

Rethinking Design Thinking from a Positive Psychology Perspective

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Student Declaration

I, Janet de Jager, ID Number 8502050172086, declare that this research paper titled ‘Rethinking Design Thinking from a Positive Psychology Perspective’ is my own work and has not been submitted to any tertiary institution before.

Janet de Jager	Date signed

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Research outline

This mini dissertation is presented in article format and includes:

Chapter 1: Introduction to the Research problem and Methodology

The introductory chapter provides an initial literature review, an overview of the research problem, and research methodology and design. The introductory chapter is formatted according to the American Psychological Association (APA) 7th edition referencing style.

Chapter 2: Manuscript

The second chapter presents the design and development of a positive design thinking process as a design artefact (an artificial human-made object), including a literature introduction, problem statement, research method and design, and conceptual development of the artefact. The manuscript is formatted according to the Chicago 6th edition referencing style.

Article Title for Submission

Rethinking Design Thinking from a Positive Psychology Perspective.

Journal for Submission

She Ji: The Journal of Design, Economics, and Innovation.

Chapter 3: Evaluation, Limitations, and Recommendations

This chapter concludes the research for this study with a critical reflection on the research process, declaration of limitations, and recommendations for future research and the promotion of the Masters in Positive Psychology curriculum. The concluding chapter is formatted, according to the APA 7th edition referencing style.

Preface

Positive psychology is part of a larger paradigmatic movement called *a positive way of knowing* that employs rigorous scientific methods to pursue an improved understanding of optimal human functioning. Positive psychology intervention strategies provide cognitive, behavioural, and emotional tools needed to move through life's challenges with a focus on developing strengths rather than fixing weaknesses. The science of positive psychology can move people, organisations, and society to a place of flourishing – bringing out the best in human capabilities. In recent years there has been a growing interest amongst researchers and practitioners to understand better how positive psychology intervention strategies can add value to employee well-being. A positive work environment benefits not only the individual but also drives organisational performance. Employees who are happy at work are more motivated to improve their work performance, which benefits the organisation. Most research on organisational well-being focusses on creating a positive work environment in which employees can thrive. However, there is a gap in organisational research about how positive psychology intervention strategies can enrich the organisations' problem-solving and innovation methodologies. Theorists and practitioners widely recognise design thinking as a problem-solving and innovation methodology inspired by the way designers work. Whether it is used as a mindset, methodology, set of principles, process, or a design science, design thinking is used to increase the emotional and symbolic value of the products, services, systems, and human experiences within organisations. Design thinking in the 21st century provides for a human-centred exploration of the problems and purpose of the present – it is a *way of thinking* rather than a *way of doing*. This article addresses the gap in organisational research on how positive psychology can add value to organisations' problem-solving and innovation. Through the synthesis of positive psychology constructs, models, and theories

with the current design thinking process, this study adopts a design science research methodology to develop a positive design thinking process as a design artefact (an artificial 'human-made' object). For this study, several positive psychology constructs, models, and theories were selected as the *positive lens* and knowledge base for the design of a positive design thinking process. The selection was: creativity, self-efficacy, compassionate love, cognitive perspective taking, positive reframing, open-mindedness, openness to experience, empathy, self-determination, hope, and flow. The results show that the structure and functionality of a positive design thinking process consist of four main components: (a) a core space of thinking, (b) different domains of thinking within the core space, (c) internal processes, and (d) the outcomes of the internal processes. The findings of this study suggest that looking at design thinking through a positive lens shifts the focus from solving problems to developing the psychological strengths of individual design thinkers. If the focus moves to the individual design thinker, the process can result in more relevant, creative, and innovative solutions.

Keywords: Positive Psychology, Design Thinking, Positive Design, Design Science

Research, Employee well-being

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Chapter 1: Introduction to the Research Problem and Methodology

Background to the Study

Positive psychology rests on the premise that despite the most severe difficulties, individuals can adjust well to, and even thrive within life's vicissitudes (Compton & Hoffman, 2019). When individuals focus on using and expressing their strengths, rather than fixating on their weaknesses, they become happier and more satisfied with their lives (Money et al., 2009).

According to Donaldson et al. (2015), positive psychology is a promising future-oriented subarea within the broader discipline of psychology. It is part of a larger paradigmatic movement called *a positive way of knowing* (Avital et al., 2009) that employs rigorous scientific methods to understand well-being in order to help individuals guard against pathologies (Donaldson et al., 2015).

In modern-day practice and research, positive psychology concerns itself with psychosocial theories and intervention strategies that provide a deeper understanding of the positive, adaptive, creative, and emotionally fulfilling elements of human behaviour. These elements include the biological, personal, relational, institutional, cultural, and global dimensions of human life (Compton & Hoffman, 2019).

Positive psychology provides individuals with the cognitive, behavioural, and emotional tools they need to move through life's challenges, with a focus on developing their strengths rather than fixing their weaknesses. The science of positive psychology can move people, organisations, and society to a place of optimal functioning by bringing out the best in human capabilities.

Positive Psychology Promotes Growth and Performance in Organisations

Researchers and practitioners have shown considerable interest in understanding the impact of positive psychology interventions in organisations in recent years (Money et al., 2009). Employees who experience positive mental health at work perform better, have better social relationships, and better physical health (Davenport et al., 2016). At the same time, a positive work environment can contribute to an employee's well-being across other domains of life (Money et al., 2009).

The field of positive psychology studies the factors that drive and motivate employees to flourish and achieve their full work potential (Davenport et al., 2016). Promoting positive mental health at work can provide considerable benefits to organisations. It is, therefore, sensible for organisations to invest in initiatives that promote employee well-being because work well-being directly affects organisational performance (Money et al., 2009).

The literature thus far shows us that the positive institution pillar in organisations supports positive employee behaviour (Money et al., 2009).. However, there is still a gap in organisational research to explore how positive psychology can add value to stakeholder relationships, marketing initiatives, operational efficiency, supply chain management, investor relations, governance, corporate responsibility, sustainability, and reputation (Money et al., 2009). This gap includes the need to investigate how positive psychology constructs, models, and theories can enrich the problem-solving and innovation methodologies used in organisations that promote both individual well-being and organisational performance.

Design Thinking promotes Performance and Innovation in Organisations

In the 21st century the design thinking methodology is applied across and within organisations to enhance the emotional and symbolic value of their products, services, systems, and human experiences. As a process, design thinking provides organisations with the tools to solve problems and address innovation from a human-centred perspective (Carlgren et al., 2016). Design thinking in organisations is applied as a way of thinking rather than a way of doing that is inspired by how designers work. The design thinking methodology incorporates theories from different disciplines, including design, psychology, education, and cognitive science (Dorst, 2011; Buchanan, 2019). The integrated stream of knowledge from this variety of disciplines provides a rich, varied understanding of the complexities of human reality (Dorst, 2011).

The design thinking process combines divergent and convergent thinking (Brenner et al., 2016) and consists of a sequence of interactions, or steps, that the design thinker performs to realise the design intent (Sun & Liu, 2008). Even though the design thinking process is applied differently across and within organisations, the process is most commonly operationalised through these actions: define the problem, find the need, synthesise, ideate, prototype, and test (Brenner et al., 2016; Grots & Creuznacher, 2016).

Design thinkers move between three key thinking spaces (Brown & Wyatt, 2010): inspiration, ideation, and implementation. Within these three spaces, the design thinking process attempts to answer these questions: *what is*, *what if*, *what wows*, *what works* (Liedtka, 2014).

What is examines current reality, whereas *what if* uses the learning from the current reality to imagine possible and better future outcomes. *What wows* guides

decisions and manages the direction of the design focus, and *what works* takes the design focus into real-world interaction with actual users through small experiments (Liedtka, 2014).

During the past decade, design thinking theorists, writers, and practitioners have expressed the need to re-conceptualise design thinking and move away from being problem-focused to being promise-focused. Ruitenbergh and Desmet (2012) theorised this shift in focus as *well-being driven* design. Well-being driven design supports the principles of design as the good, the just, the useful, and the satisfying in human experiences (Buchanan, 2019).

In response to the need to rethink design thinking from a well-being perspective, concepts such as *designers' flow* (Safin et al., 2016), *positive design*, and *design for subjective well-being* (Desmet, 2018) have emerged. These emerging trends show a positive change in perspective on what is, what if, what wows, and what works within organisations.

Problem Statement

As mentioned in the previous section, the design thinking process most commonly used in organisations includes these actions: define the problem, find the need, synthesise, ideate, prototype, and test (Brenner et al., 2016; Grots & Creuznacher, 2016). These actions can also be categorised as different modes of thinking, namely, an empathise-mode (deeply observing and understanding), the define mode, the ideate mode, the prototype mode, and the validation mode (Rauth et al., 2010). These modes of thinking enable design thinkers to explore problems more widely and deeply and take focused action (“What is the Framework for Innovation,” 2015).

By synthesising positive psychology constructs, models, and theories with the design thinking process this study investigated the design and development of a *positive design thinking process* to address the gap in positive psychology organisational research on problem-solving and innovation as mentioned in the previous section. Re-conceptualising the design thinking process through a positive lens might increase organisations' capacity to design more satisfying and morally robust solutions and innovations by drawing from the best of human capabilities.

For this mini-dissertation, the most commonly used design thinking process, that is the process categorised as several modes of thinking, was used as the baseline of a positive design thinking process.

Literature Review

The first part of the literature review presents the positive psychology constructs, models, and theories that were used to inform the design of a positive design thinking process. The first part of the review frames the positive psychology lens. The second part of the review discusses design thinking's inherent complexities as a way of thinking, reasoning, and meaning-making within a design and management discourse.

Constructs, Models, and Theories: A Positive Psychology Lens

This study investigated how a positive lens of creativity, self-efficacy, compassionate love, cognitive perspective taking, positive reframing, open-mindedness, openness to experience, and empathy can provide a knowledge base for the design of a positive design thinking process. The investigation also included a synthesis of the self-determination theory, hope theory, and flow theory with the current design thinking process. The section that follows briefly introduces each of the positive psychology constructs, models, and theories used in this study.

Creativity

According to Huang and Luthans (2015), individuals rely on their positive psychological strengths to generate creativity. From this perspective, to enhance creative experiences and creative output, emphasis should be on the psychological well-being of the creative thinker and not their creative skills.

Engaging in creative activities increases feelings of pleasure, autonomy, and intrinsic motivation (Oriol et al., 2016). Creative people enjoy what they are doing for the sake of doing it. The process of discovery is the reward in itself. Creativity can enhance the experiences of self-acceptance, personal growth, meaning in life, environmental mastery, and positive relationships (Tamannaefar & Motaghedifard, 2014). Subjective well-being and positive self-assessment are also positively associated with higher levels of creativity, modesty, appreciation of beauty, judgment, and love of learning (Charyton et al., 2009).

Social adaptation plays an essential role in creativity (To et al., 2012) as it can facilitate *connecting the dots* and *thinking outside the box*, which are both essential aspects of creative experiences. To et al. (2012) refer to a within-person relationship between creativity, intrapersonal strengths, and interpersonal support.

According to Ashton-James and Chartrand (2009), social interaction can enhance creativity, which requires convergent thinking. However, according to the authors, this social interaction does not benefit innovation, which requires divergent thinking. Creativity seems to be facilitated by social interaction and the effects of mimicry, whereas novel ideas are stimulated by a social disconnect (Ashton-James & Chartrand, 2009).

In a study conducted by Tamannaefar and Motaghedifard (2014), a significant relationship was found to exist between self-efficacy, subjective well-being, and creativity. The research findings indicated that an individual's subjective well-being could be increased by strengthening self-efficacy and optimising creativity.

Optimism is also a key predictor of creativity because it both directs and mediates positive and negative affects (Rego et al., 2012). Optimistic people are creative because of their positive explanatory style and because they tend to believe that they can overcome obstacles in their current situations to achieve their goals.

Huang and Luthans (2015) used the term *creative agency*, which they defined as the capacity to act effectively and regulate oneself in complex situations to support successful problem-solving. Creative self-efficacy naturally leads to a greater creative agency, resulting in more creative output, which, in turn, strengthens creative agency, leading to yet more creative self-efficacy (Royalty et al., 2012).

A positive lens on creativity, which is considered one of the key attributes of design thinking, can help design thinkers approach creative experiences, creative agency, and creative outputs in a way that fosters and promotes psychological strengths. An intrinsically motivated design thinker can experience self-fulfilment in the creative process itself, resulting in improved creative performance. Understanding the social aspects that affect creativity and innovation adds valuable insights for a positive design thinking process.

Self-Efficacy

Self-efficacy has a widely acclaimed theoretical foundation and an extensive knowledge base due to the seminal work of Albert Bandura (as cited in Lunenburg, 2011). According to Albert Bandura, self-efficacy as a core belief in one's own abilities,

is the foundation of human motivation, performance, accomplishment, and emotional well-being (Bandura & Adams, 1977).

Self-efficacy is concerned with the belief that we can influence the events that affect our lives. The factors that serve as self-motivators are rooted in the confidence we have that our actions can make a difference (Bandura, 2010). Unless people believe that their actions can produce the desired effect, they have little incentive to continue with an activity or to persevere when faced with difficulties. Lunenburg (2011) identifies the four sources of self-efficacy as past performance, vicarious experience, verbal persuasion, and emotional cues.

In more recent literature, self-efficacy is reported as one of the most powerful predictors of creative-efficacy (Kim et al., 2019). Self-efficacy facilitates the initial decision to engage in the effortful and persistent pursuit of creativity, which requires cognitive, emotional, and behavioural efforts. Understanding self-efficacy along with reflective self-efficacy (the perception of how others assess our ability to perform a task) provides a more refined explanation of the efficacy-creativity relationship as opposed to only considering self-assessed self-efficacy (Kim et al., 2019).

From the above perspective, self-efficacy is an essential contributor to a positive design thinking process. Unless the design thinker believes that their perseverance will have fruitful outcomes, they will be less motivated to take on the challenging task of problem solving and innovation, resulting in weaker performance and ineffective results. Investigating the relationship between self-assessed self-efficacy, reflective self-efficacy, and creativity provided promising insights into the design and development of a positive design thinking process.

Compassionate Love

Compassionate love is a type of love experienced for a variety of others, including all of humankind (Sprecher & Fehr, 2005). Chiesi et al. (2020), defined compassionate love as an awareness and understanding of others' suffering; connecting with their distress and being emotionally and cognitively moved to relieve their suffering. Social scientists interested in compassionate love theories have argued that this love promotes the greatest of social good (Sprecher & Fehr, 2005).

Compassionate love overlaps with empathy and altruism. However, compassionate love is distinct from these constructs as it includes thoughts (noticing and becoming aware), emotions (feeling and resonating), and behaviours (responding and wishing to act) (Chiesi et al., 2020).

In contrast to compassionate love, empathy is directed towards a specific other and does not necessarily involve a behavioural activation. Compassionate love differs from empathy, as it is both more encompassing and more enduring (Fehr & Sprecher, 2008). Compassionate love is also different from altruism, which has a broader range of internal motivations than compassionate love's core motivation to alleviate the suffering of others (Chiesi et al., 2020).

In a study conducted by Fehr and Sprecher (2008), where they developed the Compassionate Love Scale, the researchers found that the experience of having compassionate love for others ultimately increases an individual's well-being. The researchers also found that compassionate love is likely to lead to prosocial behaviour. Based on their research, Fehr and Sprecher (2008) developed the following working definition of compassionate love: compassionate love is an attitude towards others extending to all of humanity; compassionate love contains feelings, cognitions, and

behaviours that are oriented towards the concern for others, including supporting and helping to alleviate suffering.

From the above citations, compassionate love is activated by a deep care for . However, compassionate love stretches beyond caring and resonating with others' suffering. It includes taking action and solving problems. A positive perspective on design thinking benefits from the behavioural aspects of compassionate love theories by encouraging design thinkers to deeply observe, understand, and take positive actions in the empathy mode.

Perspective-Taking, Reframing, Open-Mindedness, and Openness to Experiences

Cognitive perspective-taking involves drawing inferences about other people's beliefs, intentions, and thoughts (Singer & Klimecki, 2014) and makes it possible to understand differing views. Perspective-taking allows people to view and treat others in a way that is more like they would treat themselves, which increases compassionate emotions (Hodges et al., 2011).

Positive reframing is defined as the ability to view a situation in a positive light, as opposed to the traditionally negative view (Lambert et al., 2009). Individuals with higher dispositional gratitude are more likely to apply positive reframing, which truly helps them to live more manageable, meaningful, and comprehensible lives (Lambert et al., 2009).

Open-minded cognition is an essential component of intellectual humility. It is marked by a willingness to consider a variety of intellectual perspectives, values, attitudes, opinions, and beliefs, even when it is contradictory to the self (Wilson et al., 2017). According to Baehrr (2011), open-mindedness is widely recognised as an intellectual virtue and strongly relates to other intellectual virtues such as fairness,

impartiality, and honesty, as well as specific cognitive abilities such as comprehension, conception, and imagination.

Openness to experience stretches our usual way of thinking about ourselves and the world expanding our propensity for deep emotional experience (Silvia et al., 2015). It relates to experiences of awe and is considered an essentially aesthetic trait. People who have high levels of openness to experience are more likely to present awe-related emotions and capture these emotions using words such as amazement, elevation, fascination, and wonder (Silvia et al., 2015).

Design thinkers who are open to other's perspective, intellectually humble, are able to reframe negative experiences, and stretch their usual way of thinking might solve problems and innovate in ways that resonate with the real, lived-out experiences of others. A positive design thinking process encourages these different *frames of mind* in order to result in more positive outcomes.

Empathy

Empathy is the capacity to resonate and share the positive and negative feelings of others. When someone is empathetic, they feel happy when they share others' joys and sad when they share in their experiences of suffering (Singer & Klimecki, 2014).

Empathy has enjoyed more research in the economics and business sector than in areas of psychology and philosophy, where the term empathy was originally conceptualised (Köppen & Meinel, 2015). Nevertheless, even though empathy is considered as one of the most basic and desirable principles in organisations, it has its pitfalls. For example, it is important not to confuse oneself with the other person's suffering (Köppen & Meinel, 2015). If this separation is not present, it is called *emotional contagion*, which may lead to empathetic distress; a strong aversive and self-oriented response to others' suffering (Singer & Klimecki, 2014).

Empathetic concern is a necessary mindset in the design thinking process.

However, a positive perspective on empathy revealed that empathetic concern in itself is not enough to initiate positive action, effective problem solving, or innovation. Being mindful of empathy's positive and negative aspects is a fundamental principle in a positive design thinking process.

Self-Determination Theory

Self-determination theory is an empirically based macro-theory of human motivation. The theory consists of three basic assumptions (Deci & Ryan, 2000): (a) people are growth-oriented and motivated by personal interest, (b) people move towards higher levels of psychological growth when they engage in activities that interest them, (c) the social context that surrounds these activities can either support or inhibit growth.

Self-determination theory considers different types of motivation, focusing on autonomous motivation, controlled motivation, and amotivation (lack of motivation) as predictors of well-being outcomes (Deci & Ryan, 2008). The theory also addresses the social conditions that can either enhance or decrease the different types of motivations.

Self-determination theory examines the differential relationship between intrinsic versus extrinsic goals and well-being (Deci & Ryan, 2008). According to Koestner and Hope (2014), motivation driven by personal interest and meaning is superior to motivation driven by external rewards and pressure. The interest and value people assign to their goals, and the nature of their aspirations predict how likely they are to satisfy their psychological needs when achieving their goals (Koestner & Hope, 2014).

Hope Theory

Hope theory considers our emotional reactions and experiences associated with goal pursuit (Lopez et al., 2018). Hopeful thoughts reflect our belief that we have the

willpower (agency) and way power (pathways) to achieve our goals (Snyder et al., 2002).

Both the hope theory (Snyder et al., 2002) and the definition of hope by Lopez et al. (2018), emphasise the emotional and cognitive aspects associated with goal-directed behaviour. According to the theory, hope overlaps with other constructs such as optimism, self-efficacy, and self-esteem (Lopez et al., 2018). Hope theory suggests that by combining agency and pathway thinking, one can generate hopeful thoughts and reach one's goals. The theory consists of three components: goals (what one wants to achieve), pathways (the route one takes to reach one's goals), and agency (what one believes one can achieve) (Lopez et al., 2018). The feedback loop is an essential aspect of the hope theory. In the feedback loop, positive emotions will positively enforce goal pursuit, whereas negative emotions will curtail the process (Lopez et al., 2018).

Understanding the various overlapping constructs of hope were important to the effective design of a positive design thinking process. The goals, pathways, agency, and feedback loop within a positive design thinking process either support or discourage the positive effects of the process for the individual design thinker as well as the intended audience.

Flow Theory

Flow theory contributes to the understanding of optimal human functioning. The enjoyment of intrinsically motivated activities will lead to moments of flow, and in return, flow is the reward of our intrinsic motivations (Csikszentmihalyi et al., 2014). Being *in flow* means experiencing a sacred moment of mastery, control, and autonomy. The flow theory describes how an individual's attention is structured, and the ingredients required to be fully immersed in the moment (Csikszentmihalyi et al., 2014).

The main characteristics of the flow state include the merging of action and awareness, having a sense of control, and experiencing an altered sense of time (Csikszentmihalyi et al., 2014). When people are in a state of flow, their brains produce a significant increase in norepinephrine, dopamine, anandamide, serotonin, and endorphins (Kotler, 2015). These chemicals enhance their performance, making them perform stronger and quicker. When in flow, people are functioning at their full biological capacity.

To enter a state of flow, a person has to have a clear set of goals (Csikszentmihalyi et al., 2014). Goals provide for intense focus by channelling an individual's attention. Another condition of experiencing flow is the balance between perceived challenge and skills. When the perceived challenge exceeds a person's skills, they become anxious; when their skills exceed the perceived challenge, they become bored (Csikszentmihalyi et al., 2014).

Understanding the balance between skills and challenge were important considerations for a positive design thinking process. Questions about how to strike an effective balance between being submerged and motivated, or isolated, disconnected, and bored were considered in the development of a positive design thinking process.

Design Thinking from Different Perspectives

Despite the recent increase in design thinking popularity, there is no agreed definition of design thinking in academic and practical terms. It is still unclear whether design thinking provides a new way to design or a way to organise a non-design activity. Brown and Katz (2011) asserted that the rising interest in design thinking relates to a culture shift where the best designers and thinkers apply their skills collaboratively to address problems that matter to society.

According to Reimann and Schilke (2011), design thinking is a creative, individual process influenced by social-level factors. Approaching complex human-centred problems from a design thinking perspective provides an opportunity for socially engaged design. This section discusses the roots of design thinking in creative thinking theories; design thinking as a way of thinking, reasoning, and meaning-making; and the development of design thinking from a design to a management discourse.

Creative Thinking Theories and Design Thinking

Herbert A. Simon first mentioned design as a way of thinking rather than doing in his book 'The Science of the Artificial' Simon (1968 as cited by Von Thienen et al., 2017). Simon's subsequent research in the 1970s shaped the foundational principles of what became known as design thinking. However, the roots of design thinking can be traced back to the creative thinking theories of John. E. Arnold in the 1940s (Von Thienen et al., 2017).

Arnold's creative thinking theories were driven by his beliefs that happiness requires creativity; that creativity is an attribute of healthy human living; and that the creative process is a way for people to realise their individual potential. Arnold saw the creative thinker as someone who frames problems in a way that aids creative solutions, who has a spirit of inquiry, and a drive to improve the things that matter (Von Thienen et al., 2017).

Design Thinking as Reasoning and Meaning-Making

The thinking side of design, as an everyday human activity, is a keen interest for modern-day researchers. According to Reimann and Schilke (2011), thinking in a design way increases positive affect and cognition, which results from heightened attention, memory, acquisition, and learning.

Liedtka (2015) defined design thinking as a creative, subjective, and emotional alternative to analytical logic, which requires a combination of analytical and creative reasoning. Lissack (2019) conceptualised design thinking as a cognitive process of inter- and intrapersonal meaning-making. Design thinking, as a meaning-making process, relates to the notion of agency and choice, how we think about things, and cognitively constructs what we need to feel good about in our lives.

From Lissack's (2019) perspective, individuals construct and evaluate their needs through everyday design thinking. When they approach their lives as design thinkers, they become more self-aware of their choices, which leads to better coping with life's challenges and higher life satisfaction.

Designerly Thinking and Design Thinking

Even though design thinking is primarily understood from a thinking perspective, the discourse has not yet been separated from the design profession. Design thinking should be viewed in terms of two distinct discourses: designerly thinking (design) and design thinking (management) (Johansson-Sköldberg et al., 2013). This pluralistic perspective should be considered by any academic researchers seeking to make a valuable contribution to the knowledge spectrum.

Designerly Thinking as a Design Discourse. Designerly thinking relates to a professional designer's skills and competence and is rooted in the academic field of design. The designerly way of thinking has been discussed in research for over 40 years, while design thinking has only developed over the last decade and relates only slightly to the design discourse (Johansson-Sköldberg et al., 2013). The theoretical perspectives on design and designerly thinking can be categorised into five sub-discourses: (a) the creation of an artefact, (b) a reflective practice, (c) a problem-solving activity, (d) a way

of reasoning and making sense of things, and (e) the creation of meaning (Johansson-Sköldberg et al., 2013).

Designers are taught to move naturally through three spaces of creation, namely, inspiration, ideation, and implementation (Brown & Katz, 2011). The thinking about these spaces was formalised into a process that moved beyond the sphere of design professionals and became known in organisations, becoming a strategic decision-making approach.

When designers become part of an interdisciplinary team, they develop more attractive ideas and solutions that are more relevant to complex human-centred problems (Brown & Katz, 2011). Similarly, design thinking draws design out of the creative studio into the boardroom to make use of its disruptive potential.

Design Thinking as a Management Discourse. Design thinking as a management discourse is an alternative approach to problem forming and problem-solving that integrates creative human, business, and technical factors (Reimann & Schilke, 2011). Design thinking is an ongoing cycle of generating ideas (abduction), predicting consequences (deduction), and testing and generalising (induction) (Johansson-Sköldberg et al., 2013). Liedtka (2015) frames this cycle as a generic process which moves from insight into the problem, to the formulation of concepts, prototyping, testing, and selecting the optimal solutions.

The design thinking process is used in different ways, both across and within organisations (Lindberg et al., 2011). A qualitative inquiry conducted by Carlgren et al. (2016), into the use of design thinking in five large organisations found that the design thinking process was not being practised consistently with the process described by theorists. Based on the research findings of the study, five core themes were identified: user focus, problem framing, visualisation, experimentation, and diversity. Each of these

themes consists of a set of principles, mindsets, practices, and techniques, which are sometimes manifested in a process, and sometimes not (Carlgren et al., 2016).

Research Aims and Objectives

This study aimed to investigate how positive psychology constructs, models, and theories can enhance the design thinking process. This study synthesised the design thinking process with positive psychology constructs, models, and theories to present a *positive design thinking process* as a design artefact (an artificial 'human-made' object). It also reflected on the form and function of the artefact through design theorising.

Method

This research study adopted a pragmatic research philosophy that applied both inductive and deductive reasoning. This philosophy was operationalised through the design science research methodology. Design science research enabled the researcher to design and develop a positive design thinking process as an artefact to meet the aim of the study.

Design science research is an important methodology for applicable yet rigorous research (Peppers et al., 2006). Since the introduction of design science research in the early 90s in the research and design of information systems, design science has become widely recognised as a research methodology that focusses on the pragmatic creation and investigation of the artificial (Gregor & Hevner, 2013).

Design science research is pragmatic because of its strong emphasis on relevance (Hevner, 2007). The research process involves identifying problems and designing theory-based solutions that are relevant to the specific environment. Design science research also provides a useful channel for collaboration between industry and academia.

However, design science research is not only defined and evaluated by its practicality. According to Hevner et al. (2019), sound design science research is a synergy between scientific rigour and practical relevance.

By synthesising scientific rigour and practical relevance, design science research aims to extend our human capabilities through the design of new and innovative artefacts (Hevner et al., 2019). These artefacts can be presented as constructs, models, methods, and instantiations (Van der Merwe et al., 2020). To achieve the aim of the study, a positive design thinking process was theorised through scientific rigour and practically constructed to present the integration of design thinking and specific positive psychology constructs, models, and theories.

Research Design

The proposed research study followed the design science research process as defined by Peffers et al. (2006) and incorporated Hevner's (2007) three cycles of design science, both of which differentiates design science from other research methodologies.

The Design Science Research Process of Peffers et al. (2006)

According to Peffers et al. (2018), the design science research process, with its focus on artefact development, facilitates the design of practical and useful artefacts. The process allows for creative, innovative exploration of possibilities and improvements without the need to provide proof that they are the optimal solution.

The design science research process (Peffer et al., 2006) includes these six steps: identification and motivation, objectives for solution, design and development, demonstration, evaluation, and communication. As the objective of the study was to design and develop a positive design thinking process, the study moved between the first three steps. Step 1 was to identify and motivate the need for a positive design thinking process with a literature review. Step 2 was to identify the specific principles and

objective of a positive design thinking process from a positive psychology perspective, as presented in the literature review. Step 3, all about design and development, was to practically construct the positive design thinking artefact by synthesising existing design thinking and positive psychology theories, models, and constructs. The study concludes with suggestions for further research on and the practical demonstration, evaluation, and communication of the designed positive design thinking process.

Hevner (2007) Three Cycles of Design Science Activities

Hevner (2007) presented three closely related design science cycles of activities: relevance cycle, rigour cycle, and central design cycle. These three cycles support the claim that design science research is pragmatic.

The relevance, rigour, and design cycles require that the knowledge base contribution is relevant and useful to both practitioners and the academic audience (Hevner, 2007), which supports the aim of this study.

Content Analysis

In design science research, designing the artefact requires a strong knowledge base. The knowledge base provides the researcher with the information needed to complete the design and development process. This study used content analysis to identify and analyse information sources to build a knowledge base for the artefact's design and development.

Content analysis is a powerful data reduction technique that combines elements of document analysis and thematic analysis (Bowen, 2009). Document analysis is the skimming, reading through, and interpretation of a source, while thematic analysis is a more careful, focused re-reading and reviewing of sources.

In both document analysis and thematic analysis, the researcher codes and structures selected information into several categories based on related characteristics,

to uncover themes that are pertinent to the research objectives (Bowen, 2009). As with document analysis and thematic analysis, content analysis is an analytical procedure to find, select, appraise, and synthesise data from different sources of information.

It is essential that the researchers not treat the variety of sources as precise, accurate, or complete truth (Bowen, 2009). Instead of merely lifting words and passages from the sources, the researcher should first determine the relevance of the information to the research problem and the specific objective of the study by asking whether or not the content fits the study's conceptual framework.

Content analysis aims to evaluate information in a way that empirical knowledge is produced. This evaluation enables the researcher to have a deeper understanding of the research topic and meet the objective of the study. With content analysis, the researchers should always strive to maintain a balance between objectivity and sensitivity (Bowen, 2009).

In the study, content analysis enabled the researcher to systematically and objectively identify specific characteristics and themes from both positive psychology and design thinking information sources. These characteristics and themes became the knowledge base to conceptualise, design, and develop the positive design thinking process.

The researcher conducted a structured review of the identified information sources to determine the codes and categories relating to the research objective. The codes and categories, along with the findings, are discussed in the study's design and development section.

Information Sampling

In design science research, scientific theory and various data sources are integrated to allow for more creativity and richer opportunities (Hevner, 2007). For this mini-dissertation, a selection of academic and non-academic articles was sourced based on their credibility, accuracy, original purpose, target audience, context, and representativeness in relation to the framework of the study (Bowen, 2009).

Because the content was human-coded within a short time frame, the total number of information sources was limited to 30. The focus of this mini-dissertation was not on analysing and interpreting content, but on designing and developing a new artefact – the main aim of the study. The content analysis was used as the knowledge base for the positive design thinking process.

Content was coded along the design science research dimensions and research objective. From the content analysis, a concept matrix was constructed. The matrix helped the researcher form a concept-centric position, which fostered an understanding of the research beyond descriptive content summarisation. The matrix helped with the overall distribution of characteristics within the theoretical dimensions defined in the content criteria and paved the way for further design and development.

Information Sources

The content analysis search process provided the grounding rationale for the artefact. This study sought to go beyond the prior analysis of positive psychology constructs, models, and theories to investigate new synergies between positive psychology and design thinking. The researcher focussed attention on relevant academic journals and online magazine publications (see Table 1) to identify which articles should be included in the content analysis. These journals and magazines were shortlisted based on their mission statements and predominance of publications related to the proposed study.

Table 1

Information sources for the proposed study

Journals (academic)	International Magazines (non-academic)
Journal of Positive Psychology	Harvard Business Review
Journal of Happiness Studies	Forbes Magazine
Applied Psychology: Health and Wellbeing	WIRED
Journal of Personality and Social Psychology	Fast Company
Journal of Personality and Individual Differences	
Journal of Social and Personal Relationships	
Journal of Social and Humanistic Psychology	
Design Management review	
Design Issues	
Journal for Design, Innovation and Economics	
Creativity and Innovation Management	
International Journal of Art & Design Education	

Selection Criteria

All articles were filtered in two steps. First, articles were selected by title, keywords, and abstract. In the second step, remaining articles were reviewed for their suitability according to predefined criteria (see Table 2). Articles that appeared to have good potential to anchor the research in the positive psychology and design thinking paradigms were shortlisted and filtered based on the predefined criteria.

Table 2

Selection criteria for information sampling

Journals (academic)	International Magazines (non-academic)
Search strings	Articles were selected based on their accurate relation to the search strings in the article's title, abstract, and keywords. Content sources returned by the search query were screened for appropriate fit to the research objective.
Citations	The article selection was influenced by the number of times other authors or articles had cited it. Articles with higher citation instances were given preference.
Publication date	A temporal boundary condition of 10 years (that is, articles from 2010 onwards), was used to ensure the modern relevance of the study.
Nature of the article	Articles had to focus on the specific construct, model, or theory and had to be descriptive or explanatory. Design thinking articles had to describe the process or specific steps, actions, tools, or methods within design thinking and not only focus on the methodology. That is, articles with a focus on validation or intervention studies were excluded.
Domain	Positive psychology articles had to look at the specific construct, model, or theory from a broad perspective and not be domain or context-specific. However, design thinking articles needed to specifically focus on the application of design thinking in the organisational or workplace environment.

Procedure

According to Bider et al. (2013), there are many ways to conduct the design science research process while still staying within the design science paradigm. To achieve the aim of this study, the research process started by describing the situation (Step 1: presenting and motivating the problem) and setting the requirements (Step 2:

defining the objective of the solution), before moving to the design and development stage (Step 3).

Identification and Motivation

The research study started by identifying the problem and justifying the value of the solution. Peffer et al. (2006) asserted that since the problem definition is an integral part of developing an effective artefact, it is useful to divide the problem into small conceptual particles. Peffers et al. (2006) referred to this activity as *atomising the problem*. By atomising the problem in the literature review of this study, the researchers could capture the complexities of the problem.

Objectives of the Solution

Based on the literature review, the researcher proposed a solution to meet the objective of the study, which was to design a new positive design thinking process. According to Peffers et al. (2006), the objective of a design science research solution can either be quantitative, where the desired solution would be better than the existing one, or qualitative, where the new artefact is expected to support a problem that has not yet been addressed.

In the proposed study, the objective was to find a quantitative solution. The researchers investigated the possibility of designing and developing a positive design thinking process to improve the existing design thinking process.

Design and Development

This study's main focus was to construct the artefactual solution by synthesising existing design thinking and positive psychology constructs, models, and theories. Achieving this objective involved sourcing information, content analysis, and constructing the artefact.

Sourcing Information. The process started with the gathering of information.

Sources included academic, theoretical sources and non-academic material as described in the information sampling section of this paper.

Content Analysis. The researcher analysed the content to find, select, appraise, and synthesise the data contained in each source. Through content analysis, the researcher determined the artefact's desired functionality and its general architectural structure (Peppers et al., 2006).

Constructing the Artefact. Constructing the artefact is a conceptual process that requires both creativity and analytical reasoning. The researcher was able to use the desired functionality and general structure of the artefact that emerged through content analysis to modify and re-conceptualise the current design thinking process. The aim is to design a new artefact as a positive design thinking process.

The researcher interpreted and discussed the different principles, constructs and steps of the positive design thinking process in relation to the positive psychology theories, models, and constructs.

Rigour, Validity, and Reliability

Design science research draws from a vast knowledge base of scientific theories and research methods (Hevner, 2007). The knowledge base of design science provides the foundation for rigorous research that can produce valid, reliable solutions.

Rigour

Due to the subjective interpretation of information in different sources, the analysis process had to be rigorous and transparent (Bowen, 2009). Rigour refers to accuracy, precision, and exactness; however, it also emphasises the importance of the knowledge base that lies at the foundation of the design artefact. The knowledge base

relies as much on researchers' experience and expertise, as it does on existing knowledge and theories (Hevner, 2007).

Referring to the knowledge base is critical in design science research because research rigour is predicted based on how skillfully the researcher selects and applies existing knowledge and theories when designing and developing the artefact (Hevner, 2007). The rigour cycle in design science research provides the research study's foundational knowledge to ensure that the artefact is innovative and generative.

According to Baskerville et al. (2015), the knowledge claims, knowledge creation process, and knowledge goals are also essential considerations in design science research. The designed artefact should:

- serve the purpose of the knowledge claims of the study,
- support the development of original knowledge,
- be concerned with finding a satisfactory rather than optimal design, and
- be generative and inventive as opposed to scientific, conventional and systematic.

Validity and Reliability

Validity is determined by whether or not the result and solution have met the requirements of the design science research process. The validity of the design artefact is evaluated based on the design science research process, and not as an independent design (Drucker-Godard et al., 2001).

There is an ongoing debate about what constitutes reliability in social and pure science because human judgement can vary between observers (Drucker-Godard et al., 2001). The same observer may also rate the reliability of a designed artefact differently within different circumstances. However, according to Drucker-Godard et al., (2001), a study is deemed reliable if the results are generative and inherently repeatable.

Rigour, Validity, and Reliability in the Research Study

The validity and reliability of the study can be measured only by assessing how rigorously the researcher followed the design science research process. The knowledge claims, knowledge creation process, and knowledge goals, can determine whether the aim of the study was achieved. The researcher, therefore, attempted that the artefact has a strong theoretical knowledge base, that it serves the purpose of the study, that it would contribute to knowledge creation, and be generative and inventive.

Ethical Considerations

Design science research, with its focus on creating new artefacts, introduces new ethical concerns unrelated to other research methodologies (Myers & Venable, 2014). According to Gregor and Hevner (2013), there are ethical implications for design science research, even though there may be no research participants involved. Even though there are no overarching, prescribed and agreed ethical principles in design science research, it is still critical that researchers consider ethical dilemmas.

Gregor and Hevner (2013) and Meyers and Venable (2014) proposed six ethical principles for design science research with specific reference to information systems research and design. These six principles are public interest, informed consent, privacy, honesty and accuracy, property, and the quality of the artefact. According to the authors, all six principles may not always apply to every design science research project.

The aim of this study was purely to design and develop an artefact that would not be observed, evaluated, or communicated to the public, and the study would not include participants. Therefore the following ethical principles were deemed necessary: honesty and accuracy, property, quality of the artefact, monitoring of research, data management, permission and informed consent, conflict of interest, and potential risk. These are now discussed individually.

Honesty and Accuracy

A design science researcher must not plagiarise ideas and must give recognition and acknowledgement to inspiration from other sources. The researcher for this study has reported accurately and honestly on the research findings, even in the single instance where the research did not support the research question (Gregor & Hevner, 2013; Myers & Venable, 2014).

To ensure honesty and accuracy, Myers and Venable (2014) suggested using a devil's advocate approach in design science research to help envision and identify potential side effects of the solution, including reasons the solution would not be fit for the intended purpose. This position is vital in design science research because a designer has a natural tendency to overstate the importance of a new design.

Property

Because the researcher is a Masters student of the North-West University, ownership and IP of all research findings and the designed artefact remain the property of the university. The researcher has the right to publish the research with consent from the co-author and the university (Gregor & Hevner, 2013; Myers & Venable, 2014).

Quality of the Artefact

Every attempt was made to ensure the quality of the artefact, based on research rigour, validity, and reliability. As there is no intention to evaluate or test the artefact with participants, no further risk assessment was needed (Gregor & Hevner, 2013; Myers & Venable, 2014).

Monitoring of Research

The research process was monitored by providing continuous feedback to the study supervisor as per a set study timeline.

Data Management

Data were collected according to the specified search strategy. The data collection process was closely monitored by keeping researcher notes and providing feedback to the research supervisor. Any deviation from the search strategy was declared and addressed with the research supervisor.

Permission and Informed Consent

The study was a conceptual analysis of documentary sources within the public domain and therefore, did not require any permission or informed consent.

Conflict of Interest

The researcher remained objective and was prepared to declare any subjective conflict that may have emerged from the study if any such conflict had occurred.

Potential Risk

The researcher responsibly ensured truthfulness, respected for the work of other researchers, and presented the content and findings of the study in an objective manner. A letter of exemption from ethical approval was requested from, and granted by the Health Research Ethics Committee (NWU-02077-20-A1) for the study as the study presented no ethical risks. The researcher completed the online Training and Resources in Research Ethics Evaluation (TRREE) as required by the North-West University Transdisciplinary Health Science Department.

Researcher and Supervisor's Qualified Experience

The researcher, Janet de Jager, completed her BA Honours degree in Information Design at the University of Pretoria in 2008. After practising in the design industry for

two years, Janet started her career in higher education as a design lecturer for first-year visual communication students at Open Window Design School.

In 2011, Janet was appointed as the graphic design programme co-ordinator and senior design lecturer at Inscape Education Group. During her time at Inscape, Janet held various positions, including the Academic Programme Manager for B.Des students, Campus Principal, Senior Business and Brand Development Manager, and Director of Performance Improvement.

Throughout her career in higher education, Janet has worked on curriculum design for interdisciplinary design qualifications, including graphic design, interior design, fashion design, interactive design, audiovisual design, marketing and communication, and design innovation. Janet has been the lead on academic programme development, programme quality assurance, accreditation, teaching and learning, staff induction and training, student retention and success, stakeholder engagement (including working with the SA Innovation Summit and various national and international partners), learning and development solutions (including the architecture of an online learner management system and learning platform), and strategic business planning, reporting and analysis.

In 2019, Janet started her Masters in Positive Psychology intending to bridge the gap and find the synergy between design and well-being. Janet advocates a strong belief that positive psychology can enhance the creative output of designers to develop products, systems, experiences, and human-centric solutions that promote the well-being of individuals, organisations, and society.

Towards the end of 2019, Janet joined the Foreign Commonwealth and Development Office as the Africa Regional Learning and Knowledge Co-ordinator where she is currently responsible for assessing learning needs and providing access to

Africa-specific learning and development opportunities across the African region and abroad. Janet is also currently the Well-Being Network design lead for the British High Commission in Pretoria.

Janet has not only taught in the field of design thinking but has also practised the methodology for more than a decade across all avenues of her professional career, and she continues to do so in her daily work.

Dr Christi Niesing, the research supervisor, is at heart a researcher, teacher, and entrepreneur with a passion for all types of creativity. Christi completed her high school career in 1994 in Heilbron. In 1995, she began her studies in BCom Hotel and Tourism Management at the University of Pretoria; followed by a Postgraduate Certificate in Higher Education at the NWU. Her career path has been filled with teaching and entrepreneurial activities. She completed her MBA degree at NWU in 2012.

The research component of Christi's degree focused on evaluating the sustainability indicators in the 'Holding Hands' projects. She completed her PhD in Business Administration at the NWU in 2016. The study was a qualitative case study with constructivist grounded theory as a methodology.

All of Christi's passions came together when she became part of AUTHeR at the NWU in October 2008. She started as the project manager for the 'Holding Hands' income-generating community projects where she gained experience as a community development practitioner through the implementation of various development interventions. She has relevant experience in conducting in-depth individual interviews and focus group interviews. Her main research focus is on sustainable community development.

Christi has lectured a second-year module for Health Sciences students called *Know Your World of health*, as well as postgraduate modules for the MHSc

degree in Transdisciplinary Health research, all while providing study guidance to masters and doctoral students. She has embedded herself in qualitative methodology and attended international training workshops on qualitative methodology for applied research. Her passions include the creative development of human capital as she believes that every person possesses the ability to become so much more than they believe.

Contributions of the Study

According to Baskerville et al. (2018), design science research can contribute to the world's knowledge base through the design of novel artefacts and generalisable design theories. As the aim of the study was to rethink design thinking from a positive psychology perspective, the study has potential practical implications through the use of the positive design thinking process in organisations. The study also has research implications through the dissemination of the research in academic publications by hopefully encouraging further research on the topic.

The study set out to make practical and research contributions to address the gap which exists on how positive psychology can enrich the problem solving and innovation methodologies in organisations so that individual well-being and organisational performance could be promoted. The study began by proposing that a positive design thinking process would add value to the current design thinking process used in organisations. By re-conceptualising the design thinking process through a positive lens, it is believed that organisations can increase their capacity to design more satisfying and morally stronger solutions and innovations by drawing from the best of human capabilities.

Design science research contributes to a knowledge base in two dominant ways, namely, by designing artefacts and by designing theories (Baskerville et al., 2018). This

study aimed to contribute to the knowledge base with both the design of an artefact and design theorising. These perspectives are complementary and demonstrate that the artefact construction and design theorising are necessary and interrelated in design science research (Baskerville et al., 2018).

Structure of the Research Study

Table 3

Structure of the Study

Title of the study
Acknowledgements
Research outline
Preface
List of contents
List of tables
List of figures
Chapter 1: Introduction to the Research Problem and Methodology
Chapter 2: Manuscript
Chapter 3: Evaluation, Limitations, and Recommendations
Appendices

Dissemination of Information

The research study was first intended to be published in the *Journal of Humanistic Psychology* and the *Design for Health journal*. The Journal of Humanistic Psychology was founded by Abraham Maslow and Anthony Sutich in 1961.

The Journal of Humanistic Psychology is open to research contributions, controversies, and diverse statements relating to humanistic psychology. The Journal of Humanistic Psychology publications include topics on personal growth, interpersonal encounters, social problems, philosophical issues, human potential, self-actualisation, the search for meaning, and social change.

The Design for Health journal (established in 2011) is an international journal that focusses on aspects of design in the context of health and well-being. The journal readership includes design and health scholars, professionals, practitioners, educators, and managers.

The journal publishes articles on design and creative practices, which opens new avenues for people to understand problems, visualise new possibilities, and deal with future challenges and opportunities.

However, during the research process, the researcher decided that the article would be most suited for the *She Ji Journal of Design, Economics, and Innovation*. The She Ji Journal is a peer-reviewed, trans-disciplinary journal with a focus on economic, innovation, design process, and design thinking. The journal publishes a variety of trans-disciplinary articles with a specific interest in how design and design thinking informs wider social, managerial, and intellectual discourse.

Budget

Table 4

Budget for study (self-funded)

Expense	Amount (estimated)	Funding
Printing costs of documents (information sampling and content analysis)	R2,000.00	Self-funded
Language editing	R6,000.00	Self-funded
Total expenses (estimated)	R8,000.00	Self-funded

Timeline

The estimated timeline for the study (see Table 5) took into consideration the continuous consultation needed with the research supervisor, as well as the duration to incorporate feedback.

Table 5

Estimate timeline for research study

Activity	Start Date	End Date
<i>Prepare for submission to AUTHeR Scientific Committee</i>		
Submit Proposal to AUTHeR Scientific Committee		4/8/2020
<i>Incorporate AUTHeR Scientific panel feedback</i>		
Submit final proposal (depending on ASC feedback)		09/09/2020
Design and development phase	14/9/2020	14/10/2020
<i>Information sampling</i>		
<i>Content analysis</i>		
Constructing the artefact	15/10/2020	15/11/2020
Interpretation and discussion of the artefact	16/11/2020	30/11/2020
<i>Design theorising</i>		
Formating of mini-dissertation	01/12/2020	04/12/2020
Submit for Language editing	06/12/2020	13/12/2020
Final changes and review	14/12/2020	17/122020
Final submission	18/12/2020	

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Rethinking Design Thinking

From a Positive Psychology perspective

Abstract

This article addresses a gap in organisational research on how positive psychology can add value to problem solving and innovation in organisations. By synthesising the current design thinking process with positive psychology constructs, models, and theories, this study adopts a design science research methodology to develop a positive design thinking process in the form of a design artefact. The results show that the structure and functionality of a positive design thinking process consist of four main components: a core space of thinking, different domains of thinking within the core space, internal processes, and the results of the internal processes. In modern-day practice, a positive lens on design thinking shifts the focus from solving organisational problems to developing the psychological strengths of individual design thinkers.

Keywords

Positive psychology

Design thinking

Positive design

Design science research

Positive institutions

Employee well-being

Introduction

Positive psychology is a promising, future-oriented subarea within the broader discipline of psychology¹. It is part of a larger paradigmatic movement called a *positive way of knowing*², which employs rigorous scientific methods to pursue an understanding of well-being and to help individuals guard against pathologies³.

In modern-day practice and research, positive psychology is concerned with psychosocial theories and intervention strategies that provide a deeper understanding of the elements of human behaviour that are positive, adaptive, creative, and emotionally fulfilling. These elements include the biological, personal, relational, institutional, cultural, and global dimensions of human life⁴.

Positive Psychology Promotes Growth and Performance in Organisations

Understanding the impact of positive psychology interventions in organisations has attracted considerable interest among researchers and practitioners in recent years⁵. Employees who experience positive mental health at work perform better, have better social relationships, and better physical and psychological health⁶. The study of positive psychology in organisations leads to a refined understanding of what drives and motivates employees to flourish and achieve their full work potential.

However, there is an untapped gap in organisational research to explore how positive psychology can add value to stakeholder relationships, marketing initiatives, operational efficiency, supply chain management, investor relations, governance, corporate responsibility, sustainability, and reputation⁷. This gap highlights the need to investigate how positive psychology constructs, models, and theories can enrich the problem solving and innovation methodologies used in organisations in a way that will promote individual well-being and drive organisational performance.

¹ Stewart I. Donaldson, Maren Dollwet, and Meghana A. Rao, 'Happiness, Excellence, and Optimal Human Functioning Revisited: Examining the Peer-Reviewed Literature Linked to Positive Psychology', *The Journal of Positive Psychology* 10, no. 3 (2015): 185–95, <https://doi.org/10.1080/17439760.2014.943801>.

² Michel Avital, Richard J. Boland, and Kalle Lyytinen, 'Introduction to Designing Information and Organizations with a Positive Lens', *Information and Organization, Designing Information and Organizations with a Positive Lens*, 19, no. 3 (2009): 153–61, <https://doi.org/10.1016/j.infoandorg.2009.04.002>.

³ Donaldson, Dollwet, and Rao, 'Happiness, Excellence, and Optimal Human Functioning', 185–95.

⁴ William C. Compton and Edward Hoffman, *Positive Psychology: The Science of Happiness and Flourishing* (SAGE Publications, 2019).

⁵ Kevin Money, Carola Hillenbrand, and Nuno Da Camara, 'Putting Positive Psychology to Work in Organisations', *Journal of General Management* 34, no. 3 (2009): 31–36, <https://doi.org/10.1177/030630700903400302>.

⁶ Lauren J. Davenport et al., 'How Can Organisations Help Employees Thrive? The Development of Guidelines for Promoting Positive Mental Health at Work', *International Journal of Workplace Health Management* 9, no. 4 (2016): 411–27, <https://doi.org/10.1108/IJWHM-01-2016-0001>.

⁷ Money, Hillenbrand, and Da Camara, 'Putting Positive Psychology to Work', 31–36.

Design Thinking Promotes Problem Solving and Innovation in Organisations

Theorists and practitioners widely recognise design thinking as a problem-solving and innovation methodology that is inspired by the way designers work⁸. Whether applied as a mindset, methodology, set of principles, process, or design science, design thinking is used to increase the emotional and symbolic value of the products, services, systems, and human experiences within organisations.

Design thinking in the 21st century provides for a human-centred exploration of present-day problems and purposes. It is a *way of thinking* rather than a *way of doing*. The design thinking methodology incorporates constructs, models, and theories from different disciplines, including design, psychology, education, and cognitive science⁹. This integrated stream of knowledge from these various disciplines provides for a rich, varied understanding of the complexities of human reality.

The Need to Rethink Design Thinking

In the past decade, design thinking theorists, writers, and practitioners have expressed the need to re-conceptualise design thinking, and there has been a move away from being problem-focused to promise-focused. This shift in focus is theorised as *well-being driven design*¹⁰.

Well-being driven design supports the principles of design as the *good*, the *just*, the *useful*, and the *satisfying* in human experiences¹¹. In response to the need to rethink design thinking from the perspective of well-being, concepts such as *designers' flow*¹², *positive design*, and *design for subjective well-being*¹³ have emerged.

Objective of the study

This study investigated the design and development of a positive design thinking process by addressing the gap in organisational research on how positive psychology can enrich the problem solving and innovation methodologies used in organisations. It has done so by synthesising positive psychology constructs, models, and theories with the design thinking process, which is a sequence of actions and different modes of thinking. By *rethinking design thinking* through a positive lens, organisations can increase their

⁸ Lisa Carlgren, Maria Elmquist, and Ingo Rauth, 'The Challenges of Using Design Thinking in Industry - Experiences from Five Large Firms', *Creativity & Innovation Management* 25, no. 3 (2016): 344–62, <https://doi.org/10.1111/caim.12176>.

⁹ Kees Dorst, 'The Core of "Design Thinking" and Its Application', *Design Studies*, 32, no. 6 (2011): 521–32, <https://doi.org/10.1016/j.destud.2011.07.006>.

¹⁰ Hans P. Ruitenbergh and Pieter M. A. Desmet, 'Design Thinking in Positive Psychology: The Development of a Product-Service Combination That Stimulates Happiness-Enhancing Activities', (Paper presented at *8th International Conference on Design and Emotion, London, UK, 11–14 September 2012*), <https://repository.tudelft.nl/islandora/object/uuid%3Aabc80f44c-1d60-45a7-a7df-399905a14888>.

¹¹ Richard Buchanan, 'Systems Thinking and Design Thinking: The Search for Principles in the World We Are Making', *She Ji: The Journal of Design, Economics, and Innovation* 5, no. 2 (2019): 85–104, <https://doi.org/10.1016/j.sheji.2019.04.001>.

¹² Stéphane Safin et al., 'Design Flow 2.0, Assessing Experience during Ideation with Increased Granularity: A Proposed method', *Design Studies* 47 (2016): 23–46, <https://doi.org/10.1016/j.destud.2016.08.002>.

¹³ Pieter Desmet. 'Positive Design: Delft Students Design for Our Well-Being' (Delft, Netherlands: Delft University of Technology), 2018.

capacity to design more satisfying and morally strong solutions and innovations by drawing from the best of human capabilities.

A Positive Psychology Perspective

This study selected several positive psychology constructs, models, and theories as the *positive lens* and knowledge base for the design of a positive design thinking process. This selection includes creativity, self-efficacy, compassionate love, cognitive perspective taking, positive reframing, open-mindedness, openness to experience, empathy, self-determination, hope, and flow. These specific positive psychology constructs, models, and theories were selected based on their relevance to design thinking theories. What follows is a description of each selection.

Creativity

Individuals rely on their positive psychological strengths to generate creativity¹⁴. From this perspective, in order to enhance creative experiences and creative output, emphasis should be on the psychological well-being of the creative thinker and not their creative skills.

Engaging in creative activities increases feelings of pleasure, autonomy, and intrinsic motivation¹⁵. Creative people enjoy what they are doing for the sake of doing it; the process of discovery is the reward in itself.

Creativity can enhance the experiences of self-acceptance, personal growth, meaning in life, environmental mastery, and positive relationships¹⁶. Subjective well-being and positive self-assessment are also positively associated with higher levels of creativity, modesty, appreciation of beauty, and love of learning¹⁷.

Self-efficacy

Self-efficacy, as a core belief in one's own abilities, is a foundational element of human motivation, performance, accomplishment, and emotional well-being¹⁸. Self-efficacy is concerned with the belief that we can influence the events that affect our lives. The factors that serve as *self-motivators* are rooted in our confidence that our actions can

¹⁴ Lei Huang and Fred Luthans, 'Toward Better Understanding of the Learning Goal Orientation-Creativity Relationship: The Role of Positive Psychological Capital: Lgo and Creativity: Role Of PsyCap', *Applied Psychology* 64, no. 2 (2015): 444–72, <https://doi.org/10.1111/apps.12028>.

¹⁵ Xavier Oriol et al., 'Emotional Creativity as Predictor of Intrinsic Motivation and Academic Engagement in University Students: The Mediating Role of Positive Emotions', *Frontiers in Psychology* 7, (2016), <https://doi.org/10.3389/fpsyg.2016.01243>.

¹⁶ Mohammad R. Tamannaefar and Mahshad Motaghedifard, 'Subjective Well-Being and Its Sub-Scales among Students: The Study of Role of Creativity and Self-Efficacy', *Thinking Skills and Creativity* 12, (2014): 37–42, <https://doi.org/10.1016/j.tsc.2013.12.003>.

¹⁷ Christine Charyton et al., 'Creativity as an Attribute of Positive Psychology: The Impact of Positive and Negative Affect on the Creative Personality', *Journal of Creativity in Mental Health* 4, no. 1 (2009): 57–66, <https://doi.org/10.1080/15401380802708791>.

¹⁸ Albert Bandura and Nancy E. Adams, 'Analysis of Self-Efficacy Theory of Behavioral Change', *Cognitive Therapy and Research* 1, no. 4 (1977): 287–310, <https://doi.org/10.1007/BF01663995>.

make a difference¹⁹. People will only believe that they can produce the desired effect through their actions if they have an incentive to continue with an activity and the psychological strength to persevere when faced with difficulties.

Compassionate Love

Compassionate love is a selfless attitude towards humanity experienced as feelings, cognitions, and behaviours oriented towards a genuine concern to alleviate the suffering of others²⁰. Compassionate love ultimately increases an individual's well-being and is likely to lead to prosocial behaviour. Social scientists interested in compassionate love theories have argued that this kind of love promotes the greatest of social good²¹.

Perspective-taking

Cognitive perspective-taking is about drawing inferences about other people's beliefs, intentions, and thoughts²² and makes it possible to understand different views.

Perspective-taking allows people to view and treat others more like they themselves would like to be treated, which increases compassionate emotions²³.

Positive Reframing

Positive reframing is the ability to view a situation in a positive light, as opposed to the traditionally negative view. Individuals with higher dispositional gratitude are more likely to apply positive reframing, which, in turn, helps them to live more manageable, meaningful, and comprehensible lives²⁴.

Open-mindedness

Open-minded cognition is an essential component of intellectual humility. It is marked by a willingness to consider a variety of intellectual perspectives, values, attitudes, opinions, and beliefs even when it is contradictory to the self²⁵. Open-mindedness is widely recognised as an intellectual virtue and strongly relates to other intellectual

¹⁹ Albert Bandura, 'Self-Efficacy'. *The Corsini Encyclopedia of Psychology*. American Cancer Society, 1–3 (Hoboken, New Jersey: John Wiley & Sons, Inc), 2010. <https://doi.org/10.1002/9780470479216.corpsy0836>

²⁰ Beverley Fehr and Susan Sprecher, eds. 'Compassionate Love: Conceptual, Measurement, and Relational Issues', in *The Science of Compassionate Love: Theory, Research, and Applications* (Hoboken, New Jersey: Wiley Blackwell, 2008), 27–52, <https://doi.org/10.1002/9781444303070.ch2>.

²¹ Susan Sprecher and Beverley Fehr, 'Compassionate Love for Close Others and Humanity', *Journal of Social and Personal Relationships* 22, no. 5 (2005): 629–51, <https://doi.org/10.1177/0265407505056439>.

²² Tania Singer and Olga M. Klimecki, 'Empathy and Compassion', *Current Biology* 24, no. 18 (2014): 75–78, <https://doi.org/10.1016/j.cub.2014.06.054>.

²³ Sara D. Hodges, Brian A.M. Clark, and Michael W. Myers, 'Better Living Through Perspective Taking', in *Positive Psychology as Social Change*, ed. Robert Biswas-Diener (Dordrecht: Springer, 2011), 193–218, https://doi.org/10.1007/978-90-481-9938-9_12.

²⁴ Nathaniel M. Lambert et al., 'A Changed Perspective: How Gratitude Can Affect Sense of Coherence through Positive Reframing', *The Journal of Positive Psychology* 4, no. 6 (2009): 461–70, <https://doi.org/10.1080/17439760903157182>.

²⁵ Chase Wilson, Victor Ottati, and Erika Price, 'Open-Minded Cognition: The Attitude Justification Effect', *The Journal of Positive Psychology* 12, no. 1 (2017): 47–58, <https://doi.org/10.1080/17439760.2016.1167941>.

virtues such as fairness, impartiality, and honesty. It is also linked to specific cognitive abilities such as comprehension, conception, and imagination²⁶.

Openness to Experience

Openness to experience is considered an essentially aesthetic trait. It stretches our usual way of thinking about ourselves and the world expanding our propensity for profound emotional experiences²⁷. People high in openness to experience are more likely to present awe-related emotions captured with words such as amazement, elevation, fascination, and wonder²⁸.

Empathy

More research is conducted on empathy in the economics and business sector than in areas of psychology and philosophy where the term was initially conceptualised²⁹. Empathy is the capacity to resonate and share other's positive and negative feelings. When being empathetic, people feel happy when they share the joys of others and sad when they share their experiences of suffering³⁰.

Self-determination

Self-determination is an empirically based macro-theory of human motivation. The theory consists of three basic assumptions³¹: people are growth-oriented and motivated by personal interest; people move towards higher levels of psychological growth when they engage in activities that interest them; the social context which surrounds these activities can either support or inhibit growth.

Hope

Hope theory considers our emotional reactions and experiences associated with goal pursuit³². Hopeful thoughts reflect our belief that we have the willpower (*agency*) and

²⁶ Jason Baehr, 'The Structure of Open-Mindedness', *Canadian Journal of Philosophy* 41, no. 2 (2011): 191–213, <https://doi.org/10.1353/cjp.2011.0010>.

²⁷ Paul J. Silvia et al., 'Openness to Experience and Awe in Response to Nature and Music: Personality and Profound Aesthetic Experiences', *Psychology of Aesthetics, Creativity, and the Arts* 9, no. 4 (2015): 376–84, <https://doi.org/10.1037/aca0000028>.

²⁸ Silvia et al., 'Openness to Experience', 376–84.

²⁹ Eva Köppen and Christoph Meinel, 'Empathy via Design Thinking: Creation of Sense and Knowledge', in *Design Thinking Research: Building Innovators*, ed. Hasso Plattner, Christoph Meinel, and Larry Leifer, Understanding Innovation (Cham: Springer International Publishing, 2015), 15–28, https://doi.org/10.1007/978-3-319-06823-7_2.

³⁰ Singer and Klimecki, 'Empathy and Compassion', 75–78.

³¹ Edward L. Deci and Richard M. Ryan, 'The "What" and "Why" of Goal Pursuits', 'The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior'. *Psychological Inquiry* 11, no. 4 (2000): 227–68. https://doi.org/10.1207/S15327965PLI1104_01

³² Shane J. Lopez, Jennifer Teramoto Pedrotti, and Charles. R. Snyder, *Positive Psychology: The Scientific and Practical Explorations of Human Strengths*, (SAGE Publications, 2018).

way power (*pathways*) to achieve our goals³³. Hope overlaps with other constructs such as optimism, self-efficacy, and self-esteem³⁴.

The feedback loop is an essential aspect of hope theory. In the feedback loop, positive emotions will positively enforce the goal pursuit, whereas negative emotions will curtail the process³⁵.

Flow

Flow theory contributes to the understanding of optimal human functioning. When people are intrinsically motivated by activities it leads to moments of flow, where flow becomes the reward of the person's intrinsic motivation. Being in flow is an intrapersonal sacred moment of mastery, control, and autonomy.

Design Thinking from Different Perspectives

Regardless of the growing popularity of design thinking in recent years, there is no agreed definition of design thinking in academic or practical terms. It remains unclear whether design thinking provides a new way to design, or rather a way to organise a non-design activity. To rethink design thinking through a positive lens, it is important to consider design thinking from different perspectives; which are now discussed.

Creative Thinking Theories and Design Thinking

The roots of design thinking can be traced back to the creative thinking theories of John. E. Arnold in the 1940s³⁶. Arnold's creative thinking theories were driven by his beliefs that happiness requires creativity, that creativity is an attribute of healthy human living, and that the creative process is a way for people to realise their potential. Arnold saw the creative thinker as someone who frames problems in a way that aids creative solutions, who has a spirit of inquiry, and a drive to improve the things that matter³⁷.

Design Thinking as Reasoning and Meaning-making

The thinking side of design, as an everyday human activity, is a keen interest for modern-day researchers. Thinking in a design way increases positive affect and cognition³⁸, which results from heightened attention, memory, acquisition, and learning.

³³ Charles. R. Snyder, Kevin L. Rand, and David R. Sigmon, 'Hope Theory: A Member of the Positive Psychology Family', in *Handbook of Positive Psychology* (New York, NY: Oxford University Press, 2002), 257–76.

³⁴ Lopez, Pedrotti, and Snyder, *Positive Psychology*.

³⁵ Lopez, Pedrotti, and Snyder, *Positive Psychology*.

³⁶ Julia von Thienen et al., 'Theoretical Foundations of Design Thinking. Part I: John E. Arnold's Creative Thinking Theories', 2017: 13–40. https://doi.org/10.1007/978-3-319-60967-6_2.

³⁷ Von Thienen et al., 'Theoretical Foundations of Design Thinking'.

³⁸ Martin Reimann and Oliver Schilke, 'Product Differentiation by Aesthetic and Creative Design', In *Design Thinking: Understand – Improve – Apply*, ed. Christoph Meinel, Larry Leifer, and Hasso Plattner (Berlin, Heidelberg: Springer, 2011), 45–57. https://doi.org/10.1007/978-3-642-13757-0_3.

Design thinking is a creative, subjective, and emotional alternative to analytical logic. It is a combination of analytical and creative reasoning³⁹.

Design thinking is also conceptualised as a cognitive process of inter-and intrapersonal meaning-making⁴⁰. As a meaning-making process, design thinking relates to agency and choice, how we think about things, and cognitively constructs what we need to feel good about in our lives. We construct and evaluate our needs through everyday design thinking⁴¹. When we approach our lives as design thinkers we become more self-aware of our choices, which leads to better coping with life's challenges and higher life satisfaction.

Designerly Thinking and Design Thinking

Even though design thinking is primarily understood from a thinking perspective, the discourse has not yet separated itself from the design profession. Design thinking is viewed in terms of two distinct discourses: designerly thinking (design discourse) and design thinking (management discourse)⁴².

Designerly Thinking as a Design Discourse

Designerly thinking is rooted in the academic field of design and relates to the skills and competence of a professional designer. The designerly way of thinking has been researched for over 40 years, while design thinking developed over the last decade and has a limited relation to the design discourse⁴³.

The theoretical perspectives on design and designerly thinking can be categorised into five sub- discourses: the creation of an artefact; a reflective practice; a problem-solving activity; a way of reasoning and making sense of things; and the creation of meaning⁴⁴.

Designers are taught to move naturally through the spaces of inspiration, ideation, and implementation⁴⁵. These spaces are so useful in the design process that they were formalised into a process that soon dispersed throughout organisations. The shift into organisations moved the process out of the hands of design professionals to a point where it has become an approach to strategic decision making. In other words, there has been a shift from designerly thinking by designers to design thinking in organisations, but they share the same fundamentals.

³⁹ Jeanne Liedtka, 'Perspective: Linking Design Thinking with Innovation Outcomes through Cognitive Bias Reduction', *Journal of Product Innovation Management* 32, no. 6 (2015): 25–38, <https://doi.org/10.1111/jpim.12163>.

⁴⁰ Michael Lissack, 'Understanding Is a Design Problem: Cognizing from a Designerly Thinking Perspective. Part 2', *She Ji: The Journal of Design, Economics, and Innovation* 5, no. 4 (2019): 327–342, <https://doi.org/10.1016/j.sheji.2019.11.019>.

⁴¹ Lissack, 'Understanding Is a Design Problem', 25–38.

⁴² Ulla Johansson-Sköldberg, Jill Woodilla, and Mehves Çetinkaya, 'Design Thinking: Past, Present and Possible Futures', *Creativity and Innovation Management* 22, no. 2 (2013): 121–146, <https://doi.org/10.1111/caim.12023>.

⁴³ Johansson-Sköldberg, Woodilla, and Çetinkaya, 'Design Thinking', 121–146

⁴⁴ Johansson-Sköldberg, Woodilla, and Çetinkaya, 'Design Thinking', 121–146

⁴⁵ Tim Brown and Barry Katz, 'Change by Design', *Journal of Product Innovation Management* 28, no. 3 (2011): 381–383, <https://doi.org/10.1111/j.1540-5885.2011.00806.x>.

Design Thinking as a Management Discourse

Design thinking as a management discourse is an alternative approach to problem-forming and problem-solving that integrates creative human, business, and technical factors⁴⁶. Design thinking in organisations represents an ongoing cycle of generating ideas, predicting consequences, and testing and generalising⁴⁷.

The Design Thinking Process

As a process, design thinking combines divergent and convergent thinking⁴⁸ using a sequence of steps that the design thinker performs to realise the design intent⁴⁹. Even though the process is applied differently across and within organisations, it is most commonly operationalised through these actions: define the problem (understand and empathise), need-finding (observation), synthesise, ideate, prototype, and test⁵⁰.

These actions can be categorised into different *modes of thinking*: an empathise mode (deeply observing and understanding), a define mode, an ideate mode, a prototype mode, and a validation mode⁵¹. These modes of thinking enable design thinkers to explore problems more widely and deeply (divergent thinking) and take focused action (convergent thinking)⁵².

Research Design

This study adopted a pragmatic research philosophy that applied both inductive and deductive reasoning. The design science research methodology was used to operationalise the pragmatic research philosophy.

Design Science Research

Design science research moves from situation, problem, to solution. It includes the activities of problem analysis, requirements, definition, artefact development, evaluation,

⁴⁶ Reimann and Schilke, 'Product Differentiation by Aesthetic and Creative Design', 45-57.

⁴⁷ Johansson-Sköldberg, Woodilla, and Çetinkaya, 'Design Thinking', 121-146.

⁴⁸ Walter Brenner, Falk Uebernickel, and Thomas Abrell, 'Design Thinking as Mindset, Process, and Toolbox', in *Design Thinking for Innovation: Research and Practice*, ed. Walter Brenner and Falk Uebernickel (Cham: Springer International Publishing, 2016), 3–21, https://doi.org/10.1007/978-3-319-26100-3_1.

⁴⁹ Zhaoyang Sun and Jihong Liu, 'A Design Thinking Process Model for Capturing and Formalizing Design Intent', (paper presented at 2008 International Symposium on Computational Intelligence and Design, vol. 2, (Whuan: China, 17-18 October 2008), 330–33, <https://doi.org/10.1109/ISCID.2008.192>).

⁵⁰ Brenner, Uebernickel, and Abrell, 'Design Thinking as Mindset, Process, and Toolbox', 3-21.

⁵¹ Ingo Rauth et al., 'Design Thinking: An Educational Model towards Creative Confidence', (paper presented at DS 66-2: Proceedings of the 1st International Conference on Design Creativity (ICDC 2010), Kobe: Japan, 29 November 2010), <https://www.designsociety.org/publication/30267/Design+Thinking%3A+An+Educational+Model+towards+Creative+Confidence>.

⁵² Design Council. 'What is the framework for innovation? Design council's evolved double diamond design', February 17, 2015, accessed 29 July 2020, <https://www.designcouncil.org.uk/news-opinion/what-framework-innovation-design-councils-evolved-double-diamond>.

and communication⁵³. The evaluation and communication activities was excluded from this study process as the aim was to design and develop a positive design thinking process (the artefact). However, the study does conclude with recommendations for practical evaluation, communication, and future research.

Three Cycles of Design Science Activities

Design science presents three closely related cycles of activities⁵⁴: relevance cycle, rigour cycle, and central design cycle. The relevance and rigour cycles require that the knowledge base contribution is relevant and useful to both practitioners and the academic audience⁵⁵. The knowledge gained from this study should, therefore, be an extension of original design thinking and positive psychology academic knowledge with practical implications.

At the heart of design science research, is the design cycle⁵⁶. The design cycle is where the hard work of the research is completed.

Research Process

The main focus of this study was to construct the artefactual solution through the synthesis of existing design thinking and positive psychology sources of information. Achieving this objective involved sourcing information, content analysis, and constructing the artefact.

Sourcing Information

The sourcing process started with the gathering of information for data analysis. To allow for more creativity and richer opportunities⁵⁷, a selection of academic and non-academic articles were sourced from several journals and online publications. These journals and publications were shortlisted based on their mission statements and predominance of publications related to the framework of the study.

Articles that appeared to have good potential to anchor the research in the positive psychology and design thinking paradigms were shortlisted. The shortlist was filtered according to credibility, accuracy, original purpose, target audience, the context, and representativeness in relation to the framework of the study⁵⁸. See Table A and Table B for a breakdown of articles selected per journal and online magazine publication.

⁵³ Ilia Bider, Paul Johannesson, and Erik Perjons, 'Design Science Research as Movement Between Individual and Generic Situation- Problem-Solution Spaces', in *Designing Organizational Systems: An Interdisciplinary Discourse*, ed. Richard Baskerville, Marco De Marco, and Paolo Spagnoletti, (Berlin, Heidelberg: Springer, 2013), 35–61, https://doi.org/10.1007/978-3-642-33371-2_3.

⁵⁴ Alan Hevner, 'A Three Cycle View of Design Science Research', *Scandinavian Journal of Information Systems* 19 (1 January 2007).

⁵⁵ Hevner, 'A Three Cycle View of Design Science Research'.

⁵⁶ Hevner, 'A Three Cycle View of Design Science Research'.

⁵⁷ Hevner, 'A Three Cycle View of Design Science Research'.

⁵⁸ Brown and Katz, 'Change by Design', 381-383.

Table A. The list of journals selected, (based on positive psychology constructs, models and theories, and design thinking) and the number of articles sourced per journal for content analysis.

Journal	Articles selected	Articles sourced
Journal of Positive Psychology	69	5
Journal of Happiness Studies	114	3
Applied Psychology: Health and Wellbeing	26	0
Journal of Personality and Social Psychology	16	2
Journal of Personality and Individual Differences	601	8
Journal of Social and Personal Relationships	71	0
Journal of Social and Humanistic Psychology	60	0
Design Management Review	23	2
Design Issues	145	0
She Ji: The Journal of Design, Economics, and Innovation	49	4
Creativity and Innovation Management	7	3
International Journal of Art & Design Education	11	0
Total number of articles	1192	27

Table B. The list of online magazine publications selected (specific to design thinking) and the number of articles sourced per publication for content analysis.

Online magazine publications	Google search term	Articles sourced
Harvard Business Review	“design thinking” AND “Harvard business review”	6
Forbes Magazine	“design thinking” AND “forbes magazine”	16
Wired	“design thinking” AND “wired magazine”	3
Fast Company	“design thinking” AND “fast company”	0
Total number of articles		25

a Due to limited search capabilities and filter options in online magazine publications, Google search was used to find articles relevant to the framework of the study and published between 2010–2020. The initial search results were not reliable and are, therefore, not included in the table.

b Each online magazine publication was treated as one data source.

Content Analysis

The researcher analysed the content of the sources to find, select, appraise, and synthesise the data within each source. Through content analysis, the researcher determined the artefact's desired functionality, its general architecture, and specific characteristics⁵⁹.

Constructing the Artefact

Constructing the artefact is a conceptual process that requires both inventiveness and analytical reasoning⁶⁰. The researcher re-conceptualised the current design thinking process to design and artefact based on the desired functionality, general structure, and specific characteristics that emerged from the content analysis.

The following section theorises the principles, constructs and steps of the positive design thinking process based on the findings of the content analysis.

Ethical Considerations

After approval by the Africa Unit for Transdisciplinary Health Research (AUTHeR) scientific committee, the study was classified as no risk, and an ethics exception was indicated. As this was a no-risk study with no human interaction and literature as data, ethical clearance exemption (NWU-02077-20-A1) was obtained from the Health Research Ethics Committee.

⁵⁹ Ken Peffers et al., ‘The Design Science Research Process: A Model for Producing and Presenting Information Systems Research’, (paper presented at Design Research Information Systems and Technology DESRIST’06 24, Claremont: California, January 2006), 83-186.

⁶⁰ Ken Peffers et al., ‘The Design Science Research Process’, 83-186.

Conceptual development of a Positive Design Thinking Process

The resources used as the theoretical baseline for the conceptual development of the design artefact is specified in Appendix 3. This section is a synthesis of information from the various sources with no specific reference made to individual sources.

The design thinking process commonly used in practice is interpreted and visualised in different ways across organisations and academic literature, for example, as a linear process with several steps, a continuous cycle of activities, or as an infinity circle with different actions. Regardless of how the process is presented, it always follows the same pattern of thinking: understand and empathise, define, synthesise, ideate, prototype, and validate.

To *empathise*, in the design thinking process, means to connect with and genuinely understand user needs. These user needs are the basis on which the problem is *defined* (what needs should be addressed through the design thinking process). The *synthesise* step requires the design thinker to bring together different thoughts and ideas by identifying patterns and making connections. Synthesis leads to the process of *ideation* where new ideas are conceptualised and *prototyped* (giving tangible/visual form to ideas that users can interact with). Prototypes are tested with the intended users to *validate* and test the solution.

Keeping the steps of the design process in mind, a structure and functionality of a positive design thinking process began to emerge from the design science research process. This structure consists of four main components:

- A core space of thinking defined as the *empathetic creativity* space;
- Different domains of thinking within the empathetic creativity space including a *society domain*, a *self-domain*, and a *solutions domain*;
- Internal processes that take place in each domain including discovering the *external reality*, *internal motivation*, and *embodying meaning*;
- The results of the internal processes as *define*, *ideate*, and *validate*.

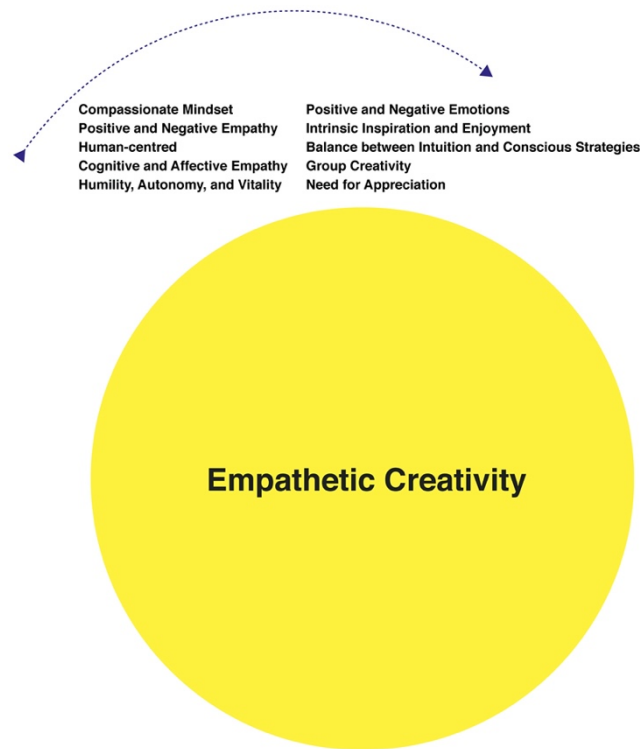


Figure 1. The Empathetic Creativity Space of a Positive Design Thinking process. Copyright © 2020 Janet de Jager.

The Empathetic Creativity Space

Before design thinkers can start with a positive design thinking process, they must step into a space of *empathetic creativity* (Figure 1). The empathetic creativity space frames the positive design thinking process. All internal processes and results sit within the empathetic creativity space.

In the empathetic creativity space, empathy is not an action or step within the process or creativity for innovation. Instead, empathetic creativity is a mindset that sets the stage for positive design thinking. The empathetic creativity space consists of different key characteristics, which are described hereunder.

Compassionate Mindset

Empathetic creativity starts with a compassionate mindset. This includes compassion for the self and compassion for others. Compassion for others relates to empathetic concern, whereas compassion for the self influences creativity. Without self-compassion, the design thinker cannot move through the challenges of creative activities.

Positive and Negative Empathy

In an empathetic creativity space, design thinkers are motivated to assist others to approach positivity by using positive empathy and avoid negativity by using negative

empathy. Positive empathy helps others to reach their goals because of a genuine concern for the well-being of others promoting prosocial behaviour. Nevertheless, positive empathy can also be egoistic and motivated to share in the positive emotions others will experience.

Whether or not the design thinker is motivated by a genuine concern for others or by the positive emotions others will experience, positive empathy is an essential attribute of empathetic creativity. Negative empathy is also a characteristic of the empathetic creativity space, however less effective than positive empathy where the focus is on improving instead of fixing.

Human-centred

An empathetic creativity space is human-centred. When adopting an empathetic, creative mindset, the design thinker is immersed in the experiences and daily lives of the people they are trying to serve. To be human-centred, the design thinker must focus on finding the factors that contribute to optimal human functioning. It is about looking from the inside-out as opposed to looking from the outside-in, which requires interaction with users and team members. Human-centred empathetic creativity implicitly drives a more thoughtful human approach to develop solutions.

Cognitive and Affective Empathy

The empathetic creativity space includes the cognitive and affective dimensions of empathy. Cognitive empathy enables the design thinker to look at a situation from another person's perspective. Affective empathy motivates emotional bonds between the design thinker, team members, and users. The cognitive and affective dimensions of empathy put the design thinker in the shoes of others to experience what they are feeling.

In an empathetic creativity space, design thinkers bring empathy to the forefront. It becomes the focal point of the positive design thinking process by expanding the design thinker's capacity to experience and understand problems before judging and executing solution.

Humility, Autonomy, and Vitality

Empathetic creativity is a space of humility, autonomy, and vitality. In an empathetic creativity space, design thinkers are humble and prepared to invent and/or reinvent many aspects of society and life without prejudice and judgement. Design thinkers do not set themselves apart from society, but understand that their creativity is a product of society.

Design thinkers who experience feelings of autonomy and vitality are more likely to exercise their natural capacity for creative expression. Fluctuations in autonomy predict fluctuations in vitality, which has an impact on the levels of creativity.

Positive and Negative Emotions

Empathetic creativity embraces positive and negative emotions and experiences. Happier individuals are not necessarily more creative, whereas the ability to experience both positive and negative emotions promotes higher levels of creativity. Creativity can occur under happy or sad circumstances, positive or negative affect, stressful or more relaxed environments.

Intrinsic Inspiration and Enjoyment

Design thinkers are intrinsically inspired and excited by creative challenges. They enjoy the process of creativity by being fully engaged with all their senses.

External motivators do not serve as significant incentives for design thinkers as they may create more stress to be creative. However, individuals respond to external motivators differently; with some responding better under stress than others.

Balance between Intuition and Conscious Strategies

An empathetic creativity space promotes a balance between intuitive unconscious processes and conscious strategies to facilitate creativity. Environmental control and behavioural self-regulation strategies foster increased levels of creativity. This requires balancing hidden, uncontrolled creative intuition with tangible, consciously controlled creative strategies.

Group Creativity

An empathetic creativity space facilitates group creativity. Working with others to move through challenges stimulates and shapes creative acts and determines how creativity is received. However, there should be a balance between individual independence and social interdependence. Even though most scientific creativity is collaborative, the involvement of other people in the creative process can be either helpful or harmful. This depends on how sensitive a person is to criticism and feedback and whether or not the presence of other people is distracting to the design thinker.

Need for Appreciation

The empathetic creativity space recognises the need for creative appreciation. Humans have to tolerate, adapt to, and embrace the creativity in others to meet the need for the collective appreciation of the creator. There is an identity-based relationship between an individual creator and the group that stimulates, appreciates, and responds constructively to their creativity.

The Society Domain of Thinking

Once the design thinker has stepped into an empathetic creativity mindset, the positive design thinking process starts within the *society domain of thinking* (see Figure 2). In the society domain, the design thinker is immersed in the experience of others, including the users and team members.

The steps of the positive design thinking process start within the society domain. The first step is to gain insight into *external reality*. The result of the external reality step, which is an internal process, is to *define the problem*, which is the second step. Only once a deep insight into the external reality of the users is achieved, can the design thinker define the problem that needs to be solved with the positive design thinking process.

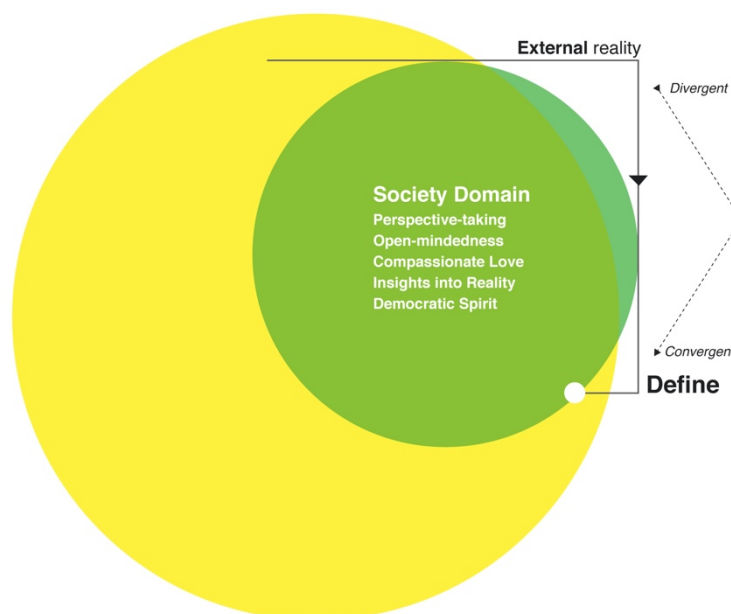


Figure 2. The Society Domain of a Positive Design Thinking process, including Step 1 (external reality) and Step 2 (define). Copyright © 2020 Janet de Jager.

Through a positive lens, the society domain is characterised by three core themes: perspective taking, open-mindedness, and compassionate love; and two sub-themes: insight into reality and a democratic spirit. In the society domain, the focus moves from divergent thinking (discovering the external reality) to convergent thinking (defining the problem through logic).

Perspective-taking

Perspective-taking in the society domain is about having an *others perspective* mindset. This requires the design thinker to move beyond their individual limitations to view problems from the perspective of others. Using multiple perspectives leads to innovation because it helps to challenge consensus and pursue alternative views - exploring different pictures of the current external reality of others.

Perspective-taking involves looking through different lenses to determine the best approach to finding a solution. It is important to steer away from perceived knowledge, which is restrictive in forward-thinking and narrow in depth. In the society domain, the design thinker is willing to let go of preconceived ideas.

Through perspective taking the design thinker can fuse different perspectives, which includes the perspective of the individual design thinker. Perspective-taking does not imply that the design thinker lets go of their perspective entirely, but instead maintains a balance between their perspectives and the perspective of others without favouring either side.

Perspective-taking is not argumentative but instead encourages prosocial behaviour. The more we know about something, the more prone we become to intuitive bias. In the society domain, design thinkers use perspective-taking to combat negative attitudes and biases toward others.

Part of perspective-taking is letting others know that their perspectives are considered. When someone believes that their perspective is successfully considered, it results in many of the same positive outcomes as when another individual adopts their perspective.

Syncretic self-esteem is also an important mediator of perspective-taking in the society domain. Syncretic self-esteem is the integration of agency (one's own goals) and communion (considering others). Showing high syncretic self-esteem in the society domain results in better perspective-taking by enabling the design thinker to pursue their own goals whilst still considering others

Open-mindedness

Open-mindedness is built on the premise of *intellectual humility*. In the society domain, the design thinker recognises the limits of their own knowledge, including their own sensitivity and circumstances. As with perspective taking, the design thinker abandons pre-existing ideas by keeping their own feelings aside and their mindset open.

Curiosity is another critical factor of open-mindedness. In the society domain, design thinkers have curious minds, look at things unconventionally, and are open-minded to alternative solutions.

The society domain provides a positive environment that encourages growth and values experimentation and exploration over and above rule-following. Design thinkers are encouraged to challenge conventional norms while being sensitive to the fact that open-mindedness is not uniformly favoured. Open-mindedness is viewed as socially desirable when individuals encounter viewpoints that are compatible with conventional social norms; but less desirable when viewpoints undermine these norms.

Compassionate Love

The society domain nurtures experiences of compassionate love as a genuine concern to improve the well-being of others. Through experiences of compassionate love, design thinker approach the needs of users and team members with kindness and sensitivity. They recognise emotional highs and lows within themselves and others and pay attention to blind spots that are often overlooked.

Insights into Reality

An essential requirement of the society domain is the ability to assess current reality by focussing on the here and now. In the society domain, design thinkers ask *what is?* questions to gain more insight. They have an intense desire to seek realisation and perceptiveness.

Even though insight into current reality focusses on the here and now there is still an element of having a forward-thinking mindset. The art of positive design thinking is the ability to imagine a better future. While investigating current reality, design thinkers are continuously envisioning an improved future state. They use their insights into current reality to fuel their forward-thinking imagination.

Democratic Spirit

The society domain promotes a *democratic spirit*. A democratic spirit implies that everyone can innovate and that creativity it is not exclusive to designers. The more diverse the team, the more possible it is to integrate diverse outside perspectives - bringing more voices into the innovation conversation. It is vital to look across industries and harvest new sources of inspiration to drive fresh solutions. A democratic spirit in the society domain promotes the need for integrative thinking, avoiding judgmental thinking, and being comfortable around people with different ways of thinking.

The Self Domain of Thinking

Once the problem has been defined, the design thinker moves from the society domain into the *self domain of thinking* (see Figure 3). In the self domain, the focus shifts from others to the self. Even though ideation relies heavily on collaboration and co-creation, it depends on the intrapersonal psychological strengths of individual design thinkers.

The third step in the positive design thinking process is *internal motivation*. The result of the internal motivation step (internal process) is to *ideate* (Step 4). Internal motivation drives the design thinker through the creative problem-solving challenge to reach a point of ideation. Without internal motivation, ideation is impossible.

Through a positive lens, the self domain is characterised by four core themes: self-efficacy, self-determination, hope, and flow; and one sub-theme as fear of failure. In the self domain, the focus moves from divergent thinking (spontaneous, free-flowing exploration of ideas) to convergent thinking (to ideate with logic).

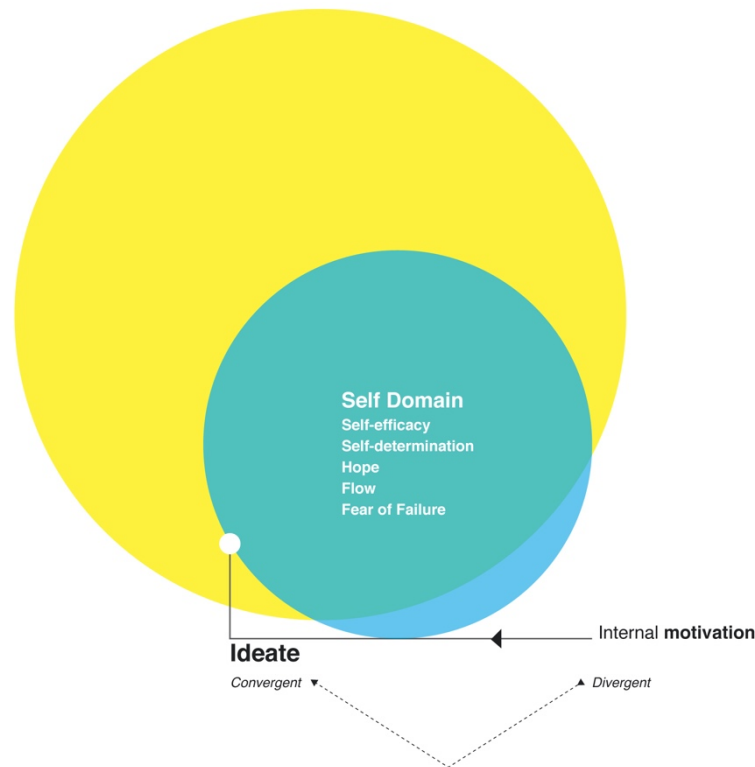


Figure 3. The Self Domain of a Positive Design Thinking process, including Step 3 (internal motivation) and Step 4 (ideate). Copyright © 2020 Janet de Jager.

Self-efficacy

The design thinker's experience of self-efficacy impacts their ability to achieve creative success in the self domain. A design thinker is more motivated to persevere through the creative problem-solving process when they believe that they can succeed.

There is a dynamic self-efficacy-performance relationship in the self domain. Design thinkers need to remain resilient, persevere through failure, and learn from their shortcomings. In the self domain, occasional failure is encouraged, as temporary failures may increase perceptions of challenge. When the design thinker succeeds through a perceived challenge, it increases feelings of self-efficacy, resulting in increased performance.

Self-determination

In a positive design thinking process, novelty (new and original) is considered an essential component of self-determination. Design thinkers are motivated through their experiences of novelty. In the self domain novelty is added as a psychological need that sits alongside autonomy, competence, and relatedness.

Hope

In the self domain, it is vital to take into account two core dimensions of hope: *internal and external locus of control*. Locus of control (in the context of psychology)

refers to how strongly a person believes that they have control over their situation and experiences.

With an internal locus, the design thinker hopes to achieve creative success as a result of their own actions by relying on their own abilities. In this instance, the self is the focal agent of goal attainment. Internal locus involves independent self-construal where the self is defined independently of others. Design thinkers with more independent self-construal are more likely to place their hope in themselves by relying less on team members for creative output.

With external locus, the design thinker hopes for success as a result of external factors. Here hope is anchored on significant others by being highly dependent on collaboration and other team members. External locus involves interdependent self-construal where the self is defined interdependent of others (through others). Design thinkers with more interdependent self-construals are more likely to place their hope for success in their team members.

Flow

The most enjoyable flow experiences within the self domain occur during social interactions. Social interdependence and emotional contagion can enhance the joy felt during and after social flow experiences. Social flow increases in intensity the individual flow experience because social tasks require more skills and are inherently more challenging.

In the self domain, several paths connect curiosity with creativity and flow. Higher levels of curiosity are naturally associated with greater flow, and flow, in return, links curiosity with creativity. The more the individual design thinker enters a state of flow, the greater the creative output. Higher joyous exploration and tolerance of stress are also associated with more flow in the self domain.

An important factor of flow in the self domain is the design thinkers transition from flow to control. This transition involves progressing from the need to gain competency (flow channel) to be comfortable in the level of competency achieved (control channel).

Enjoyment, happiness, and intrinsic motivation are associated with control more so than with flow. Control relates to the feeling of being motivated, happy, and cognitively efficient. High skills and moderate challenge are predictive of optimal experiences and creative output in the self domain.

Fear of Failure

Innovation involves reaching a conclusion based on evidence and reasoning and embracing risks. The idea to innovate comes with ambiguity, uncertainty and anxiety. The innovation process in itself is characterised by competing demands, which generate tensions. However, struggles are beneficial to the positive design thinking process.

Fear of failure is the biggest impediment of innovation in the self domain. This includes the fear of chaos, fear of the unknown, and a sense of loss of control and focus.

The self domain breaks the mould of fear of failure that implies that there is always only one right answer that can be proven. Instead, failure in the self domain becomes a source of power.

Design thinkers in the self domain are willing to struggle with ambiguous problems, search for better insights, and fail. The self domain provides a space of *psychological safety* where failure is encouraged.

In the self domain, design thinkers enjoy the journey of discovery. They are comfortable with iteration and accept that failure is an element of learning. The self domain values mistakes rather than considering them a waste of time.

Failures are useful to know what works and what needs fixing. It becomes a way of learning, as opposed to proof of incompetency. In the self domain, design thinkers view *struggles as triggers* for innovation. They accept that their struggles during the innovation process are the same triggers to their innovative behaviour.

The Solutions Domain of Thinking

From the self domain, the design thinker moves into the *solutions domain of thinking* (see Figure 4). In the solutions domain, the focus shifts from the self to the solutions.

Step 5 in the positive design thinking process is *embody meaning*. The result of embodying meaning (internal process) is to *validate* (Step 6). In a positive design thinking process to embody meaning is to give a tangible, experiential, or visible form to an abstract idea. In practice this is more commonly known as prototyping.

To embody meaning is a process that is open to iteration. It allows users to experience and engage with the solution that emerged in the ideation step in the self domain, and this helps them learn by doing. In the solutions domain, imaginary ideas become real and relevant.

Through a positive lens, the solutions domain is characterised by two core themes: positive reframing and openness to experience; and three sub-themes: imaginative capacity, future-oriented, and meeting user needs. In the solutions domain, the focus moves from divergent thinking (being open to experimenting and learning by doing) to convergent thinking (to validate with logic).

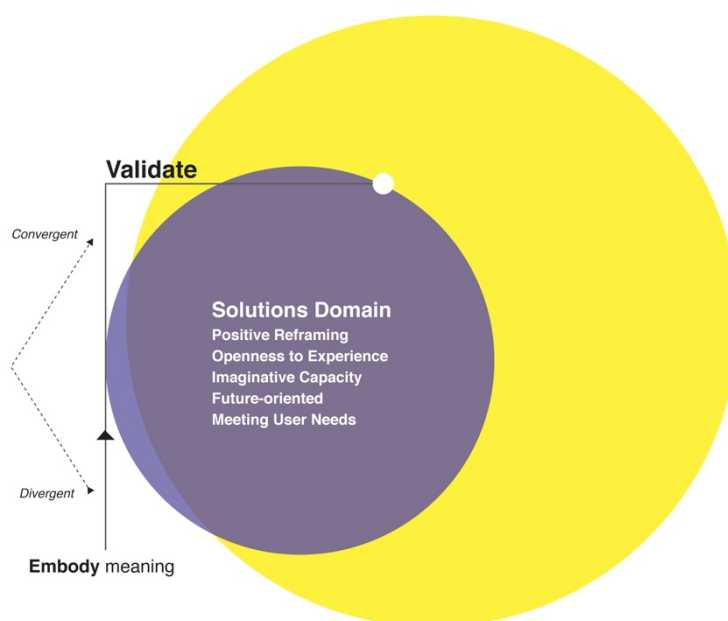


Figure 4. The Solutions Domain of a Positive Design Thinking process, including Step 5 (embodying meaning) and Step 6 (validation). Copyright © 2020 Janet de Jager.

Positive Reframing

During the process of figuring out how solutions will work in real-time, positive reframing connects the constraints with creativity. In the solutions domain, design thinkers are explicitly looking for and focusing on the positive aspects of negative feedback and experiences. The design thinkers reframe negative thoughts to think more flexibly and creatively. They cut through complexities and imagine better solutions by asking questions that no one else is asking.

Openness to Experience

In the solutions domain, openness to experience has two major facets - openness and intellect. Openness relates to creativity, whereas intellect is associated with fluid intelligence which is a vital attribute of the solutions domain. Through fluid intelligence, design thinkers can think logically, identify patterns and relationships, and extrapolate findings using logic.

Imaginative Capacity

A mindset geared towards solutions requires unconstrained thinking. Unconstrained thinking relates to our *imaginative capacity*, which starts with our feelings and our connections to the world.

Design thinkers who enter the solutions domain are open to stretching their imaginative capacity. They are curious and creative, playful and humouristic, optimistic and energetic, learning-oriented, and eager to share. Design thinkers continuously face

drawbacks determined by the abundance of accessible ideas. However, their imaginative capacity enables them to work through these drawbacks.

Future-oriented

In the solutions domain, design thinkers are looking towards the future. They ask *what if?* questions as they find ways to test the future in the present. They identify a novel purpose not only as a new how but mostly a new why.

Design thinkers in the solutions domain generate new visions that represent radical reinterpretations of the strategic direction to follow. They look at what might be and how to reach that state, rather than to look at what has been. The focus is on the ultimate goal as opposed to narrowing down the problem.

Being future-oriented involves critical thinking. Design thinkers rigorously question ideas and assumptions, rather than accepting them without more in-depth reflection. Critical thinking does not hinder but rather augments innovative future-thinking.

Criticism also promotes future-oriented thinking. Design thinkers in a solutions domain can combine the best of criticism with the best of innovation. They do not defer criticism but create through it. When conducted with curiosity and respect, criticism becomes the most advanced form of creativity.

Meeting User Needs

Design thinkers are focussed on meeting user needs, including needs that are unarticulated or unknown. They do so by engaging with users' emotional intelligence. Design thinkers in the solutions domain can adjust to different cultural contexts. They develop solutions that are focussed on the problems that actual people face. They see the world through the user's eyes and capture the essence of their experiences. They go beyond the quantitative data and seek qualitative feedback.

When design thinkers place the users at the core of the solutions domain, they shift the focus away from a *features-first* approach to a *user-first* mentality. Being open to the needs of users is part of an ongoing interpretive process, which allows users to make changes that meet their needs at that given moment. By keeping the user always in mind, solutions become intuitive and humanised.

Overlapping of Domains of Thinking

Each domain in the positive design thinking process suggests that the design thinker steps into a specific mindset - a society mindset, a self mindset, and a solutions mindset. However, Figure 5 shows that the domains overlap with each other. Each domain contains some characteristics of the other two domains. The focus on society, the self, and the solution cannot be completely separated from each other.

The overlapping of domains also shows that they do not exist entirely within the empathetic creativity space. The process, therefore, takes into account that empathy and

creativity cannot completely frame the process. Design thinkers will, at times, need to step out of the empathetic creativity space either consciously or unconsciously.

Transition points

A positive design thinking process consists of three internal processes and three results of the internal processes. The results are also the *transition points* (see Figure 5) that trigger the design thinker to step from one mindset into another.

Only once the design thinker has moved through the internal process of external reality in the society domain, can the problem be defined. Defining the problem triggers the internal motivation needed to move through the process in order to ideate, which, in turn, triggers the process of embodying meaning, where abstract ideas are represented visually or experientially. Embodying meaning is an iterative process built on trial and error (experimenting, reflecting, and learning by doing). Only once the design thinker has a visual or experiential representation of the solution, can the idea be validated with the intended users.

Depending on how successful the outcome of validation is, the design thinker may need to restart the process to re-define, re-ideate, and re-validate other solutions. The process is always in motion - continuously adapting and changing.

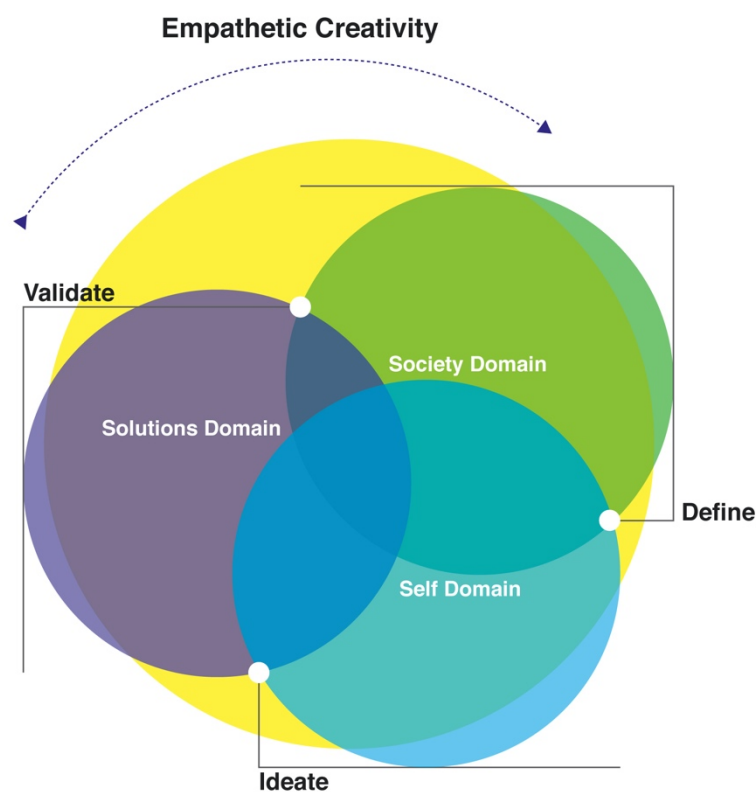


Figure 5. The Overlapping of Domains and Transition Points in a Positive Design Thinking process.
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The Self as Anchor

Interpreting the domains through a positive lens shows that the self domain carries the most weight, and it overlaps the most with the other domains. Four out of the five themes in the self domain correlates with the positive psychology constructs, models, and theories described in the literature section.

The *self is the anchor* (see Figure 6) in a positive design thinking process. If the self is not able, and if the self does not develop then the process will fail. Nevertheless, the importance of the self is often overlooked in design thinking theories and practice.

The internal processes (insight into external reality, internal motivation, and embodying meaning) within each domain can not be separated from the psychological strengths of the individual design thinker. To achieve the desired outcomes within each domain, the individual must have the capacity to function within and progress to the separate domains.

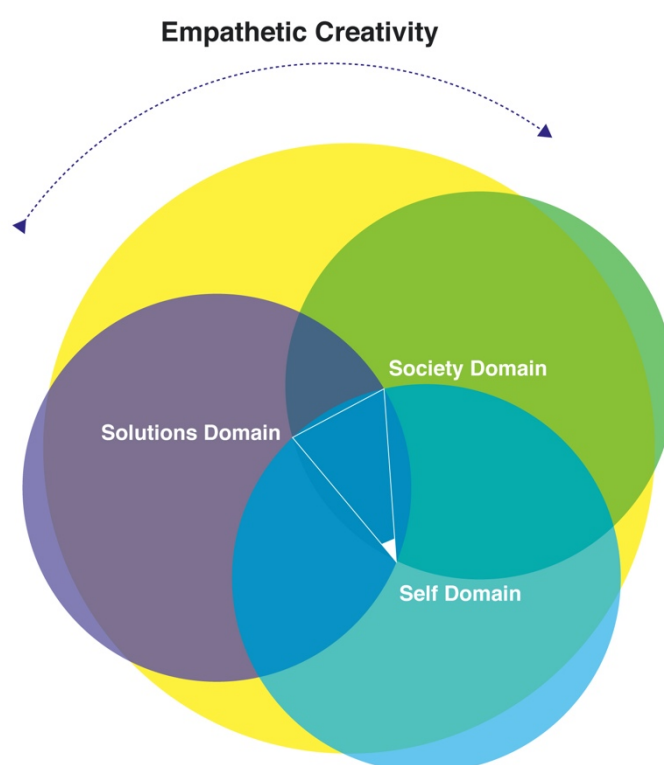


Figure 6. The Self as the Anchor of a Positive Design Thinking process. Copyright © 2020 Janet de Jager.

The Positive Design Thinking Process

As a circular process

When all the elements of a positive design thinking process are placed together, it reveals a continuous cycle of internal processes and results. Figure 7 shows the integration of the domains, steps, overlaps, transition points, self as an anchor, and the various ways of thinking within the empathetic creativity space in one complete positive design thinking process.

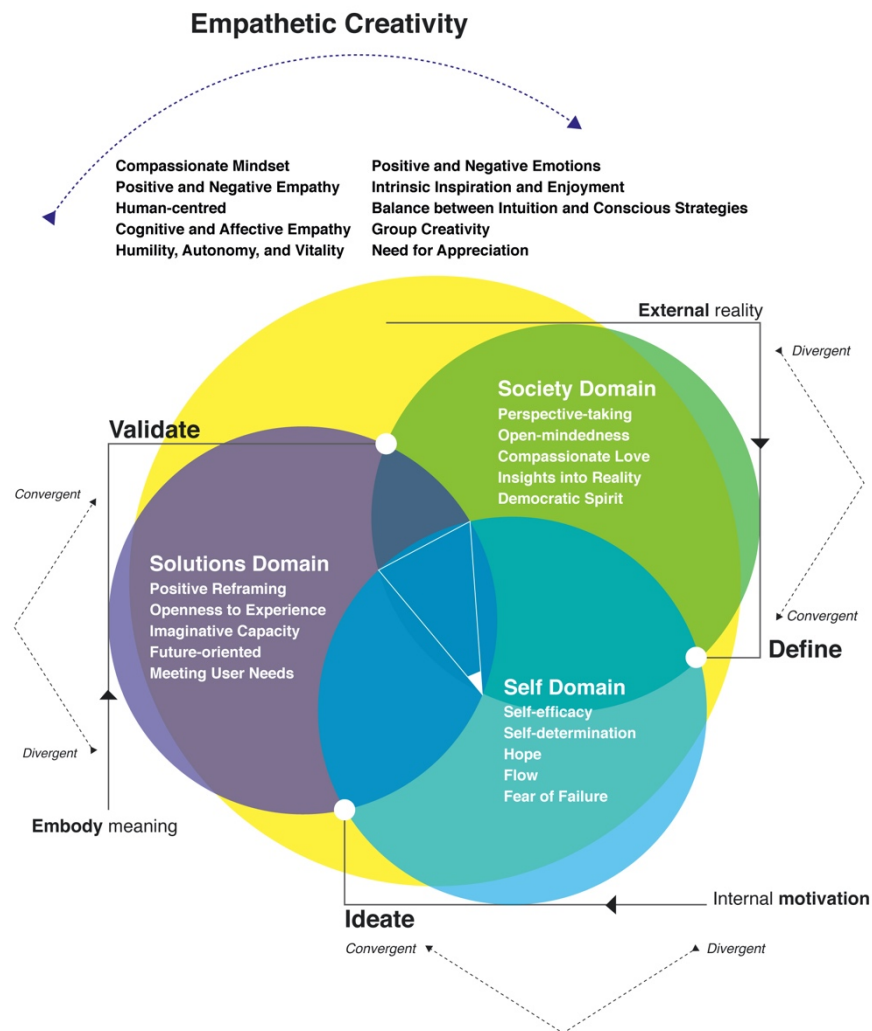


Figure 7. Circular representation of a Positive Design Thinking process. Copyright © 2020 Janet de Jager.

Linear representation

Figure 8 shows how the internal processes are separated from the outcomes. The curvilinear lines show the flow of divergent and convergent thinking, from open-ended creative thinking to focussed logic.

The arrows indicate that the process should follow a specific sequence, yet can never be fully complete (starting again at Step 1 after Step 6). The linear representation also shows how the self (internal motivation to ideate) lies at the centre of the process.

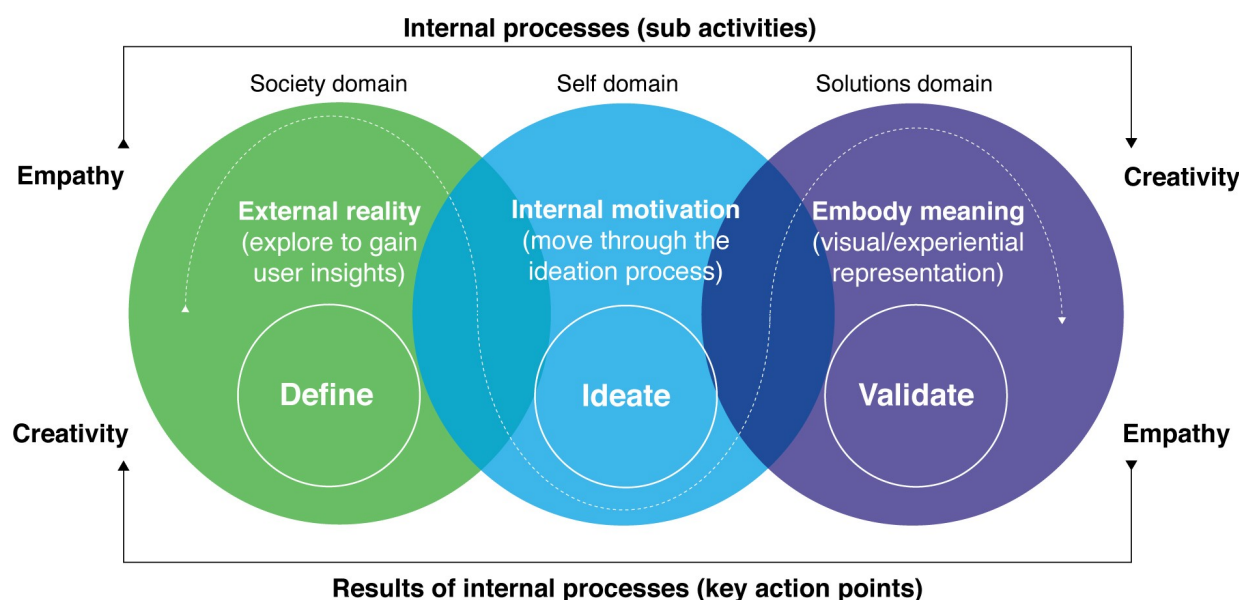


Figure 8. Linear representation of a Positive Design Thinking process. Copyright © 2020 Janet de Jager.

Conclusions

This article demonstrates how a positive psychology perspective can be used to rethink problem solving and innovation in organisations. A positive lens on design thinking shifts the *creative intention* from being problem-focussed to the psychological strengths of individual design thinkers. A positive design thinking process enables design thinkers to move through different domains with an emphasis on developing their intra- and interpersonal strengths. If the focus moves to the individual design thinker, then the process can result in more relevant, creative, and innovative solutions.

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Chapter 3: Evaluation, Limitations, and Recommendations

Chapter 3, the concluding chapter, reflects on the research process, declares the limitations of the study, and concludes with recommendations for future research and the promotion of the Masters in Positive Psychology curriculum.

Introduction

The impact of positive psychology, as the science of optimal human functioning, on employee well-being has attracted considerable interest among researchers and practitioners in recent years (Money et al., 2009). Individuals who experience work well-being perform better, have better social relationships, and better physical health (Davenport et al., 2016). Furthermore, a positive work environment that promotes the best of human capabilities benefits not only the individual but can also improve overall organisational performance.

Design thinking is a popular methodology used in organisations as an alternative approach to problem-solving and innovation. It is a methodology that integrates creative human, business, and technical factors (Reimann & Schilke, 2011). The design thinking process is framed as a generic cycle that moves from insight into the exploration of the problem; to idea generation and the formulation of concepts and solutions; then prototyping; testing; and selecting the optimal solutions through experimentation (Liedtka, 2014). Whether viewed as a mindset, methodology, a set of principles, a process, or a design science, the purpose of design thinking is to increase the emotional and symbolic value of the products, services, systems, and human experiences within organisations.

This research paper identified and addressed the gap in organisational research about how positive psychology can add value to problem-solving and innovation in organisations - specifically focusing on the design thinking process. Through the synthesise of positive psychology constructs, models, and theories with the current design thinking process, this study adopted a design science research methodology to develop a positive design thinking process as a design artefact.

By following the design science research process, the results showed that the structure and functionality of a positive design thinking process consist of four main components: a core space of thinking (empathetic creativity), different domains of thinking within the empathetic creativity space (a society domain, a self domain, and a solutions domain), internal processes (external reality, internal motivation, and embodying meaning) and the results of the internal processes (define, ideate, and validate).

The findings of this study suggest that a positive lens on design thinking shifts the focus from solving problems to developing the psychological strengths of individual design thinkers. If the focus moves to the individual design thinker, the process can result in more relevant, creative, and innovative solutions.

Evaluation of the Research Process

Design science is widely recognised as a research methodology focused on the pragmatic creation and investigation of the artificial (Gregor & Hevner, 2013). Design science research extends our human capabilities through the design of new and innovative artefacts. The design science research methodology provides a clear guide to move through a practical research process that results in the construction of a design artefact. The process enabled the researcher to move through the stages of identification and motivation; defining the objective; and ultimately to design and develop the artifactual solution, namely, a positive design thinking process. By applying research rigour in information sampling and content analysis, the researcher objectively progressed through the research journey.

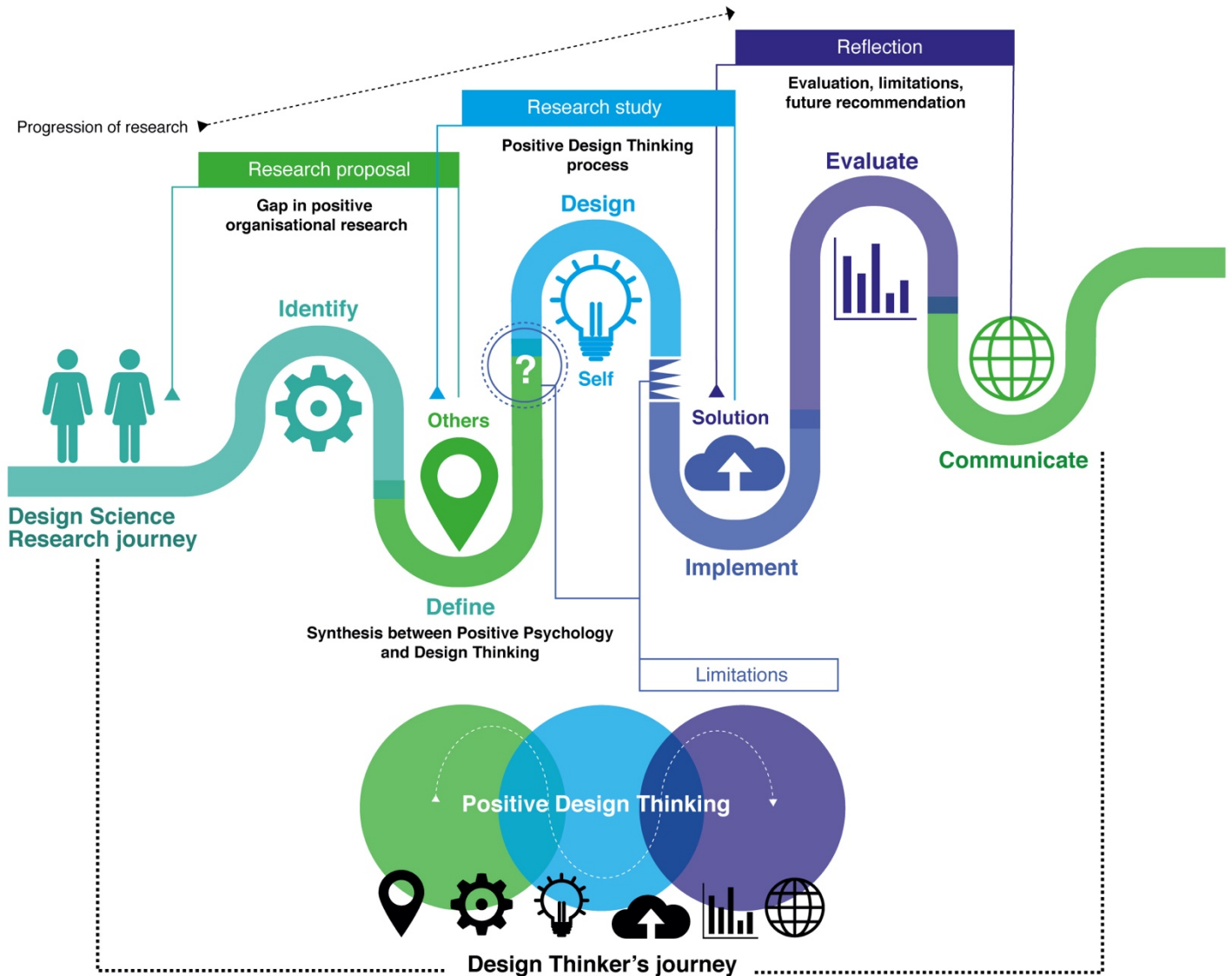


Figure A. Visual representation of the design science research journey.

Figure A shows the progression of the research study from identifying the knowledge gap and opportunity for knowledge contribution in the research proposal, completing the research study by following the design science research process, and concluding with reflection and future research recommendations. The figure also shows that the research process did not follow a clear linear line, but went through different stages of focussed thinking and open-minded discovery.

Evaluating Positive Design Thinking in relation to Design Science

Reflecting on the research process reveals a conceptual overlap between design science research and the general structure of the positive design thinking process conceptualised in this

study. Figure 1 shows how a focus on others, self, and the solution can be incorporated into the design science research process. The steps in design science research and positive design thinking are also conceptually linked (as presented in Figure 1).

Limitations

Figure 1 also shows two limiting factors: the question mark at the start of the design stage and the break in the process between design and implementation. The question mark signifies the challenge of defining the scope and feasibility of the research. As this was a literature-based study, applying boundaries to how far the data collection would stretch to make the study relevant yet manageable/feasible, limited the depth and breadth of the solution.

The break in the process between design and implementation represents the limits of the study's practical implementation to evaluate and validate the positive design thinking process in a real environment. This study remains open-ended and the positive design process only conceptual. However, this limitation also directs opportunities for future research.

Recommendation for Future Research

Recommendations for future research relate to the limitations and break in the process, as shown in Figure 1. The first recommendation is to expand the depth and breadth of the research data. Future research can include separating the components of the positive design thinking process and focusing the investigation on the details within specific domains and steps within the process. This study included a variety of positive psychology constructs, models, and theories. Future research can benefit from limiting the positive psychology perspective to, for example, only focus on self-efficacy within positive design thinking.

The second recommendation for future research is to implement and evaluate the process in practice. Implementing and evaluating the process could add significant practical and research value for positive organisational research.

By providing a transferable research approach, this study opens opportunities for future organisational research about how positive psychology can enhance stakeholder relationships,

marketing initiatives, operational efficiency, supply chain management, investor relations, governance, corporate responsibility, sustainability, and reputation – all research gaps in identified during the literature review.

Promotion of the Masters in Positive Psychology curriculum

This study shows that there is value in encouraging students to be more open-minded and willing to explore alternative research methodologies to contribute to academic research on positive psychology. This study also opens the door to extend the breadth of positive psychology transdisciplinary research - addressing more complex problems and challenges that would typically fall outside of the field of positive psychology.

Conclusion

Chapter 3 is a critical self-reflection on the research process, limitations of the study, and future research recommendation. The success achieved by this study opens up many opportunities for future research and practical implementation and validation of the process. Even though this study only presented a conceptual model of a positive design thinking process, the study achieved the intended objective to rethink design thinking from a positive psychology perspective.

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Email: Ethics-HRECAppl@nwu.ac.za (for human studies)

1 December 2020

RESEARCH ETHICS COMMITTEE LETTER OF DECISION: NO RISK

Based on the review by the North-West University Health Research Ethics Committee (NWU-HREC) on 01/12/2020, the NWU-HREC hereby clears your study as a no risk study. This implies that the NWU-HREC grants its permission that, provided the general conditions specified below are met, the study may be initiated, using the ethics number below.

Study title: Rethinking design thinking from a Positive Psychology perspective

Principal Investigator/Study Supervisor/Researcher: Dr CM Niesing

Student: J de Jager - 33101809

Ethics number:

N	W	U	-	0	2	0	7	7	-	2	0	-	A	1
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Institution Study Number Year Status
Status: S = Submission; R = Re-Submission; P = Provisional Authorisation;
A = Authorisation

Application Type: Single study

Commencement date: 01/12/2020

Risk:

No Risk

General conditions:

The following general terms and conditions will apply:

- The commencement date indicates the first date that the study may be started.
- In the interest of ethical responsibility, the NWU-HREC reserves the right to:
 - request access to any information or data at any time during the course or after completion of the study;
 - to ask further questions, seek additional information, require further modification or monitor the conduct of your research;
 - withdraw or postpone clearance if:
 - any unethical principles or practices of the study are revealed or suspected;
 - it becomes apparent that any relevant information was withheld from the NWU-HREC or that information has been false or misrepresented;
 - submission of the required amendments, or reporting of adverse events or incidents was not done in a timely manner and accurately; and/or
 - new institutional rules, national legislation or international conventions deem it necessary.
- NWU-HREC can be contacted for further information via Ethics-HRECAppl@nwu.ac.za or 018 299 1206

Appendix 2: TRREE training certificates



Zertifikat
Certificat

Certificado
Certificate

Promouvoir les plus hauts standards éthiques dans la protection des participants à la recherche biomédicale
Promoting the highest ethical standards in the protection of biomedical research participants

 **Certificat de formation - Training Certificate**
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a complété avec succès - has successfully completed
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du programme de formation TRREE en évaluation éthique de la recherche
of the TRREE training programme in research ethics evaluation

Release Date: 2020/05/19
CID : 7B4UGMB1G


Professeur Dominique Sprumont
Coordinateur TRREE Coordinator

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Swiss Academy of Medical Science (SAMS/ASSM/SAMW) (www.samw.ch) - Commission for Research Partnerships with Developing Countries (www.kfpe.ch)

[REV : 20170310]



Zertifikat
Certificat

Certificado
Certificate

Promouvoir les plus hauts standards éthiques dans la protection des participants à la recherche biomédicale
Promoting the highest ethical standards in the protection of biomedical research participants

 **Certificat de formation - Training Certificate**
Ce document atteste que - this document certifies that

Janet De Jager
a complété avec succès - has successfully completed
Informed Consent
du programme de formation TRREE en évaluation éthique de la recherche
of the TRREE training programme in research ethics evaluation

Release Date: 2020/06/07
CID : saShu147k2


Professeur Dominique Sprumont
Coordinateur TRREE Coordinator

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Programme de Formation continue (5 Crédits)

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[REV : 20170310]



Zertifikat Certificat

Certificado Certificate

Promouvoir les plus hauts standards éthiques dans la protection des participants à la recherche biomédicale
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Release Date: 2020/06/06
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Appendix 3: Information Sampling and Content Analysis

Journal Articles selection

Year	Author	Author	Publication Title
2020	Coco, Nunzia; Calcagno, Monica; Lusiani, Maria	Struggles as triggers in a design-thinking journey	Creativity and Innovation Management
2016	Carlgren, Lisa; Rauth, Ingo; Elmquist, Maria	Framing Design Thinking: The Concept in Idea and Enactment	Creativity and Innovation Management
2020	Dell'Era, Claudio; Magistretti, Stefano; Cautela, Cabiño; Verganti, Roberto; Zurlo, Francesco	Four kinds of design thinking: From ideating to making, engaging, and criticizing	Creativity and Innovation Management
2012	Liedtka, Jeanne; Ogilvie, Tim	Helping Business Managers Discover Their Appetite for Design Thinking	Design Management Review
2017	Liedtka, Jeanne; Salzman, Randy; Azer, Daisy	Democratizing Innovation in Organizations: Teaching Design Thinking to Non-Designers	Design Management Review
2017	Ranney, Rachel M.; Bruehlman-Senecal, Emma; Ayduk, Ozlem	Comparing the Effects of Three Online Cognitive Reappraisal Trainings on Well-Being	Journal of Happiness Studies
2019	Demir, Melikşah; Haynes, Andrew; Sanchez, Marilyn; Parada, Jennifer C.	Personal Sense of Uniqueness Mediates the Relationship Between Compassion for Others and Subjective Well-Being	Journal of Happiness Studies
2016	Ceci, Michael W.; Kumar, V. K.	A Correlational Study of Creativity, Happiness, Motivation, and Stress from Creative Pursuits	Journal of Happiness Studies
2014	Goldstein, Noah J.; Vezich, I. Stephanie; Shapiro, Jenessa R.	Perceived perspective taking: When others walk in our shoes	Journal of Personality and Social Psychology
2020	Schutte, Nicola S.; Malouff, John M.	Connections between curiosity, flow and creativity	Personality and Individual Differences
2015	Azizli, Nicole; Atkinson, Breanna E.; Baughman, Holly M.; Giammarco, Erica A.	Relationships between general self-efficacy, planning for the future, and life satisfaction	Personality and Individual Differences
2014	Hardy III, Jay H.	Dynamics in the self-efficacy-performance relationship following failure	Personality and Individual Differences
2017	Andreychik, Michael R.; Lewis, Eliza	Will you help me to suffer less? How about to feel more joy? Positive and negative empathy are associated with different other-oriented motivations	Personality and Individual Differences
2013	Du, Hongfei; King, Ronnel B.	Placing hope in self and others: Exploring the relationships among self-construals, locus of hope, and adjustment	Personality and Individual Differences
2016	González-Cutre, David; Sicilia, Álvaro; Sierra, Ana C.; Ferriz, Roberto; Hagger, Martin S.	Understanding the need for novelty from the perspective of self-determination theory	Personality and Individual Differences
2020	Wang, Yinan	When power increases perspective-taking: The moderating role of syncretic self-esteem	Personality and Individual Differences
2011	Nusbaum, Emily C.; Silvia, Paul J.	Are Openness and Intellect distinct aspects of Openness to Experience? A test of the O/I model	Personality and Individual Differences
2013	Haslam, S. Alexander; Adarves-Yorno, Inmaculada; Postmes, Tom; Jans, Lise	The Collective Origins of Valued Originality: A Social Identity Approach to Creativity	Personality and Social Psychology Review
2019	Sarwar, Ameer; Fraser, Patrick Thomas	Explanations in Design Thinking: New Directions for an Obfuscated Field	She Ji: The Journal of Design, Economics, and Innovation
2019	Diethelm, Jerry	Embodied Design Thinking	She Ji: The Journal of Design, Economics, and Innovation
2017	Antle, Alissa N.	Making Sense of Design Thinking	She Ji: The Journal of Design, Economics, and Innovation

2018	Lindgaard, Karin; Wesselius, Heico	Once More, with Feeling: Design Thinking and Embodied Cognition	She Ji: The Journal of Design, Economics, and Innovation
2014	Welp, Laura R.; Brown, Christina M.	Self-compassion, empathy, and helping intentions	The Journal of Positive Psychology
2013	Lambert, Joseph; Chapman, Judith; Lurie, Deborah	Challenges to the four-channel model of flow: Primary assumption of flow support the moderate challenging control channel	The Journal of Positive Psychology
2010	Walker, Charles J.	Experiencing flow: Is doing it together better than doing it alone?	The Journal of Positive Psychology
2020	Yu, Huixian; Zuo, Shijiang; Liu, Yan; Niemiec, Christopher P.	Toward a personality integration perspective on creativity: between- and within-persons associations among autonomy, vitality, and everyday creativity	The Journal of Positive Psychology
2017	Wilson, Chase; Ottati, Victor; Price, Erika	Open-minded cognition: The attitude justification effect	The Journal of Positive Psychology

Journal content analysis (1)

Title						
Self-compassion, empathy, and helping intentions	Self-compassion and empathy influence each other.	Empathy relates to taking the perspective of another person.				
	Self-compassion and compassion for humanity relates to empathetic concern and altruism					
	Empathy relates to prosocial behaviour					
Challenges to the four-channel model of flow: Primary assumption of flow support the moderate challenging control channel	Being cognitively involved in activities (active involvement and effortful concentration)	Flow and control are predictive of different psychological experiences (different types of motivations)				
	Characterised by self-determined extrinsic motivation (as opposed to intrinsic motivation)	Enjoyment, happiness, and intrinsic motivation are associated with 'control,' as opposed to flow				
	Need to experience autonomy to enter a state of flow	Psychological state of control relates to feelings of being motivated, happy, and cognitively efficient.				
		Transition from seeking to gain competency (flow channel) to being comfortable in one's level of competency achieved (control channel).				
		High skills and moderate challenge (control) are more predictive of optimal experiences				
Experiencing flow: Is doing it together better than doing it alone?	Most enjoyable flow experiences occur during social interactions.					
	Basic conditions for flow for individuals must be met first.					
	Social flow is more intense because social tasks require more skill and are inherently more challenging.					
	Social interdependence and emotional contagion can enhance the joy and elation felt during and after social flow experiences.					
Toward a personality integration perspective on creativity: between- and within-persons associations among autonomy, vitality, and everyday creativity	Autonomous individuals are more likely to exercise their natural capacities for creative expression.					
	Higher levels of autonomy result in higher levels of vitality, and in return, higher levels of everyday creativity.					
	Fluctuations in autonomy predict fluctuations in vitality and everyday creativity.					
Open-minded cognition: The attitude justification effect	Important dimension of intellectual humility.					
	The positive value placed on open-mindedness fluctuates.					
	Not uniformly championed / favoured					
	Viewed as socially desirable when individuals encounter viewpoints that are compatible with conventional social norms / less deared when viewpoints undermine these norms					
Connections between curiosity, flow and creativity	Several paths or processes connect curiosity with creativity (some strengthen and others suppress)	Higher levels of curiosity associated with greater flow.				
	Flow links curiosity with creativity.	Flow links curiosity with creativity.				
	More experience of flow associated with greater creativity.	Higher joyous exploration curiosity, knowledge-deprivation sensitivity, and tolerance of stress are associated with more flow.				
		More experience of flow associated with greater creativity.				
Relationships between general self-efficacy, planning for the future, and life satisfaction	Continuous planning positively relates to self efficacy					
	Consideration of future consequences positively relates to self efficacy					

	Life satisfaction positively positively relates to self efficacy					
Dynamics in the self-efficacy-performance relationship following failure	Failure experiences alter the form and direction of the self-efficacy-performance relationship.					
	Self-efficacy-performance relationship is fundamentally dynamic					
	Individuals with higher levels of self-efficacy relative to others are more likely to remain resilient, persevere through failure, and learn from their shortcomings.					
	Occasional failure experiences may ultimately benefit performance for highly confident individuals.					
	Inducing temporary failures during preparatory stages for highly confident individuals may serve to increase perceptions of challenge and increase performance.					
Will you help me to suffer less? How about to feel more joy? Positive and negative empathy are associated with different other-oriented motivations	Empathy for others' negative emotions and empathy for others' positive emotions are distinct capacities.					
	Empathic capacities relate to the (pro)social motivations to assist others to approach positivity vs. avoid negativity.					
	Positive empathy is associated with an other-focused motivation to assist others to approach positive outcomes.					
	Negative empathy is associated with an other-focused motivation to assist others to avoid negative outcomes.					
	Positive empathy potentially could be about helping others reach their goals to share in the positive emotions the other will experience (egoistic).					
	Positive empathy could be about helping others to flourish because of a true concern for the welfare of the other person.					
Placing hope in self and others: Exploring the relationships among self-construals, locus of hope, and adjustment	In hope theory, the self is considered as the focal agent of goal attainment.					
	Hope can either be anchored on oneself (internal locus) or on significant others (external locus).					
	Individualistic and collectivist types of hope.					
	People can anchor their hope on significant others.					
	How people see themselves exerts a powerful influence on hope.					
	Interdependent self-construals are more likely to put their hope on significant others.					
	People with more independent self-construals are more likely to place their hope on oneself.					
Understanding the need for novelty from the perspective of self-determination theory	Self-determination theory is the satisfaction of three basic, innate psychological needs for autonomy, competence, and relatedness necessary for optimal functioning.					
	Novelty can be added as a basic psychological need alongside the set of existing needs in self-determination theory.					
	Novelty is psychological need and important component of intrinsic motivation.					
	Novelty is positive for human development as long as it is combined with the three basic psychological needs of SDT.					
When power increases perspective-taking: The moderating role of syncretic self-esteem	Syncretic self-esteem (integration of agency and communion) moderates the relationship between power and perspective-taking.					

	High syncretic self-esteem result in better perspective-taking					
	Merely focusing on others' needs will not necessarily lead someone with power to increase their perspective-taking					
	Need to maintain balance between focusing on the self and others without favoring either side.					
Are Openness and Intellect distinct aspects of Openness to Experience? A test of the O/I model	Openness to Experience has two major facets—Openness and Intellect					
	Creative behavior and achievement (conceptually closer to Openness) and fluid intelligence (conceptually closer to Intellect).					
	Openness aspect significantly predicted creativity but not fluid intelligence; the Intellect aspect, in contrast, significantly predicted fluid intelligence but not creativity.					
	Distinction between openness and intellect.					
The Collective Origins of Valued Originality: A Social Identity Approach to Creativity	Emphasis on the role the groups play in stimulating and shaping creative acts and in determining the reception they are given.					
	Balance between individual independence and social conformity					
	Identity-based relationship between individual creators and the groups that stimulate, appreciate, and respond constructively to their creativity.					
	Humans have to be innovative and creative, and be prepared to invent (and, if necessary, reinvent) many aspects of their life.					
	Humans have to tolerate, adapt to, and sometimes embrace creativity in others					
	Need for the collective appreciation of the creator.					
	Creativity does not show how great creators are set apart from society, but demonstrates how they are a product of societies					
Comparing the Effects of Three Online Cognitive Reappraisal Trainings on Well-Being	Positive reframing is a cognitive reappraisal strategy, together with self-distancing, and temporal distancing.					
	Positive reframing is characterized by recognising a negative event's positive aspects and outcomes.					
	Positive reframing has been shown to benefit individuals in the short-term, leading to adaptive emotional responding.					
	Positive reframing is conveyed in folk wisdom, such as "Look on the bright side" and "Try to find the silver lining."					
	Positive reframing can enhance well-being (positive emotion, optimism, etc.) because it explicitly entails looking for, and focusing on, positive aspects of negative situations.					
Personal Sense of Uniqueness Mediates the Relationship Between Compassion for Others and Subjective Well-Being	Selfless giving to others.					
	Does not delineate between love (a selfless want for the other's well-being) and compassion (which normally is specifically directed towards a person suffering).					
	Does not contain different domains (not domain specific)					
	Kindness and common humanity (not the mindfulness component of compassion for others)					
Perceived perspective taking: When others walk in our shoes	Increases the extent to which people like, feel a sense of self-other overlap with, and help those whose perspective they take.					

	Taking another's perspective is a potential intervention for combating and correcting negative attitudes and biases toward others or for encouraging prosocial behaviour toward individuals in need.					
	Perceiving that another person has taken one's perspective will lead to greater liking for that individual.					
	Believing that one's perspective has been successfully taken results in many of the same positive outcomes as taking the perspective of another individual.					
Helping Business Managers Discover Their Appetite for Design Thinking	DT is focused on the creative generation of new ideas.	Innovation begins with the accurate assessment of the current reality (the here and now)	Collaboration (creative brainstorming) generates new possibilities and new alternative.			
	Looking towards the future and ask, 'What if?' (take creative leaps forward)	The goal of innovation is to envision and implement an improved future state.	Insights generate more insights when working in teams.			
	Test the future in the present.	Framing the current reality is where innovation starts.				
		Without insights in current reality, the imagination has little to work with.				
		Attention to the emotional highs and lows within (blind spots often overlooked)				
		Through asking 'What is?' we gain more insight into the people we serve.				
Democratizing Innovation in Organizations: Teaching Design Thinking to Non-Designers	Fear is the biggest impediment of innovation (fear of chaos and loss of control and focus)		Democratise innovation activities where everyone has the opportunity to innovate.	Structure also makes it easier to keep learners going when the going gets tough.		
	Observing and being comfortable with ambiguity (rarely rely on a structured processes)	Seeking diverse perspectives, encouraging multiple solutions and experiments, and redefining innovation	Create confidence through increasing diversity and bringing more voices into the innovation conversation	In idea generation, they can move in seemingly sequential stages from data gathering into insight		
	Breaking the mould of 'fear of failure' (always only one right answer that can be proven)					
	The idea to 'innovate' comes with ambiguity, uncertainty and anxiety.					
	Need to creating psychological safety.					
	Creative confidence can overcome anxiety related to innovation.					
	Growth mindset (enjoying the journey of discovery, being comfortable with iteration and failure as elements of learning)					
	Innovation requires a willingness to struggle with ambiguous problems, search for better insights, and failing.					
Explanations in Design Thinking: New Directions for an Obfuscated Field	Extension of cognitive science or social science					
	Stuck to well-delineated paths (of artistic and scientific pursuits) and define the discipline according to the interests and abilities of those engaged.					
Embodied Design Thinking	An embodied process of experience (including cognition and feeling).					
	Outcome of mind that functions as brain-body-in-the-world.					
	Process that seeks to resolve qualitative differences in transformative situations.					
	Process of the conceptual blending together of embodied mind and embodied meaning.					
	Meaning starts with our feelings and our connections to the world, and second on various imaginative capacities for using sensorimotor processes to understand abstract concepts.					

Struggles as triggers in a design-thinking journey	Innovation processes characterized by competing demands, which generate tensions.					
	Accepting struggles and learning how to cope with innovation tensions.					
	Process of both struggling and triggering innovation, and, in turn, that triggering innovation implies struggling through the process.					
	Struggles in inspiration, ideation, action was characterised by destabilisation, abstraction, and non-deciding.					
	Struggles are functional to the process, in that these same struggles are the very triggers to innovative behaviour.					
Framing Design Thinking: The Concept in Idea and Enactment	Fail often and fail soon', (value mistakes rather than considering them a waste of time).	Diversity, encompassing collaboration in diverse teams, and the integration of diverse outside perspectives throughout the process.	Empathize (data collection based on, for example, ethnographic studies), define (data syntheses to gain a refined problem understanding), ideate (suggest ideas for solving the problem), prototype (develop tangible and experienceable representations of the ideas) and test (with potential users).	Empathize as 'understanding' and 'observing'.	Different principles/ mindsets are crucial (being open, avoiding being judgmental and being comfortable around people with different backgrounds and opinions)	instead of trying to solve the problem, they tried to widen, challenge and reframe it.
		Integrative thinking, open to differences in personality type/ background, having a democratic spirit.	Need to be less normative and static - specific enough to be able to frame it as a concept, yet flexible enough to allow for variety in its local use.	User focus expressed in terms of empathy building, deep user understanding and user involvement	Mindset geared towards action requires creativity and unconstrained thinking	moving between divergent and convergent ways of thinking
			As a process, or as methods, a toolbox, a mental approach, a culture or a mix thereof.	Keep the user in mind (activity geared towards finding solutions to user needs).	Mindset of curiosity, playfulness, optimism and displaying a sense of humour.	
				User focus: Empathic, Curious, Non-judgemental, Social;	Open to experimentation (curious and creative, playful and humorous, optimistic and energetic, learning-oriented, eager to share)	Problem framing: Unconstrained thinking, Comfortable with complexity and ambiguity, Open to the unexpected,
Four kinds of design thinking: From ideating to making, engaging, and criticizing	Formal creative problem-solving method with the intent to foster innovation.	Creative Problem Solving and Sprint Execution approaches address the solution domain.	Creative Confidence approach operates in the people domain.	Innovation of Meaning approach in the direction domain.		
		Creative Problem Solving is aimed at inspiring insights able to lead the development of creative and original solutions that can meet emerging users' needs.	The Creative Confidence approach engages with new sets of approaches, practices and methodologies to foster innovation and change.	Innovation of Meaning enables facing the drawbacks determined by the abundance of accessible ideas through the identification of a novel purpose.		
		Sprint Execution can be considered a sort of evolution of the Creative Problem Solving approach, incorporating the efficiency of the lean/agile approach.		Innovation of Meaning approach aims at creating new visions that represent radical reinterpretations of the strategic direction to follow.		
				Not only a new how, but especially a new why, having a clear direction to pursue (fit the novel purpose).		
Making Sense of Design Thinking	Cognitive style and reflective practice.	Iterative problem framing and solution generation.		Making an argument for a way to change the world.		
	Felt experience (the body and mind matters)					
	Understanding, reasoning, and imaginative cognitive processes involve the concurrent integration of bodily and mental elements of cognition.					
	Involves reasoned imagination; it is both rational (mental) and experiential (body-based).					
	Holistic and inseparable process involving the body and the mind situated in the world.					
	Interleaving of different cognitive processes—each involving the body and mind—working in tandem to make sense.					
A Correlational Study of Creativity, Happiness, Motivation, and Stress from Creative Pursuits	Creative people focus is on the creative process in itself.					

	Creative individuals are more intrinsically inspired (self-motivated).					
	External motivators do not serve as major incentives for highly creative individuals (may relate to higher stress).					
	Happier individuals are not necessarily more creative.					
	The ability to experience both positive and negative emotions report being more creative.					
	Relationship between creativity and affect (positive or negative) might be moderated by the type of motivation (intrinsic or extrinsic) as well as the stress that the creative process itself brings.					
	Relates more strongly with tendency for positive than with negative affect.					
	No single approach stimulates divergent thinking, believing in creativity.					
	Unconscious process to facilitate creativity is neither inherently wrong nor right. However, solely relying on unconscious processes must be discouraged.					
	Most scientific creativity is collaborative and working with others is essential.					
	Involvement of other people may be helpful or harmful depending upon how sensitive the person is to criticism and feedback (the presence of others can possibly be a distraction).					
	Encourage the use of environmental control and behavioural self-regulation strategies.					
	Delicate balance of conscious activities and unconscious processes.					
	However, people with the ability to experience both positive and negative emotions do report being more creative.					
	Complex process that can occur under happy or sad circumstances, positive or negative affect, stressful, or more relaxed environments.					
	Foster intrinsic motivational aspects of curiosity, challenge and enjoyment in making people more creative.					
	More creative people tend to believe in being self-motivated and to rely on both unconscious processes and conscious strategies to facilitate their creative efforts.					
	Aided by balancing the hidden, uncontrolled, internal experiences with the tangible, consciously controlled, external experiences.					
	Delicate interplay of inspiration and discipline is key to maximising creativity.					
	Individual differences in the way people respond to creative tasks—with some responding better under stress than others.					
	Higher intrinsic motivation is associated with greater positive affect, subjective well-being, belief in unconscious processes.					
	Encourage people to engage all senses in the creative process.					
Once More, with Feeling: Design Thinking and Embodied Cognition	Involves body, perception, and feeling.					
	Material design practices can augment the creative process.					
	Interdisciplinary account for the role that feeling plays in design and cognition both.					

	Intuitive "sense of fit" or "feeling for" a solution.					
	Importance of movement and the kinaesthetic sense for creativity in the design process.					

Magazines article selection

Year	Author	Title	Publication Title
2010	Berger, Warren	The Four Phases of Design Thinking	Harvard Business Review
2015	Kolko, Jon	Design Thinking Comes of Age	Harvard Business Review
2015	Brown, Tim; Martin, Roger L.	Design for Action	Harvard Business Review
2019	Bason, Christian; Austin, Robert D.	The Right Way to Lead Design Thinking	Harvard Business Review
2018	Iskander, Natasha	Design Thinking Is Fundamentally Conservative and Preserves the Status Quo	Harvard Business Review
2019	Verganti, Roberto; Norman, Don	Why Criticism Is Good for Creativity	Harvard Business Review
2020	McKendrick, Joe	These Days, Everyone Needs To Engage In Design Thinking	Forbes
2020	Bowman, Tyler	Council Post: Design Thinking: Are Empathy And Failure The Secret Ingredients For Your Business' Future?	Forbes
2020	Riani, Abdo	How To Implement Design Thinking In Your Startup	Forbes
2020	Panel®, Expert	Council Post: Seven Ways Design Thinking Enhances Customer Experience	Forbes
2019	Fatemi, Falon	Why Design Thinking Is The Future Of Sales	Forbes
2019	Johnson, Jim Ludema and Amber	Bring Design Thinking Into Your Office: Easy Ideas For Incorporating More Creative Problem Solving	Forbes
2017	Modicum	Design Thinking: Your Next Competitive Advantage	Forbes
2017	Davis-Laack, Paula	The Link Between Design Thinking And Resilience	Forbes
2016	Turnali, Kaan	SAP BrandVoice: Empathy, Design Thinking, And An Obsession With Customer-Centric Innovation	Forbes
2016	Turnali, Kaan	SAP BrandVoice: The Art Of Opportunity And Innovation With Design Thinking	Forbes
2016	Turnali, Kaan	SAP BrandVoice: The Art And Science Of Customer Empathy In Design Thinking	Forbes
2016	Turnali, Kaan	SAP BrandVoice: Innovation With Design Thinking Demands Critical Thinking	Forbes
2016	Council, Young Entrepreneur	Council Post: The Power Of Strategic Design Thinking: Four Principles For Your Business	Forbes
2014	Cohen, Reuven	Design Thinking: A Unified Framework For Innovation	Forbes
2010	Joni, Saj-nicole	Why We All Need More Design Thinking	Forbes
2016	Cho, Jeena	Stuck At A Crossroads? Using 'Design Thinking' To Navigate Uncertainty	Forbes
2016	Stinson, Liz	IBM's Got a Plan to Bring Design Thinking to Big Business	Wired
2014	Design, Jeffrey Tjendra, Business Innovation by	The Origins of Design Thinking	Wired
2014	Critical, Andrew Reid, Vision	Why You Are Design Thinking's Holy Grail	Wired

Magazine content analysis (1)

Article title						
The Four Phases of Design Thinking						
Question	Starting point of the DT process. Ask a lot of questions	Reframing the challenge steers the direction of the process to follow				
Care	Immerse yourself in the daily lives of people you're trying to serve (empathize)					
Connect	Synthesizing (taking existing elements or ideas and integrating them together in fresh new ways)					
Think laterally	Search far and wide for ideas and influences (divergent thinking)	Connect ideas that might not seem to go together				
Commit	Giving form to ideas					
Iterative process with setbacks	Failures are useful to show the designer what works and what needs fixing	"Fail forward" is a particularly valuable quality in times of dynamic change				
Design Thinking Comes of Age						
Making sense of things	Ideas to be simple, intuitive, pleasurable, responsive and flexible	Design thinking is an essential tool for simplifying and humanizing	Adjust to different cultural contexts	Cutting through complexity and imagining a better future		
Focus on emotional experiences of users (emotional resonance)	User empathy involves observing and drawing conclusions about user wants and needs	Use emotional language (words that concern desires, aspirations, engagement, and experience)				
Non linear thinking	Third dimension to the exploration of complexity					
Deploying prototypes	Open-minded culture that that values exploration and experimentation over rule following					
Tolerate failure	Recognize that it's rare to get things right the first time	Accept ambiguity	Innovation involves influence (conclusion reached on the basis of evidence and reasoning) and embracing risks			
Empathy	Empathy in design implicitly drives a more thoughtful, human approach developing solutions					
Design for Action						
Problem solving	Use design to solve extraordinarily persistent and difficult challenges	Managing intangible challenges				
Fear	Fear of the unknown stands in the way of innovative thinking					
The Right Way to Lead Design Thinking						
Personal connection	Establish a personal connection people (users) for whom a solution is being developed	Deep understanding of conditions, situations, and needs. The focus is on achieving connection, even intimacy, with users.	See the world through the user's eyes and capture the essence of their experiences			
Fear of failure	Repeatedly experience something designers try to avoid	Enduring discomfort creates possibilities for change and improvement	Fear of failure is also the source of power			
Divergent thinking	Unsettling aspect is the reliance on divergent thinking					
Design Thinking Is Fundamentally Conservative and Preserves the Status Quo						
Researcher's bias	Importance of paying attention to the researcher's identity and political positioning.					
Includes the users in testing	Openness to users are part of the ongoing interpretive process - allowing them to make changes that meet their needs at that given moment					
Engage with change						
Why Criticism Is Good for Creativity						
Creating through criticism	Innovation teams do not defer criticism; they create through it	You need critical feedback to understand why a original solution is not working	Combine the best of criticism with the best of innovation	When conducted with curiosity and respect, criticism becomes the most advanced form of creativity		
Stimulating ideas through criticism	Debate and criticism do not inhibit ideas, rather they stimulate them	Progress requires clashing and fusing different perspectives	Criticism works only when it leads to enhancing and improving an idea			
Constructive and positive criticism	Turning it from an idea-killing phrase into a way of expanding the flow of creativity rather than stopping it	Listen to critique and learn from it by being curious and open minded	Frame criticism to be helpful and positive			
These Days, Everyone Needs To Engage In Design Thinking						
Framing problems in new ways	Interactions can be improved, humanized, and made more intuitive	Looking at problems in new ways, from new angles, and coming up with new ways to design solutions	Frame and reframe the problem: "Ask a question no one else is asking"			
Open minded	Abandon pre-existing notions and become more open-minded.	Get better at noticing things	The first step in the design-thinking process "is to observe a situation and notice what is actually happening."			
Multiple vantage points	Looking through different lenses to determine the best approach to finding a solution					
Fail fast	Failure is an expected part of the process and will ultimately improve the solution	Failure becomes a way to learn, not proof of incompetency				
Council Post: Design Thinking: Are Empathy And Failure The Secret Ingredients For Your Business' Future?						
Empathy	Empathy leads to a change in perspective					
Willing to fail	To reach a solution you should be willing to fail					
Alter your mindset	Embrace getting uncomfortable	Engage your user, but keep your feelings aside and your mindset open	Understand end user perspectives first before your own	Be willing to let go of preconceived ideas		
Encourage divergence and navigating ambiguity	Get beyond easy answers and find options that might be truly innovative	To goal-oriented people, divergent thinking can generate unnecessary ambiguity about the direction	It involves more than managing change - it involves discovering what kind of change is needed			
How To Implement Design Thinking In Your Startup						
Observe with empathy	Have a curious mind and look at things unconventionally	Look at problems through the eyes of the user	To empathize, you need to interact			
Design thinking is an iterative process						
Involve team members	Internal and external perspectives (diverse)					
Council Post: Seven Ways Design Thinking Enhances Customer Experience						
User needs	Presumpting user needs and anticipating their wants	Make the interaction useful and usable	Shift to the user's perspective			

Empathize	Empathy sets good businesses apart	Understand the user's mindset	Step outside and look at the problem from the user's perspective	Don't start from your own limitations		
Be open minded to alternative solutions						
Why Design Thinking Is The Future Of Sales						
Building up of ideas	In contrast to analytical thinking, which involves the breaking down of ideas, design thinking involves the building up of ideas.	Defining a problem requires a different point of view				
Empathy	Empathy is at the core of design thinking.	Empathy involves both a cognitive dimension—an ability to look at a situation from another person's perspective—as well as an affective dimension—an ability to relate to a person and develop an emotional bond with them				
Bring Design Thinking Into Your Office: Easy Ideas For Incorporating More Creative Problem Solving						
Three phases	Three broad phases: discovery, design, and delivering a solution.					
Immerse	Immerse yourself in a situation in a human-centered way	Move past easy answers to find richer solutions to real problems				
Design Thinking: Your Next Competitive Advantage						
Redefine the problem	Understand it as is in a new context, and figure out how solutions will work in real-time	Shift focus away from a "features-first" approach to a "user-first" mentality	Solve the problem that real people face	Don't just address challenges, rethink them entirely		
Collaboration	Create a positive environment for growth and experimentation	Having multiple perspectives can lead to innovative approaches				
Tap into feelings and experiences	Understanding user's feelings and experiences provides purposeful and informed changes					
Humanizing solutions	Keeping the user constantly in mind so solutions become intuitive and humanized					
The Link Between Design Thinking And Resilience						
Resilience	Resilience involves developing a flexible way of thinking about challenge and adversity and being able to solve problems in an accurate way					
Be curious	Think like a beginner and get curious					
Reframe counterproductive thinking	Your automatic negative thoughts can cause you to miss critical information	Be able to quickly reframe negative thoughts in order to think more flexibly and accurately				
Self-compassion	Be kind to yourself, get support from others, and take a balanced approach to your emotions					
Withhold judgement	Create as many ideas as possible, even those you might consider to be wild and outside of the box					
Fail rapidly	Prototypes allow you to try and fail rapidly					
SAP BrandVoice: Empathy, Design Thinking, And An Obsession With Customer-Centric Innovation						
Empathy as the most important DT principle	Empathy is the most important design thinking principle	Enables us to not only experience and understand another person's circumstances, but it also puts us in our customers' shoes to experience what they are feeling	When we find the innate struggle born out of user frustrations and bound to the intrinsic value chain of the user experience			
Customer-centric begins with empathy	Customer-centric design is about looking out from the inside—rather than outside in	To deliver innovative, customer-centric solutions through design thinking, we must begin with empathy	We embrace the empathy principle by living and experiencing our users' pain points and state of mind strictly from their perspective	When we place the customer (user) at the core of everything we do in our design thinking journey, we foster a human-centered approach that always focuses on needs, including those that are unarticulated or unknown	If we combine empathy to the forefront and make it a focal point of our thinking, we expand our capacity to experience and understand before judging or executing. That's the essence of customer empathy.	
Empathy to discover	The compass that guides us along the innovation path as we set out to discover hidden, but detectable, elements of the user experience	Increase our awareness in a state of design mindfulness				
Preconceived ideas	The more we know about something the more prone we become to intuitive bias	Preconceived mindsets can turn our expertise and experience into perceived knowledge and reinforce them in a form that can be both restrictive in its forward-thinking motion and narrow in its depth and angle				
The strength of empathy in DT	The desire to seek realization and perceptiveness in the experience—not accumulated experience confined to raw knowledge	Humans react to emotional probes—elicited or not—that are often accompanied by emotional assurances rather than logic, reason, or dispassion				
SAP BrandVoice: The Art Of Opportunity And Innovation With Design Thinking						
Growth mindset	Realize that innovation is an opportunity to deliver customer-centric solutions, we develop a growth mindset that's vital for success	Establish a reflective and productive learning process				
Empathetic approach	Create value by applying an empathetic approach	Observe, engage, and immerse yourself in the behavior, needs, and mindset of users				
Engage with users	Accelerate decision making and engage with your users' emotional intelligence					
Collaborate and test with users	Collaborate and co-create among multidisciplinary groups to build alignment and support	During the process, continuous iteration—or learning by doing—enables the team to test ideas and quickly make adjustments along the way to building the solution	This approach opens new channels to creativity, actively engages participants and stakeholders, brings clarity and consensus, and accelerates speed to market.			
Innovation limits	Innovation doesn't have any limits when it's founded on passion and human ingenuity					
SAP BrandVoice: The Art And Science Of Customer Empathy In Design Thinking						
Creativity and empathy	We rely on our creativity to accurately frame a problem and discover the attached opportunity	Using creativity to frame a problem is the art of customer empathy				
Empathetic listening and observing	Essential during the entire design process	Immersion: Place yourself in the full experience through the eyes of the user	Observation: Carefully watch and examine what people are actually doing	Conversation: Accurately capture conversations and personal choices	When we observe, we disappear, rather than interfere.	Insist on seeking untested experiences to capture undefined observations that frame the details of the user journey
Forward-thinking mindset	A forward-thinking mindset that fuels a cultural shift	Delivers a compelling value proposition				
SAP BrandVoice: Innovation With Design Thinking Demands Critical Thinking						
Blending design and critical thinking	Mindset that delivers innovation	Encourages a complete different view	Challenge consensus and pursue alternative views - provides a different picture of current reality	Human-centered models for understanding the problem	Alternative ways of looking at a problem	

Evaluating and improving ideas	Not argumentative	Acquire vital insight about the user experience and strengthen our design assumptions				
Mindful restraint	Eliminates conscious and unconscious bias	Important when it comes to empathy	Critical thinking does not hinder—but rather augments—innovative thinking			
Question ideas and assumptions	Encouraged to rigorously question ideas and assumptions, rather than accepting them without deeper reflection	Determine whether ideas and findings represent a realistic picture of the user experience				
Synchronous process	No longer separate design from thinking; we become a critical thinker in the design	Thoroughly represents the reality of our intended target users by observing the situations and identifying needs and opportunities				
Council Post: The Power Of Strategic Design Thinking: Four Principles For Your Business						
Shift in thinking	Shift from traditional thinking to being authentic and thoughtful	Go beyond the quantitative data, and seek qualitative feedback				
Apply lateral thinking	To drive fresh solutions, it is vital to look across industries and harvest new sources of inspiration					
Empathy education	At the heart of design thinking	Truly understand who users are and what their needs require				
Design Thinking: A Unified Framework For Innovation						
Elements of creativity	Ability to take an abstract idea and create something with it	Within these steps, problems can be framed, the right questions can be asked, more ideas can be created, and the best answers can be chosen. The steps aren't linear; they can occur simultaneously and can be repeated.				
Doing is equally as valuable as thinking	Based on the fundamental belief that an unrepresented idea, one that is never realized, is a worthless proposition	Doing is equally as valuable as thinking				
DT process steps	Problems are framed	Right questions are asked	More ideas are created and the best answers can be chosen	Steps not linear occur simultaneously and repeatedly		
Empathy	Big part of the DT process to understand who you are designing for					
Why We All Need More Design Thinking						
Future oriented	Look at what might be (how to reach that) rather than what has been (extrapolate and modify)					
Optimism and confidence	You need to be optimistic and confident in order to be creative	If you don't have confidence that you can create solutions, you won't create solutions	Being excited about the challenges is the first step in bringing out your creativity	Connects constraints with creativity (look at old problems with new eyes and generate new possibilities)		
Stuck At A Crossroads? Using 'Design Thinking' To Navigate Uncertainty						
Framing (defining the problem)	Refines the issue and focus on the ultimate goal as opposed to narrowing down the problem					
Developing empathy	Understanding the problem from the user's perspective					
Discovery and synthesis	For a more creative and successful collaboration					
Enjoying the process	Conditions and mindsets that allowed for finding satisfaction and joy, even in the midst of doing very difficult work					
IBM's Got a Plan to Bring Design Thinking to Big Business						
Putting user needs first						
The Origins of Design Thinking						
Responding to external change	To respond to external change is to innovate					
Foster creative thinking	Foster creative thinking and actions with design methods and tools designers use	The risk of having a defined process that becomes standardized may lead to a predictable and less creative outcome	Creativity is the ability to make sense of new logic			
Ambiguity	Designer's creative process and mindset are too ambiguous, messy and unpredictable for businesses to follow					
Why You Are Design Thinking's Holy Grail						
Focus on human interaction	Companies should concentrate on the importance of human interaction	Stress the need for human connectivity				
Redefining creatives	Creatives as we know them will be redefined	Though creatives will remain the backbone of the process, their role will be redefined	Those considered creative will be slightly different in comparison to the conventional definition			

Magazine content analysis (7)

Empathy	Creativity	Divergent thinking	Critical thinking	Criticism and innovation	User needs	Lateral thinking	Fear of failure	Referring	Open-minded	Different perspectives	Problem solving	Collaboration
Humans yourself in the daily lives of people (empathy)	Widely on our creativity to accurately frame a problem and overcome the attached opportunity	To deal oriented people, divergent thinking on generate user-story and opportunity about the direction	Critical thinking does not include but rather suggests innovative thinking	When conducted with curiosity and respect, criticism becomes the most advanced form of creativity	Adjust to different cultural contexts	Systematic taking existing elements to plan and integrating them together in fresh new ways	Pitfalls are useful to identify design what works and what needs fixing	Referring to the challenges over the direction of the process to follow	Abandoning existing culture and become more open-minded	Looking through different lenses to determine the best approach to finding a solution	How to be simple, intuitive, pleasant, responsive and flexible	Collaborate and co-create using multiple primary groups to build alignment and support
User empathy involves observing and drawing concrete observations and needs	Using creativity to frame a problem is the act of culture or empathy	It involves more than a single change - it involves discovering what kind of change is needed	Encourage to rigorously question ideas and assumptions, rather than accepting them without deeper reflection	Combine the best of criticism with the best of innovation	Use emotional language (words that concern desires, aspirations, engagement, and experience)	Search for and wide for ideas and influence (divergent thinking)	Accept ambiguity	Outright through complexity and ambiguity better frame	Engage your users, but keep your feelings aside and your mind open	Recognize creative thinking and thinking different perspectives	Managing through challenges	During the process, customer iteration - or learning by doing - enables the team to test ideas and quickly make adjustments along the way to building the solution
Rapidity in design implies that ideas are thoughtful, human approach developing culture	Ability to take on abstract ideas and create something with it	Use the right aspect is the culture on divergent thinking	Innovation teams don't defer criticism, they create through it	Establish a personal connection people (user) for whom a solution is being developed	Connect ideas that might not seem to go together	Innovation involves inference (conclusions reached on the basis of evidence understanding and culture hypothesis)	Open-minded culture that facilitates exploration and experimentation over risk following	Be willing to let go of preconceived ideas	Don't start from your own limitations	Solve the problems that real people face	To drive fresh solutions, it's vital to look across industries and harness new sources of inspiration	
Rapidity leads to a change in perspective	You need to be optimistic and confident in order to be creative	Use the right aspect is the culture on divergent thinking	Debate and criticism do not inhibit ideas, rather they stimulate them	Deep understanding of conditions, constraints, and needs. The focus is on achieving connection, even intimacy, with users	Plan dimensions to the complexity of complexity	Fear of the unknown stands in the way of innovative thinking	Looking at problems in new ways, from new angles, and coming up with new ways to design solutions	Have a curious mind and look at things unconventionally	Harness multiple perspectives can lead to innovative approaches	It respond to external change is to innovate	Discover and synthesize for action creative and successful collaboration	
To empathize, you need to interact	If you don't have confidence that you can create solutions, you won't create solutions		Criticism works only when it leads to enhancing and improving an idea	See the world through the user's eyes and capture the essence of their experience	In contrast to analytical thinking, which involves the building block of ideas, design thinking involves the building up of ideas	Baking discomfort creates possibilities for change and improvement	Frame and reframe the problem. "Ask a question no one else is asking"	Be open-minded to alternative solutions	The more we know about something the more prone we become to believe a bias	Conditions and models that allowed for finding satisfaction and joy, even in the midst of doing very difficult work		
Rapidity involves both a cognitive dimension as it allows for a rapid iteration, another person's perspective - as well as an affective dimension - an ability to make a personal and deeply emotional bond with them	Being excited about the challenges is the first step in bringing out creativity		Openness to users are part of the ongoing iterative process - allowing them to make changes that meet their needs within given moment	Openness to users are part of the ongoing iterative process - allowing them to make changes that meet their needs within given moment		Fear of failure is also the source of power	Defining a problem requires a different point of view	Create a positive environment for growth and experimentation	Reconstructed mindset can turn our expertise and experience into perceived knowledge and intuition that has form that can be both creative in its forward thinking and grounded in its depth and single	Look at what might be (down to earth) that rather than what has been (unrealistic and mostly)		
Ability to not only experience and understand another person's circumstance, but it also puts us in our customers' shoes to experience whatever they are feeling	The risk of having a default position that becomes embedded may inhibit a predictable and less creative outcome		Understand another perspective first before your own	Understand another perspective first before your own		Pitfalls are an expected part of the process and will ultimately improve the solution	Humans yourself in a situation is a human connection	Realize that innovation is an opportunity to deliver customer-centric solutions, we develop a growth mindset that vital for success				
When we facilitate teams through the use of user stories and beyond the initial value chain of the user experience	Optimism and confidence comes as contrasts with creativity (look at old problems with new eyes and generate new possibilities)		Look at problems through the eyes of the user	Look at problems through the eyes of the user		Pitfalls become a way to learn, not proof of incompetency	Understand issues in a new context, and figure out how solutions will work in real time	A forward thinking mindset that facilitates cultural shift	Challenging consensus and unique alternative ways - provides a different picture of current reality			
Customer-centric design is about looking out from the inside - rather than outside in			Shift to the user's perspective	Shift to the user's perspective			Don't just address challenges, rethink them entirely		Not appropriate			
If we can bring empathy to the forefront and make it a first point of our thinking, we expand our capacity to experience and understand before judging or reacting. That's the essence of customer empathy.			Understand the user's mindset	Understand the user's mindset			Be able to quickly reform negative thought in order to think more flexibly and accurately		Eliminate conscious and subconscious bias			
Create value by applying an empathetic approach			Shift focus away from a "bottom-line" approach to a "user-first" mentality	Shift focus away from a "bottom-line" approach to a "user-first" mentality				Connects constraints with creativity (look at old problems with new eyes and generate new possibilities)				
			Understand user's feelings and experience provide purposeful and reform of changes	Understand user's feelings and experience provide purposeful and reform of changes			Reframe the issue and focus on the ultimate goal as opposed to narrowing down the problem					
			Keeping the user constantly in mind and solutions become intuitive and humanized	Keeping the user constantly in mind and solutions become intuitive and humanized								
			When we place the customer (user) at the core of everything we do in our design thinking journey, we foster a human-centered approach that always focuses on needs, including those that are unarticulated or unknown	When we place the customer (user) at the core of everything we do in our design thinking journey, we foster a human-centered approach that always focuses on needs, including those that are unarticulated or unknown								
			Observe, engage, and immerse yourself in the behavior, needs, and mindset of users	Observe, engage, and immerse yourself in the behavior, needs, and mindset of users								
			Accelerate decision-making and engage with your users on critical insights	Accelerate decision-making and engage with your users on critical insights								
			Hold on seeking widespread experiences to capture unmet observations and drive the details of the user journey	Hold on seeking widespread experiences to capture unmet observations and drive the details of the user journey								
			Go beyond the quantitative data, and seek qualitative feedback	Go beyond the quantitative data, and seek qualitative feedback								
			Stress the need for human connectivity	Stress the need for human connectivity								

Appendix 4: Editing Declaration



EDITING DECLARATION

This document certifies that the article-style dissertation listed below was edited for proper use of English language, grammar, punctuation, spelling, typographical errors, and overall style. Chapters 1 and 3 were edited for the correct use of APA referencing style (7th Edition). Chapter 2, written as a journal article, was edited for the correct use of Chicago referencing style according to the requirements of *She Ji: The Journal of Design, Economics, and Innovation*.

Neither the research content nor the author's intentions were altered in any way during the editing process. The author was given the ability to accept or reject all suggestions and changes through Word track changes and comments.

The author is responsible for the final, correct presentation of the content, illustrative materials, tables, arrangement of parts, sentence structure, grammar, paragraphing, punctuation, spelling, typographical errors, quotations, bibliographical items, and all information contained within. The author is also responsible for the detection and correction of all instances of plagiarism.

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Appendix 5: Solemn Declaration and Permission to Submit



NWU Higher Degrees Administration

SOLEMN DECLARATION AND PERMISSION TO SUBMIT

1. Solemn declaration by student

I, **Janet de Jager**declare herewith that the thesis/dissertation/mini-dissertation/article entitled (**exactly as registered/approved title**),

Rethinking Design Thinking from a Positive Psychology Perspective

which I herewith submit to the North-West University is in compliance/partial compliance with the requirements set for the degree:

Masters in Positive Psychology

is my own work, has been text-edited in accordance with the requirements and has not already been submitted to any other university.

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Signature of Student

Janet de Jager

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Signed on this 21st day of December of 2020

2. Permission to submit and solemn declaration by supervisor/promoter

The undersigned declares that the thesis/dissertation/mini-dissertation/article:

- ☒ complies with the A-rules and the technical requirements provided for in the Manual for Master's and Doctoral studies and in faculty rules;
- ☒ has been checked by me for plagiarism (by making use of Turnitin software for example) and a satisfactory report has been obtained;
- ☒ and that the work was language edited before submission for examination.

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- ☐ complies with regards to faculty rules on submission or acceptance by an accredited scientific journal;
- ☐ complies with regards to faculty rules on peer reviewed conference proceedings;
- ☒ the student is hereby granted permission to submit his/her article/mini-dissertation/ dissertation/thesis for examination.

Signatures of supervisor(s) and Promoter(s): (only compulsory in cases where there are co- or assistant- supervisor(s/promoters))

Christi Niesing

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Date: 2020.12.21
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Appendix 6: Turnitin Digital Receipt



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