Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences

Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Ying Shen
Student number	5792371

Studio		
Name / Theme	Dwelling Graduation Studio: Design for care in an inclusive environment	
Main mentor	Birgit Jürgenhake	Architecture
Second mentor	Lex van Deudekom	Building technology
Third mentor	Leo Oorschot	Research
Argumentation of choice of the studio	I chose this studio because I was attracted by the keywords 'inclusive environment' and 'human-centred research'. Firstly, I think it is a warm topic. Designing for people who need help or care and building an inclusive environment are warm. As an architecture student, in addition to designing for the majority, I should also pay attention to the needs of minorities. Since I have also experienced depression, I am concerned about topics related to depression. I think it is a good opportunity to research and design for people, and to understrand more about depression prevention. In addition, the human-centered research approach also interests me because I believe it is one of the social responsibilities of architects. Only by truly understanding the needs of the target group can we really design buildings that are helpful to them. Therefore, this is a project worth thinking and practicing.	

Graduation project	
Title of the graduation project	Happy living environment for university students
Goal	
Location:	Delft campus
The posed problem,	**Background** **Depression in University students** More than half of all university students report having emotional problems (Versteeg & Kappe, 2021). In the majority of developed nations, over 50% of young people are enrolled in higher education. The average age of entry into higher education coincides with the peak age

	of onset of mental health issues, with 75% of cases seeing the first signs of mental and drug use disorders before the age of 24. While many students adjust well to the significant lifestyle adjustments that come with higher education, this is not always the case for certain students (Reavley & Jorm, 2010). The prevalence of anxiety, depression, ADHD, and substance addiction among university students in the Netherlands has significantly increased; in 2009, 22% of students reported having such issues. In comparison to the working population (21%), this percentage has increased to 44% by the year 2022(Almost Half of Students in the Netherlands Have Mental Health Problems | DUB, n.d.). The Dutch population between the ages of 18 and 25 will have the highest levels of dissatisfaction with their mental health in 2019 and 2020, compared to other age groups. The most common individual mental health problem in the Netherlands is serious depression(Versteeg & Kappe, 2021). The young college age group (18–24 years), sometimes known as "emerging adulthood," is a developmental stage that sits between late adolescence and adulthood. Stress and anxiety are believed to occur throughout this time due to the requirement to build the independence and self-sufficiency that people learn during adolescence, as well as the ability to manage the brand-new chores connected with creating and maintaining personal relationships (Mahmoud et al., 2012). At the same time, this might be brought on by academic overload, peer competition, pressure to perform, and less time spent with friends and family (Versteeg & Kappe, 2021). The academic performance, productivity, substance usage, and social interactions of college students during this time may all be significantly impacted by an untreated mental illness (Hunt & Eisenberg, 2010). **Prevention is better than cure** The Dutch government has established a system of primary and secondary mental health treatment as well as frontline support provided by general practitioners to assist those suffering from depression or other mental disorder (Primary or Secondary Mental Health Care, n.d.). The Netherlands Court of Audit found that 1.3 million persons receive mental healthcare annually, with the majority receiving rapid assistance. The waiting lists for mental healthcare maintained by the industry groups

GGZ Nederland and MeerGGZ in 2018 were the basis for the estimate that 11,000 people must wait 4 months or longer to receive treatment(Rekenkamer, 2020).

Most young people who suffer from depression and similar disorders either delay seeking professional care or do not seek it at all, despite a significant number of mental problems in the younger population. Instead of seeking professional assistance, they frequently turn to self-help techniques that might be detrimental, such as abusing alcohol or other substances (Reavley & Jorm, 2010). Avoid seeking help because they believe that doing so shows weakness, which will hinder their ability to advance in their careers. High psychological discomfort patients may not be aware of their atypical mental condition. They might not be aware that there are practical strategies to handle stress or know where to turn for assistance (Storrie et al., 2010). In addition, the cost of treating depression is substantial. As a result, there is a strong motivation to prevent depression and its symptoms (Tak et al., 2012).

The idea that proactive awareness and preventative interventions are more effective than remedial efforts has never been more crucial, according to the Dutch humanist scholar Desiderius Erasmus (Psychiatry, 2022). Meanwhile, Nicola Reavley in her study also highlighted that the facilitation of preventive and early intervention in this context has the potential to introduce a new dimension to mental health, with over 50% of 18–20 year old in higher education. has the potential to have significant positive effects on both the individual and the population levels in this situation (Reavley & Jorm, 2010).

Problem statement

Mental health prevention in the social aspect

According to Colleen S. Conley's research, psychoeducation and skill development are the main components of preventive strategies for students in higher education. a combination of exposing them to probable difficulties and issues, inspiring them to make wise and effective decisions, and educating them on how to employ relaxation techniques, constructive conflict resolution techniques, and other coping mechanisms to relieve stress or sadness (Conley et al., 2015). Josefien J. F. Breedvelt investigated the impact of community cohesion on teenage and young adult depression

	reduction. and suggested specific measures to improve community harmony going forward (Breedvelt et al., 2022). The Dutch government places a lot of emphasis on mental health prevention and effective therapies, and it suggests tailored interventions and policy support for various age groups. It is reported that interventions for adolescents in the Netherlands are also partially applicable to students in higher education, but there are no effective interventions in the Dutch intervention database that are specifically targeted at university students (Effectieve interventies en beleid mentale gezondheid en preventie, n.d.). **Mental health prevention in the living environment** There are numerous architects who concentrate on the connection between space and mental health in the area of architectural design. According to architect Tonia Householder, "The greatest opportunity for architecture to encourage the prevention and control of mental illness is in residential and work environments, where we spend most of our time." As of now, the focus of health-related architectural design has been on medical buildings, giving architects well-researched and practical experience that can be used to both residential and commercial space (Architecture Concepts Can Boost Mental Health, n.d.). In the study of A. Fernandez, it is mentioned that there has been an increase in interest in studying how the built environment affects psychological well-being in recent years. However, there is no research evaluating the effects of the built environment on the mental health of the university neighborhood, and little is known about the strategies implemented in universities that follow the environment-based model (Fernandez et al., 2016). In addition, there is limited research on providing students living in student housing with living environments that support health and may reduce symptoms of depression and anxiety (Worsley et al., 2023). In some of the scholars' research on student residential environment and mental health, it was mentioned that: some students claimed that living in their student housing made them feel lonely; someone said that because their apartment block looked a concrete tower, they did not feel particularly inclined to hang out there (Vytniorgu et al., 2023).

	Overall problem statement There is a lack of research that is inspired by combining the prevention strategies in social mental health field and the existing architectural design principles related to mental health to specifically research for university students about how the architectural and built environment can be designed to support depression prevention in their residential environment on campus. Therefore, this research and design is meaningful and can provide some ideas on the relevant field. In addition, it will have a positive impact on preventing other more serious problems, like suicide that depression brings to university students in the aspect of architectural design.
research questions and	**Main question:** What architectural and built environment features of residential environment on a university campus can have a positive impact on depression prevention of university students? **Sub questions:** 1. What architectural and built environment features are there? 2. What is the residential environment on a university campus for university students? 3. Which depression prevention strategies can be used to architecture and built environment? 4. What are the design elements of mentally supportive environment that can be learnt from current urban/campus planning and student residence project?
design assignment in which these result.	The research aims to combine depression prevention strategies with mental health-related architectural design principles to design living environment on campus that can have a positive impact on depression prevention in university students. It is of concern that depression is a common problem among university students due to stress, competition, social relationships, and so on. Although architecture is not medicine and cannot directly solve the problem of mental illness, it can play a positive role in the mental health or well-being of university students by promoting their daily life environments on campus, including their residential and daily activity networks.

Theoretical framework

The theoretical framework of is separated into three sections, physical health: walkable city, social health: social cohesion, mental health: mentally supportive environment, corresponding to the research questions by combining existing research and theories in related fields.

Physical health: walkable city

Literature studies on physical health discuss the positive effects of physical activity and exercise for both mental and physical well-being. "Planned, structured, and repetitive bodily movement done to improve or maintain one or more components of physical fitness" (Cooney et al., 2013), is the definition of physical exercise. Some scholars gave a more detailed explanation "With exercise we mean that you for example go for a walk, go skiing, swim or take part in a sport"(Grasdalsmoen et al., 2019)

Both the World Health Organization and Guidelines from the National Institute for Health and Care Excellence (NICE) recommend physical activity as part of standard treatment for depression. And there are many studies that have demonstrated the positive effects of exercise in fighting or alleviating depression (Kvam et al., 2016). There are many other kinds of exercise practices, such as basketball, volleyball, running, etc. Exercise also includes walking. Walking has been shown to positively affect both physical and mental health, including lowering stress and enhancing creativity and mental alertness (Southworth, 2005). Jenny Roe et al. also conducted ART-based research on the relationship between walking and mental health and suggested the potential of urban walking to promote recovery in adults with poor mental health (Roe & Aspinall, 2011)

In the area of architecture, terms like "walkable city" and "walkability" are used frequently. In 2005, Michael Southworth conducted research and defined walkability as the degree to which the built environment facilitates and supports walking by offering pedestrians a safe and comfortable environment, facilitating travel times and effort estimates between destinations, and creating visual interest across the network. supplying visual interest across the network and getting users to various locations in an acceptable amount of time and effort. He also highlighted the importance of connection, safety, and good road conditions in creating a walking city (Southworth, 2005). A community-scale walkability model was proposed in a study by Adriana A. Zuniga-Teran et al in 2017. with some factors overlapping with Michael Southworth's study and with the addition of Motivations for Walking, Social Interactions with Neighbors and wellbeing, among other factors (Zuniga-Teran et al., 2017). In 2021, Antonio Zumelzu and Marie Geraldine Herrmann-Lunecke collated a large number of studies on healthy and walkable cities and summarized the criteria that are important at the level of the built environment, including green space, density, spatial design and so on (Zumelzu & Herrmann-Lunecke, 2021).

Combining the findings of these three literatures on walkable city, I will summarize the design guidelines for walkable city in my research based on the standard that it can be achieved through architectural and built environment.

Social health: social cohesion

Literature studies in social health are about social cohesion helping to promote mental health. Social cohesion can be defined as "the extent of connectedness and solidarity among groups in society" by Josefien J. F. Breedvelt et al, while they also collated factors of social cohesion in their study, including social support, social belonging etc (Breedvelt et al., 2022). These terms are also searched during the research process.

Humans are sociable creatures by nature. Humans require closeness, comfort, a sense of value, and frequently, validation of who they are. People may experience a sense of deprivation that shows up as conditions like loneliness, depression, and anxiety when they are in a situation where they consistently struggle to build and maintain satisfying relationships with others and thus struggle to meet their need to belong (Heinrich & Gullone, 2006). Mental and physical health are significantly impacted by social ties. An individual's general health is impacted by the status of their social ties. Individuals who have a sense of closeness and belonging in a social setting are less likely to suffer from depression (Santini et al., 2015). According to a study, social ties can have a favorable impact on mental health while also serving as a protective factor against depression (Williams & Galliher, 2006).

There is also a great amount of research on social cohesion in the field of architecture. Architects can promote human relationships and cohesion by designing or creating built environment that positively affects mental health. According to Jamie Anderson et al.'s 2016 study, public space design can enhance people's social wellbeing through three key design criteria: fostering connections with people, encouraging physical activity, fostering awareness of one's surroundings (Anderson et al., 2017). In 2022, Josefien J. F. Breedvelt et al. not only included a definition of social cohesion, but also demonstrated that promoting social cohesion is useful in preventing depression in young people. Their study also mentioned some measures that can be taken in the future to improve neighborhood social cohesion, such as volunteering, art, creativity and culture, sport groups, online spaces, green spaces (Breedvelt et al., 2022).

Combining these two theoretical studies, I will summarize the design guidelines for social cohesion in terms of social health in terms of what can be achieved through architectural and built environments.

Mental health: mentally supportive environment

Literature on mental health is about how to create or design mentally supportive environments. Mentally supportive environment can be defined as architectural and built environment that positively influence a user's mood, a definition inspired by the author's definition of a healing environment. A healing environment has been defined by a physical setting where interactions between patients and staff promote good health outcomes (Huisman et al., 2012).

Currently, most of the theories on this topic concern medical environments or psychiatric facilities, where the users are mainly patients and medical staff (Householder, n.d.). In these studies, the terms healing environment or healing

architecture are mentioned. There is a theory for the general situation. Happy by design, written by architect Ben Channon. However, Tonia Householder, an architect, points out that healthcare is currently the main emphasis of health-related architectural design. This gives architects a well-rounded and practical experience that they can use to both residential and commercial buildings (Householder, n.d.). Therefore, it is reasonable to combine the results of research on the healing environment and the general environment to construct design criteria that are appropriate for the living environment.

In 2012, E.R.C.M. Huisman et al. studies mentioned a lot of details of healing environment where comfort aspects of factors, materials, view, orientation, and so on, applying to the living environment (Huisman et al., 2012). Stefan Lundin offered seven suggestions for creating inpatient spaces in mental health facilities in his book Healing Architecture, published in 2015. These three suggestions—which apply to both residential settings—are to create an open, free atmosphere, encourage social interaction, and provide views of the outside and unrestricted access to it (Lundin, 2015). The relationship between architectural design and mental health is discussed in Ben Channon's book Happy by Design. The book discusses how light, comfort, control, nature, aesthetics, activity and psychology can influence our emotions and thoughts and how they can be modified and customized to better serve our collective well-being in a variety of ways (Channon, n.d.).

Combining these three theories, I will summarize the design guidelines for mentally supportive environments in this part of my research in terms of what can be achieved and applied to living environments through architectural and built environment.

Process

Method description

This research will be carried out through a selection of research methods including literature review, case studies, observation and interview

A. Literature research

According to the theoretical framework, the literature research is divided into three sections samely, physical health: walkable city, social health: social cohesion, mental health: mentally supportive environment. Each section will be examined in detail. theory has been overviewed in the theoretical framework section.

In the formal literature research stage, the theories contained within each of the three sections will be analysed in detail and the design factors that influence design in the research theories will be compared, refined and fully explained. I will remove and merge these factors into design factors that will influence my design, based on what can be realised and applied to the campus space and students' living envrionment through the architectural and built environment. Finally, the design factors in three sections will be organised into design guidelines.

B. Observation

In the fieldwork week, I plan to be observing in and around the student housing on the TU Delft campus. Observation will focus on the fellow aspects:
1. Connection with campus spaces

2. Nature or greenery in building or around building
3. Facilities around building
4. Floor plans (circulation, common room, gallery, and so on in the building)
5. Collision spaces (where do the students meet/ chat/ work together/ with each other in the building, and when do they do usually?)
6. Typology of housing

C. Interview

In order to support my research, I will be conducting a lot of interviews. before conducting the interviews, I discuss and share the interview questions with my colleague as well since our research topics are related. During fieldwork week, we plan to divide up the work of conducting the interviews and finally share the results of the interviews. We listed a few questions for different interviewees and would try to keep each person's interview to about 15-20 minutes. The people I interviewed were: students at TU Delft, psychologist at TU Delft, psychologist from Dutch psychological websites such as openup.nl, psychiatric doctors, etc. The detailed interview plan is shown in the appendix.

D. Case studies

In order to demonstrate the effectiveness of strategies related to the prevention of depression, architectural design related to health will be analyzed, which include residence/ student residence, urban/ campus design.

Residence/ student residence:
Grand Morillon Student Residence -2021- Kengo Kuma & Associates
Student Experience Minervahaven -2021- VURB Architects

Urban/ campus design:
Healthy Tracks - 2018-2019 – Felixx

BACKGROUND

Depression in university students

Mental care for depression

- Avoid seeking help
- Long waiting list
- Expensive therapy cost
- .....

Prevention is better than cure

PROBLEM STATEMENT

Research for depression prevention

in social aspect

- Psychoeducation Skill development
- Neighborhood social cohesion
- .....
- No effective strategies targeted at university students in NL

in architectural aspect

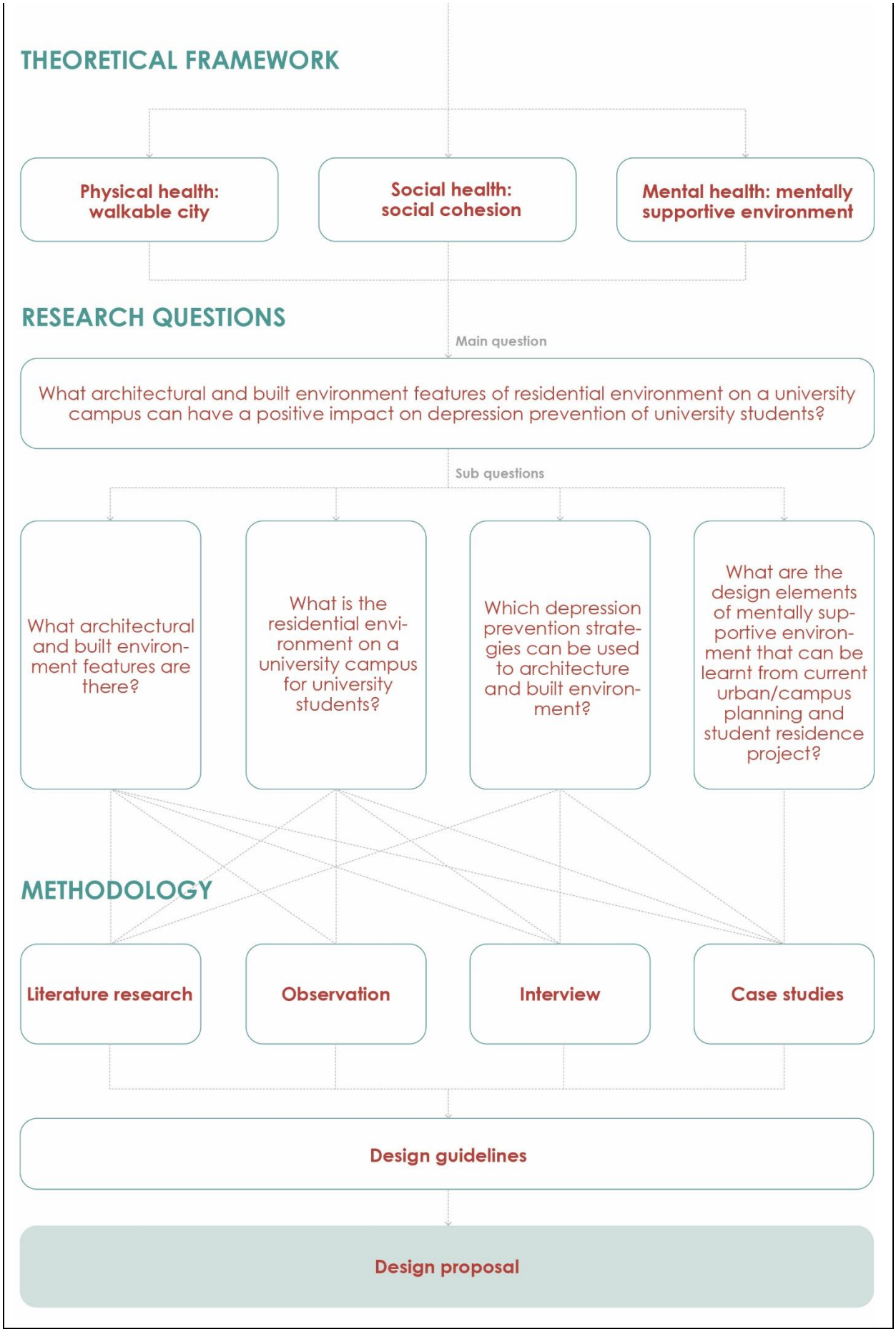
- Focus on medical buildings
- Limited research on mental health and university environment
- Limited research on mental health and student living environment

Overall

There is a lack of research that is inspired by **combining the prevention strategies in social mental health field** and **the existing architectural design principles related to mental health** to specifically research for **university students** about how the architectural and built environment can be designed to **support depression prevention** in their **residential environment on campus.**

RESEARCH GOAL

The research aims to combine depression prevention strategies with mental health-related architectural design principles to design living environment on campus that can have a positive impact on depression prevention in university students.


THEORETICAL FRAMEWORK
Physical health: walkable city
Social health: social cohesion
Mental health: mentally supportive environment
RESEARCH QUESTIONS
Main question
What architectural and built environment features of residential environment on a university campus can have a positive impact on depression prevention of university students?
Sub questions
What architectural and built environment features are there?
What is the residential environment on a university campus for university students?
Which depression prevention strategies can be used to architecture and built environment?
What are the design elements of mentally supportive environment that can be learnt from current urban/campus planning and student residence project?
METHODOLOGY
Literature research
Observation
Interview
Case studies
Design guidelines
Design proposal

Literature and general practical references

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Reflection

1. **What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?**

   "Designing for Care in an Inclusive Environment" is the topic of my graduation studio. With that topic in the background, my graduation project is about building a healthy living atmosphere for university to support depression prevention by researching and designing the campus environment and student residence. Based on the research, the design will be developed from two scales, campus scale and residence scale. The main guiding concept is to create a walking-friendly campus, which means it would promote healthy lifestyles through physical, social, and mental health aspects for university students. They are living on the university campus will be able to be happy through a healthy and inclusive environment, thus staying away from depression.

2. **What is the relevance of your graduation work in the larger social, professional, and scientific framework.**

   Depression among university students is a serious problem in a global context. Currently, research related to emotional problems has been focused on medical buildings, and limited research has been conducted on daily living environments. In the current research context, this research combines psychological, social, and architectural measures to support the prevention of depression through architectural environments. It is hypothesized that the built environment can be used to promote healthy lifestyles in terms of physical, social, and mental health among university students, and thus to

prevent depression. Students can gain happiness and enjoy their campus life in the campus and living environment. This research, as a tiny piece of a huge research framework, may not guarantee the complete prevention of depression, but it has the potential to provide a possible research direction for subsequent studies that consider healthy lifestyles in the context of three different aspects of physical, social, and mental health.