economic data were collected from surveys, while direct observation and literature were acquired during the experimentation phase using cooperative Applied Research methodologies.

Students were asked to carry out collaborative projects with each other and with the communities to understand and respond closely to immediate practical questions (Stoecker, 2005) and real problems.

## Conclusions

In line with the program of the course, the students developed projects that included different areas such as Urban & Interior design, Branding, Contemporary History, Experimental Methods of Energy and Environment, Photography and Events. Each project consisted of complementary stages of reflection on the social problem to be solved, awareness of existing needs, the design strategy, a solution for the purpose, the elaboration of a project, the implementation and further improvement by the inputs and feedbacks (Serrano, 2008). All the projects suggested different types of vulnerabilities that impact internal socio-economic activities. The most relevant negative inputs were: the loss of historical roots, the “mythical” negative image of social housing neighbourhoods, the loss of personal inter-relationships among the residents, the elderly population, the lack of mobility and accessibility, degradation/pollution and, finally, uncontrolled monthly household expenses, such as energy and water. The students were exposed to an intergenerational and intercultural experience, in which they were able to connect and exchange experiences and knowledge with people, constituting a powerful experience of facing and listening to personal feelings.

Their role was to awaken the conscience of individuals and await the promotion of their experience, to expand new forms of behaviour in their closest circles, to generate or restore relationships and proximity bridges by developing tools to keep the system diversified, productive and sustainable. The planning of an organizational system, by distributing industries and

redistributing flows of interactions, increases the intersection of knowledge that supports the structure to build a more sustainable society. Regarding the energy issue, following the intervention the results pointed to the identification of tasks that needed to be integrated in the daily behaviour of residents to control their energy consumption. In most cases, the individuals were completely unaware of the importance of this and its impact on their monthly expenses. The results of this experience and the dissemination of positive results in the neighbourhood gave rise to new internal behaviour patterns of sustainability and the awakening of (social-economic) skills as a result of adversity (Horacio, 65 a.C. - 8 d. C.). For the students, their interaction and contribution to the community in the implementation of their projects was the most relevant part of this experience. Communication with the residents was the most significant obstacle and it was only possible to relate constructively to them with the intervention of the stakeholders (Frascara, 2002).

Following the experience of the case study, it was necessary to collect the stakeholders' feedback on the project, namely on the actions developed as well as their opinions on the supply of future designers.

According to Mafalda Machado, a psychologist at Misericórdia parish council, extra academic learning is more valuable, as it unites knowledge, theoretical concepts and their applicability. It fosters a more concrete and objective knowledge of reality, as well as the definition of priorities according to the needs of the surrounding environment. She also praised the fact that Academies, as primary sources of research and study, should establish partnerships with public entities to add quality and innovation to the daily needs of populations. Projects like L3 and other projects are always worthwhile and must be replicated so that there is continuity between the academic world and society after the knowledge has been acquired to facilitate and open doors to a future job market.

Celso Antão, from the Intervention Unit of the parish council of Estrela, highlights that the academic, professional and personal experiences students bring to the projects can contribute to reflection and evaluation, as well as to reinforcing and updating socio-cultural and community interventions. According to Antão, the project, rather than changing the perspective of this role, gave rise to the (re) discovery of "seeds of belief and hope" concerning the students' potential and the Academic Institutions - Society for Community Development link. A partnership requires not

only the development of projects but essentially the establishment of relationships of trust and making the most of the adjustments and divergences.

The period of collaboration between the students and the various entities and host projects was too short to deepen thematic and community relations. Antão mentioned that the inclusion of community project experiences and themes in the structure and curricular materials is fundamental (e.g., project Debates; Training; Workshops) to build bridges in the areas of Social Responsibility and Ethical / Moral Responsibility, as a means of promoting a technical journey towards professional competence and a thoughtful journey towards attentive citizenship and intervention. Marta Galvão Teles from *O nosso Km2*, a community development project that seeks integrated solutions to respond to complex social problems in the Lisbon area, affirmed the great importance of the project, namely the insight into human relationships that is gained on the ground.

As far as Marta Galvão Teles is concerned, working for the community must take the form of working with the community and the instruments required for this can only be acquired on the ground with individuals' readiness to listen and understand each other. In her opinion, this project should be taken very seriously by the students, as the interaction with the community creates dreams and expectations that should not be frustrated by academic problems or a lack of maturity. According to Marta's experience, there was no realistic involvement of all the working groups and, above all, the question of uncertainty in the realization of some ideas was a shadow of frustration between the students and the community members involved in the project. She also mentioned the schedule as a significant constraint. The academy is managed on the basis of periods, and strict timeframes that need to be complied with, while human relations, which for me are the basis of any kind of work with the community, need time- time to listen, understand and then work together.

As referred to by Stoecker (2005) in his book on the methodologies for community change, an early awakening to a network construction can provide the formula for the construction of more assertive professionals in their projects and communities which will gain effective tools and training for their sustainability.

The main research issue addressed in this project was whether or not it was possible to accelerate the growth of disadvantaged communities by shaping their financial sustainability and social

impact products through design and advertising. The proposed practice-oriented advertising and design approach provided several theoretical and practical contributions. The learning objectives identified in the courses in which it was developed were achieved. Knowledge and skills were acquired in the work developed with the communities despite the difficulty in finding compatible schedules with the students, which bring both social and economic benefits. The potential created by design in the sustainability component serves as a basis for research, thus allowing other researchers to become involved and explore this potential even further.

## b) Preliminary Case Study 2 – Children at Risk

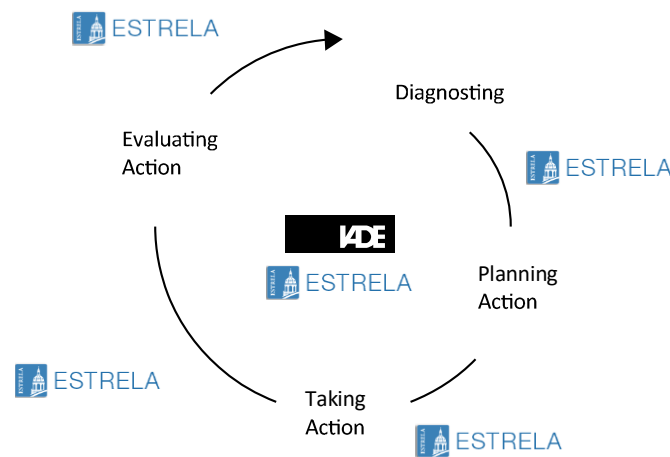


Figure 2 – Development cycle on children at risk project

### General Context

The activity “Far and Close, the Family of Yesterday and the Family of Today”, resulting from the IADE - European University and parish council of Estrela (JFE), a collaboration which took place on December 20, 2017, included The holyday program organized by the JFE with 10 children and adolescents, aged between 6 and 15 years, living in the Ceuta Sul neighbourhood and enrolled in the Study Support Project. (Fig. 9)

This vacation program was part of JFE's intervention in the territory, one of the aims of which is the promotion of the personal, social and academic skills of children and adolescents. (Fig. 10)

In this context, in partnership with IADE - Universidade Europeia, one of the program's activities was developed to stimulate the reflection of young people on their feelings and behaviours, namely on the impact of new technologies on communication and inter-generational relations.

### Project Development

The objective of the project was to promote reflection on the impact of new technologies on the forms of communication and relationships among people.



Figure 3 - Participants at the Workshop in Estrela (Lisbon) (Ceuta Sul Neighbourhood)

To achieve results on the reflection on the impact of new technologies on communication and on relationships among people today, especially on the family circle, images that represent and illustrate everyday scenes from life in different forms of relationships within the family were projected (Fig. 11).

The group of youths was asked to associate the keywords with images representing feelings (choosing words arranged on the floor or others of their own choice) and to explain why; the young people recorded the words chosen by the group for each image. They then debated the choice of words, associating them with the feelings invoked by the projected images.

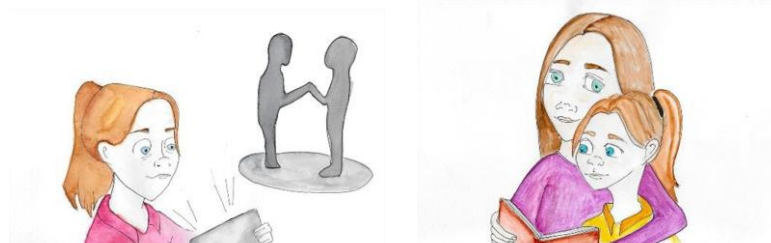


Figure 4 - Illustrations at the Workshop in Estrela (Lisbon)

In the evaluation of the activity, it was observed that overall, the participants were highly motivated and engaged. They expressed the desire to continue and even to display their results in one of the rooms of the space. It was also noted that this was the second activity of the holiday program with the most positive evaluation by the young people involved.

## Conclusions

During the session, the use of images proved to be an effective tool to stimulate reflection and awareness of the proposed theme among the young people. This resource proved to be appealing and motivating to them, and facilitated their identification of feelings associated with situations, and, consequently, their reflection on them. The final debate on the topic by these youths proved to be rich and productive.

The participation of IADE - European University students in the activity itself was also highly motivating for the young people, not only since they were given the possibility to discuss the images presented with their authors, but also due to the opportunity of spending time with older young people, with an academic and life journey seen by them as successful.

### c) Preliminary Case Study 3 - PCM Project



Figure 5 – PCM project partnerships

### General Context

The development of a pilot project highlighted how a multiplicity of actors from different sectors and fields of knowledge can foster the construction of innovative and structured projects. This dynamic and open process results in the construction of knowledge, skills and competences among the participants and, above all, their applicability in the context of social intervention and community-based activities. This reality evidences the need for integrated multidisciplinary social agents, which are an added value for society, in view of the witnessed cooperation between two different but complementary scientific areas, of a design nature, but with different methods and practices, namely Design and Engineering (Fig. 14). The developed prototypes were analysed quantitatively and qualitatively, allowing the researchers to identify some limitations in the assembly of the different tested materials for a solution more geared towards usability/mobility,

considering issues such as budgetary matters, the symbolic nature of the product and its main characteristic related to thermal efficiency (Bernarda, Ferreira, Santos Silva, & Costa Neto, 2019).

## Project Development

The defined intervention approach for the development of a project that would respond to the needs of the most vulnerable and socially excluded groups and communities identified in Lisbon was based on a pragmatic and participatory approach, through the collaboration of different sciences working towards the development of a proposal. In the participatory intervention model, the information compiled relative to the public was provided by social agents who are able to examine, describe and facilitate applicability with a view to changing an individual's situation by creating an alternative that seeks to trigger his/her emancipation from the current psychological or physiological state. The collection of data through practices to identify opportunities also made it possible to obtain a set of data providing updated information on the current state of the situation of these communities, more specifically the isolated elderly and the homeless, which may be distinguished in the two qualitative and quantitative strategies. As already stated, and according to the data obtained by the national media, in November 2018, over 4 thousand people in mainland Portugal and approximately 1500 in the metropolitan region of Lisbon were reported to be homeless (Agência Lusa). According to data from the City Council, an increasing number of elderly people are isolated, which corresponds to around a quarter of the population of Lisbon. This perception led to the creation of recognition programs (Radar Project, 2018), in order to obtain viable figures and factual data on the needs and risks of urban citizens. Both targets (elderly and homeless) reported different data from the context under study, from a narrative and practical perspective. Participatory action is intended to affect a behavioural change that fosters improvement, progress of the state, skills, development and social justice (Manzini, 2019). Participatory action research favours commitment to the cause, making it an actor, an agent of change and facilitator of practices, and it was within this scope that the present case study was developed (Macdonald, 2012).

To understand the reality, it was essential to work with some of the entities that operate in the field and have a direct or indirect relationship with the most disadvantaged members of society. The



main objective was to defend fundamental human rights and ensure that everyone was given the necessary conditions to exercise citizenship and have a dignified life. It is also important to promote an ecosystem that enables the participation of people from different branches of knowledge in the fight against poverty and social exclusion, through networking and by involving the entire civil society. In this regard, it may be said that every day design gets closer to citizens and is more aware of the role it plays in culture, politics and society (European Anti-Poverty Network, 2015).

To establish and stimulate interaction among the institutions, groups and people who work in the field fighting against poverty and social exclusion, and to collaborate in the design of action programs and social policies to encourage the promotion of (a) innovative actions, (b) social integration and (c) the cultural, economic, moral and physical development of people living in situations of poverty and social exclusion, it was crucial to become better acquainted with those that are closer to the users, namely the non-governmental organizations involved in the project. Their foundation is based on improving the quality of life of the population and contributing to their well-being, such as Santa Casa da Misericórdia de Lisboa (a non-profit Portuguese Catholic secular organization), EAPN (European Anti-Poverty Network), ACA (Associação Conversa Amiga), Comunidade Vida e Paz and Legião da Boa Vontade, as well as the administrative departments of the Municipalities, Estrela and Misericórdia parish council and Lisboa Municipal police department, with which it was also possible, despite many restrictions, to establish systematic contacts and share knowledge about each stage of the intervention (Fig. 13).



Figure 6 – Presentation of EAPN (European Anti-Poverty Network) at IADE/UE

The stages of the project may be referred to as problem definition, situation analysis and social diagnosis. Knowledge regarding the target population was collected and organized to trigger the project development and implementation stages. Following a project's implementation, an evaluation of the results is necessary to evaluate changes in the various factors (material, emotional, social, psychological, intellectual and relational) and, finally, to close the action (Robertis, 2011).

In a context in which two target audiences are increasingly a concern, namely the elderly in isolation, with an estimated number of around 30,000, and the homeless, amounting to approximately 350 individuals in Lisbon, the motivation to undertake a pilot project in a partnership between Design (IADE-U/ Universidade Europeia) and Engineering (Instituto Superior Técnico - UL) was extremely high. The intervention of these disciplines in social action aims to trigger the emergence of new practical methodologies focusing on the concept of behaviour change. In the context of this project, these practices left open a reflection on the integrated collaborative and multi-disciplinary processes, paving the way for future collaboration with the social intervention units. This approach contributes to the emergence of a new civilization, based on new ways of acting, being and intervening, accentuating the direction of a modernity fluid through the potentiality of the new adaptation, transformation and rhythmic capacities of the sciences and dynamics of methodological and theoretical transformation, that will ultimately result

in actions or projects that materialize the change in interventions (Bauman, 2000) (Koskinen, Zimmerman, Binder, Redstrom, & Wensveen, 2011).

This project results from the interdisciplinary collaboration between design and engineering, thus ensuring a comprehensive and in-depth intervention proposal for the problem. Based on the in-depth knowledge gathered on the reality of homeless and elderly people in a state of isolation, and on their exposure to the elements, especially in winter, the main objective of the proposal was to develop an optimized prototype that would minimize loss of heat from the human body while sleeping through its ability to minimize thermal disturbances by absorbing them before the human body is affected (Holling, 1973). With regard to homeless people, and taking the “National Strategy for the Integration of Homeless People 2017–2023” (ENIPSSA 2017–2023) as a frame of reference, the case study sought to achieve one of the intervention axes, namely to promote the integration of people, thus fulfilling some of the strategic objectives, among which, the promotion of the technical quality of the intervention and the provision of training solutions (objectives E2.OE1, E2.OE1, E2.OE3, E2.OE 7B in ENIPSSA 2017–2023). Within the afore-mentioned objectives, and by approaching the product development process with a combined and divided methodology between design and engineering practices, it was possible to obtain a series of intervention possibilities that would respond to a factor responsible for accentuating the fragility of the vulnerable state of the human being, namely the cold.

Indeed, after defining a general problem, a network of consequences or sub-problems that surround the main topic can be worked out and resolved. In this particular case, concentration on a shared resolution may even achieve, with favourable results, a greater number of interdependent sub-responses, such as body heat/consumption, and consequently psychical wellbeing and benefits of a neural plasticity nature, thereby supporting brain function and cognition. Sleep deprivation impairs hippocampus-dependent learning and memory and contributes to cognitive disorders and psychiatric illnesses (Haskell, Palca, Walker, Berger, & Heller, 1981) (Kreutzmann, Havekes, & Meerlo, 2015) (Pilcher, Morris, Donnelly, & Feigl, 2015).

## Project - PCM Mattress



Figure 7 – Proposal A – 3D Prototype

The initial idea gave rise to a concept that would result in an individual and portable climate shelter for the homeless so that they would feel less exposed to the weather and the loss of body heat would be minimized. The portability of the product would also allow them to adjust any location to their needs and security (Fig. 16). By transforming and humanizing the way people sleep on the street it is hoped that, through sensorial thermal comfort, they will be convinced to go to community shelters (Heller & Vienne, 2018). Through the collaboration between IADE and IST - Instituto Superior Técnico, the proposal was updated in terms of its design and the composition of the materials and was redefined with the inclusion of Phase Change Material (PCM) (Fig. 15).

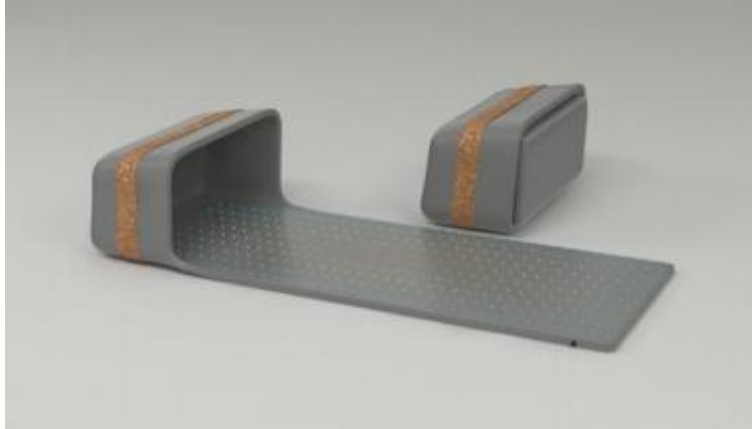


Figure 8 – Proposal B – 3d Rendering

These materials can absorb and release thermal energy during the liquefaction and solidification processes. In the form of microcapsules, they can be incorporated into fibres or foams or can be coated in fabrics. PCM fabrics adapt to the user and maintain the ideal body temperature, keeping the user cool or retaining body heat, improving thermal insulation and more temperature storage during sleep and indirectly contributing to an improvement in users' mental condition and thermal comfort during cold winter nights (Song, 2011).

#### PCM Mattress Prototype

As the project was being developed, it was necessary to perform the PCM test on the mattress (Fig. 16). The prototype was tested, and some pre-conclusions were collected. The test was carried out in a garage in Oeiras (Lisbon) at 9 am on January 11, 2018.

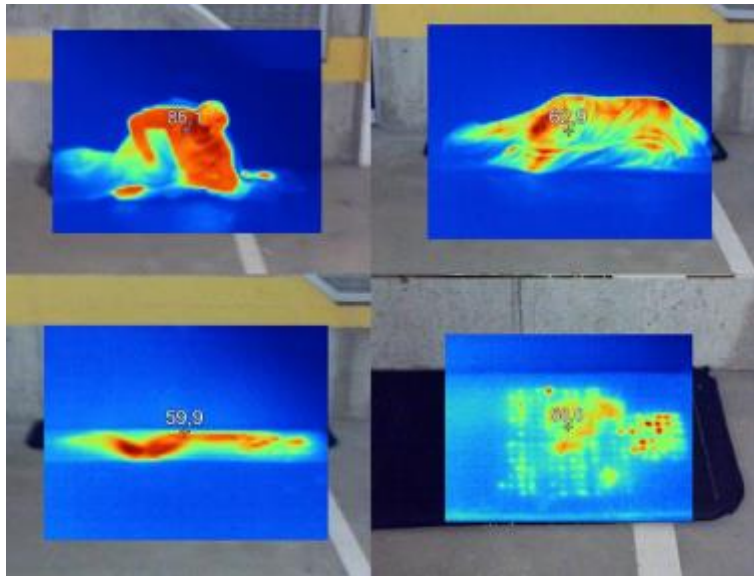


Figure 9 - Proposal 2 Prototype test development

The ambient temperature was 10 °C and after 5 minutes of use, the mattress retained the human body temperature from the time the user left the mattress for 20 minutes, ranging from 35% to 55% of the user's heat ( $\cong 35$  °C) in areas of greater muscle mass (legs) and blood concentration (head). This study confirmed the feasibility of integrating PCM in the mattresses to enhance body heat stability. The making of a functional prototype was taken into account, as well as the potential costs associated with its large-scale production. At the initial phase of production and optimization, through tests and different design proposals by a specialized team in an estimated 2-month period, the estimated value was approximately US\$14,000. On a large scale, considering the production of 1,000 copies, the values would be close to US\$15 per unit.

In order to prove the concept in a more consolidated manner, it is necessary to proceed with more tests and studies on human thermal discomfort during winter, when subjected to temperatures below 15 °C for up to 8 h per day. The expected procedures may be carried out in stages, initially using the recorded homeless population and testimonials to determine the causes of their thermal discomfort; then modelling the distribution of the temperature in the human body followed by experimental validation with thermography and the use of tests with prototypes in climatic chambers simulating the conditions of winter nights.

The approval of these tests and the making of several prototypes combining different types of functional materials (PCM) will also determine the final design. The final evaluation will be

reported after implementation and testimonials through a comparative study of the impact of thermal discomfort on the welfare of the homeless during the various seasons of the year.

## Conclusions

Following the results obtained, the team decided that the most effective way to implement the project would be through partnerships with organizations or companies involved in the social action sector. After establishing contacts, it was possible to schedule meetings with some of them, e.g., the Cruz Vermelha Portuguesa, Santa Casa da Misericórdia and Comunidade Vida e Paz, which showed interest not only in the results but also in the production and development values. This was also the case with the companies in the mattress industry, whose interest was mainly centred around the combination of foam and PCM and the values associated with its production, to the detriment of the humanitarian cause. In all cases, project presentation meetings were held. However, no collaboration was established for the development of a prototype. This raises questions as to: (a) whether organizations in social intervention are open to collaborate with sciences with which they do not have a familiar or common relationship and (b) whether the companies in the industry are open to collaborating with sciences with which they do not have a familiar or common relationship to promote social or humanitarian projects. There is clearly a need for organizations to reinvent new corporate conducts geared towards generating new values by intervening in the most vulnerable communities (Bernarda, Ferreira, Queiroz, & Silva, 2017) (Reznick, 2016) (Bernarda, Ferreira, Santos Silva, & Costa Neto, 2019).

Three preliminary study cases were presented, in which the relevance of the partnership with stakeholders was highlighted as important for a good project referral. The timing was also underlined for the way it influences collaboration with the awakening to a reality that is structured with its objectives and can limit the opening to new alliances and projects.

It is also worth noting the awareness present in the social agents that were available to discuss ideas and solutions, even on a scale of reduced but driving impact.

## Conferences Participation

Design Doctoral Conference 2016, Lisboa, Portugal (June 2016)

Ciência 2016 Meeting, Lisboa, Portugal (July 2016)

GreenFest Meeting 2016, Estoril, Portugal (September 2016)

Design for Next 2017, Rome, Italy (April, 2017)

Design Doctoral Conference 2017, Lisboa , Portugal(June 2017)

Design Doctoral Conference 2018, Lisboa , Portugal (June 2018)

AHFE Conference 2019, Washington, D.C., USA (July 2019)

Design Doctoral Conference 2019, Lisboa , Portugal (June 2019)

D4H Conference 2020, Amsterdam, Netherlands (July 2020)

## Dissemination

Bernarda, J. , Ferreira, A.M. And Niemeyer, L. (2016). *Design and Collaborative Methodologies: Would Them Be Valuable To Empower Resilience Of communities.?* In Duarte, E., Duarte, C.& Rodrigues,F.C. (Eds) DDC'16 conference, IADE. Lisboa, Portugal.

Bernarda, J., Ferreira, A. M., Queiroz, I., Silva, C. (2017). Design As A Process Tool Of Collaborative And Multidisciplinary Learning In Society, The Design Journal, 20:Sup1, S900-S914, Doi: 10.1080/14606925.2017.1353035

Bernarda, J., Ferreira, A. M., Queiroz, I., Silva,C. (2017). *Design as A Pedagogical Tool To Make (In)Visible Realities Visible, To Promote Social Sensibility And Nurture Activism For A More Sustainable Future.* In Edições IADE (Eds). Proceedings of IADE & UNIDCOM. Design Doctoral Conferences. IADE. Lisboa, Portugal.

Bernarda, J., Ferreira, A. M., Queiroz, I., Silva,C. (2018). *Transforming Social Dynamics by Design.* In E, Duarte. (Eds). Proceedings of IADE & UNIDCOM. Design Doctoral Conferences. IADE. Lisboa, Portugal.



Bernarda J., Ferreira A.M., Silva C.S., Neto R.C. (2020). *Collaborative Practices Through Design And Engineering: The Phases Of A Pilot Project To Improve The Human Condition Of Vulnerable Communities*. In: Goossens R., Murata A. (Eds). Advances in Social and Occupational Ergonomics. Ahfe 2019. Advances in Intelligent Systems and Computing, Vol 970. Springer, Cham.

Bernarda, J., Ferreira, A.M. (2020) *Collaborative Practices Through Design and Social Services: The Phases of a Cognitive Stimulation Pilot Project*. Christer, Kirsty, Craig, Claire And Chamberlain, Paul Eds. 2020. Proceedings of the 6th International Conference on Design4health, Amsterdam, Nl, 1-3 July 2020. Sheffield: Sheffield Hallam University.