

THE EXPLORATION OF IMPROVEMENT FOR THE WELL-BEING OF THE
INDUSTRIAL SECTORIAL EMPLOYEES THROUGH CONSCIOUS INTERIOR
DESIGN

Samantha Bacon



Submitted in partial fulfillment of the requirements for the degree BA Honours in
INTERIOR DESIGN
in the module
RESEARCH PRACTICE (RESE8419
at
Vega, an educational brand of The Independent Institute of Education (IIE)

Supervisor: Mr Armand Meyer
Co-Supervisor: Dr. Ria Van Zyl
December 2020

Word Count: 11 125

DECLARATION

I hereby declare that the research report submitted for the BA Honours degree in Interior Design to The Independent Institute of Education (IIE) is my work and has not previously been submitted to another university or higher education institution for degree purposes. I also acknowledge that I:

- understand what plagiarism is;
- know that it is an offence to plagiarism;
- understand that all work submitted has to be my own original work;
- recognize patchwork as a serious form of plagiarism.



11 / 12 / 2020

Date

ABSTRACT

The back-of-house environment is where all products or materials are produced and packaged for contractors and big corporate companies. This environment should be respected and considered through design for well-being specifically for the employees working in that environment. Many employees don't receive inspiration or creativity within their fields of jobs as its all mainly mass production jobs. This study is focused on investigating the importance of design for well-being and spatial planning for the factory environment, with design elements or materials that can improve the well-being of the employees, it is possible to increase productivity and enhance respect for their workspaces. This study follows a qualitative methodology, through an interpretivist paradigm. By answering the research questions presented in this report, all the data is collected through an ethnographic approach. This is done through observations and interviews with participants that work within a factory environment. There are a total of five participants that are observed and interviewed from a company based in Isando, Kempton Park. All the data is collected and then analysed in a spreadsheet to code the information all together. Although there are many factory buildings being neglected, there is a chance to influence the environment surrounding the buildings thus influencing the employees working within the spaces for the better, the intent of this study is to create awareness to Interior Designers to not concentrate on design for well-being for the front-of-house employees but look back at the employees that produce and manufacture the products being sold at the front-of-house.

Keywords: Spatial Planning, Interior Design, Design for well-being, Factory environments.

TABLE OF CONTENTS

LIST OF FIGURES.....	vi
LIST OF TABLES.....	vii
LIST OF APPENDICES.....	viii
LIST OF ABBREVIATIONS.....	ix
LIST OF TERMINOLOGY.....	x

CHAPTER 1 - PROPOSAL AND ORIENTATION OF THE STUDY

1.1 Introduction.....	1
1.2 Background to the Research Problem.....	1
1.3 Problem Statement, Research Questions and Objectives	
1.3.1 Problem Statement.....	2
1.3.2 Research Questions.....	3
1.3.3 Aims and Objectives.....	4
1.4 Overview of the Research Design and Methodology.....	4
1.5 Limitations of the Study.....	6
1.6 Structure of the Study.....	6
1.7 Chapter Summary.....	9

CHAPTER 2 – LITERATURE STUDY

2.1 Introduction.....	10
2.2 Paradigm.....	11
2.3 Theoretical Foundation.....	12
2.4 Literature Review.....	14
2.5 Chapter Summary.....	24

CHAPTER 3 – RESEARCH METHODOLOGY

3.1 Introduction.....	25
3.2 Design of the Study	
3.2.1 Research Approach and Paradigm.....	25
3.2.2 Research Design.....	26

3.3 Sample Selection.....	26
3.4 Data Collection	
3.4.1 Data Collection Tools.....	28
3.4.2 Method of Collection.....	28
3.5 Data Analysis.....	31
3.6 Ethical Considerations.....	32
3.7 Trustworthiness.....	34
3.8 Chapter Summary.....	35
 CHAPTER 4 – FINDINGS, INTERPRETATIONS AND DISCUSSION	
4.1 Introduction.....	37
4.2 Presentations and Discussion of Findings	
4.2.1 Observation Analysis.....	38
4.2.2 Interview Analysis.....	39
4.3 Chapter Summary.....	42
 CHAPTER 5 – CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS	
5.1 Introduction.....	43
5.2 Conclusion Drawn from the Findings and Implications.....	43
5.3 Contributions to the Field.....	45
5.4 Further Research and Critique of the Research.....	46
5.5 Chapter Summary.....	47
 LIST OF REFERENCES.....	48
APPENDICES.....	59

LIST OF FIGURES

Figure 1.1: Bacon, S. 2020. <i>Diagram of the Research Outline.</i>	3
Figure 1.2: Bacon, S. 2020. <i>Research Approach.</i>	5
Figure 2.1: Bacon, S. 2020. <i>Outline of Literatures.</i>	10
Figure 2.2: Desmet & Pohlmeier, 2013. <i>The Positive Design Framework.</i>	12
Figure 2.3: Positive Psychology. 2020. <i>Broaden-and-Build Theory of Positive Emotions.</i>	13
Figure 2.4: Positive Strategic Design. 2020. <i>Determinants of Happiness.</i>	18
Figure 3.1: Bacon, S. 2020. <i>Population Sample Diagram.</i>	27
Figure 3.2: Bacon, S. 2020. <i>Floor Plan of the Factory environment.</i>	30
Figure 3.3: Bacon, S. 2020. <i>Ethics Guidelines.</i>	32
Figure 3.4: Bacon, S. 2020. <i>An interpretation of the Triangulation Process.</i>	35
Figure 4.1: Bacon, S. 2020. <i>Context Map.</i>	37
Figure 4.2: Bacon, S. 2020 <i>Floor Plan of Factory layout.</i>	38

LIST OF TABLES

Table 1.1: Author, 2020. *Alignment and Summary of Research Paper.*

Table 1.2: Savavibool, N., Gatersleben, B. & Moorapun, C. 2018. *Categories of study design and the reported effects of colour in the working environment.*

LIST OF APPENDICES

Appendix A – IIE Ethical Clearance	59
Appendix B – Informed Consent Letters for the participants	61
Appendix C – Letter for permission to Acute Steel Works	62
Appendix D – Letter of permission from Acute Steel Works	63
Appendix E – Approved Interview Guide	64
Appendix F – Data Analysis Spreadsheet	65

LIST OF ABBREVIATIONS

QWL	Quality of Work Life	12
SWB	Subjective Well-Being	10, 11
IEQ	Indoor Environment Quality	21
GBCSA	Green Building Council South Africa	21
SANS	South African National Standards	21

LIST OF TERMINOLOGY

Back-of-house –

Roles for employees in the back of house usually have a strict hierarchy in which each person has a specific job to fill and chain of command to follow. (Web Restaurant Store. 2020.)

Biophilic Design –

Biophilia is defined as the inherent human feeling to associate with nature. Biophilic design, an extension of biophilia, incorporates natural materials, natural light, vegetation, nature views and other experiences of the natural world into the modern built environment. (Skyline Art Services, s.a.)

Design for Well-Being –

Well-being is a state of persons, which labels that they are happy, or thriving and that their life is going well for them. Well-being is often measured to be the highest value to which other values can be included: it is that what makes ones life good; a good life is for many people of the highest value. (Brey, 2015).

Inductive Approach –

Inductive approach, also known in inductive reasoning, starts with the observations and theories are proposed towards the end of the research process as a result of observations. Inductive research “involves the search for pattern from observation and the development of explanations – theories – for those patterns through series of hypotheses”. (Research Methodology, s.a.)

Industrial Sector –

The industrial goods sector is a category of stocks of companies who produce capital goods used in construction and manufacturing. Businesses in the industrial goods sector make and sell machinery, equipment, and supplies that are used to produce other goods rather than sold directly to consumers. The Industrial Sector is the main area that is being focused on and needs improvement for well-being design.

Positive Design –

“Positive Design – design that creates means for increasing people’s happiness.”

Positive Design involves with elements that can be used to influence people’s emotions in a positive effect. (Seven Innovation, s.a.)

Sick Buildings –

“Sick building syndrome is used to describe situations in which building inhabitants experience acute health and comfort effects that appear to be linked to time spent in a building, but no exact illness or cause can be identified.” (EPA, 1991).

Subjective Well-Being –

Subjective well-being (SWB) is defined as ‘a person’s mental and affective evaluations of his or her life’ (Diener, Lucas, & Oishi, 2002, p. 63).

CHAPTER 1 – PROPOSAL AND ORIENTATION OF THE STUDY

1.1 INTRODUCTION

The main research topic that is being investigated is, design for well-being for employees that is incorporated into the Industrial sector in South Africa. Considering the amount of time the employees spend in buildings, the physical conditions in the workplace are important factors of satisfaction, comfort, well-being and effectiveness, and can play an important role in their mental health. (Thirion-Venter, E.M., 2013). Identifying questions and key words will add relevance to the investigation and problem, the Industrial Sector is currently experiencing in South Africa.

1.2 BACKGROUND OF THE RESEARCH PROBLEM

Design for well-being is an important role in the life of a living being as this helps the person/animal live with life satisfaction and measure their quality of life in the home space as well as the workspace. (Thirion-Venter, E.M., 2013). Therefore, the focus will be on the individuals' different perspectives and reactions to the spatial difficulties. An investigation into the fundamental idea will include researching how spatial and design for well-being can be functional, effective, as well as appealingly.

In the process of investigating this problem, a detailed investigation will be conducted. The investigation will include a literature review that will discuss prior research on this problem. Specific research methods and methodologies will be chosen. The chosen method will be implemented during the data collection process. The anticipated result will be a spatial, organized workspace that inspires productivity and improves well-being.

1.3 PROBLEM STATEMENT, RESEARCH QUESTIONS AND OBJECTIVES

1.3.1 Problem Statement

Ann Petermans & Anna Polymeyer (2014) believes Interior Design can influence the well-being for employees within any industry. It is observantly that the Industrial Sector of South Africa has been left behind or has been failed through Interior Design. This has an impact on the employees and businesses that is involved in this sector. The Industrial Sector has an important role in South Africa's economy and businesses relying on manufacturing and product. Design for well-being has become popular within the corporate and residential environments, however there is still a large gap for improvements within the Industrial Sector.

The purpose of this research study is to initially identify how the notion of well-being, through the design of interior, working environments within the Industrial Sector, can encourage the well-being of its employee by process of mindful design strategies, as seen in Figure 1.1. Additionally, beforehand-envisioned involvements exactly meant for this sector will be investigated, alongside with adding factors from failed and unsuccessful implementations. This important sector is classified as a 'back of the house' environment, and is usually neglected, while the 'front of the house' areas get more attention with designing for the employees. (Kirillova, K., Fu, X. & Kucukusta, D., 2018) This allows the heart of the company loose positivity and meaning, as it's not appreciated as much as the 'front of the house'. The health and well-being of the employees is fundamental – for personal well-being with reference to happiness and ability to flourish (Brey, 2015) and will be reflected throughout the investigation of this problem.

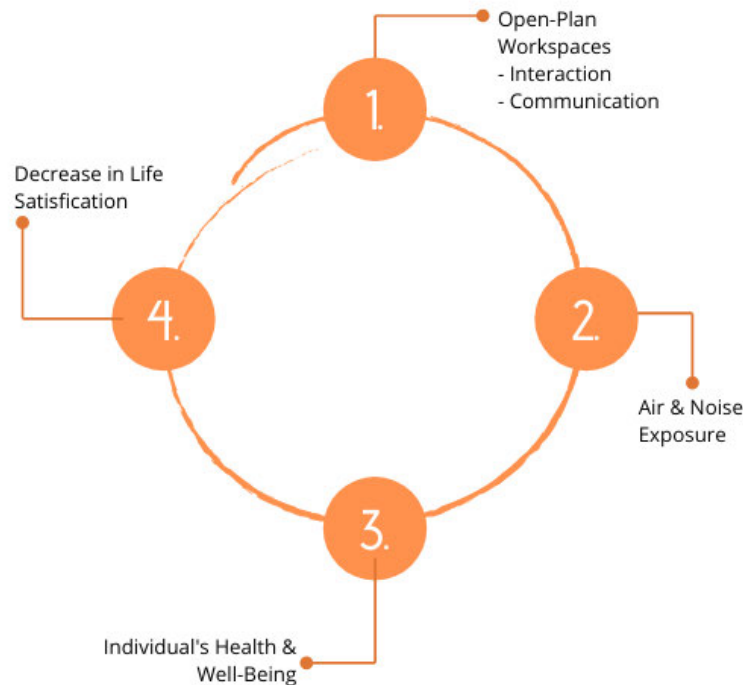


Figure 1.1: Bacon, S. 2020. *Diagram of the Research Outline.*

1.3.2 Research Questions

The primary research question:

How can Interior Design enhance the well-being of an employee within the Industrial Sector through Positive Design?

The secondary research questions:

- *How can Interior Design boost well-being within the space?*
- *What well-being elements can be used?*
- *What current approaches have been established to improve well-being for employees within the Industrial Sector?*
- *How can positive design, if applied effectively, improve existing conditions of employees within the Industrial Sector?*

1.3.3 Aims and Objectives

The research objective is to prove that design for well-being has a positive effect on the employee's productivity and morale towards their employer and life as well as the concept that the back-of-house area needs similar design attention as the front-of-house. The objectives of this research are:

- OBJECTIVE ONE: To explore simple elements of well-being design to implement within the workspaces for the employee's well-being and productivity.
- OBJECTIVE TWO: To develop ways of how to incorporate nature and natural materials within the workspaces.
- OBJECTIVE THREE: To explore ways of how to keep the workspace positively to have a long-term effect on the employee's well-being.

1.4 OVERVIEW OF THE RESEARCH DESIGN AND METHODOLOGY

This research study will be a Qualitative approach, this is a method of observation to collect non-numerical figures, this is focusing on meaning-making. Subjective research will be collected and analyzed to answer the primary research question. A qualitative approach is suitable for this research study because this study is using subjective responses and opinions from employees that can influence South Africa. The main research method that will be used to gain the information from the participants through questions that will be conducted as an interview; this is because some participants are illiterate. The researcher will be conducting these questionnaires/interviews with a post positivist mind, as the researcher can understand that the participant's backgrounds, knowledge and values will influence their answer.

The paradigm for this investigation is Interpretivism, it is explained by Research Methodology (2019), Interpretivism, with understanding, is seeing the world as it is from subjective experiences of individuals. This paradigm works well as this

investigation is based on subjective well-being and subjective responses from the participants. This paradigm will be perceived through an axiology point of view as it refers to value of judgment through a subjective perspective. (Research Methodology. 2019).

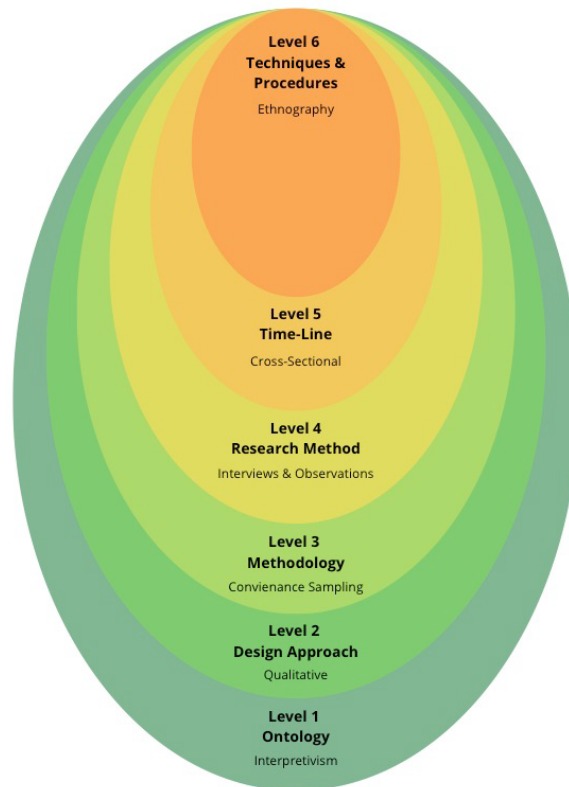


Figure 1.2: Author, 2020. *Research Approach*.

The tradition chosen is an axiological position of Interpretivism, this perspective holds that individuals do not have access to the real world, implying that their knowledge of the apparent world is meaningful in its own terms and can be assumed through careful use of interpretivist measures. (Integrity, 2016). This tradition is appropriate to this research study as the data will be from the subjective experience of employees that work in the Industrial Sector, this will further the investigation of how the current Interior Design well-being influences the employees life satisfactory and productivity. The tradition will be perceived from an axiology point of view, as this is the study of the nature of value and the things that are valuable within a research point of view. (Research Methodology, 2019). This

perception is relevant as the value of the employee's subjective well-being is the main reason why Interior Spaces need to be positively designed for the positive impact on well-being. The design approach for this study will be inductive as the inductive approach is specific to the general. There are conducted observations, distinguish a pattern, make an overview, and conclude an explanation or a theory for the study. (Wassertheil- Smoller, 2017).

1.5 LIMITATIONS OF THE STUDY

Recalling the study is collecting data from human participants, the limitations will be their subjective responses that can be influenced by everyday life in and exterior of the workplace. The interviews are also limitations as it will be timed during work hours and thus can create a slow down in productivity. Another limitations, in relation to the participants, are confidentiality. In this study, confidentiality of the participant will be kept confidential, as only the researcher and the supervisor will know their identities. The observation process will also be a limitation, while work environments differ and the productivity cannot be interfered with. This study will focus on the employees within the back-of-house. The associated research investigation is also limited, due to this study being conducted at Honours level. Time is then a limitation. To stabilize the limitation of time, all data collected and analysed will be documented through heavy and detailed descriptions. Another limitation in 2020 is the COVID-19 pandemic and the national lockdown. This is a limitation as the employees and businesses were shutdown due to the pandemic. This pushes time as the data could only be collected much later in the year and safety precautions were taken place while the interviews were being conducted.

1.6 STRUCTURE OF THE RESEARCH PAPER

Table 1.1 is a summary of this research paper and emphasizes the arrangement between the research questions, objectives and methodology. This table is an outline of the structure of the intended paper.

Table 1.1: Alignment and Summary of Research Paper

	Aim & Objectives	Research Method & Data Collection	Data Analysis	Ch.
Orientation of the Study				1
Primary Question How can Interior Design enhance the well-being of an employee within the Industrial Sector through Positive Design?	Aim To investigate the effect of design for well-being and spatial planning on employees in the back-of-house within the Industrial Sector.	Research Method The Interrpetivist paradigm and literature reviews will be used as the research methods. Interviews and observations will be used to collect the data.	Data Analysis The transcribed interviews and observation field notes will be captured on Microsoft Excel.	2 3 4
Question 1 How can Interior Design boost well-being of the employee within the space?	Objective 1 To explore simple elements of well-being design to implement within the workspaces for the employee's well-being and productivity.	The aim of using the interpretivist paradigm is to interpret and understand the individuals' personal experience of special planning in the factory environment. This will be conducted through interviews and observations.	Through transcribing and capturing of the collection process, the data will be analysed and presented primarily through connect mapping.	2 3 4

Research Questions	Aim & Objectives	Research Method & Data Collection	Data Analyses	Ch.
Question 2 How can Interior Design boost well-being within the space?	Objective 2 To develop ways of how to incorporate nature and natural materials within the workspaces.	Through an ethnographic approach, the interview process will be documented with an audio recording. Data will be collected from the literature review.	After interviewing the participants, the interviews will be transcribed and presented in a context map, word cloud as well as diagrams.	2 3 4
Question 3 What current approaches have been established to improve well-being for employees within the Industrial Sector?	Objective 3 To explore ways of how to keep the workspace positively to have a long-term effect on the employee's well-being.	Through the information found in the literature review, as well as the two ethnography data collection tools, a conclusion could be established regarding the problems of lack of design for well-being, spatial planning and productivity.	As mentioned above, through the transcribing and capturing of the collection process, a personal understanding will be integrated and presented through context mapping and diagrams.	2 3 4
Conclusion, limitations and implications				5

Outline of Chapters

Chapter 1: Proposal and Orientation of the Study

Chapter 2: Literature Study

Chapter 3: Research Methodology

Chapter 4: Findings, Interpretations and Discussions

Chapter 5: Conclusion, Implications and Recommendations

1.7 CHAPTER SUMMARY

Due to the health effects from lack of design for well-being, an expected result for this research is to create awareness towards Interior Designers. To design well-being spaces for these employees in the back-of-house space of large companies. This study, as part of the Honours in Interior Design at Vega, could perhaps generate or add onto existing research that will be presented in the literature review. Thus, the anticipated result will be to incorporate simple design elements and spatial planning to enhance well-being in an open-plan factory.

CHAPTER 2 – LITERATURE STUDY

2.1 INTRODUCTION

Throughout the research process of this problem, a literature review is an important part in understanding other researchers' views about the problem being explored. The summaries of articles are to determine significance, identify gaps in the occupation and to support with the trustworthiness of this study. Additionally, they will determine importance in the literature review and pinpoint changes of opinion in the literature to either further support or provide other points of views on the topic. The researcher will carefully identify each topic within the research questions and their relevance to the study and progress towards resolving the research questions with the appropriate literature in the interest that the possible results can add to the phenomenology. The following selected literature will guide the growth of the investigation, as seen in Figure 2.1.

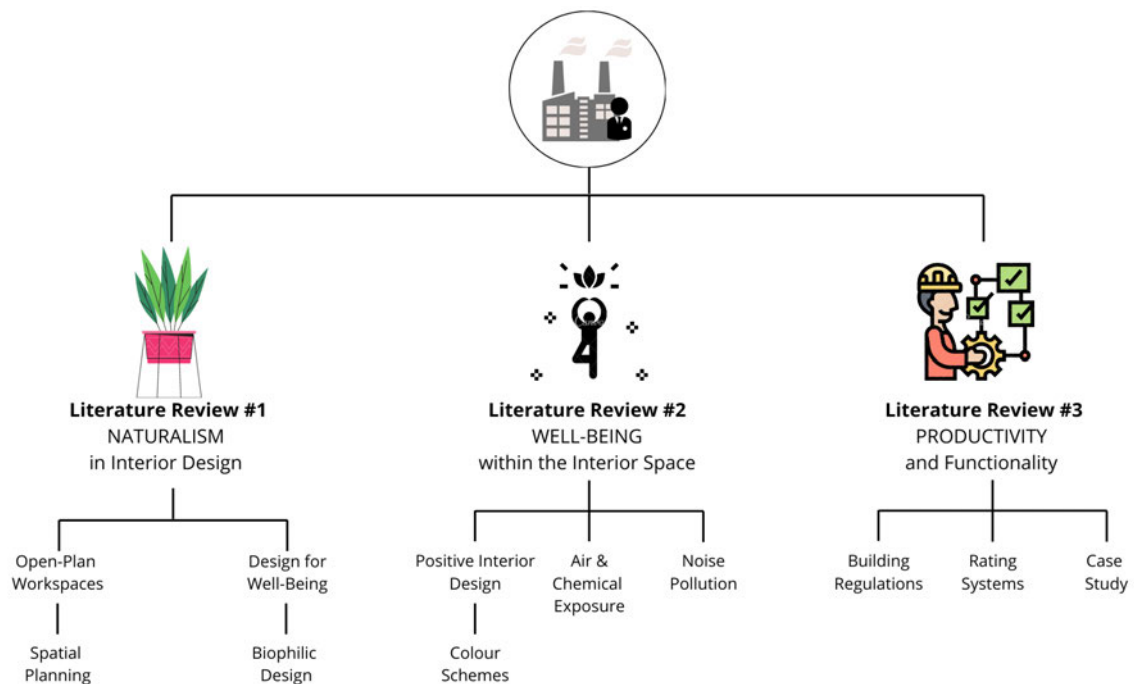


Figure 2.1: Bacon, S. 2020. *Outline of Literatures*.

2.2 PARADIGM

The paradigm for this investigation is Interpretivism, it is explained by Research Methodology (2019), Interpretivism, with understanding, is seeing the world as it is from subjective experiences of individuals. This paradigm works well as this investigation is based on subjective well-being and subjective responses from the participants. This paradigm will be perceived through an axiology point of view as it refers to the value of judgment through a subjective perspective. (Oxford Dictionary, s.a.).

The tradition chosen is an axiological position of Interpretivism, this perspective holds that individuals do not have access to the real world, implying that their knowledge of the apparent world is meaningful in its terms and can be assumed through careful use of interpretivist measures. (Integrity, 2016). This tradition is appropriate to this research study as the data will be from the subjective experience of employees that work in the Industrial Sector, this will further the investigation of how the current Interior Design well-being influences the employee's life satisfaction and productivity. The tradition will be perceived from an axiology point of view, as this is the study of the nature of value and the things that are valuable within a research point of view. (Research Methodology, 2019). This perception is relevant as the value of the employee's subjective well-being is the main reason why Interior Spaces need to be positively designed for the positive impact on well-being. The design approach for this study will be inductive as the inductive approach is specific to the general. There are conducted observations, distinguish a pattern, make an overview, and conclude an explanation or a theory for the study. (Wassertheil- Smoller, 2017).

2.3 THEORETICAL FOUNDATION

The main Key Theory that will be used in this research study is Design for Well-Being. This theory will be investigated through design for well-being of people which can influence through their mental, physical and emotional state. Ann Petermans & et al, (2014). believes Interior Design can create or bring out emotions, memories or make you comfortable in a space.

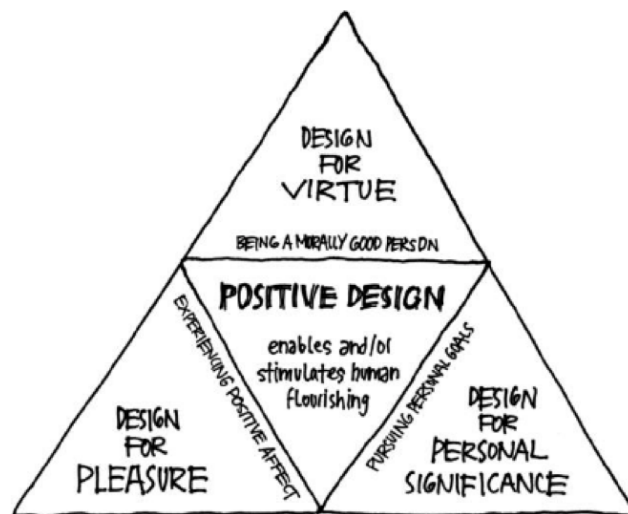


Figure 2.2: *The Positive Design Framework*: Desmet & Pohlmeier, 2013, p.7.

This Design Framework focuses on three components for SWB:

- Design for Pleasure – This component aims to increase the experience of pleasure and reduce unhappiness. Understanding this component from a design perspective, it is clear that design can function as a direct source of pleasure or facilitate pleasurable activities. (Petermans, A. & et al, 2014). These activities can allow people experience and enjoy the occurrence of and connection with themselves and the environment.

- Design for Personal Significance – This component supports people in following their own personal goals. Design can be an implementer to support people to commit to or reach their personal goals as well as a symbolic representation of personally meaningful value and past achievements. (Brunstein, 1993).

- Design for Virtue – This component pushes people to be an ethically good person. The six core virtues that needs to be considered for design for virtue is: wisdom and knowledge, courage, love and humanity, justice, temperance and spirituality and transcendence. (Peterson and Seligman, 2004).

The individuality of Positive Design is the open purpose to increase SWB, which motivates the design process from the start. (Petermans, A. & et al, 2014).

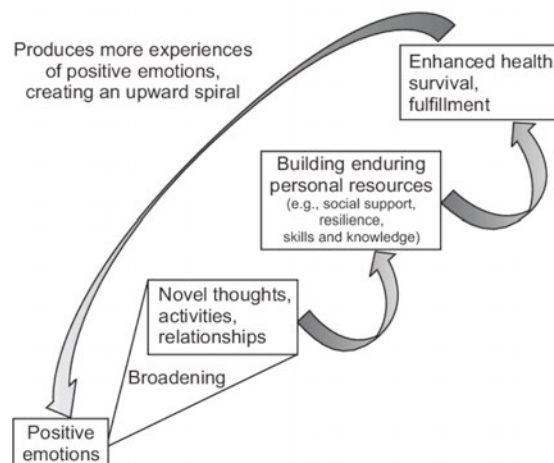


Figure 2.3: Positive Psychology. 2020. *Broaden-and-Build Theory of Positive Emotions*.

This broaden-and-build theory is a model for describing the devices behind positive emotions, mentally and emotionally. It's important to understand and advance the well-being of people, but it has been a challenge to examine. Referring to emotions, researcher, Barbara Frederickson, explains "multicomponent response tendencies that unfold over relatively short time spans." (Frederickson, B., 2020). The issue that has arisen is, the negative emotions like fear, anger and disgust has been studied but leaving a group of positive emotions not researched. This theory looks at broadening the perspectives and actions of people and try to build vital and fixed physical, intellectual, psychological and social resources. "Positive emotions may allow for more creative cognitive processing, including making more connections and creating more inclusive categories. (Frederickson, B. 2020).

2.4 LITERATURE REVIEW

- i. Literature relating to how Interior Design can boost well-being towards employees within a space:

Open-Plan Workspaces

Open-Plan Workspaces have been proven to have a positive effect on employees, workflow, and productivity thus why it has been implemented in the corporate and residential environments. Providing the open-plan workspaces, employees and visitors become more visible; employees are more accessible in their stations and can collaborate with other employees whenever needed. (Berstein, E., & Waber, B. 2019). According to Sundstrom, E., Graehl, M. & Sundstrom, M.G. (1986a, p.43), "The psychology of the workplace requires an understanding of some recurring issues in the evolution of the office and factory: comfort and efficiency, communication and interpersonal relationships and the productivity and effectiveness of the organization." Space layouts and open-plan workspaces can influence the QWL for employees that can enable communication, collaboration, and improve mutual support behaviors and co-operation between the employees within the space. (Vischer, J. et al. 2017). Workplace design and its influence on occupants have come to be recognized as having a significant impact not only on work performance, but also on employee commitment and even on the creation of knowledge within the organization (Vischer, 2008a). The current trend in workplace development is to broaden the view of the physical and social features of employee environments in order to improve working conditions and, thereby, promote employee satisfaction, well-being, and effectiveness on the job. (Samani, S., Rasid, S. Z. A. & Sofian, S. 2017.) Though often touted for their flexibility, open-plan of offices typically do not allow employees to regulate such ambient factors as lighting. Therefore, it comes as no surprise that some studies have found that open of office design can contribute to employees' dissatisfaction with their environment and negatively affect their productivity (Brennan, Chugh, & Kline, 2002; De Been & Beijer, 2014; Hua, 2007).

Spatial Planning

An understanding of the use and allocation of space is a cornerstone in the many design disciplines that shape our built environment today. Knowledge of space planning and programming are essential tools in conceiving a successful project. (Kubba, S. 2003.)

The hallmark of a good space planner/interior designer is the ability to create a space that is both functional and aesthetically pleasing. The physical relationship between workers and their machines will continue to be an issue as people spend increasing amounts of time dealing with each other through machines. Improving the comfort of sitting at computers for long hours would be best dealt with as a combined effort between corporations and manufacturers. Modern interior spaces have incorporated and integrated new technologies as they become available. (Kubba, S. 2003)

Before embarking on design work, the designer must fully understand how the spaces 'fit together' and the way in which these spaces are affected by light throughout the day. (Dodsworth, S. 2009.) There are two different aspects of the space that are worthy of our attention; firstly, the spatial relationships that exist between the enclosed volume and the building elements that form the enclosure, and secondly, the construction of those building elements. (Dodsworth, S. 2009.) The analysis of spatial factors is fundamental to determining appropriate conditions for the satisfaction of occupants' needs in actual space in terms of self-reported examined procedures in spatial design adequacy. (Sangwon, L., Hussain, H. A. & Sooyoung, K. 2017.)

Design for well-being

Well-Being is when a person defines when they are happy or flourishing and that their life is going well for them. (Brey, P. 2015). Designing for happiness in a space is important as it is said by Petermans, A. & Nuyts, E. that happy people seem to be well-off in many fields of life, and these successes are at least in part owed to

their happiness. There is an enormous challenge in further understanding how architects and interior architects can design spaces in such a way so that they can function as a large, inspiring, and productive framework wherein people can set up important activities that add to their happiness.

Petermans, A. & et al. (2016, p115), There is no agreement on the idea of well-being and happiness, except in design disciplines that focus' on this topic and the users. Incorporating design elements and activities within the environment can allow the participants to do something expressive or something that adds meaning and pleasure to their life. (Petermans, A. & et al. 2016). The important questions as a designer, you need to ask is, "Can I be happy in their environment?" and "Does the environment enable me to work on my happiness?" These questions will allow the space to be versatile and influence subjective viewpoints.

Understanding in such developments is challenging, as architects or interior architects are vital to fall into the worldview of the worried objective group, get to know the needs and wants of the diverse participants involved and have to do a meaningful effort in trying to combine these different sources of input into an appreciated architectural or interior architectural concept that can request an answer to the different participants' desires and goals. Petermans, A. & et al. (2016), explains Interior architects or architects will be asked to design a future health care facility, a school, or an office environment as these spaces are the main focused environments needed for positive designing.

Biophilic Design

Kellert, S.R. & Calabrese, E.F. (2016) explains Biophilic Design pursues to create a good environment for people as an organic system in the modern built environment that improves people's well-being, strength, and happiness. Biophilic Design can be implemented in any environment, community, building, or even an office or school.

This theory is categorized into three experiences: direct experience of nature, the

indirect experience of nature, and experience of space and place. Direct experience of nature refers to plants, light, water – any natural elements that people can have physical contact with. Indirect Experience of nature refers to physical contact with the depiction of nature, the transformation of nature or natural patterns, and artwork within the space. The Experience of space and place refers to the spatial feeling of the environment that can advance human health and well-being. (Kellert, S.R. & et al. 2016). These strategies can influence the workspace with bringing in the natural environment; this allows participants within the harsh Industrial Sector to be exposed in a positive way within the natural environment. Biophilic design is about creating good habitat for people as a biological organism in the built environment. (Kellert, S.R. & et al. 2016)

Conserving and maintaining our buildings and landscapes also requires an attachment to and affection for these creations that originates in the realization of their contribution to our physical and mental health and well-being through an array of beneficial connections to nature. (Kellert, S.R. & et al. 2016)

Often in a messy, unorganized workspace, the personal well-being of the employees is neglected. However, by incorporating biophilic design and special planning, working environments and personal well-being can be enhanced and solved.

ii. Literature relating to well-being within an Interior Space.

Positive Design

Positive design is based on design theories and positive psychology. Research indicates that the performance of happy people can increase up to 12% whilst maintaining quality of work. On the other hand, people can lose up to 10% of their performance when they are unhappy. Thus, an employee's subjective well-being plays a significant role in their performance, especially in the service-part of a product-service system this can have an increased impact. (Positive Strategic Design, 2020)

When talking about positive and negative spaces it is important to first understand the term “space” in itself. Positive psychology is the science that focuses on understanding what makes people happy and what makes them flourish. Research has found that happiness is determined by three factors, and that two of these three determinants are possible to design for. (Positive Strategic Design, 2020)

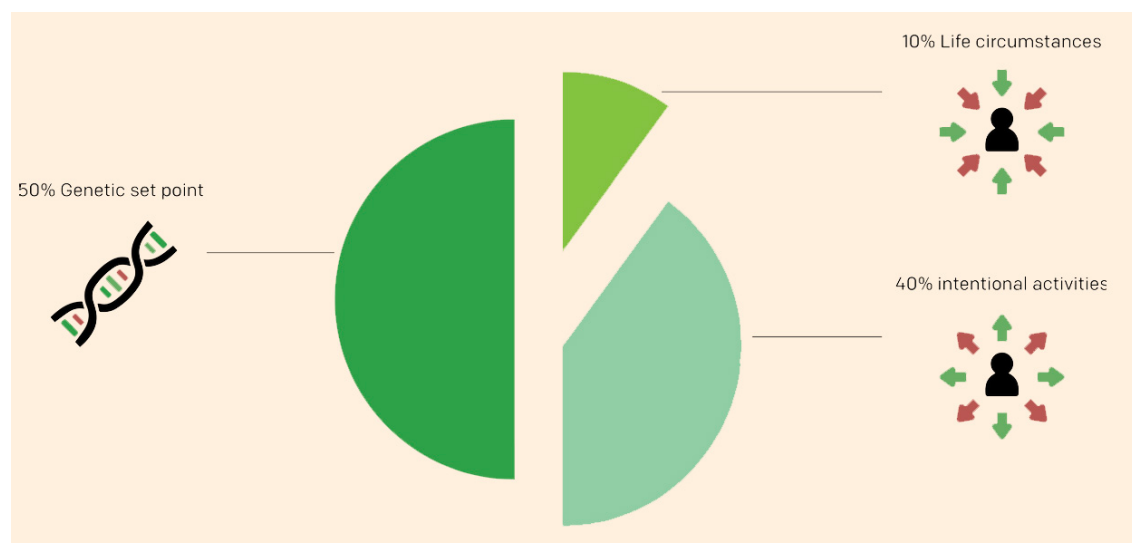


Figure 2.4: Positive Strategic Design. 2020. *Determinants of Happiness.*

Colour Schemes

Colours have been proven that they can suggest different emotions and feelings as well as bring back memories you thought you have forgotten. These colours are embedded in “psychological effects, biological conditioning, and cultural imprinting.” (Gremillion, A.S, 2019). There are different schemes of how to showcase colours to bring out emotions, feelings, or actions. It all depends on what the colours brightness, shade; tint, or tone are showcased in a space. There is a list of these different elements such as warm colours and cool colours; happy colours and sad colours; calming colours and energizing colours to influence someone’s feelings or mood within a space. Savavibool, N., Gatersleben, B. & Moorapun, C. conducted a colour systematic review on a wide range of participants such as students, employees, managers, etc.

As shown in Table 2, the categories and methods used to conduct this theory of colour. Savavibool, N. & et al. 2018. presents the results from the study, for colour preference, in total 16 studies were used and found that blue and green are found to be the most favorite colours and as predicted, colour preference is influenced by differences in age, gender, cultural aspect, background, and experience. White is a favorite neutral colour and workers chose to work in a white environment. (Savavibool, N. & et al. 2018). For mood and emotion, a total of 21 studies were used and the replies were that green influences a positive emotional response and are linked with relaxation and happiness. It has shown that blue is seen more positive than red in an open-plan environment whereas red is seen stimulating but distracting at the same time, as well as white walls are seen to be boring and not interesting. (Savavibool, N. et al. 2018). For productivity, four studies were used and showed neutral colours and cool blue colours, between warm and cool colours can improve productivity. (Savavibool, N. et al. 2018). Referring to Table 2 and understanding the results colour affects mentally and physically within every working environment. “The use of colour in the workplace can enhance positive mood, contribute the sense of well-being, and lead to a positive outcome.” (Savavibool, N. et al. 2018).

Air and Chemical Exposure

Certain groups of the population – children, pregnant women, the elderly, and specific groups of workers – are mainly exposed to the risks from chemical exposure, and, have a greater chance of increasing adverse health effects throughout their life. (Goldenman, G., Holland, M., Lietzmann J., Meura, L., Camboni, M., Reihlen, A., and Bakker, J. 2017). These groups of participants must be protected and need special protection from the health effects and risks they work with.

Focusing on the workers that are vulnerable to chemical exposures: the biggest risk is the language barrier that can cause miscommunication with health and safety information being translated, poor working conditions with no natural air or ventilation within the space and lack of natural light, lack of training with heavy machinery and working at client premises without any knowledge of safety regulations for other people around. (Goldenman, G. et al. 2017). Due to economic strains, lower socio-economic people work in the factories or Industrial Sector as skills are taught and it is based on mass production, but these people are exposed to air and noise pollution twice – at home in informal settlements and their workplace.

In informal settlements, a study has found that the concentration of pollution is higher than in other living areas. (Goldenman, G. et al. 2017). There are challenges with chemical risk valuation for exposed groups, whose consumption patterns and exposure levels may vary knowingly based on the age group, geographical location, and lifestyle factors, and who may be exposed to many chemicals over time. (Goldenman, G. et al. 2017).

Noise Pollution

The main sources of the noise pollution within the workplaces are machinery and technological equipment, or handheld tools and material handling. The main issue for noise pollution is operating machinery and hand-held tools. (Piňosová, M., Liptai, P. & Lumnitzer, E. 2011). In measuring the noise in the working environment of man is principal to define what sort of traffic goes, what types of machinery and equipment are at work used, as spoken issues of noise, in which technical state are used machinery and equipment. (Piňosová, M. et al. 2011).

Piňosová, M. et al (2011) describes “noise as the main effect of harassing, harmful and disruptive activities and welfare of man.” Measurement of noise in the work area is conveyed out when in a noisy area changes more people, space is filled with a better number of noise foundations of the same type and level of noise in the workspace does not change notably. (Piňosová, M. et al. 2011).

- iii. Literature relation to the relationship between spatial planning and productivity.

BUILDING REGULATIONS

The Building Regulations for Factories and Warehouses is focused on the main building and the structure, but this can create a comfortable space with regards to lighting, air ventilation and the safety for the building. A room where there will be dust, gas vapor or volatile matter and hazardous biological agents, which might be dangerous to safety or health, should have a provision of openings for natural ventilation. (National Building Standards, 1977.)

Where specialist ventilation plants are provided as part of the protection measures against hazardous substances, and for the protection of occupants and to ensure safe procedures, such as in hospital theatres, such plant shall be inspected and validated at least every 12 months by an independent competent person. (National Building Standards, 1977.)

The foundation of any building shall be designed and constructed to safely transmit all the actions which can reasonably be expected to occur from such building to the ground and in such a manner that any local damage (including cracking), deformation or vibration do not compromise the efficient use of a building or the functioning of any element of a building or equipment within a building. (National Building Standards, 1977.)

Any wall shall be designed and constructed to safely sustain any actions which can reasonably be expected to occur and in such a manner that any local damage (including cracking) or deformation do not compromise the opening and closing of doors and windows or the weather tightness of the wall and in the case of any structural wall, be capable of safely transferring such actions to the foundations supporting such wall. (National Building Standards, 1977.)

RATING SYSTEMS

There are no rules or regulations for factories or warehouses that have been established and thus creates a gap within the research. There are National Building Regulations for structures within the SANS 10400, but those regulations aren't focused on chemical or metal exposure specifically for factories or warehouses. The GBCSA recognizes the key areas such as water, energy, transport, Indoor Environment Quality (IEQ), material, management, emissions, innovation, land use and ecology. (GBCSA, s.a.)

High temperatures in factories can increase health risks and cause trouble with equipment, both of which can reduce productivity and potentially harm factory employees. For these reasons, it's essential to implement proper factory cooling solutions. (Global Electronic Services. 2020.) Factory workers have always had to deal with problems related to high temperatures, but several factors have caused heat to become an even more common issue today. This has raised awareness of the damage that heat can cause and the importance of factory cooling solutions. (Global Electronic Services. 2020.) If the temperature becomes too high in your facility, and you need to cool it down, you can try a manual method of reducing heat on the factory floor. In more extreme cases, this may not be enough — its effectiveness depends on the setup of your building. However, manual methods are a practical first technique to try. (Global Electronic Services. 2020.)

When choosing lighting solutions, the setting plays a big role in determining the right options. If you are trying to figure out the keys to successful factory lighting, you may feel overwhelmed by the many options on the market. However, not every option is ideal for your particular setting. Here are a few tips for finding the right factory lighting. (Warehouse Lighting. 2020.)

CASE STUDY

Bialowolska, D. W. and associates (2018) conducted a study investigating a new approach to the well-being of factory workers in the global supply chains. The outcome of this study was that by setting out a metric for continuous process improvement that includes workers' voice, buyers and suppliers all standing to gain – especially in the most vulnerable workforces and regions of the globe – business can choose to be a force for good by changing expectations on the factory floor. (Bialowolska, D.W., Mcneely, E. & Leon, C. 2018.)

Worker health and well-being were considered in relation to various business outcomes, such as turnover and job satisfaction. From this perspective, we explored the potential dependencies between worker needs and business needs at the factory level. (Bialowolska, D.W., & ens. 2018.)

By understanding the dependencies between worker needs and business needs at the factory level, both the employer and employee will benefit. Healthy, happy and productive employees will be surrounding the employer. It is important to consider and design around your employer and employees needs within the environment that is housing and is comfortable.

2.5 CHAPTER SUMMARY

These literature articles raise concerns about certain working environments that don't get the attention that it deserves with a design for well-being. The Industrial Sector's working conditions expose employees to air and noise pollution. This working sector of South Africa is the most venerable out there as many of them work in harsh conditions and chemicals, unstable facilities, metals, and fabrics. There are the employees, as designers, should be designing for and creating new concepts for the evolution of manufacturing and self-satisfaction within the employees in South Africa. Petermans, A. & et al (2016) states that different researchers in architecture and interior architecture are beginning to redirect about the question of how the constructed environment can add to happiness.

CHAPTER 3 – RESEARCH METHODOLOGY

3.1 INTRODUCTION

The methodology that this study will follow is a qualitative method. This will support in answering the questions mentioned in Chapter 1. A short method of the objective is to explore simple elements of well-being design to implement within the workspaces for the employee's well-being and productivity.

3.2 DESIGN OF THE STUDY

3.2.1 Research Approach and Paradigm

This research study, the interpretivist paradigm will be applied. The interpretivist paradigm is used to gain understanding knowledge related to human and social sciences cannot be the same as its usage in physical sciences because human interprets their world and then acts based on such interpretation while the world does not. (Pham, L. T. M. 2018.) Interpretivists adapt a relativist ontology in which a single phenomenon may have multiple interpretations rather than a truth that can be determined by a process of measurement. (Pham, L. T. M. 2018.) Hammersley (2013) emphasizes that since multiple interpretation is developed among humans' relationship, interpretivist researchers should try to understand "the diverse ways of seeing and experiencing the world through different contexts and cultures" and try to avoid the bias in studying the events and people with their own interpretations.

Alongside with the interpretivist paradigm, an ethnographic approach will be used for the data collection process. This approach is used when the researcher tries to gain a deep understanding of a cultural practice. (Crouch and Pearce, 2012). The ethnography tools that will be used are the observation and interviews. (Alzheimer Europe, 2009). The ethnography tools will influence the addition principles of the population sample. The paradigm and ethnographic approach

work together with their common factors of gaining a deep understanding of the certain collection of participants. (Crouch and Pearce, 2012). Thus, the research process will be investigated to understand the effects of lack of design for well-being.

3.2.2 Research Design

This research study will follow a qualitative methodology. Qualitative methods are regularly used to investigate human behaviour and environments. (Crouch and Pearce, 2012). Qualitative methodology is a way of understanding the experiences, values and opinions of a specific population. (McLeod, 2019). This method will be used to understand the relationship between people and their current working environments. Qualitative methodology, merged with the interpretivist paradigm and an ethnographic approach, will add in attaining personal understanding and opinions of the participants in this study. (Crouch and Pearce, 2012).

The research approach and paradigm were selected with regards to the case study mentioned in the literature review. Bialowolska, D. W., conducted the case study and associates (2018) conducted a study investigating a new approach to the well-being of factory workers in the global supply chains. The key difference between the case study and this research study is that Bialowolska, D. W. and associates (2018) emphasizes on quantitative methodology, however, this study will be directing on human experiences. Thus, a qualitative approach will be used. The sample group will contain of participants from a factory open-plan environment.

3.3 SAMPLE SELECTION

The participants for this study will be chosen using the convenient sampling technique. Convenient sampling is a probability method that trusts on data from people who are conveniently available to contribute to the study. (Research Methodology, 2019.) This technique is used to gain direct related data in a short

period of time, due to the subjective replies to the study. The participants were chosen based on their role in the back-of-house of the company. The participants were chosen from a visual aspect within the back-of-house environment.

The sample population was chosen from a manufacturing company based in Isando, Kempton Park. The research statement created the key focus when pinpointing the sample population for the addition measures. With this study following the qualitative methodology, the same group contained of a small, knowingly selected group of participants. (Alzheimer Europe, 2009). The interview sample group consisted of five participants that work in the back-of-house environments. Their ages ranged between 38 and 58 years, as can be seen in Figure 3.1.

The elimination measures for this study will be the hierarchy rating. Due to this study focusing on design for well-being and spacial planning within the back-of-house environment, the occupation situations will not be a problem factor in this research. Although, occupation situations may briefly be mentioned in the data collection process, they will not be important to the final findings.

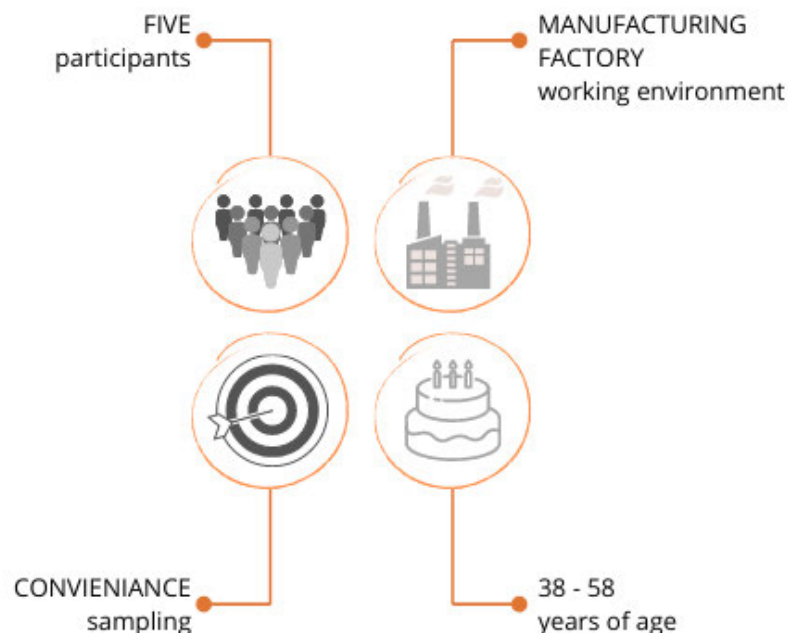


Figure 3.1: Bacon, S. 2020. *Population Sample Diagram*.

3.4 DATA COLLECTION

3.4.1 Data Collection Tools

The data collection process used two ethnography tools. These tools include observation and interviews. With the use of these tools, rich data was collected at a manufacturing factory based in Isando, Kempton Park.

The observation is the process is where the researcher observes a group of participants from an unknown's perspective. (Strydom, A. and Bezuidenhout, R.M. 2014.) The observation process for this study was conducted for a week. During the week, sketches and field notes were used to document the process. The sketches were used to examine the layout of the work environment visually. The field notes documented all the behaviours that happened, as well as the behaviours that did not happen. (Alzheimer Europe, 2009). This observation supported in adding deeper understanding of how the employees work and cooperate in the workplace. The main strength of the observation was being that there were periods of time when very few activities took place.

The interview process was documented with notes and audio recording. Recording of the interview was only conducted when the interviewee gave consent. By using an interview, the participants' point of view connected to the problem can be documented in a collaborative manner. (Alzheimer Europe, 2009). The strength that was identified was that the participants were able to involve with the questions and give an important amount of response. The participants' personal opinions about the problem were recognized.

3.4.2 Method of Collection

In order to understand the explanation of the data collection process, a brief summary will be given. The observation process involved of observing and then compiling field notes for a week at the manufacturing factory. At the end of the observation week, the participants were invited to fill out permission forms to participate in a one on one interview. Once the data was collected, the data

analysis process began.

The data collection process commenced on Monday, 28 September 2020. The first day of the observation process began at 10:05, with introductions. The observation began at 10:20. On the first day, the observation process focused on the open-plan layout of the factory (see green key in Figure 3.2 below). Field notes such as environmental, behaviour, flow, ventilation, lighting and noise pollution were documented. This observation process for the first day conducted in 2hrs, ending at 12:20. At the end of the day, the field notes were transcribed in Microsoft Word.

The second day of the observation process commenced on Tuesday, 29 September 2020. The observation began at 08:00. On the second day, the observation took place in both the working environment and on site (see green and red keys in Figure 3.2 below). The detailed notes included a sketch of the floor plan (Figure 3.2), different noise factors, observations from walking around the working environment, as well as the exterior of the factory building. The observation process for the second day was conducted in 4hrs, ending at 13:00. At the end of the day, the field notes were transcribed in Microsoft Word.

The third day of the observation process commenced on Wednesday, 30 September 2020. The observation process commenced at 14:00. On the third day, the observation took place in the working environment (see green key in Figure 3.2 below). Field notes documented the physical elements of the office, the outside noise and the structure of the building. The observation process for the third day was conducted in 1h30, ending at 3:30. At the end of the day, the field notes were transcribed in Microsoft Word.

The fourth day of the observation process commenced on Thursday, 1 October 2020. The observation process commenced at 10:00. The observation process conducted with the connection between the factory and offices (see red and orange keys in Figure 3.2 below). Field notes such as the flow of the spaces, participant interactions, and noise monitoring were documented. The observation

process for the fourth day lasted for 2hrs, ending at 12:00. At the end of the day, the field notes were transcribed in Microsoft Word.

The fifth and last day of the observation and the day of the interviews commenced on Friday, 2 October 2020. The observation process commenced at 13:00. The observation process took place in the open-plan factory (see orange key in Figure 3.2 below). Field notes documented the noise, dust and no space within the environment. At 14:00, the first interview was conducted in a private office. Before commencing, permission was granted to use audio recordings during the interview. Field notes and a recording documented the five-minute interview. The second interview commenced at 14:05 in the same private office, this process was repeated with three other participants. Field notes and a recording documented the five-minute interviews. Once completed, the observation continued. The observation process on the fifth day was conducted in 1hr40, ending at 14:40. At the end of the day, the field notes were transcribed in Microsoft Word. The data was then studied, before the data analysis process could continue.

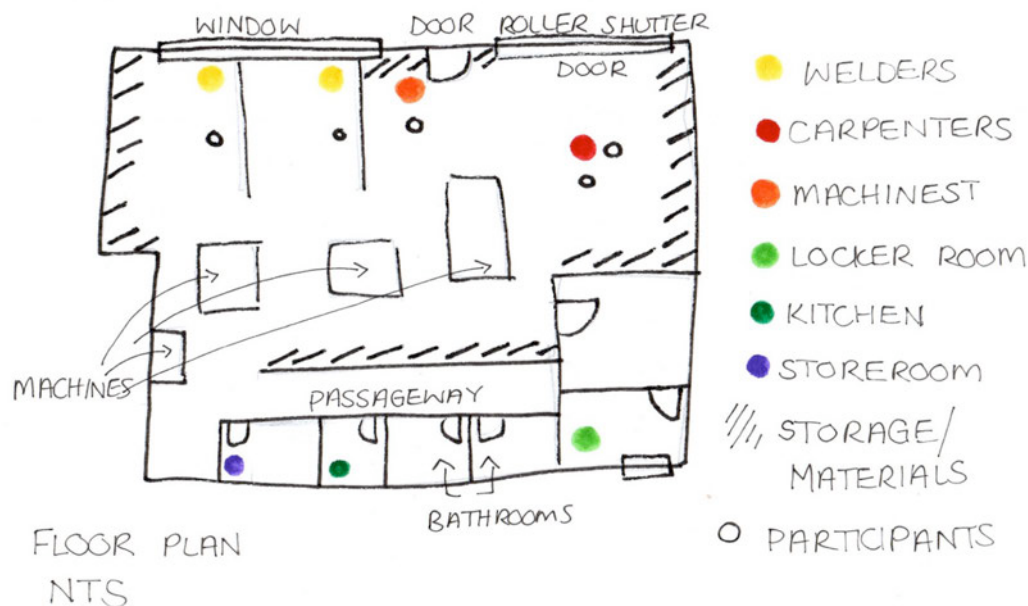


Figure 3.2: Bacon, S. 2020. *Floor Plan of the Factory environment.*

3.5 DATA ANALYSIS

All the collected, analysed data and audio recordings of the interviews are saved on a computer. All the original field notes will be kept safe.

This data was analysed through the qualitative analysis process. The first step of this process entailed of collecting the primary data. This was done through the ethnography tools of observation and interviews.

The second step entailed of capturing the original data into text. The copied interview and field notes were transferred to different spreadsheets on Microsoft Excel.

The third step involved managing the data by arranging it into units. This step was done after each observation. The field notes were quickly drafted in Microsoft Word in order to make sense of the data.

The fourth step was a insurance in order to confirm stability and general clearness of the analysed data.

The fifth step involved of selective coding. The coding was done in Microsoft Excel. Secondary coding was done by underlining keywords in the interview field notes data. This involved of questioning and re-questioning the analysis process as the researcher. The primary groups for the interview contained of well-being, time, nature and space. The primary category for the field notes included of well-being, nature, building practices, interactions, noise, spacial difficulties and distractions.

The sixth step required re-checking the uniformity and identifying that no data was ignored during the grouping process.

The seventh step resulted in assessing the data in order to incorporate personal understanding. Once the selective coding (step five) was completed, the data became easier to read and understand. All the data started to show unity, and links between the interview and field notes became obvious. Through this,

comparisons and gaps were acknowledged.

The eighth and final step, was too identify how the investigated data would be visually presented. In Chapter Four, the data that has been analysed will be presented primarily through a context map. This will help in understand the comparisons between the collected and analysed data. The data will also be shown visually in an infographic, as well as diagrams and charts.

3.6 ETHICAL CONSIDERATIONS

During this study, there was an endless image on the ethical considerations during the collection and analysis of the data, as seen in Figure 3.3. This was fundamental due to the sample population being human participants. The participants were chosen between the ages 38-58. Therefore, they are not classified as at-risk groups. At-risk groups refer to children or people over the age of 65.

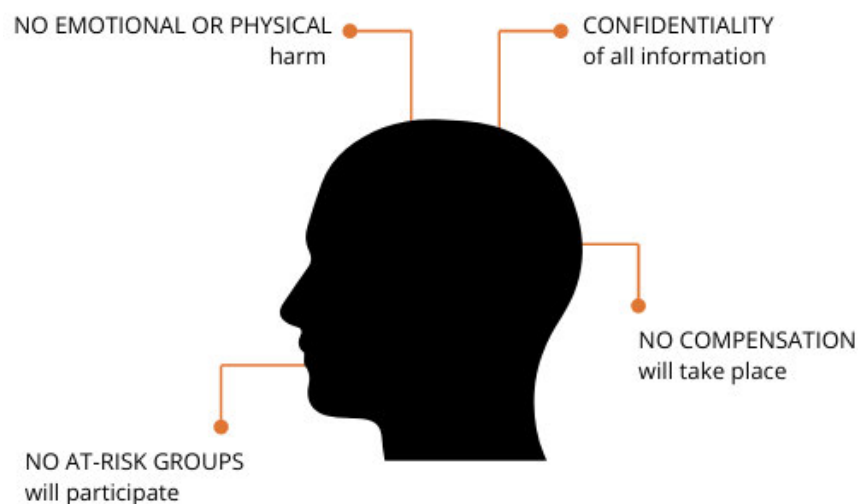


Figure 3.3: Bacon, S. 2020. Ethics Guidelines.

OBSERVATION

During the observation process, the following ethical considerations were obeyed. Before this process could start, ethical clearance was approved by the Institute (see Appendix A). After ethical clearance was approved, permission had

to be granted by the chosen manufacturing company (Appendix D). Once permission was granted, each participant in the office was informed of the observation and then agreed. Participants were also informed that this study was voluntary, and that the participants had the right to withdraw at any stage of this study. All of the participants were made mindful of the observation, and knew what the study consisted of. No compensation and none of the participants were remunerated for participating in this study.

No emotional or physical harm occurred during the observation process. Due to this observation being non-participatory, the participants were only observed from a distance (Alzheimer Europe, 2009). Throughout the observation process, confidentiality and privacy were obeyed. No participants were named and the company's name was kept private.

INTERVIEW

During the interview process, the following ethical considerations were obeyed to. Before this process could commence, ethical clearance was granted by the Institute (see Appendix A). Before the data can be collected, the participants had to sign an informed consent form (see Appendix B). After ethical clearance was approved, the questions were sent to the company for approval. Once the company approved, the five employees were asked to participate. Participants were also informed that this study was voluntary, and that the participants had the right to withdraw at any stage of this study. When the employees decided, each were given a copy of the interview questions before the process started.

None of the questions in the interview was misleading or tried to make the participant feel uncomfortable in any way. In the interview process, confidentiality and privacy were followed. No participants' personal details were compulsory. Before the interview process began, the participant was asked if they would feel comfortable if the researcher could record their answers.

3.7 TRUSTWORTHINESS

In this research report, the qualitative trustworthiness features were followed during the interviews and observation processes. In order to guarantee qualitative trustworthiness in this study, several actions such as credibility, transferability, dependability and conformability, were used.

Credibility

The literature review is an important aspect of the creditability of this study. The literature collected was used to back up the results of this research. It is important to imitate on the findings by mentioning back to what other researchers have documented. Thick explanations were used throughout this research report, thus creating a detailed review. As seen in Figure 3.4, a method of triangulation was used to explain the three methods that were used in the data collection process. This backs with the creditability of the study. The three methods that were used were observations and interviews. The observation process was conducted for a week. The interviews were conducted on the final day of the interview, once the participants were more aware with the researcher's attendance in the environment.



Figure 3.4: Bacon, S. 2020. An interpretation of the Triangulation Process.

Transferability

The theoretical framework, data collection and analysis methods helped in the transferability piece of this research. The methods used to collect the data were driven by former literature reviews. The research that was collected during the data collection and analysis process can be used in other studies. This is due to the data not only concentrating on spatial design, but also the factory working environment in which the individuals work.

Dependability

Dependability was accomplished by organizing the composed and analysed data in a reasonable and well-documented method. The Microsoft Excel worksheets support in visually classifying the rational structure in which the data was analysed. The data is colour coded and separated into classes. All the data was accessible in a well-documented method by organizing the evidence into a correct timeline. This timelines was: observation – interview. The researcher stayed non-biased, and left a detailed description and stood by ethical guidelines. The data collection and analysis process was also written in thick and detailed descriptions and, thus, this study could be repeated.

Confirmability

This research report needed image and power over subjectivity. The data that was collected resembled with the data analysed and findings in this research. Confirmability was also achieved with endless image with the supervisor and co-supervisor.

3.8 CHAPTER SUMMARY

In this chapter, data was collected and analysed. The collection and analysis processes were compiled in an ethical and trustworthy manner – thus helping with the creditability of this study. All the information in this chapter can be used to repeat this study. Though, the results in Chapter Four may vary due to

different researchers. The heavy and detailed data that was collected will back in categorizing the relationship between design for well-being and spacial design in the open-plan factory environment. In Chapter Four, the data that has been collected and analysed will be debated and comparisons will be identified.

CHAPTER 4 – FINDINGS, INTERPRETATIONS AND DISCUSSION

4.1 INTRODUCTION

In this fourth research chapter, the collected data findings from the observation and interview methods will be debated. Repetitions and resemblances that were learnt will be understood. As seen in Figure 4.1, a context map has been drawn up to explain the resemblances between the three ethnography tools and the literature review. The data analysis spreadsheet can be viewed in Appendix F.

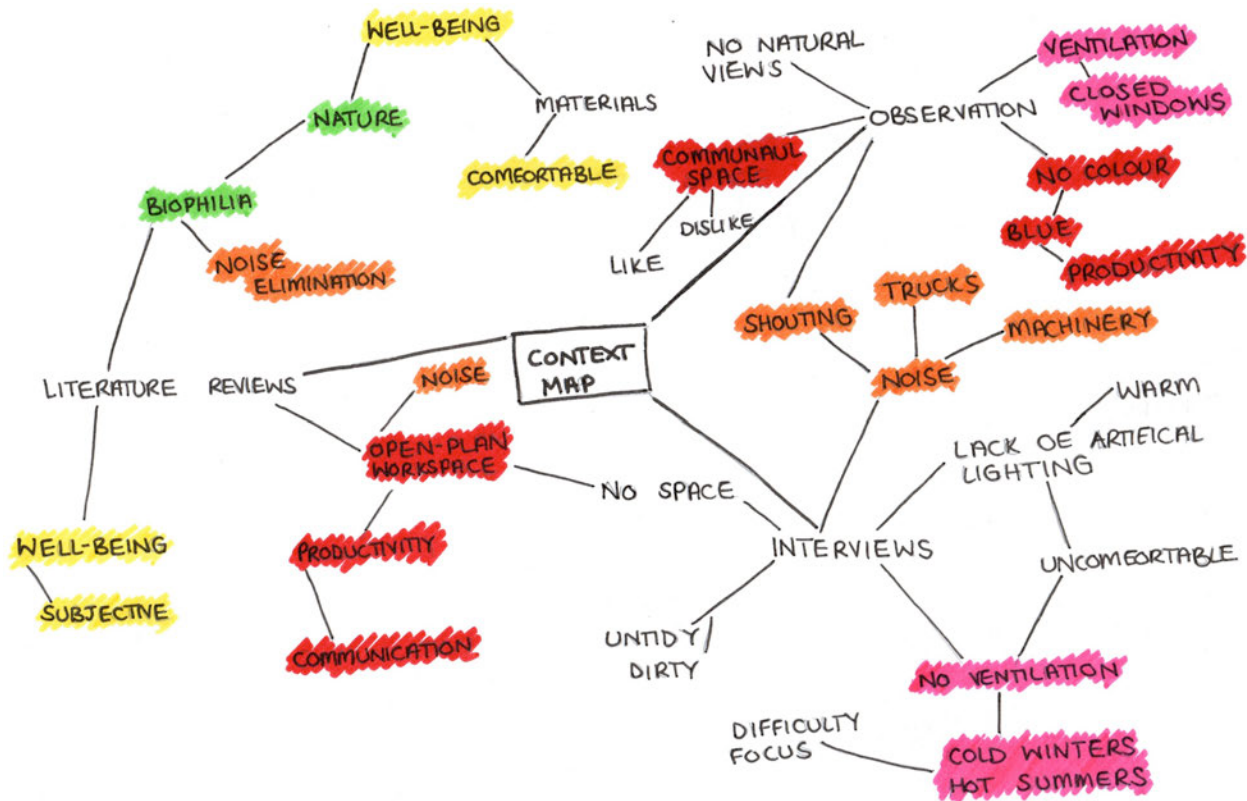


Figure 4.1: Bacon, S. 2020. Context Map.

4.2 PRESENTATIONS AND DISCUSSION OF FINDINGS

4.2.1 Observation Analysis

The observation process entailed of five workdays. During this process, the environment and employees behaviour was observed. When visiting the factory environment on the first day, it was visually noted that the building was neglected, with paint peeling off and windows are all dusty. This factory has to hold five employees. The layout of the factory started off with different jobs divided amongst the space but as the company as grown, the space has become disorganized. The space in the corner is designated to the welders (see in Figure 4.2 below). The carpenters are in an open area where they cut wood but have to pack their tables away as the van has to park inside. Due to the small size of this team, but lack of space for all their materials and working space, it causes issues and arguments.

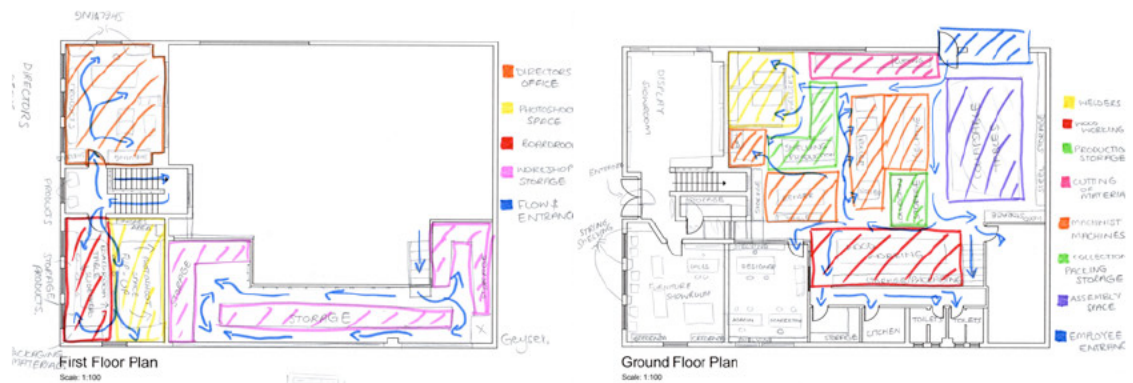


Figure 4.2: Bacon, S, 2020. *Floor Plan of Factory layout.*

The interior space is not designed for any particular company, rather than an empty shell. The windows are painted to create privacy for the factory from the outside. There is no sound absorbing materials that creates a disturbance for the offices. There are only two main lighting openings on the one side of the building, but when the weather is overcast, there is lack of natural lighting. The windows within the factory are fixed shut; this results in a problem with the ventilation.

An observation was made with concern to the overall look and feel of the main building interior linked to the office and factory interiors. There are a few differences between the two spaces. The main space (factory environment) is designed to fit any type of manufacturing company; it is not specific to type of industry. There is no aesthetic quality within the factory environment, as well as in the offices. The building looks like a cookie cutter design as there is nothing pleasing or special about the building. The offices are basic, with white walls and blue carpets. In the factory environment, there are white walls with concrete flooring. The doors are painted a dirty orange; orange is usually used to mind feelings of excitement, enthusiasm and warmth. This gives no reason to paint the office area orange, as it needs to be a colour to stimulate productivity.

It was noticed that both the factory environment contributed to the noise for the offices in the building. This is due to the majority of the time; the passage door is left open as well as no sound non-absorbent materials are used. The noise (in the factory environment) that was evident during the five days of the observation process consisted of the welder, wood saw, duct tape and gelatin. The noise (in the offices) that was evident during the five days of the observation process consisted of fingernails typing on the keyboard, phone ringing and conversations, the printer, the radio and the trucks that pass throughout the day.

4.2.2 Interview Analysis

The data collected for the interview involved of five participants. All participants work back-of-house, in the factory environment. The data collected from the participants was collected by means of ten questions.

In answering Question One, all participants were asked what their job was within the company, referring back to Figure 4.2, this would help the researcher understand how much space the participants require in the factory workspace.

In answering Question Two, all participants were asked what they like about their current working space, majority of the participants answered they enjoy the

variety of tools they have access too. The other majority of the participants replied saying they don't really enjoy their current working space. This is a concern as the replies from the participants, aren't relating to the actual space but to the contents inside the space.

In answering Question Three, all participants were asked to describe their current working spaces in three words – negative or positive. 5/5 participants responded with *"Small, there's no space for anyone to move and work."* 3/5 participants said the lighting was a problem and that it's difficult to work with materials with poor lighting over their workspaces. 2/3 participants said that the overall spaces are not clean and it's difficult to clean because there's no space to move materials and finished products to clean. And lastly, 2/3 participants said they have no proper access to their workspaces without bothering and disrupting another co-worker.

In Question Four, all participants were asked what they don't like about their specific working space within the factory. Their responses were very similar as they all replied with their spaces being cluttered. This is with new materials, off-cuts and old materials that needed to be cut off, this creates an uncomfortable space for all the participants.

In Question Five, all participants were asked to describe their specific working space in three words – negative or positive. Their responses were the same as Question Three; lack of lighting, not clean spaces and no proper access their workspaces.

In Question Six, all participants were asked what their ideal working environment would be – this was asked to see if they can provide the researcher with creativity and maybe understanding what the participants would like within their working space. One participant requested for more space and a permanent table for his woodwork, as they have to move their tables wherever there is space. Another two participants requested for higher tables and wall toolboxes for their tools and welding materials. Other participants required for permanent toolboxes

for their specific tools for their job, also the machinist requested a comfortable chair for when they cut materials. This is acceptable as that is for mass production and is all cut to the same specs. Two participants requested a larger factory for more space for material storage and stock storage while there is still enough space to manufacture and walk around safely.

In Question Seven, the participants were asked what they would change about their specific working space if they couldn't move to a bigger factory. All the participants answered with, move all materials, clean the factory and organize the space a bit better to do production. This is a great response as all the participants acknowledge the space is untidy and not organized and so they are willing to move everything out, clean the spaces and organize for themselves to create a better environment overall.

In Question Eight, the participants were asked what specific tools they need and use for their job. This all depends on their job descriptions and specialty within the company.

In Question Nine, the participants were asked what they look forward to when coming into work everyday. There was a great response from all the participants as they all said, creating new designs and seeing what they can make is exciting as well as doing some problem-solving for some Clients. Other responses included with just seeing each other, as they all consider each other as a family. They are all focused on making this company grow and showing Clients what they are capable of.

For the last Question, the participants were asked what their opinion is on the current state of factories and buildings in Isando. This is to get other perspectives on the area of Isando. All participants said there are some parts of Isando you shouldn't go to as there is bad crime and the maintenance of the roads needs to be adhered too. But overall of the responses were positive saying there are buildings being rebuilt and cleaned up, there is change happening and it's exciting for the area.

4.3 CHAPTER SUMMARY

In this chapter, the data that was composed was debated and understood. In the working space, it was identified that there is no design for well-being and no spatial design being applied for the participants. The participants would like simple elements that can influence their productivity and workspace in a major way. Their requests vary from lighting, proper, safe access to their workstations and organized spaces for their tools and materials. This all goes towards the design for well-being and spacial design for their individual spaces.

As seen in Figure 4.1, the context map visually recognizes the resemblances between the interviews, literature reviews and observations. These resemblances include the no space, no access to workspaces, lack of lighting and boring interior elements. In Chapter Five, the findings recognized in this chapter will be determined, and the result of the study will be acknowledged.

CHAPTER 5 – CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

Due to the negative outcome that lack of design for well-being and spatial planning has on individuals in a factory, this study was guided to be used to create awareness for future interior designers. In this final chapter, the research questions drawn up in Chapter One will be answered. This chapter will also enlarge on the limitations of this study, as well as make propositions for future research connected to this study.

5.2 CONCLUSION DRAWN FROM THE FINDINGS AND IMPLICATIONS

Design for well-being has become popular within the corporate and residential sectors. Firms and designers often pride themselves with developing products that are claimed to enhance well-being, quality of life, the good life, or some similar notion. (Brey, 2015). With the amount of time spent in buildings, the physical conditions in the workplace are important determinants of satisfaction, comfort, well-being and effectiveness and can play a role in mental health. (Thirion-Venter, E. M. s.a.). This study aimed to investigate how the combination of design for well-being and spatial design could assist in improving productivity and well-being for back-of-house employees in a factory environment.

RESEARCH QUESTION ONE

The first secondary research question was to understand how interior design can boost the well-being within the space. This was completed by investigating previous literature about design for well-being and biophilic design. Observing and interviewing participants in a manufacturing factory in Isando, Kempton Park, also achieved this. In the literature, it was learned that biophilic design is often used to improve in well-being of the occupants as well as to enhance productivity. (Oliver Health Design, s.a.). The results from observing and

interviewing the participants were that the little to none of the outside environment could affect employees' well-being in a negative way. Through the data collection, the majority of participants' responses were for including natural elements such as more lighting and fresher air.

RESEARCH QUESTION TWO

The next secondary research question was to investigate what elements could be used to influence the well-being of the employees. This was achieved by mainly focusing on the literature review. In the literature review, it was identified through the colour schemes and positive Interior Design literature. "The use of colour in the workplace can enhance positive mood, contribute the sense of well-being, and lead to a positive outcome." For productivity, 4 studies were used and showed neutral colours and cool blue colours, between warm and cool colours can improve productivity. (Savavibool, N. et al. 2018)

During the observation process, three main challenges were identified in the factory environment. These challengers were lack of lighting, lack of space and no proper top space.

RESEARCH QUESTION THREE

The third secondary research question was to investigate current approaches to have been implemented to improve well-being for employees within the factory environment. There were literature reviews exploring building regulations and rating systems for Industrial Buildings but not enough information to gain knowledge of construction and designs for factories or warehouses. There is a gap of studies and research for this question.

RESEARCH QUESTION FOUR

The final secondary research question was to investigate how positive design can improve existing conditions of employees within the Industrial environment. This question was answered by Literature Review as all the literature reviews

speak about the well-being of employees within the built environment. In any building, the well-being of the employee should be the most important aspect of the project. Creating comfortable and less stressful spaces for the employees to experience is the main concern. Many buildings are built and end up becoming 'sick buildings' and this obviously passes onto the occupants of the building.

In conclusion, through the process of this research problem, it was acknowledged that lack of design for well-being and spatial planning has a negative effect on productivity and well-being of the employees. Through the combination of design elements and materials, an organized and comfortable space can be achieved making a valued influence to the discipline of Interior Design.

5.3 CONTRIBUTIONS TO THE FIELD

The research that has been lead can make an important contribution to the discipline of Interior Design. Due to the limitation of time, research collected in this study could be examined further. Thus, this contribution involves referring this research report along with other research papers in order to find a resolution to the lack of design for well-being and spatial planning in a factory environment in South Africa.

The contribution that this research seeks to have on the interior design discipline is to become a design platform for future back-of-house factory design projects. With future problems of well-being in back-of-house environments, this research could be referred and solutions could be founded. The research collected in this document is only a starting point to solving the problem of design for well-being in factory environments. Developments and enhancements are welcomed through consulting this paper, as well as other papers that have been written.

Contributions could be made with respect to the company that was observed. Due to the data collected, a few challenges were recognized regarding to design for well-being and spatial planning in the factory environment. This research

could help in creating a more productive and inviting space for the participants. Two of the problems include the lack of space for all employees to move around and lighting for the workspaces.

This research has the power to make an important influence to the discipline of Interior Design; and it could also have an influence on individuals' well-being in a space. Through the combination of colour, organizational space strategies and better workspaces. This is due to the work environment being planned for the employees of the interior and their capacity to grow with the company (Desmet & Pohlmeier, 2013).

Though there is always more research that could be done, research compiled in this paper could be referred with other research papers in order to make a substantial influence to the discipline of Interior Design and future Interior Design projects.

5.4 FURTHER RESEARCH AND CRITIQUE OF THE RESEARCH

In this study, there were a few boundaries and there are ways in which this study could be investigated more in the future. In this section, proposals for advancing this research as well as the boundaries of this study will be refined.

Due to time constraints, the research collected throughout this study could still be extended on. A suggestion for potential research is for the data collection process to become more inclusive. Observing participants in three different spaces could do a suggested study. The first space could be a collection point environment, the second space could be the actual steel-manufacturing environment and the third space could be the dispatch point environment. Through the different environments being observed, the well-being and productivity levels can be measured. The research collected in this new study of the three environments could have a larger contribution to the discipline of Interior Design than this study that was conducted in a designated timeframe as well as with the COVID-19 pandemic.

A significant limitation of this study was the time limit due to the COVID-19 pandemic across the world. This is a limitation as the employees and businesses were shutdown due to the pandemic. This pushes time as the data could only be collected much later in the year and safety precautions were taken place while the interviews were being conducted. Due to this study being conducted at Honours level, the time limitations needed to be adhered to. Thus, the research that was collected can be increased on through additional examination.

While boundaries stalled certain features of this research and more research could be done, the general result of this study was meaningful. A longer observation process and investigational studies could have also supported this study. Though, through the combination of the three ethnography tools, the research collected was suitable and important to this study. Throughout the combination of observation, the participants were watched from a non-participatory point of view. With the observations and interviews let the participants to voice their opinions about the problem of lack of space and design for well-being.

Thus, this study that was showed combined the literature review, observations and opinions of the participants, in order to settle the spacial design and design for well-being can affect individuals' well-being and productivity in a factory environment.

5.5 CHAPTER SUMMARY

In this final chapter, design for well-being has a deeply positive effect on occupants in an interior space. It was determined that with the combination of design for well-being elements and materials, a factory environment could encourage productivity and improve personal well-being. Though there was the time constraint and the COVID-19 pandemic, the result of this research can have a positive impact on the design community and building profession. This can be accomplished by correcting the design requirements for factory environments to keep up-to-date with the continuous expansion for the factory workplace.

The researcher has learnt that the research that has been collected could have the capability to develop interior environments and working conditions in a positive way. During the data collection process, it was important to see how the opinions that the researcher had sometimes vary from the research composed. It is then helpful to begin any research study with the literature review. This contributes with collecting information from prior researchers, in order to back up the answers and prevent bias. The answer to the primary research question is that design for well-being can affect individuals' productivity and personal well-being in a positive way.

REFERENCE LIST

- All About Interiors. 2018. *The Concept of Positive and Negative Space in Interior Design*. 2020. [Online]. Available at: <https://allaboutinteriors-tx.com/positive-and-negative-space-in-interior-design/> [Accessed on: 13 November 2020]
- ArchDaily. 2020. *BingDing Wood Kiln Factory Renovation*. 2020. [Online]. Available at: https://www.archdaily.com/918469/bingding-wood-kiln-factory-renovation-azl-architects?ad_source=search&ad_medium=search_result_projects [Accessed on: 3 April 2020]
- ArchDaily. 2020. *Pingshan Terrace, the Renovation of Nanbu Water Purification Station*. 2020. [Online]. Available at: https://www.archdaily.com/940764/pingshan-terrace-the-renovation-of-nanbu-water-purification-station-node-achitecture-and-urbanism?ad_source=search&ad_medium=search_result_projects [Accessed on: 3 April 2020]
- Arnoldi, M., 2019. *Mining, Manufacturing contribute to 3.1% GDP growth in second quarter*. Polity. [Online]. Available at: <https://www.polity.org.za/article/mining-manufacturing-contribute-to-31-gdp-growth-in-second-quarter-2019-09-03> [Accessed on: 2 April 2020]
- Bernstein, E., & Waber, B. 2019. The Truth About Open Offices. *Harvard Business Review*, November/December, Introduction. [Online]. Available at: <https://hbr.org/2019/11/the-truth-about-open-offices> [Accessed on: 3 April 2020]
- Bialowolska, D.W., Mcneely, E. & Leon, C. 2018. A New Approach to the well-being of factory workers in global supply chains: Evidence from apparel factories in Mexico, Sri Lanka, China and Cambodia, *Abstract*. Pp. 130. [Online]. Available

at:

[https://www.researchgate.net/publication/329105048_A_new_approach_to_the_well-](https://www.researchgate.net/publication/329105048_A_new_approach_to_the_well-being_of_factory_workers_in_global_supply_chains_Evidence_from_apparel_factories_in_Mexico_Sri_Lanka_China_and_Cambodia/link/5bf5d9e4a6fdcc3a8de8b5a8/download)

[being_of_factory_workers_in_global_supply_chains_Evidence_from_apparel_factories_in_Mexico_Sri_Lanka_China_and_Cambodia/link/5bf5d9e4a6fdcc3a8de8b5a8/download](https://www.researchgate.net/publication/329105048_A_new_approach_to_the_well-being_of_factory_workers_in_global_supply_chains_Evidence_from_apparel_factories_in_Mexico_Sri_Lanka_China_and_Cambodia/link/5bf5d9e4a6fdcc3a8de8b5a8/download) [Accessed on: 13 November 2020]

- Brand South Africa. 2014. *South Africa's economy: Key Sectors*. 2020. [Online]. Available at: <https://www.brandsouthafrica.com/investments-immigration/economynews/south-africa-economy-key-sectors> [Accessed on: 2 April 2020]
- Brey, P. 2015. Design for the Value of Human Well-Being. November, Section: 2. What is well-being? [Online]. Available at: https://www.researchgate.net/publication/283751900_Design_for_the_Value_of_Human_Well-Being [Accessed on: 2 April 2020]
- Building Design + Construction. 2018. *Biophilic Design: What is it? Why it matters? And how do we use it?* 2020. [Online]. Available at: <https://www.bdcnetwork.com/blog/biophilic-design-what-it-why-it-matters-and-how-do-we-use-it> [Accessed on: 3 April 2020]
- Colenber, S., Jylhä, Y. & Arkesteijn, M. 2020. Building Research & Information. *The Relationship between Interior Office Space and Employee Health and well-being – A Literature Review*. Section: Characteristics of Studies. [Online]. Available at: <https://www.tandfonline.com/doi/full/10.1080/09613218.2019.1710098> [Accessed on: 2 April 2020]

- Conjointly. 2020. *Qualitative Approaches*. 2020. [Online]. Available at: <https://conjointly.com/kb/qualitative-approaches/> [Accessed on: 13 November 2020]
- Creswell, J.W., Ebersöhn, L., Eloff, I., Ferreira, R., Ivankova, N.V., Jansen, J.D., Nieuwenhuis, J., Pietersen, J., Plano Clakr, V.L., 2020. First Steps in Research: 3rd Edition, 6.2 *Approaches to Qualitative Data Analysis*. – 6.2.4 *Ethnography*. pp. 120-121.
- Crouch, C. and Pearce, J. 2012. *Doing Research in Design*. Oxford: Bloomsbury. ISBN 978- 1847885791-0.
- Design for Wellbeing. 2011. *About Design for Wellbeing*. 2020. [Online]. Available at: <http://www.designforwellbeing.org/?p=842> [Accessed on: 3 April 2020]
- Desmet, P. & Pohlmeier, A. 2013. Positive Design an Introduction to Design for Subjective Well-Being, 2020. [Online]. Available at: https://www.researchgate.net/publication/261873470_Positive_Design_An_Introduction_to_Design_for_Subjective_Well-Being/link/0f317535b6e8a70dea000000/download [Accessed on: 13 November 2020]
- Dictionary. 2020. *Interior Design*. [Online]. Available at: <https://www.dictionary.com/browse/interior-design> [Accessed on: 2 April 2020]
- Dictionary. s.a. *Axiology*. 2020. [Online]. Available at: https://www.google.com/search?sxsrf=ALeKk02XeMPxMKI2a_4HEX7LZqS47AJvpA:1591531061806&q=Dictionary&stick=H4sIAAAAAAAAAAONQesSoyi3w8sc9YSmZSWtOXmMU4-

[LzL0jNc8IMLsnMz0ssqrRiUWJKzeNZxMqFEAMA7 QXqzcAAAA&zx=1591537012659#dobs=axiology](https://www.artclever.com/books/The_Fundamentals_of_Interior_Design.pdf) [Accessed on: 3 April 2020]

- Dodsworth, S. 2009. The Fundamentals of Interior Design, *Understanding Spatial Relationships*. Pp. 48. 2020. [Online]. Available at: https://artclever.com/books/The_Fundamentals_of_Interior_Design.pdf [Accessed on: 13 November 2020]
- Elsa M. Thirion-Venter. 2013. Designing Workplace Environments for Well-Being: Why Bother? Section: 1.5 Needs in the Physical Office Environment. [Online]. Available at: https://www.samra.co.za/wp-content/uploads/2013/05/Thirion-Venter_Designing-workplace-environments-Research-Paper.pdf [Accessed on: 2 April 2020]
- GBCSA. s.a. *Certify*. 2020. [Online]. Available at: <https://gbcsa.org.za/certify/> [Accessed on: 13 November 2020]
- Geier, N.K. 2019. A Study on the Impact that Interior Design has on an Individual's Health and Well-Being by Reducing Noise Pollution within an Open-Plan Office Environment. November, Section: Chapter 2: Literature Study.
- Global Electronic Services. 2020. *How to Reduce Heat on Factory Floors*. 2020. [Online]. Available at: <https://gesrepair.com/reduce-heat-on-factory-floors/> [Accessed on: 13 November 2020]
- Goldenman, G., Holland, M., Lietzmann J., Meura, L., Camboni, M., Reihlen, A., and Bakker, J. 2017. The Protection of vulnerable groups. *Study for the strategy for a non-toxic environment of the 7th Environment Action Programme*. August, pp 73 – 79. [Online]. Available at: <https://ec.europa.eu/environment/chemicals/non-toxic/pdf/NTE%20main%20report%20final.pdf> [Accessed on: 3 April 2020]

- Gremillion, AS. 2019. *Colours and Emotions: How colours make you feel*. 99 Designs, [Blog], September. Available at: <https://99designs.com/blog/tips/how-color-impacts-emotions-and-behaviors/> [Accessed on: 3 April 2020].
- Hammersley, M. (2013). *What is Qualitative Research?* London and New York: Bloomsbury.
<https://explorable.com/convenience-sampling> [Accessed on: 2 April 2020]
- Hunter Link. 2018. *Who benefits from workplace well-being?* [Online]. Available at: <https://hunterlink.org.au/workplace-wellbeing/who-benefits-from-workplace-wellbeing/> [Accessed on: 3 June 2020]
- Investopedia. 2018. *Industrial Sector*. 2020. [Online]. Available at: <https://www.investopedia.com/terms/i/industrial-goods-sector.asp> [Accessed on: 2 April 2020]
- Kellert, S. 2015. The Practice of Biophilic Design, *What is Biophilia and Biophilic Design?* Pp. 3-5. 2020. [Online]. Available at: [https://www.academia.edu/18646355/The Practice of Biophilic Design](https://www.academia.edu/18646355/The_Practice_of_Biophilic_Design) [Accessed on: 13 November 2020]
- Kellert, S.R. & Calabrese, E.F. 2016. The Practice of Biophilic Design. *The Principles and Benefits of Biophilic Design*, pp. 6. [Online]. Available at: https://4eb001d0-b89e-44ef-8a43-a66d4e82feb3.filesusr.com/ugd/21459d_81ccb84caf6d4bee8195f9b5af92d8f4.pdf [Accessed on: 17 July 2020].
- Kirillova, K., Fu, X. & Kucukusta, D. 2018. Workplace design and well-being: aesthetic perceptions of hotel employees. *Abstract*, November. [Online]. Available at:

<https://www.tandfonline.com/doi/full/10.1080/02642069.2018.1543411?scroll=top&needAccess=true> [Accessed on: 3 June 2020]

- Kubba, S. 2003. Space Planning for Commercial and Residential Interiors, *An Innovative Approach to Space Planning and Design*. Pp. Xvii. 2020. [Online]. Available at: https://www.academia.edu/6101552/SPACE_PLANNING_FOR_COMMERCIAL_AND_RESIDENTIAL_INTERIORS [Accessed on: 13 November 2020]
- Live Science. 2017. *Deductive Reasoning vs. Inductive Reasoning*. 2020. [Online]. Available at: <https://www.livescience.com/21569-deduction-vs-induction.html> [Accessed on: 29 June 2020]
- Lucida. 2020. *What is Well-Being Design?* [Online]. Available at: <https://lucidaforwellbeing.ca/blog/2017/9/18/discovering-holistic-interior-design-part-1> [Accessed on: 2 April 2020]
- McLeod, S. 2019. *What is the Difference between Qualitative and Quantitative Research?* [Online]. Available at: <https://www.simplypsychology.org/qualitative-quantitative.html> [Accessed 30 August 2019].
- National Building Regulation Standards. 1977. *South Africa: Consolidated Regulations*. 2020. [Online]. Available at: <file:///Users/sam/Desktop/REGULATIONS%20UNDER%20THE%20NATIONAL%20BUILDING%20REGULATIONS%20AND%20BUILDING%20STANDARDS%20ACT%201977.html> [Accessed on: 13 November 2020]
- Petermans, A., Polmeyer, A., 2014. Design for Subjective well-being in Interior Architecture. *Subjective well-being (SWB) and Interior Architecture*, pp. 209 – 210. [Online]. Available at:

<https://www.researchgate.net/publication/267631889> Design for subjective well-being in interior architecture [Accessed on: 2 April 2020]

- Pham, L. T. M. 2018. Qualitative Approach to Research, *A review of advantages and disadvantages of three paradigms: Positivism, Interpretivism and Critical Inquiry*. 2020. [Online]. Available at: <https://www.researchgate.net/publication/324486854> A Review of key paradigms positivism interpretivism and critical inquiry/link/5acffa880f7e9b18965cd52f/download [Accessed on: 13 November 2020]
- Piñosová, M., Liptai, P. & Lumnitzer, E. 2011. *Ways and Methods to reduce noise at workplaces*. pp. 99 – 102. [Online]. Available at: <https://www.researchgate.net/publication/308031918> Ways and methods to reduce noise at workplaces/link/57d7af2308ae0c0081eac1d4/download [Accessed on: 3 April 2020]
- Positive Psychology. 2020. *Broaden-and-Build Theory of Positive Emotions*. 2020. [Online]. Available at: <https://positivepsychology.com/broaden-build-theory/> [Accessed on: 29 June 2020]
- Positive Psychology. 2010. *What is Subjective Well-Being? Understanding and Measuring Subjective Well-Being*. 2020. [Online]. Available at: <http://positivepsychology.org.uk/subjective-well-being/> [Accessed on: 13 November 2020]
- Positive Strategic Design. 2020. *Positive Design*. 2020. [Online]. Available at: <https://www.positivestrategicdesign.com/positive-design> [Accessed on: 13 November 2020]
- Precision Consulting. 2020. *Phenomenology*. 2020. [Online]. Available at: <http://precisionconsultingcompany.com/qualitative->

[analysis.shtml?group=qualitative&gclid=CjwKCAjw9vn4BRBaEiwAh0muDJ1H-mkP-Omwcgq3vOMel4sHEQ5Ec2PhgAWIDGjCDBBbLzxaLQRepBoCGecQAvD_BwE](https://www.researchgate.net/publication/348144444-analysis.shtml?group=qualitative&gclid=CjwKCAjw9vn4BRBaEiwAh0muDJ1H-mkP-Omwcgq3vOMel4sHEQ5Ec2PhgAWIDGjCDBBbLzxaLQRepBoCGecQAvD_BwE) [Accessed on: 27 July 2020]

- Quote Master. s.a. *Quotes about Emotional Well-Being*. 2020. [Online]. Available at: <https://www.quotemaster.org/emotional+well+being> [Accessed on: 27 July 2020]
- ReFactoring. 2020. *Factory Method*. 2020. [Online]. Available at: <https://refactoring.guru/design-patterns/factory-method> [Accessed on: 3 April 2020]
- Research Gate. 2020. *A Framework for Research*. [Online]. Available at: https://www.researchgate.net/figure/A-Framework-for-Research-The-Interconnection-of-Worldviews-Design-and-Research-Methods_fig2_327832478 [Accessed on: 3 June 2020]
- Research Methodology. 2019. *Axiology*. 2020. [Online]. Available at: <https://research-methodology.net/research-philosophy/axiology-2/> [Accessed on: 2 April 2020]
- Research Methodology. 2019. *Convenience Sampling*. 2020. [Online]. Available at: <https://research-methodology.net/sampling-in-primary-data-collection/convenience-sampling/> [Accessed on: 17 July 2020]
- Research Methodology. s.a. *Inductive Approach (Inductive Reasoning)*. 2020. [Online]. Available at: <https://research-methodology.net/research-methodology/research-approach/inductive-approach-2/> [Accessed on: 13 November 2020]

- Research Methodology. 2019. *Interpretivism Research Philosophy*. 2020. [Online]. Available at: <https://research-methodology.net/research-philosophy/interpretivism/> [Accessed on: 3 April 2020]
- Samani, S., Rasid, S. Z. A. & Sofian, S. 2017. The Effect of Open-Plan Workspaces on Behavior and Performance Among Malaysian Creative Workers, *Introduction*, pp. 42-43. [Online]. Available at: https://www.researchgate.net/publication/313686079_The_Effect_of_Open-Plan_Workspaces_on_Behavior_and_Performance_Among_Malaysian_Creative_Workers/link/5a50df88a6fdcc769001d595/download [Accessed on: 13 November 2020]
- Sangwon, L., Hussain, H. A. & Sooyoung, K. 2017. The Effect of Interior Design Elements and Lighting Layouts on Prospective Occupants' Perceptions of Amenity and Efficiency in Living Rooms, *Introduction*. Pp. 1-2. 2020. [Accessed on: 13 November 2020]
- Savavibool, N., Gatersleben, B. & Moorapun, C. 2018. Colour Preference, Mood and Emotion, Physiology and well-being, Performance, Productivity, Creativity. *The Effects of Colour in Work Environment: A systematic Review*, pp 154 – 156. [Online]. Available at: https://www.researchgate.net/publication/327504773_The_Effects_of_Colour_in_Work_Environment_A_systematic_review/link/5b92787392851c78c4f4d1ed/download [Accessed on: 3 April 2020]
- Seven Innovation. s.a. *Positive Design*. [Online]. Available at: <http://www.seveninnovation.com/positive-design/> [Accessed on: 2 April 2020]
- Skyline Art Services. s.a. *What is Biophilic Design?* 2020. [Online]. Available at: <https://skylineartservices.com/wp-content/uploads/Biophilic-well-building-Handout.pdf> [Accessed on: 13 November 2020]

- Smelser, N.J. & Baltes, P.B. 2001. International Encyclopedia of the Social & Behavioral Sciences, *Behavioral and Cognitive Neuroscience*. Pp. 1118 – 1125. [Online]. Available at: <https://www.sciencedirect.com/referencework/9780080430768/international-encyclopedia-of-the-social-and-behavioral-sciences#browse-content> [Accessed on: 14 September 2020]
- Statistics Solutions. 2020. *Qualitative Research Approach*. 2020. [Online]. Available at: <https://www.statisticssolutions.com/qualitative-research-approach/> [Accessed on: 13 November 2020]
- Strydom, A. and Bezuidenhout, R.M. 2014. *Qualitative Data Collection*. In Bezuidenhout, R.N., Davis, C. and Du Plooy-Cilliers, F. eds. 2014. *Research Matters*. Claremont: Juta and Company [Pty] Ltd, Chapter 13: 173-194. [eBook]. Available on EBSCOhost at: https://ezproxy.iielearn.ac.za/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=746917&site=ehost-live&ebv=EB&ppid+pp_Cover [Accessed 25 march 2019].
- Sundstrom, E. & Sundstrom, M.G. 1986. Historical View. *Work Places: The Psychology of the Physical Environment in Offices and Factories*, s.a. p 42-43. [Online]. Available at: <https://books.google.co.za/books?id=mzl7AAAAIAAJ&pg=PA42&lpg=PA42&dq=open+plan+factories&source=bl&ots=8rsydYC0on&sig=ACfU3U1mvDXIoC0BrWRd99Xdm4eR744IQ&hl=en&sa=X&ved=2ahUKEwjv3PWs3fvpAhU7WhUIHTACBvAQ6AEwFXoECA0QAQ#v=onepage&q=open%20plan%20factories&f=false> [Accessed on: 3 April 2020]

- Surbhi, S. 2017. *Difference between Primary and Secondary Data*. [Online]. Available at: <https://keydifferences.com/difference-between-primary-and-secondary-data.html#KeyDifferences> [Accessed on: 3 June 2020]
- Vian Ahmed Sharref, & Husein Ali Husien & Soran Kakarash Omer, 2018. *The Effect of Interior Design on Employee's Job Satisfaction*. July, Section: 2. Literature Reviews. [Online]. Available at: https://www.researchgate.net/publication/325084911_The_effect_of_interior_design_on_employee%27s_job_satisfaction [Accessed on: 2 April 2020]
- Vischer, J. & Wifi, M. 2017. Why Quality Matters. *The Effect of Workplace Design on Quality of life at Work*. January, pp. 2 – 3. [Online]. Available at: https://www.researchgate.net/publication/311994835_The_Effect_of_Workplace_Design_on_Quality_of_Life_at_Work/link/5a1c3b2ba6fdcced952b4a48/download [Accessed on: 3 April 2020]
- Warehouse Lighting. 2020. *Factory Lighting*. 2020. [Online]. Available at: <https://www.warehouse-lighting.com/blogs/lighting-application-suggestions/factory-lighting-application> [Accessed on; 13 November 2020]
- Web Restaurant Store. 2020. *Front of House vs. Back of House*. 2020. [Online]. Available at: <https://www.webstaurantstore.com/article/5/front-of-house-vs-back-of-house.html> [Accessed on: 13 November 2020]
- Your Dictionary. 2020. *Postpositivism*. [Online]. Available at: <https://www.yourdictionary.com/postpositivism> [Accessed on: 3 June 2020]

APPENDIX A – IIE ETHICAL CLEARANCE



2020.08.20



Re: Approval of Honours in Interior Design Proposal and Ethics Clearance

HONOURS/PGDIP ETHICAL CLEARANCE LETTER

Your research proposal and the ethical implications of your proposed research topic were reviewed by your supervisor and the campus research panel, a subcommittee of The Independent Institute of Education's Research and Postgraduate Studies Committee.

There are some aspects that you still need to address in your proposal. You will need to address these aspects in consultation with your supervisor before you may proceed (see below):

Please discuss with your supervisor/navigator/lecturer how you will address these issues listed below:

Please note: **Your fieldwork may only proceed once you addressed the following issues:**

- Please adjust supporting documentation accordingly. You make reference to a questionnaire, yet only an interview schedule was submitted.
- Please refer to marked-up interview schedule for slight restructuring and question reformation. Moreover, identify selected categories of question types as per Du Plooy in Research Matters and ensure that you have accounted for a variety of questions and/or optimal responses.
- Ensure that all required information is discussed in Letter of Consent. Elaborate on background of study, expectations, process, transcription and access thereto, academic purpose etc.
- In terms of population and sampling, please ensure that you address suggestions as outlined in feedback of research proposal.

In the event of you deciding to change your research methodology in any way, kindly consult your supervisor to ensure all ethical considerations are adhered to and pose no risk to any participant or party involved. A revised ethical clearance letter will be issued.

We wish you all the best with your research!

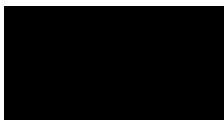
GENERAL CONDITIONS TO BE FULFILLED IN RELATION TO RESEARCH

Permission is granted to proceed with the above study subject to the conditions listed below being met and may be withdrawn should any of these conditions be flouted.

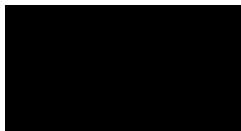
Please note: The panel has not considered the merits, accuracy or ethical soundness of the research. The only merits examined are the use of The IIE as a sample.

Permission is granted subject to the following conditions:

1. The researcher(s) will need to obtain informed consent in writing from all of the participants in his/ her sample if the study is not anonymous.
2. The researcher(s) may only use the data collected for research purposes and in no other way.
3. Photographs of human subjects may only be taken if relevant to the research, informed consent was obtained, and even with informed consent, the photographs may not be published on any online platforms.
4. The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.
5. No names or identifying information of participants may be used within the research and the research must be voluntary.
6. Please make it clear that the information will not be used punitively in any way and participants may in no way be counselled/advised based on this.



Supervisor: Armand Meyer



Campus Postgraduate Coordinator (CPC): RIA VAN ZYL

APPENDIX B – INFORMED CONSENT LETTERS FOR THE PARTICIPANTS

Participation in this research study is voluntary. All information will remain strictly confidential. The descriptions and findings may be used to help with the main topic of this research study. Your name or any form of identification will not be shared. All interviews will be voice recorded for research reference. You can withdraw your consent to the research study and stop participation at any time.

If you have any questions regarding this study or withdrawing your consent, please contact Samantha Bacon at [REDACTED]

I have read and understood the information on this form and had all of my questions and concerns answered.

Participants Signature

Date

Researchers Signature

Date

APPENDIX C – LETTER FOR PERMISSION TO ACUTE STEEL WORKS

28 July 2020

Sean Bacon

Director

Nocab, Pty Ltd.

Dear Mr. Sean Bacon

In finalizing one of my requirements for RESE 8419, I would like to request your permission to conduct interviews with 6 of your employees. This study is to explore design for well-being focused on employees within the Industrial Sector.

Please note all information will be strictly confidential and to be used for academic purposes only. All names or any form of identification will not be shared. All interviews will be voice recorded for research reference. The employees may withdraw their consent to the research study and stop participation at any time.

I believe that you are with me in gaining this data and finishing this requirement as compliance for my subject. Your approval to conduct this study will be greatly appreciated.

Kind Regards,

Samantha Bacon

APPENDIX D – LETTER OF PERMISSION FROM ACUTE STEEL WORKS



NOCAB (PTY) LTD
t/a Acute Steel Works
Unit 9, Isando Industrial
12 Foundry Road,
Isando
P O BOX 368
BROMHOF
2154
TEL: 011 974 2977
e-mail:
sales@nocab.co.za
28 July 2020

Dear Samantha Bacon

I believe this topic is great to understand and focus on the employee's well-being in and out of the working space, especially in this harsh working sector in South Africa.

You hereby have my permission to continue finalizing this requirement for your subject, in consideration of respecting the employee's wishes of keeping their personal information and recordings confidential.

Kind Regards,



Sean Bacon

Director

Nocab (Pty) Ltd.

Director: S C Bacon
Reg. No: 2012/164076/07
VAT: 4280263544

APPENDIX E – APPROVED INTERVIEW GUIDE

1. What is your job description for Acute Steel Works?
2. What do you like about your current working space?
3. Describe the overall working spaces in three words:
4. What do you not like about your current working space?
5. Describe your specific working space in three words:
6. What would be your ideal working environment?
7. What would you do to change your current working space?
8. What tools do you use for your job?
9. What do you look forward to when coming into work every day?
10. What is your opinion on the current state of factories and buildings in Isando?

*All interviews will be voice recorded for research references.

APPENDIX F – DATA ANALYSIS SPREADSHEET

*View the data analysis on the next page.

Interviewer or Interviewee	Answer		Category: Space/ Organized	Category: Air Ventilation	Category: Lighting	Category: Cleanliness
PARTICIPANT ONE (Factory Environment)						
Interviewer	The <u>first question</u> is, what is your job for Acute Steel Works?					
Interviewee	My job is to clean and help out with woodwork when we are very busy.					
Interviewer	<u>Second question</u> is, what do you like/enjoy about your current working space?					
Interviewee	When i come in every morning, i enjoy getting the spaces and offices ready for the day , so i clean and make sure everything is sanitized before everyone comes in . I also enjoy the space we have for the wood work , i like the lighting from the open door , the amount of space to cut and sand wood. I like that we can move out tables anywhere in the factory so we arent stuck in the same space all the time .					
Interviewer	The <u>third question</u> is to describe the overall working spaces in three words.					
Interviewee	Clean, Open , lots of communication between all participants as its an open-plan factory.					
Interviewer	<u>Fourth question</u> is, what do you not like about your current working space?					
Interviewee	Cluttered - when theres alot of orders and products waiting to be delivered or collected, it stands there and then theres no space for us to move around. And then it gets dusty and dirty easier so it becomes a whole mess inside the factory .					
Interviewer	<u>Fifth question</u> is, describe your specific working space in three words.					
Interviewee	I would say, it can get dusty, cluttered very quickly but we can move around so not fixed to one space .					
Interviewer	<u>Sixth question</u> is, What would be your ideal working environment?					
Interviewee	I would like more of a organized space like a space to put all our tools and my cleaning supplies away safely and neatly. We always have to look for tools because we dont have a specific space for the tools for the wood. I would also like to have a cleaner and more organized space for the whole factory so i can clean the whole factory properly after each day.					
Interviewer	Next is <u>seventh question</u> is, if you could change some aspects of your current working space, what would it be?					
Interviewee	I would like to put new lighting for all of the workspaces and also to get more tables and better storage for the tools we use.					
Interviewer	Number <u>eight</u> is, What tools do you use for your job?					
Interviewee	When i clean, i usually use the standard cleaning supplies. When i help out with woodwork, i usually just do the sanding or filling holes or splits with putty.					
Interviewer	<u>Question nine</u> is, what do you look forward to when coming into work everyday?					
Interviewee	I would say, overall, i enjoy seeing the employees. I consider everyone to be my family as i've worked with them for many many years. I didnt like the lockdown because i didnt work but also because i missed my friends and seeing everyone working and coming together as a team.					
Interviewer	<u>Last question</u> is, what is your opinion on the current state of factories and buildings in Isando?					
Interviewee	I think the Isando area is trying to be turned around as there is alot of buildings being fixed up but there is alot of crime and the roads arent maintained and everyone is loosing their jobs because factories are closing down.					
Interviewer	Awesome, thank you for letting me interview you. I really appreciate it.					

Interviewer or Interviewee	Answer		Category: Space/ Organized	Category: Air Ventilation	Category: Lighting	Category: Cleanliness	
PARTICIPANT TWO (Factory Environment)							
Interviewer	The <u>first question</u> is, what is your job for Acute Steel Works?						
Interviewee	I am a carpenter. So i work with wood.						
Interviewer	<u>Second question</u> is, what do you like/enjoy about your current working space?						
Interviewee	i like where i work as there is enough space, there is enough natural lighting for cutting.						
Interviewer	The <u>third question</u> is to describe the overall working spaces in three words.						
Interviewee	Open , enough light , clean and enough space .						
Interviewer	<u>Fourth question</u> is, what do you not like about your current working space?						
Interviewee	Better tables to work on, like a taller and bigger tables. and one long table as im working with small tables that can be too small for some orders.						
Interviewer	<u>Fifth question</u> is, describe your specific working space in three wrods.						
Interviewee	I would say, it can get dusty, cluttered very quickly but we can move around so not fixed to one space .						
Interviewer	<u>Sixth question</u> is, What would be your ideal working enviornment?						
Interviewee	I would prefer to have a space to keep my tools in and safe to lock up everyday. I usually have to leave it on the tables or put it on other machines as there is no where i can put them.						
Interviewer	Next is <u>seventh question</u> is, if you could change some aspects of your current working space, what would it be?						
Interviewee	I would like to put better new lighting for all of the workspaces and higher work tables.						
Interviewer	Number <u>eight</u> is, What tools do you use for your job?						
Interviewee	I use saws, sanders and tables saws and putty to fill in holes and splits.						
Interviewer	<u>Question nine</u> is, what do you look forward to when coming into work everyday?						
Interviewee	I enjoy to be creative and see pieces of wood make beautiful products that can be displayed in shops and peoples homes.						
Interviewer	<u>Last question</u> is, what is your opinion on the current state of factories and buildings in Isando?						
Interviewee	I think the Isando area is good, people protect eachother here and look after eachother as we are all just trying to survive.						
Interviewer	Awesome, thank you for letting me interview you. I really appreciate it.						

Interviewer or Interviewee	Answer		Category: Space/ Organized	Category: Air Ventilation	Category: Lighting	Category: Cleanliness	
PARTICIPANT THREE (Factory Environment)							
Interviewer	The <u>first question</u> is, what is your job for Acute Steel Works?						
Interviewee	I am a machinest. I prepare all the materials for production so i cut the metals and sharpen the metals to be manufactured into something. I also do stock take on all the materials and make sure we have enough for a job.						
Interviewer	<u>Second question</u> is, what do you like/enjoy about your current working space?						
Interviewee	i enjoy my space as i get alot of natural lighting onto my cutting machine from the large windows in front of me.						
Interviewer	The <u>third question</u> is to describe the overall working spaces in three words.						
Interviewee	Cluttered , dirty and noisy.						
Interviewer	<u>Fourth question</u> is, what do you not like about your current working space?						
Interviewee	I dont like my seat that i use when im cutting. If i have to cut 200 prongs, i would like to sit down and be precise but the chair is very uncomfortable. Also, the air ventilation, i get no natural airflow to my workstation and it can get very hot in the factory during summer.						
Interviewer	<u>Fifth question</u> is, describe your specific working space in three wrods.						
Interviewee	Comfortable, Lighting is nice but it can get dirty quickly .						
Interviewer	<u>Sixth question</u> is, What would be your ideal working enviornment?						
Interviewee	I would like to get more natural cool air , being comforable, more space to be organized .						
Interviewer	Next is <u>seventh question</u> is, if you could change some aspects of your current working space, what would it be?						
Interviewee	I would like to change the layout also as i look towards the wall with my back to everyone .						
Interviewer	Number <u>eight</u> is, What tools do you use for your job?						
Interviewee	i use the cutter, drill, circular saw and gelatein.						
Interviewer	<u>Question nine</u> is, what do you look forward to when coming into work everyday?						
Interviewee	I look forward to see everyone as theyre my family. I also enjoy seeing the metals come in bulk and then leave as a finished product.						
Interviewer	<u>Last question</u> is, what is your opinion on the current state of factories and buildings in Isando?						
Interviewee	I think the Isando area is an area where you need to be careful, there are some areas you stay away from but i think its getting better and more busy.						
Interviewer	Awesome, thank you for letting me interview you. I really appreciate it.						

Interviewer or Interviewee	Answer		Category: Space/ Organized	Category: Air Ventilation	Category: Lighting	Category: Cleanliness	
PARTICIPANT FOUR (Factory Environment)							
Interviewer	The <u>first question</u> is, what is your job for Acute Steel Works?						
Interviewee	I am a welder.						
Interviewer	<u>Second question</u> is, what do you like/enjoy about your current working space?						
Interviewee	i enjoy my space as i have my space with my tools in an arms reach.						
Interviewer	The <u>third question</u> is to describe the overall working spaces in three words.						
Interviewee	Theres not enough space , too much material and there is not enough lighting .						
Interviewer	<u>Fourth question</u> is, what do you not like about your current working space?						
Interviewee	i dont like that there isnt enough organizational space for my tools and materials . Also there is no space for big projects that i have to weld with my small table.						
Interviewer	<u>Fifth question</u> is, describe your specific working space in three wrods.						
Interviewee	Comfortable, no lighting and undtidy .						
Interviewer	<u>Sixth question</u> is, What would be your ideal working enviornment?						
Interviewee	I would like to get more natural cool air , better tables and space .						
Interviewer	Next is <u>seventh question</u> is, if you could change some aspects of your current working space, what would it be?						
Interviewee	i dont like to change anything for my space other than the stuff i mentioned before.						
Interviewer	Number <u>eight</u> is, What tools do you use for your job?						
Interviewee	i use the welder, hammer, grinder and spanners.						
Interviewer	<u>Question nine</u> is, what do you look forward to when coming into work everyday?						
Interviewee	I look forward to make things and be creative.						
Interviewer	<u>Last question</u> is, what is your opinion on the current state of factories and buildings in Isando?						
Interviewee	I think the Isando area is a good area.						
Interviewer	Awesome, thank you for letting me interview you. I really appreciate it.						

Interviewer or Interviewee	Answer		Category: Space/ Organized	Category: Air Ventilation	Category: Lighting	Category: Cleanliness	
PARTICIPANT FIVE (Factory Environment)							
Interviewer	The <u>first question</u> is, what is your job for Acute Steel Works?						
Interviewee	I am a senior welder.						
Interviewer	<u>Second question</u> is, what do you like/enjoy about your current working space?						
Interviewee	i dont like my space at all.						
Interviewer	The <u>third question</u> is to describe the overall working spaces in three words.						
Interviewee	Theres not enough space , not enough lighting , its always messy and dirty and it gets so hot in the factory .						
Interviewer	<u>Fourth question</u> is, what do you not like about your current working space?						
Interviewee	Theres not enough space , not enough lighting , its always messy and dirty and it gets so hot in the factory .						
Interviewer	<u>Fifth question</u> is, describe your specific working space in three wrods.						
Interviewee	Unomfortable , no lighting and undtidy .						
Interviewer	<u>Sixth question</u> is, What would be your ideal working enviornment?						
Interviewee	I would like to get more natural cool air , better tables and space there needs to be more organized spaces for the tools and finishe products waiting to be taken to powder-coat.						
Interviewer	Next is <u>seventh question</u> is, if you could change some aspects of your current working space, what would it be?						
Interviewee	Everything.						
Interviewer	Number <u>eight</u> is, What tools do you use for your job?						
Interviewee	i use the welder, hammer, grinder and spanners - the same as the other welder.						
Interviewer	<u>Question nine</u> is, what do you look forward to when coming into work everyday?						
Interviewee	I look forward to make things and do problem-solving for the client.						
Interviewer	<u>Last question</u> is, what is your opinion on the current state of factories and buildings in Isando?						
Interviewee	I think the Isando area is a good area but you need to be careful of which areas you go to in Isando as there are so dodge areas that has alot of crime.						
Interviewer	Awesome, thank you for letting me interview you. I really appreciate it.						

Date	Day	Starting Time	Ending Time	Place	Observation Notes		Category: Environment	Category: Behaviour	Category: Flow	Category: Ventilations	Category: Lighting	Category: Noise Pollution (Machinery)
28/09/2020	1	10:05	12:20AM	Factory Environment	Unsettled air as there is dust floating around. There is no air ventilation.							
					Machinery is very loud - especially when done all together.							
					The weather is very overcast so they rely on artificial lighting which is very vague.							
					Noise distractions come outside of the building - trucks and delivery trucks.							
29/09/2020	2	08:00PM	13:00PM	Factory Environment & On-Site								
					The workshop space is open-planned.							
					There is shouting and screaming to get eachothers attention.							
					Looking chaotic with materials and finished goods standing around.							
					Quiet and rather peaceful when it is lunchtime.							
30/09/2020	3	14:00 PM	15:30PM	Factory Environment								
					The factory is quiet today. Waiting for orders to come in.							
					All employees are present, behaviour is rather tired and need upliftment.							
					Noise can be heard from the offices if a corrodor is left open.							
					The air is very hot and stuffy in the factory.							
					The envionrment is still cluttered and no proper oragnizational packing away of machines or materials.							
					The behaviour of the employees and waiting for more orders but always positive.							
1/10/20	4	10:00AM	12:00PM	Factory Environment								
					There are alot of orders that have been replaced so materials are being delivered.							
					The deliveries bring alot of noise and distraction.							
					There were alot of cutting of materials and alot of clutter of cut offs and materials waiting.							
					There was no natural ventilation for the factory space.							
2/10/20	5	13:00 AM	14:40PM	Factory Environment								
					All participants work seperate but together. They all rely on eachother.							
					The participants were finishing some orders so it was productive in the factory.							
					The weather was overcast again, so the lighting for the whole factory was poor.							
					FIRST INTERVIEW WAS CONDUCTED AT 14:00 (with all the participants)							
							Participant Interviews					