Research Plan

AR3AD110 Dwelling Graduation Studio: Designing for Care in an Inclusive Environment 2024/25

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Problem Statement

Following the COVID-19 pandemic, there has been a significant global increase in mental health disorders, affecting individuals across various age groups and socioeconomic backgrounds (World Health Organization, 2022). In 2020, the pandemic contributed to an estimated 53 million additional cases of major depressive disorder and 76 million additional cases of anxiety disorders (Santomauro et al., 2021).

This issue is not only a pressing concern today but also a future one, as the World Health Organization predicts that by 2030, depression will become the leading cause of disease burden worldwide, surpassing other major illnesses (World Health Organization, 2018a).

Specifically amongst university students, research indicates a high prevalence of mental health issues, linked to a variety of stressors. Ibrahim et al. (2013) conducted a systematic review and found that university students worldwide experience higher rates of depression compared to the general population. These increased rates are often attributed to academic pressures such as intense coursework and examinations, as well as other stressors, including financial difficulties, adaptating to a new environment, social isolation, and challenges in forming new relationships.

For instance, a global study found that 31% of college students screened positive for at least one common mental disorder (Auerbach et al., 2018). Furthermore, the transition to independent living in student accommodations often presents additional difficulties in adjusting to a new environment and the absence of familiar support networks, further impacting their mental well-being (Worsley et al., 2021).

In the Netherlands, mental health challenges among university students are becoming increasingly evident. According to the Monitor Mentale gezondheid en Middelengebruik Studenten hoger onderwijs 2023, 56% of university students reported experiencing high levels of stress, and 44% showed symptoms of anxiety or depression. Additionally, 59% reported feelings of emotional exhaustion (Trimbos Institute & RIVM, 2023).

Furthermore, Dutch student dropout rates have risen since the COVID-19 pandemic, with the dropout rate among first-year students at research universities increasing from 5% during the pandemic to 7% in the 2021/22 academic year. Similarly, universities of applied sciences saw their dropout rate climb from 12% to 15% (Ministerie van Onderwijs, Cultuur en Wetenschap, 2022).

In response, higher education institutions have allocated funds from the National Education Programme to address student mental health, by hiring additional psychologists and offering more support services. However, the report notes that these institutions are not always equipped to manage severe cases, with waiting lists often preventing students from accessing mental health care in a timely manner (Ministerie van Onderwijs, Cultuur en Wetenschap, 2022).

Approximately 37% of students with significant mental health problems do not seek treatment due to stigma (Downs & Eisenberg, 2009). Given this reluctance, along with the challenges in accessing timely care for more severe cases, it is crucial to explore indirect methods for supporting student mental well-being.

The built environment plays a significant role in influencing mental health, providing opportunities to support mental well-being (World Health Organization, 2018b) without the barriers associated with traditional treatment.

Research indicates that housing quality has a substantial impact on student well-being. For example, a study conducted in Italy during the COVID-19 lockdown found that university students living in poor-quality or cramped accommodations experienced a higher prevalence of depressive symptoms. Issues such as inadequate natural light, limited space, and poor indoor air quality were linked to negative mental health outcomes (Morganti et al., 2022).

The graduation site is located within Tarwewijk, a neighbourhood of Rotterdam, in which the previously mentioned problems are of great relevance, firstly because of its demographics. 9% of the residents are students, higher than the citywide average of 7%, and a significant portion of the population is under 25 years old (Gemeente Rotterdam, n.d.). Additionally, nearly one in three residents stay for only a year or less (Veldacademie, n.d.).

Furthermore, mental health issues seem to be prevalent within the Tarwewijk neighborhood, as 38% of residents aged 18 and older report psychological complaints, with 68% feeling lonely and 24% experiencing severe loneliness (AlleCijfers, n.d.).

Another point of relevance is the quality of student housing. Across the Netherlands, there is a substantial shortage of suitable and affordable student accommodations, with cities like Rotterdam facing particularly high demand. This shortage leaves many students struggling to secure adequate living conditions that meet their needs. This deficit often forces students into suboptimal accommodations that are both smaller and frequently shared, impacting their comfort and quality of life. Furthermore, limited affordable options add financial strain, as students must often settle for poorly maintained spaces that lack essential privacy and amenities, making daily life more stressful (Landelijke Monitor Studentenhuisvesting 2023).

Despite a significant recent increase, and an anticipated further increase in mental health issues, architectural practices have yet to adapt to address these challenges. Particularly in student housing, within Tarwewijk there is a gap in creating supportive living environments that can indirectly enhance students' mental well-being.

Theoretical Framework

The theoretical framework for this research will draw from a selection of phenomenological theory books, which will guide the study's direction and analysis. Phenomenology, as a philosophical approach, focuses on the lived experience and perception of individuals within their environments. In architecture, this perspective examines how spaces are sensed and experienced, emphasising the subjective interpretation of physical surroundings. This is particularly relevant to mental well-being, as an individual's perception of their environment can significantly influence their psychological state.

Herman Hertzberger, in his book Lessons for Students in Architecture, already highlighted the significance of architectural design in fostering a sense of community and social interaction. He stated, 'We must grasp every opportunity of avoiding too rigid separation between dwellings, and of stimulating what is left of the feeling of belonging together. In the first place this feeling of belonging together revolves around everyday social interaction...' (Hertzberger, 1991, p. 54).

Hertzberger's statement has been increasingly supported by recent research, such as the study conducted in Guangzhou and Hong Kong, which explored how communal spaces in high-rise public housing impact residents' mental health (Xie et al., 2022). The study found that communal spaces facilitate social interactions, contributing positively to mental health by enhancing the sense of place.

In The Poetics of Space, Gaston Bachelard reflects on the nature of corners as places that evoke a sense of solitude and calm. He describes them as "a little castle of calm in the midst of everyday noise" (Bachelard, 1958, p. 137), highlighting their role in offering a space for daydreaming and retreat. Bachelard further notes, "In the corner, one can dream. The house shelters daydreaming, the house protects the dreamer, the house allows one to dream in peace" (Bachelard, 1958, p. 136). While he does not explicitly state that these spaces directly improve well-being, his poetic descriptions suggest that such places offer moments of mental refuge and tranquillity.

Gaston's suggestions regarding corners aligns with findings from O'Callaghan and Brady's (2020) systematic review, which examines the health impacts of residential retreats. Their study suggests that spaces designed for retreat can have positive effects on mental health by providing opportunities for reflection, peace, and solitude (O'Callaghan & Brady, 2020).

Building upon the theoretical framework, the works of Peter Zumthor and Juhani Pallasmaa offer additional valuable insights for this research. Their contributions alongside the previously mentioned ones can be organized into three categories, each providing a distinct focus on how architecture can support mental well-being from different phenomenological perspectives. The proposed categories are:

Sensory Architecture: This category includes The Eyes of the Skin by Juhani Pallasmaa (1996) and Atmospheres by Peter Zumthor (2006), which explore the sensory experiences of architecture, emphasizing how elements like light, texture, and sound shape human perception.

Poetic Architecture: The Poetics of Space by Gaston Bachelard (1958) falls under this category, focusing on the psychological and poetic dimensions of spaces, examining how intimate environments influence mental states.

Practical Architecture: This category includes Thinking Architecture by Peter Zumthor (1998) and Lessons for Students in Architecture by Herman Hertzberger (1991), centering on design philosophy, practical considerations, and the creation of social spaces that foster interaction and a sense of community.

The choice of these specific books is not arbitrary; they were selected because they are seminal and representative works in the field of phenomenological architecture. Authors like Bachelard, Pallasmaa, Zumthor, and Hertzberger have significantly shaped the understanding of how architectural spaces influence human perception and experience. Their writings directly explore the sensory and experiential aspects of architecture relevant to supporting mental well-being in residential environments. Additionally, my familiarity with these texts enables a comprehensive and efficient analysis within the research timeframe. Having already engaged extensively with their contents, I can effectively extract multiple relevant topics to inform this study within the allocated ten weeks.

The selection of books should also be perceived from a critical perspective, all books mention their perspective on phenomena in a positive light, they often lack critical self-reflection, failing to address the limitations or challenges of their ideas. By focusing on the idealised aspects of their theories, they overlook the complexities and potential drawbacks of their approaches, presenting a one-sided view of architectural phenomena without a deeper critique.

I hypothesise that applying principles from phenomenological theory to the design of residential living environments for students in Tarwewijk can significantly support and enhance their mental well-being. By integrating these architectural theories into student housing design, the living environments will foster social interaction, provide sensory engagement, and offer spaces for solitude and reflection, leading to improved mental health outcomes among student residents.

Sensory Architecture

The Eyes of the Skin
Juhani Pallasmaa

Atmospheres
Peter Zumthor

Practical Architecture

Poetic Architecture

Mental
Well-Being

Thinking Architecture
Peter Zumthor

Lessons for Students
in Architecture
Herman Hertzberger
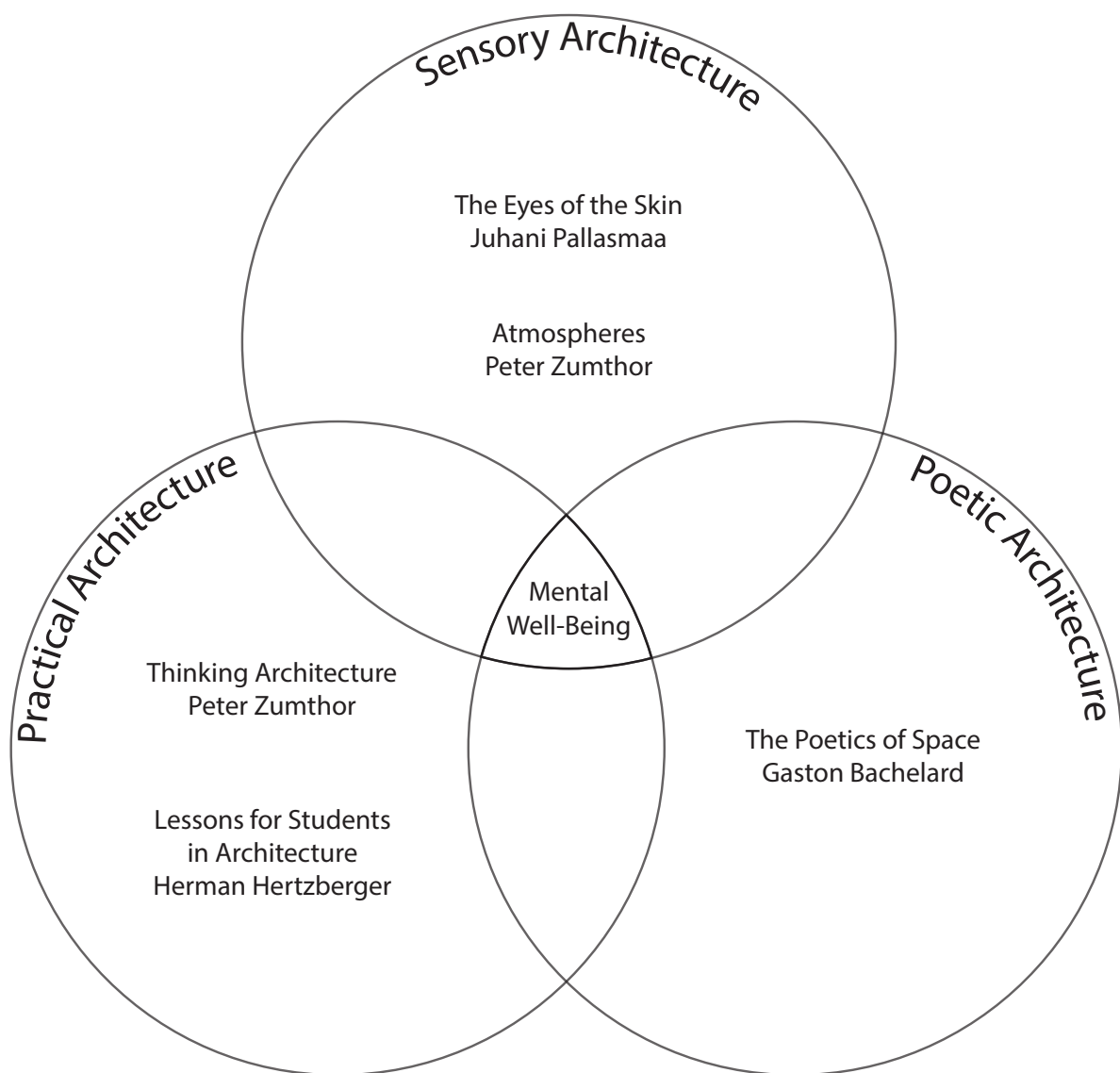
The Poetics of Space
Gaston Bachelard

Figure 1:
Categorization of phenomenological theory books

Research Questions

How can the design of residential living environments, viewed through the prism of phenomenological theory, support and enhance the mental well-being of students? A Tarwewijk case study.

Sub Questions

What does phenomenological theory propose for the design of residential living environments in relation to mental well-being?

How do the ideas proposed by phenomenological theory regarding mental well-being align with the findings of modern research on mental well-being?

What living environment features have already been discovered and implemented in order to enhance well-being?

What living environment features are most desired by students within Tarwewijk, for their mental well-being?

Mental well-being is a dynamic state in which an individual can develop their potential, work productively and creatively, build strong and positive relationships, and contribute to their community" (Foresight Mental Capital and Wellbeing Project, 2008, p. 10).

Living environment encompasses the physical and social settings in which people live, including the dwelling, its architectural characteristics, and the surrounding physical and social environment" (Evans, 2003, p. 573).
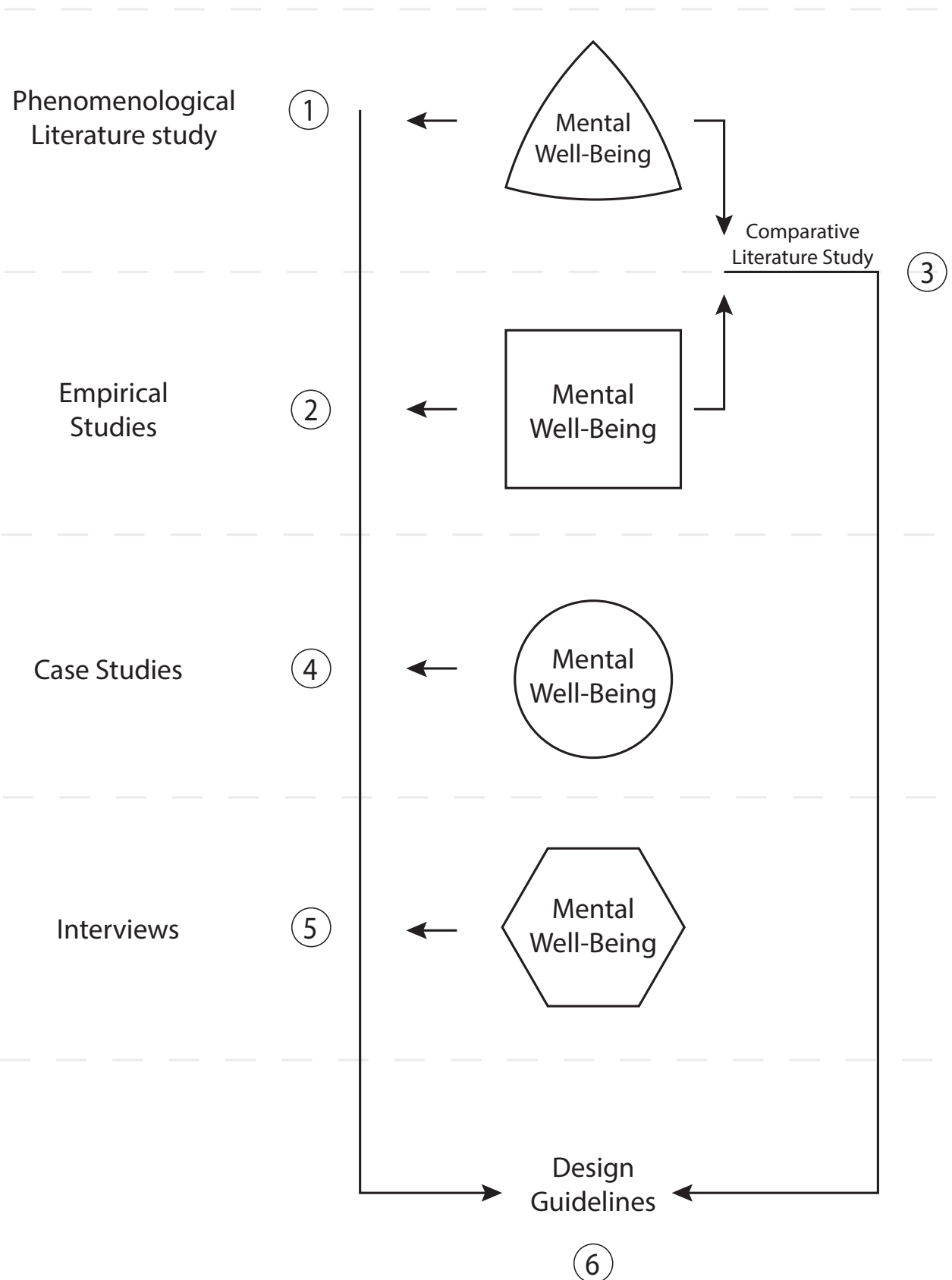
Figure 2:
Diagram of methodological approach

Methodology

As part of the research methodology, this study will begin with an exploration of phenomenological theory books, the selection of which can be seen in Figure 1. The objective is to extract themes and concepts relevant to the topic of mental well-being.

The following step is a literature review of empirical studies across psychology, sociology, and anthropology, utilising the themes extracted from the phenomenological theory books as a starting point. The same topics will be explored from an empirical perspective rather than a phenomenological one.

Afterwards, both results will be used for a comparative literature study, in order to study how phenomenological literature relates to empirical research, and if the two strengthen each other's findings.

This research will also include case studies of architectural projects that have been designed with mental well-being in mind. By analysing a variety of architectural projects, the study aims to identify already implemented architectural means that support mental well-being. The selection of case studies will consist of psychiatric care facilities, residential projects and institutional projects.

The next phase of the research involves conducting interviews with students residing in or around Rotterdam. These interviews will focus on exploring what students wish they had within their living environments to better support their mental well-being. The interview process will be divided into two parts.

In the first part, a set of questions will be developed based on topics which were found to be relevant in the phenomenological theory review, the empirical research literature review and the case studies. These questions will be integrated within a questionnaire and distributed.

In the second part, a small group of students will be provided with a printed floor plan of their current dwelling. They will be invited to draw or annotate directly on the floor plan to visually express their desires and ideas for an ideal living environment that supports their mental well-being. This creative exercise serves as an alternative means of expression, allowing students to communicate spatial and design-related preferences that might be difficult to communicate through words alone.

In accordance with TU Delft's Human Research Ethics Committee guidelines, all interviews with students and questionnaires will follow ethical protocols. Participants will give informed consent, understanding the study's purpose. While data from these interviews will be included in the final thesis, personal identities will remain confidential, with all identifying details fully anonymized.

All the afore mentioned research methods will contribute to the creation of a set of guidelines, as can be seen in Figure 2, by extracting the most relevant findings from each method. The guidelines will consist primarily out of architectural means and architectural concepts that can be used as a point of departure for the designing phase within the graduation project.

The specific research methods are chosen in order to create guidelines coming from diverse sources, phenomenological theory, emperical research, practice, and users, which can be seen in Figure 3.
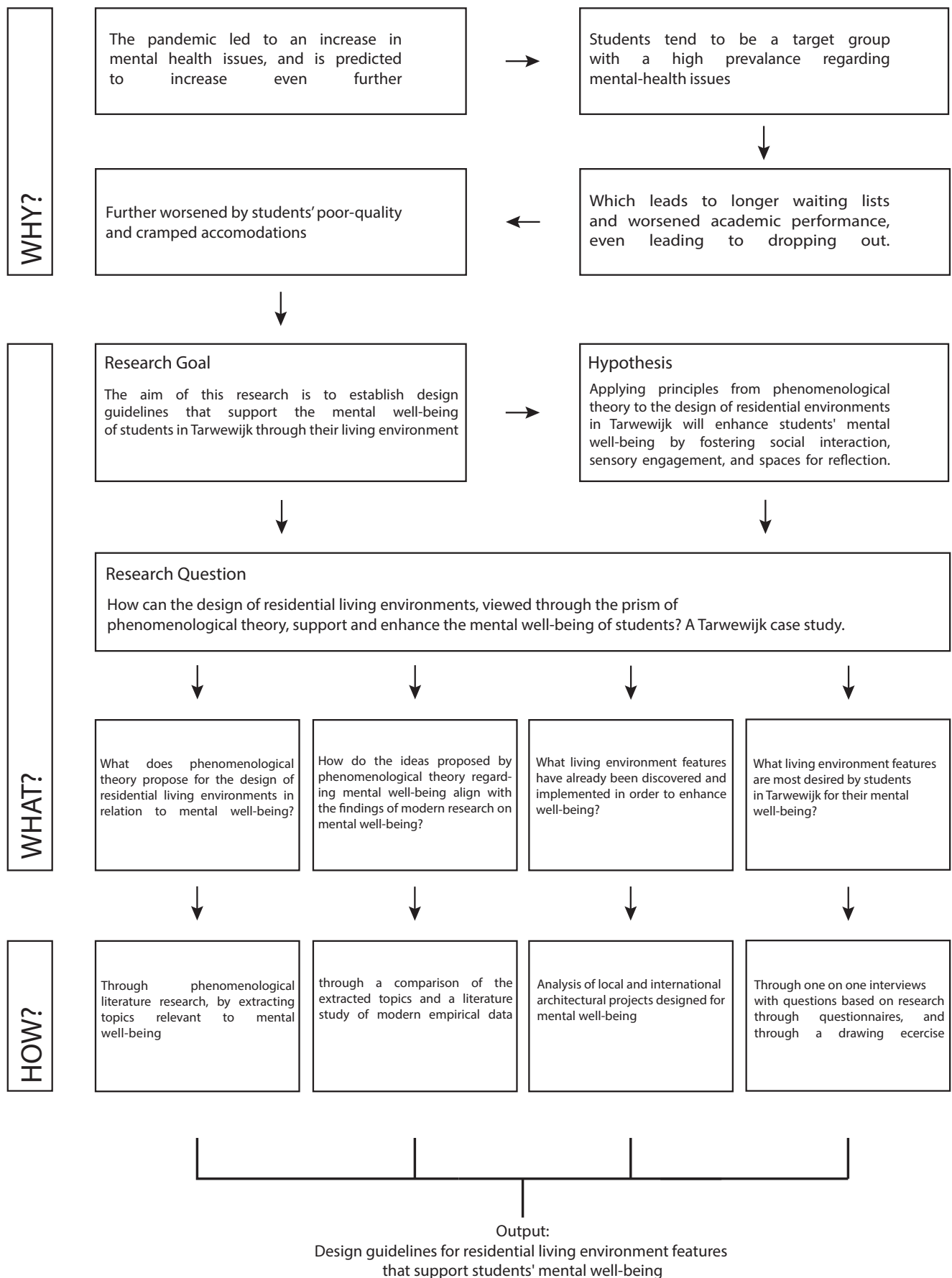
WHY?

The pandemic led to an increase in mental health issues, and is predicted to increase even further

→ Students tend to be a target group with a high prevalance regarding mental-health issues

↓

Further worsened by students' poor-quality and cramped accomodations ← Which leads to longer waiting lists and worsened academic performance, even leading to dropping out.

↓

WHAT?

Research Goal

The aim of this research is to establish design guidelines that support the mental well-being of students in Tarwewijk through their living environment

→ ### Hypothesis

Applying principles from phenomenological theory to the design of residential environments in Tarwewijk will enhance students' mental well-being by fostering social interaction, sensory engagement, and spaces for reflection.

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Research Question

How can the design of residential living environments, viewed through the prism of phenomenological theory, support and enhance the mental well-being of students? A Tarwewijk case study.

↓ ↓ ↓ ↓

What does phenomenological theory propose for the design of residential living environments in relation to mental well-being?

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HOW?

Through phenomenological literature research, by extracting topics relevant to mental well-being

through a comparison of the extracted topics and a literature study of modern empirical data

Analysis of local and international architectural projects designed for mental well-being

Through one on one interviews with questions based on research through questionnaires, and through a drawing ecercise

Output:
Design guidelines for residential living environment features
that support students' mental well-being

Figure 3:
Research Plan Diagram

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Appendix

Appendix A

Week 2.1: 11 – 17 November
Fieldwork, start extracting information from books

Week 2.2: 18 – 24 November
Start finding and reading papers based on extracted information from books

Week 2.3: 25 November – 1 December
Compare information from books and papers

Week 2.4: 2 – 8 December
Research existing projects, case studies

Week 2.5: 9 – 15 December
Initially interview students Tarwewijk

Week 2.6: 16 – 22 December

Interview students with their floor plan ready to draw on

Holiday Break: 23 December – 5 January
Process all information and think about what is relevant for guidelines

Week 2.7: 6 – 12 January
Create guidelines

Week 2.8: 13 – 19 January
Finalise research

Week 2.9: 20 – 26 January (P2 Examination)

Week 2.10: 27 January – 2 February (P2 Examination)