

National DESIGN Project

Project: The Hive 5



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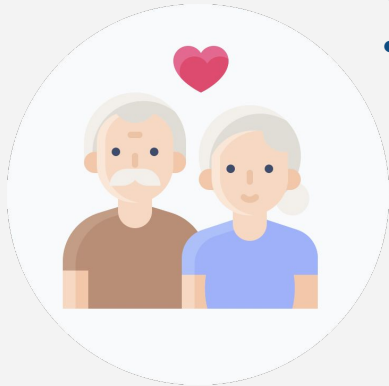
St. Joseph's Institution

01. RESEARCH

- Brainstorming
- Why is this issue important?
- What is the current situation in Singapore?
-

02. DESIGN PROBLEM

- Site Visits
- Problem statement
- Target audience



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- Form & Function
- Inspiration

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- Prototype
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01



RESEARCH

Brainstorming

Why is this issue important?

What is the current situation in Singapore?

Adrien's Reflection

The theme selected for our project is:

2

Social Wellness – how might we design solutions to reduce social isolation and loneliness, improve social support networks and create opportunities for social connection?

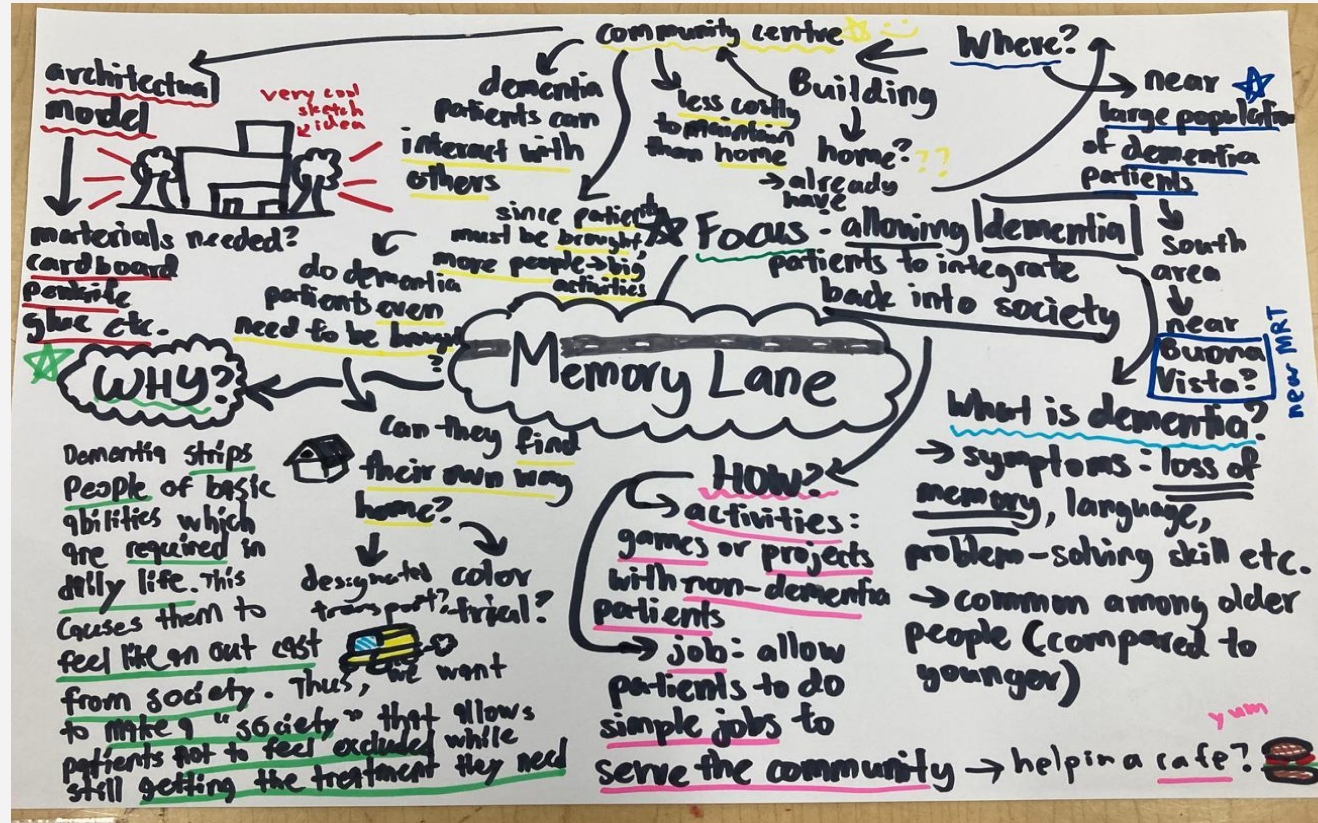


Source: Pexels Photos

Brainstorming

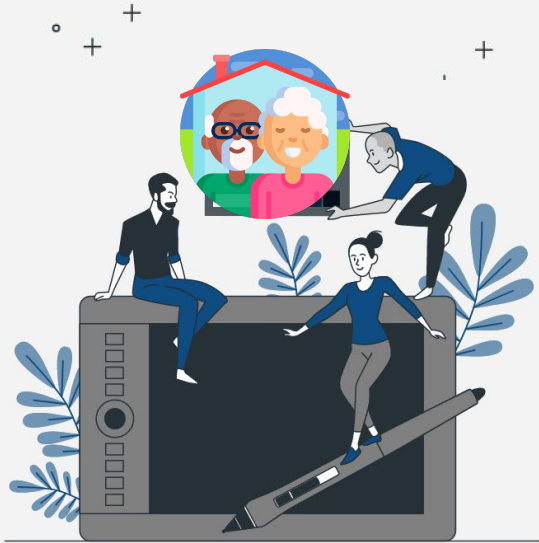
This is our original mind-map that we created when we first started this project. Our target audience at the time was people **diagnosed with dementia**. We thought of Toa Payoh since there is a large number of elderly people staying there.

We later changed the target audience to the **elderly in general** after a session with our mentor, Mr David. He advised us not to be too specific in our focus.



~Memory lane was the original name of our project~

Why is this issue important?



According to this [website](#) by Harvard School of Public Health, the research showed that "an unusually long-living population on the island of Sardinia, Italy has showed that **strong ties to family and friends, along with frequent physical activity, may contribute to their longevity**, according to a May 9, 2019, CNN article. The CNN article also mentioned a recent review of 148 studies that found that people who are isolated face a 50% greater risk of premature death than those who have stronger social connections."

As Singapore moves towards an ageing society, we feel that it is important to engage the elderly in everyday activities like exercise, dining together with friends, engaging in hobbies etc. This is to get them more integrated into the modern day society. It will also be a relief to the Singapore healthcare system when the elderly population is able to be independent and leading an active social life.

What is the current situation in Singapore?

"Our population is not just ageing, but ageing rapidly. In 2010, about **1 in 10** Singaporeans were aged 65 and above. A decade later, in 2020, it has risen to about **1 in 6**. By 2030, another 10 years later, it would be almost **1 in 4** Singaporeans over **65**."

-PM Lee, Singapore ageing and Challenges Ahead' on 11 April 2023.

This is proof that Singapore is an aging population. In the future, a significant part of the population would be elderly.

<https://www.pmo.gov.sg/Newsroom/PM-Lee-Hsien-Loong-at-the-Singapore-Ageing-Issues-and-Challenges-Ahead-Book-Launch>

Why did our team choose Toa Payoh?



source

Based on the data as reflected in slide 10 to 12 , we found out that there is a significant number of elderly people compared to other estates, where buildings are newer. As Toa Payoh is Singapore first HDB estate built in 1964, many of the residents still live there today.

Furthermore, according to Tan Tock Seng Hospital (slide 11) , 12% of the elderly requiring much assistance to complete day to day activities, going to the market to buy groceries or just visiting the park may be difficult for the elderly.

Hence, it will ideal if we can design a communal space that can serve just the elderly as both as a rest and social stop. The current community centre designs are not ideal as it caters to the general public of all ages.

Toa Payoh

https://www.citypopulation.de/en/singapore/admin/122_toa_payoh/

TOA PAYOH

Planning Area in Singapore

Subdivision

The population development in Toa Payoh as well as related information and services (Wikipedia)

The icon links to further information about a selected division including its population structure (gender, age, ethnic group).

Name	Status	Population Census 2000-06-30	Population Census 2010-06-30	Population Estimate 2015-06-30	Population Census 2020-06-30
Toa Payoh	Planning Area	121,004	124,653	124,940	121,850

Toa Payoh

- **121,850** Population [2020] – Census
- **8.180 km²** Area
- **14,896/km²** Population Density [2020]
- 📈 **-0.50%** Annual Population Change [2015 → 2020]

Toa Payoh: planning area and matured residential town located in the northern part of the Central Region of Singapore



Bidadari	Subzone	10	...
Boon Teck	Subzone	16,831	16,358	15,110	14,660
Braddell	Subzone	12,126	11,536	10,760	9,810
Joo Seng (Paya Lebar)	Subzone	...	6,852	6,720	8,150
Kim Keat	Subzone	9,377	8,985	8,610	7,960
Lorong 8 Toa Payoh (Kallang)	Subzone	9,173	8,669	8,220	7,160
Pei Chun	Subzone	12,141	12,317	11,780	10,360
Potong Pasir	Subzone	13,997	13,319	12,650	11,720
Sennett	Subzone	...	4,426	4,540	7,190
Toa Payoh Central	Subzone	19,382	27,168	30,740	28,020
Toa Payoh West (Marymount)	Subzone	14,933	13,212	13,360	14,360
Woodleigh	Subzone	...	1,801	2,440	2,450
Singapore	Republic	3,273,360	3,771,720	3,902,690	4,044,210

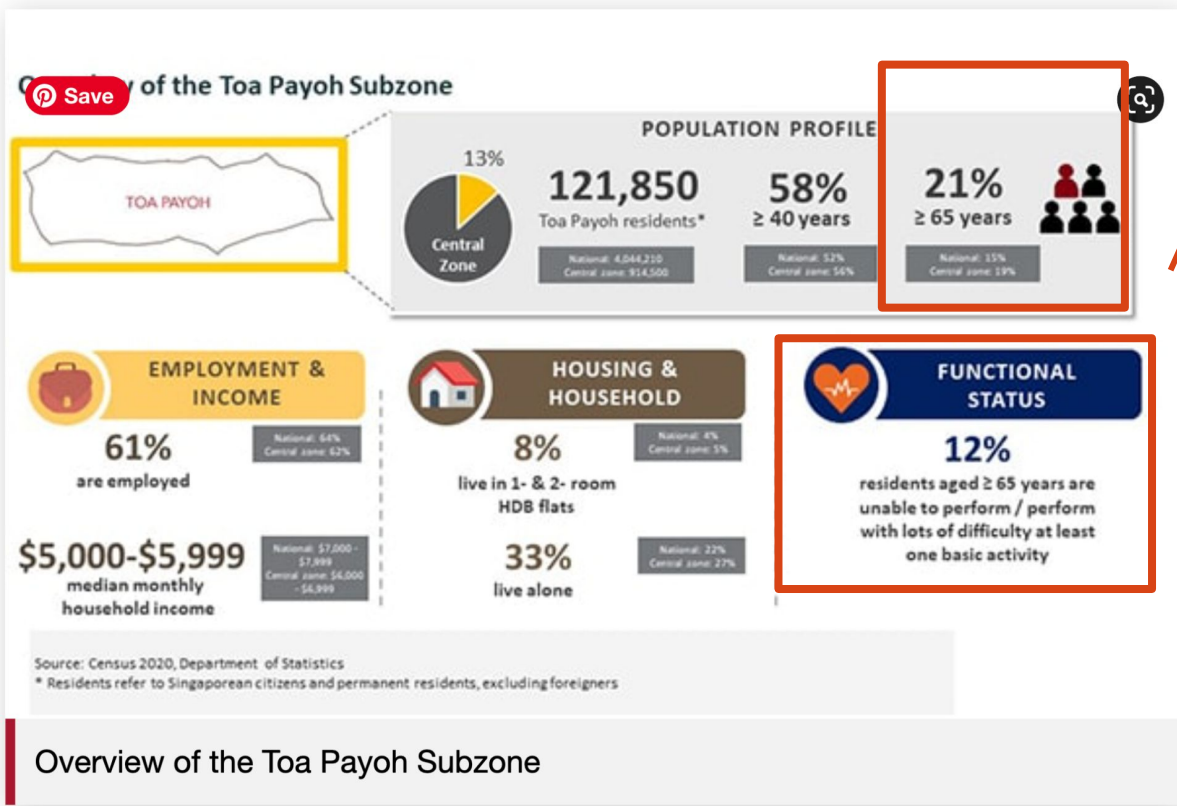
Source: Singapore Department of Statistics (web).

Explanation: Non-resident population (1,641,597 in Singapore on 30 June 2020) is not included in the tabulated figures. All censuses are register-based, i.e., basic population count and characteristics such as age, gender, ethnic group and place of residence were obtained from administrative records and do not differ from estimates. Planning areas and subzones as demarcated in the Urban Redevelopment Authority's Master Plan 2019. Area figures are calculated by using geospatial data.

Toa Payoh has a high population density in Singapore



By Tan Tock Seng Hospital



Toa Payoh has a population of 21% over 65 years old

"Over the years, Toa Payoh has seen many changes, but that sense of community has remained. Today, more than a fifth of the residents in Toa Payoh are above the age of 65 years, and almost one in three residents live alone. These are significantly higher proportions compared to the national average. In addition, around 12% of residents above the age of 65 face difficulties or are unable to carry out at least one functional activity such as seeing, hearing, or walking/climbing stairs. There are about 3,600 resident households with at least one such family member.

Providing place-based care is a key tenet to residents continuing to stay healthy and live well in Toa Payoh. This has been made possible with the strong support from Central Health partners such as Toa Payoh Polyclinic, Care Corner, Thye Hua Kwan Hospital, and many others. For example, in July, Toa Payoh East Community Club worked with our Community Health Team (CHT) to bring care closer to residents through a health screening event. Residents were screened for vision, hearing, and dental issues as well as their mobility status, and received referrals to follow-up care near their home if necessary. Our Community Health Teams also signed interested residents up for health activities during the event."

[Browse](#)

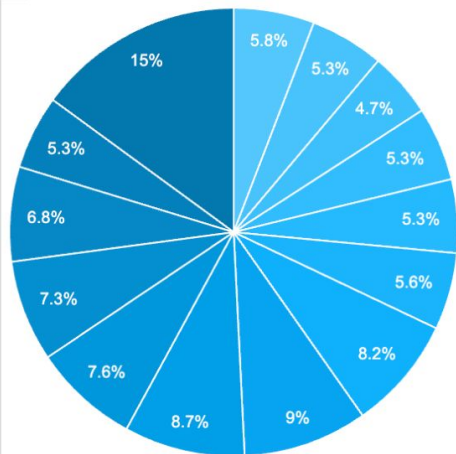

[Amenities](#) [Lifestyle](#) [Financial](#) [Groceries](#) [Education](#) [Healthcare](#) [Tourism](#) [Others](#)

POPULATION STATISTICS & DEMOGRAPHIC ANALYSIS

SHARE:

📍 TOA PAYOH CENTRAL, 177 Toa Payoh Central Singapore 310177 **within** [Toa Payoh](#), [Toa Payoh Central](#)

The following analysis report is powered by YourSingaporeMap's Analytics with unique algorithms and official datasets from Census of Population (Singapore). By using the data from this analysis report, you will agree to our [Terms & Conditions](#), [Privacy Policy](#) & [Disclaimer](#)



AGE GROUP

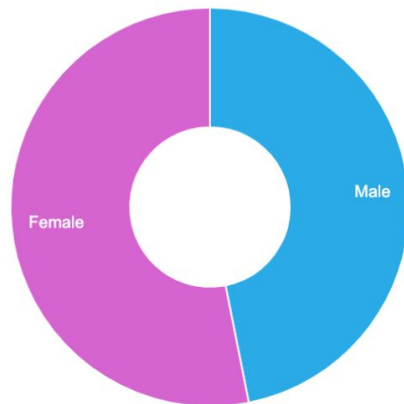
Area: Toa Payoh, Toa Payoh Central

Total Residents: 30,760

Age group of residents staying within the area of Toa Payoh, Toa Payoh Central

- AGE 0-4: 1,790
- AGE 5-9: 1,640
- AGE 10-14: 1,450
- AGE 15-19: 1,640
- AGE 20-24: 1,630
- AGE 25-29: 1,710
- AGE 30-34: 2,520
- AGE 35-39: 2,760
- AGE 40-44: 2,680
- AGE 45-49: 2,350
- AGE 50-54: 2,250
- AGE 55-59: 2,100
- AGE 60-64: 1,640
- AGE 65+: 4,600

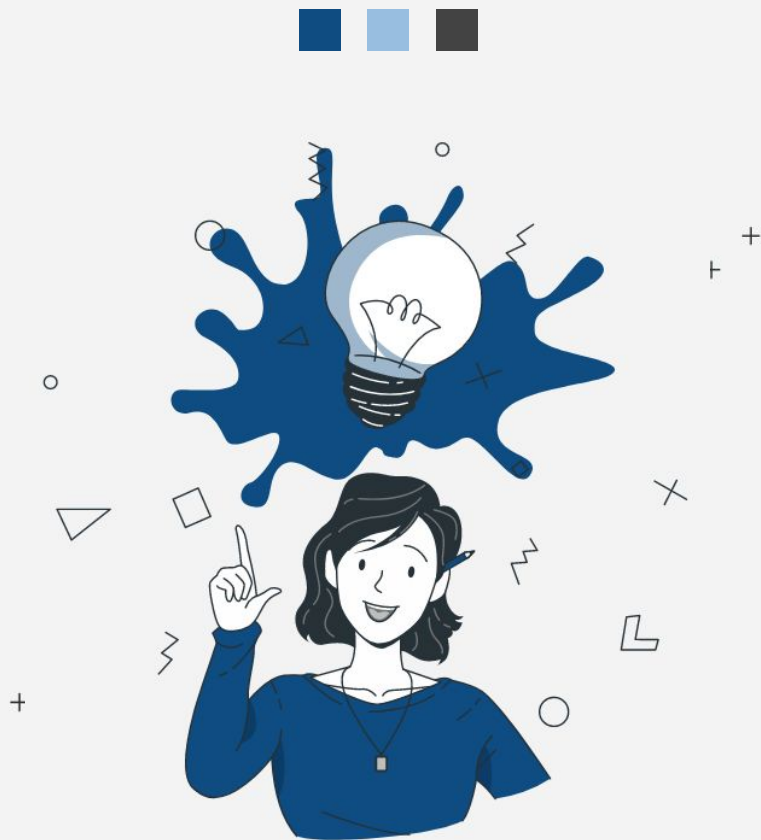
GENDER GROUP



02

Design Problem

Site Visit, Problem Statement,
Target Audience



How to care for the elderly without their caregivers burning out

There are lessons to be drawn from the way other nations have devised systems to care for their older citizens.

Arthur Chia

Sarah is 69 and has her hands full, caring for her 90-year-old mother who suffers from dementia.

Her mother was recently admitted to hospital after suffering severe abdominal pain. Since then, the elderly woman's appetite has been affected and she can eat only soft foods. Her health has worsened.

All this has taken its toll on Sarah, who now finds herself spending twice the time caring for her mother as she did before.

Sarah shared: "I felt that she needed more attention. I have to do practically everything for her – previously, she could come out (of her room) and feed herself, but now she cannot. She has become more dependent on my help and me. When she is in pain, she will groan and call for us. 'Help me, help me. I am in pain.' She wants somebody by her side all the time, but we have household chores and other things to do. We feel stressed because we don't know what else we can do for her even after giving her medication, a hot water pack, and doing our best to keep her safe and comfortable".

Sarah said that she worries about her mother. She is stressed and trapped in a situation she cannot control. She is afraid she may feel resentment building up inside her. She does not know whether she needs counselling or services such as respite care.

WHO CARES FOR THE CAREGIVER?

Sarah may be at risk of caregiver burnout – where the caregiver feels emotional exhaustion, depersonalisation, and a reduced sense of personal satisfaction from the life she is leading.

Our studies showed that caregiver burnout worsens when the health needs of the person

they are caring for change – for example, if they are hit by a new, chronic ailment. Or the caregiver herself may see her own health worsening, making it harder for her to care for others.

Matters get worse if there is lack of family support or money problems. It's also not easy to balance work and caregiving responsibilities, and even harder when the person they are caring for constantly demands attention.

Both Sarah and her mother's care needs are complex. To see how they can be helped, we could learn from how older citizens in other countries are being supported.

DENMARK, FINLAND AND JAPAN

Denmark, Finland and Japan have been improving their eldercare for decades. Their systems are still evolving within the context of social welfare states – in the case of Finland and Denmark – and universal access to health and social care for the elderly in the case of Japan.

Denmark started the transition on Elderly in the late 1970s to improve the lives of its older citizens without vastly raising costs. Through the 1980s and 1990s, it moved towards caring for them in their homes, instead of in institutions.

Independent, adapted homes were built for the elderly and assisted living facilities and services rolled out. Denmark also continues to emphasise self-reliance. This means the elderly can count on public services to maintain their independence and quality of life, and stay healthy in their own homes for as long as possible.

Family members are neither expected, nor obliged, to care for the elderly. There is a vast array of medical, psychological and specialised rehabilitation facilities available to the elderly. Social and health professionals work together in



To help caregivers, there is an urgent need to expand the range of care services for older people and caregivers before a broader, community-based system takes root, says the writer. ST PHOTO: EUGENE TAN

Denmark, Finland and Japan may have societies and systems that are very different from Singapore's. But the one thing that they have all shown is that for the elderly to age in place with dignity, a nation requires comprehensive and coordinated care services tailored to an individual's needs. We need more investments in the care sector to support caregivers at risk of burning out. We could even look at tapping the reach and resources of community development councils to help the elderly in need of care.

teams that include home helpers, home nurses, physiotherapists and occupational therapists who need support also as a case manager assigned to them by the municipal government. The case manager is also the older person's

individual counsellor, who coordinates care services for them. Regardless of whether they are rich or poor, all citizens are entitled to home care and home nursing services, depending on their needs. Like Denmark, Finland too

moved away from institutionalised old-age care and social services in the 1990s. The responsibility for caring for the elderly lies largely with local municipalities. They offer home help, home nursing and health centre services.

The elderly are offered meals on wheels and help to do their laundry and clean their homes. Trained home helpers and volunteers assist older people with everyday chores and also help monitor the state of their health.

Unlike Denmark, family members in Finland play a big part in supporting the elderly. The municipality supports the family caregiver with an allowance for informal caregiving. The family caregiver is also entitled to at least one day off each month, when the municipality steps in to provide care.

Meanwhile, in Japan, a series of laws have helped eldercare services to evolve. It began in 1963, when older people in need were given access to public, assistance-based nursing homes

for the elderly. Another law in 1983 paved the way for home help services, day services, and short-stay services.

Then, in 2000, a long-term care insurance system was introduced. This has opened doors to comprehensive care for the elderly in their homes, communities and institutions.

And since everyone pays premiums towards this insurance, older Japanese citizens see such care as a right and not some kind of state benevolence towards the poor.

Managed by local municipalities, community-based care systems aim to enable older Japanese citizens to continue living in their own community by providing for housing, healthcare, long-term care, and living support. At the heart of the system are integrated care centres, equipped with nurses and social workers, which provide support to older citizens and coordinate home care services for them.

It has taken decades for such care systems to develop in Denmark, Finland and Japan – and they are still evolving.

WIDER RANGE OF CARE SERVICES NEEDED

In Singapore, the responsibility to care for the elderly still falls mainly on their families. The least we can do is to provide support to caregivers, so that they don't suffer burnout.

To help caregivers like Sarah and her mother, there is an urgent need to expand the range of care services for older people and caregivers before a broader, community-based system takes root.

Healthier SG aims to bring healthcare closer to the community. This could be an important step towards a system in which older Singaporeans are encouraged to age in their own homes or within their communities, with universal access to the care they need.

Through Healthier SG, I know that on a family doctor's plan, I can reach my golden years knowing how to access and coordinate resources and services to meet the needs of the elderly "while respecting both the will and the fragility of another".

It is a rare skill, as American feminist philosopher Eva F. Kittay puts it. Denmark, Finland and Japan may have societies and systems that are very different from Singapore's. But the one thing that they have all shown is that for the elderly to age in place with dignity, a nation requires comprehensive and coordinated care services tailored to an individual's needs.

We need more investments in the care sector to support caregivers at risk of burning out. We could even look at tapping the reach and resources of community development councils to help the elderly in need of care.

Hopefully, this will also ease the burden on caregivers like Sarah.

• Arthur Chia is senior research fellow at the Centre for Ageing Research and Education, Duke-NUS Medical School, Singapore.

Straits Times 10 July 2023

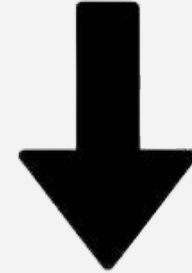
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<https://www.straitstimes.com/opinion/how-to-care-for-the-elderly-without-their-caregivers-burning-out>

Why is this problem **worth solving?**

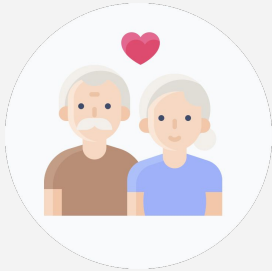
As seen in the Straits Times article in slide 14, the aging population in Singapore is constantly growing larger and larger each year. There is also the caregivers' fatigue that the government is looking into.

We feel that it is important to not have these elderly feel excluded and that they do not contribute to society. We know that it is important to give these elderly people a space where they feel like they are meaningfully spending their time instead of feeling that they are useless. We want to give them a feeling of independence and a place where they can spend time with their loved ones and still be active.



USER NEED STATEMENT

How might we encourage the elderly residents in Toa Payoh to live **independently** and **stay connected** with the society?

USERS	NEED	INSIGHTS (GOAL)
<p>Elderly people living in Toa Payoh</p> 	<p>Connections -Fear of being forgotten, losing the independence, boredom</p> <p>No Pain points/ Frustration -We do not want them to feel that they cannot do anything without the help of others</p>	<p><u>Motivation</u> - Being socially connected and leading a meaningful life after 70s</p> <p><u>Design Problem</u> To create a common and safe space in Toa Payoh that allows the elderly residents to gather to engage in meaningful activities and being socially connected without involving the family members/caregivers.</p>

Toa Payoh Site Visit

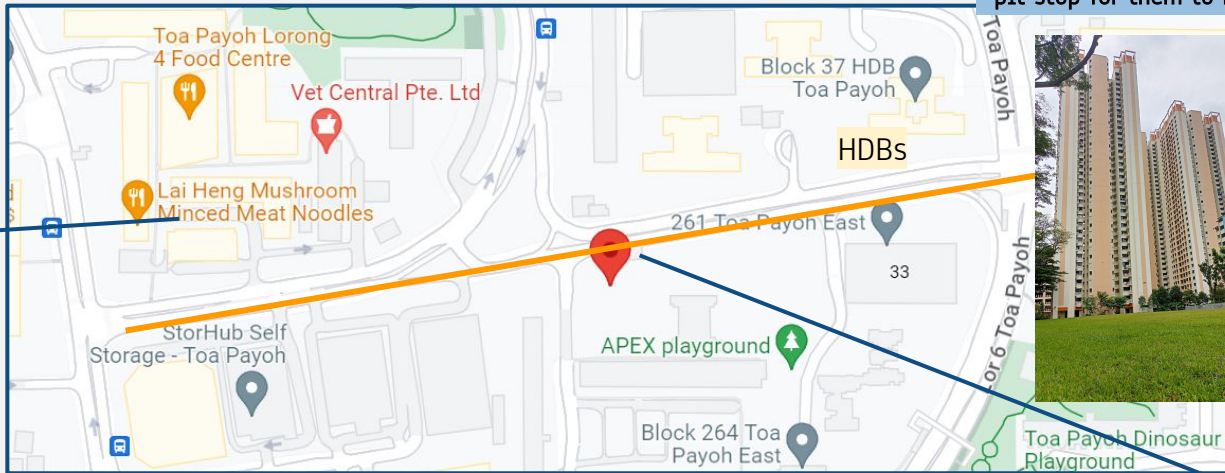
We used google street view to help source for potential spaces for our building. As some photos were outdated, we visited Toa Payoh to have a look and found the perfect spot.

The place we found is quiet and peaceful, with little to no traffic on the road. It is surrounded with residential spaces. The place we chose will be a safe haven for the elderly.

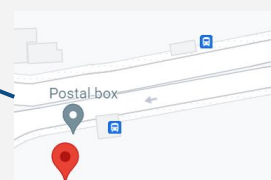


We noticed the elderly would carry the grocery bags and walk along the orange line. Idea : Our building is in between the routes from residences and stores. It is a pit stop for them to rest.

Hawker center and shophouses that sell fruits, vegetables and daily necessities



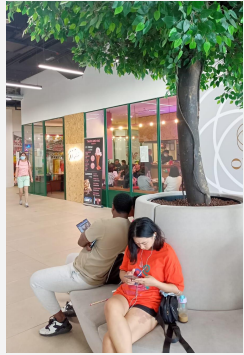
Close up: There are bus stops nearby, making it more accessible.



Pinned Location: 1°20'01.3"N 103°51'15.1"E Land Dimensions: 100x50m

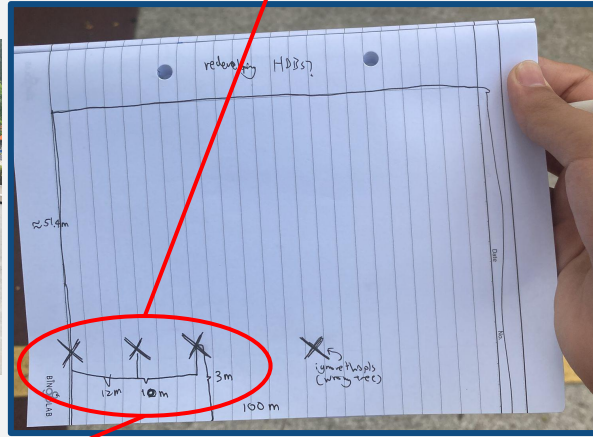
+ Site Visit

Inspiration:



We want to use the trees as a seating area for the elderly.

There are 3 existing trees that we would like to keep.



Exploring the proposed area - surroundings!

According to Remember Singapore, the block of flats here, particularly BLK 29,31 are being demolished for redevelopment. Hence sound barriers have been installed. Nevertheless, we feel that this plot of land can be used.



Proposed
Land Area

Bus stop "Opp Blk 35"
(off to the left)

Carpark entrance
(not in use)

Site Photos

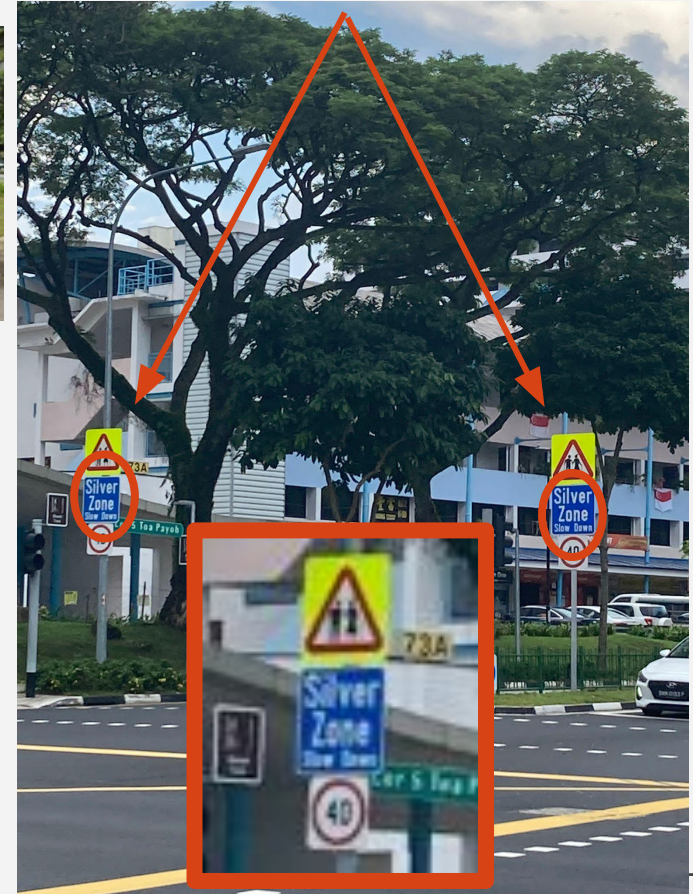


A picture of the entire plot, which is 100 x 50 meters.

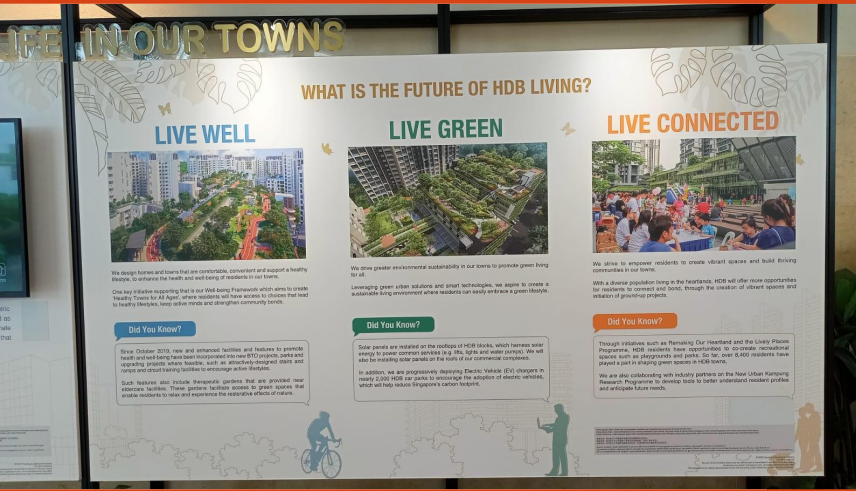
The area which we had seen was part of a silver zone in Toa Payoh. It means that there is a concentration of elderly living in this area.

Drivers are advised to slow down within a silver zone with a lower speed limit, and the silver zones tend to be close to amenities like hawker centres and markets. Hence, we chose this location for its safety and accessibility.

This area is a silver zone in Toa Payoh.



Site Photos



HDB Hub - Live Well, Live Green, Live Connected



HDB Hub - "Co-creating Green Spaces with Communities"

03

Design Solution

Form & Function
Inspiration





We are creating a community centre, where the elderly can partake in activities with their friends and loved ones while still maintaining a healthy and sustainable lifestyle.

The rationale behind creating a community centre is that it is a space for elderly to interact with each other, rather than just staying within their own homes.

A community centre could allow the elderly to socialise with the rest of society, rather than becoming isolated from the world within the confines of a nursing home.

RATIONALE



Consideration for the design solution

How might we encourage the elderly residents in Toa Payoh to **live independently and stay connected with the society?**

SHOULD NOT HAVE

- Hazardous aspects of design (Eg. Sharp Corners, Blind Spots)
- Activities that promote unhealthy habits (Vending Machine Providing Snacks, jackpots)
- Materials that are easily damaged or slippery (Eg. Fragile Glass)

MUST HAVE

- Well-ventilated and bright
- Safety (no sharp corners, no steps, just slopes)
- Simple/Easy to Maintain (reduce maintenance cost)
- Bright colors (easy identification of spaces, positive moods)

GOOD TO HAVE

- Pleasant aesthetic design
 - Vibrant colours on both the outside and the inner sides of the building to attract children
- Environmental Concerns
 - Greenery present inside and outside the building, vines/trees/ potted plants. Cools the place. Interactive with Nature
- Durability
 - Quality Materials that is more resistant to wear and tear,
 - Lower maintenance expenses

Image Board - The Hive 5



Source



Source

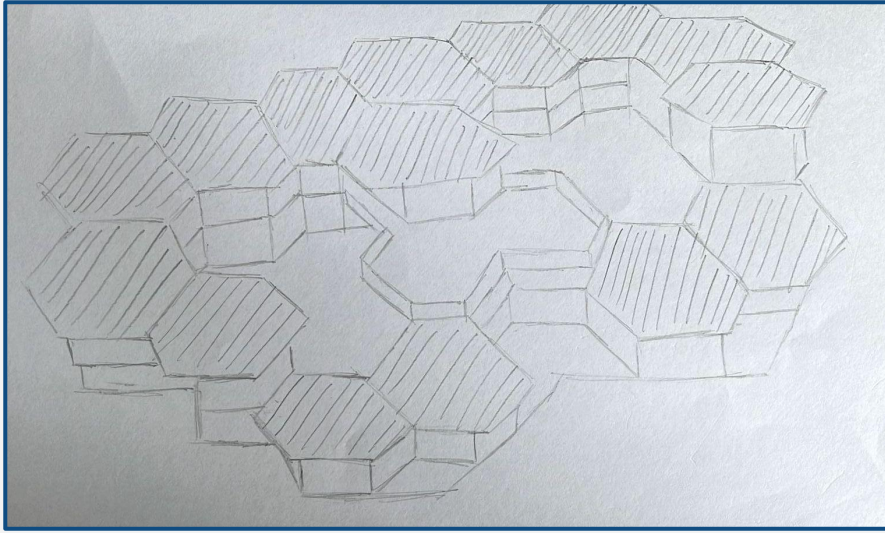


Source



Source

Ideation - The Hive 5

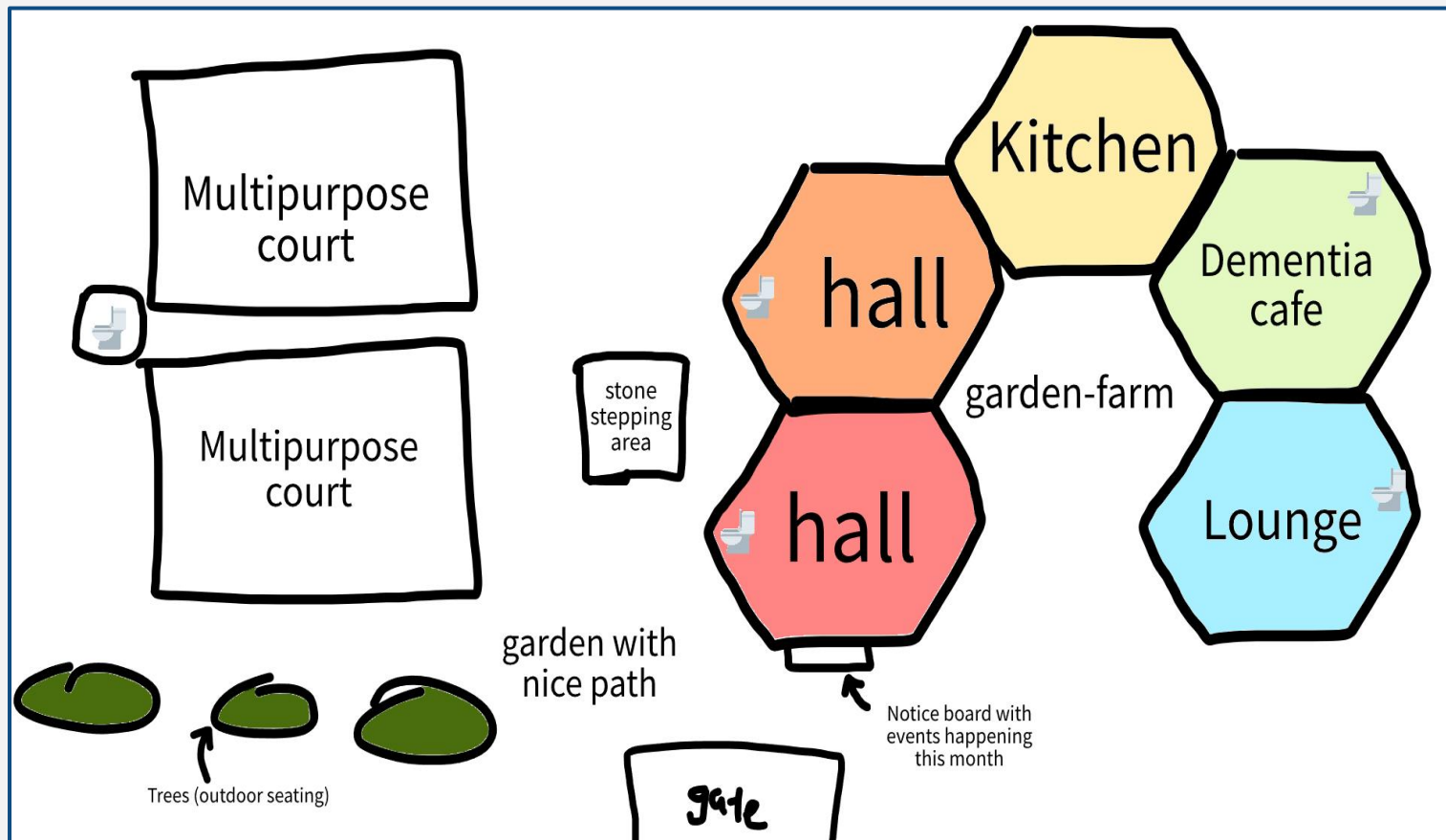


An initial draft sketch by Elliot, showing the idea of many hexagons joined together to create a “well” in the middle where our garden would be. We decreased the number of hexagons to suit our land space.



A fun draft of our idea made on Minecraft by Elliot, used for our discussions on how many hexagons and what configuration we would use.

Initial Draft



~~~~~  
We were still  
focused on  
dementia at  
the time of  
this  
conception~~~  
~~~


Some considerations and features in The Hive 5

Agincare
Caring in your community

DEMENTIA

Good natural lighting helps to prevent falls.

Hearing loops are good for those with hearing aids.

Shiny surfaces should be avoided as they can trigger confusion. Choose wooden frames for pictures and photos.

Sensor alarms can be placed around the room to alert the care team to any falls.



https://www.carehome.co.uk/article_photos/largephotos/1567011.jpg



<https://mobilitycity.com/wp-content/uploads/2023/01/image2-1.jpg>

Safety precautions are very important. These are useful for ensuring that the place is elderly-friendly, rather than having to hire many employees or volunteers to help out all the time. Whether the elderly have dementia or not, some of these features are useful in planning The Hive Five.

Vibrant colors and color coding certain areas could help the elderly visitors in the High 5 to better find their way around.

Ramps make it more convenient for the elderly to get around, especially if they are not accompanied. It also allows wheelchair bound elderly visitors to move around easily with their caregivers.



[SOURCE](#)

A digital billboard mounted on the wall can be used to direct the elderly to types of activities in The Hive 5. For example, if there is an activity in **Purple Hive**, the billboard can show the location on a map.



[SOURCE](#)

We observed many of the elderly in their fifties and sixties are still active in sports, routinely playing pickleball and some even engaged in more strenuous activities like badminton. We thought that including multipurpose courts would encourage this group to have fun and stay active.



[SOURCE](#)

We also saw many elderly who liked to take off their shoes and walk barefooted on pebbled paths, which we found out to be a form of foot reflexology. They believed it will help them with blood circulation.

04

The Hive 5



The Hive 5 - Socially Connected by Spaces



The Hive 5 is a **single-story building** consisting of **6** rooms.

Double-room cafe, Kitchen, Resting lounge, Activity hall, and a Multi-Purpose Court.



Features

Tree benches



Toilets can be situated here for easy access (Near Admin Office and near reflexology corner)



Colour coding:

Instead of long names for a building that is hard to remember, colour coding is a great way for the elderly to easily remember the different individual 'hives'. It makes the building more visually appealing too. The roofs have their respective colour and that way residents staying in nearby HDBs would be attracted to visit such an appealing structure.

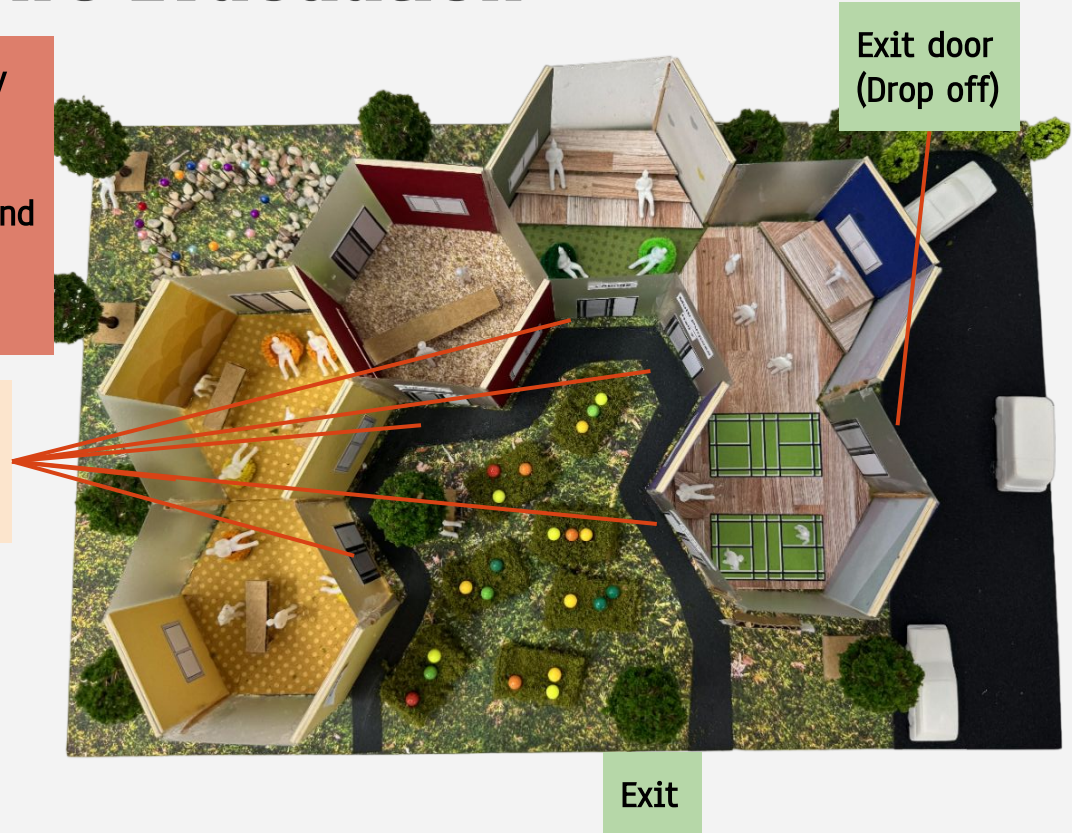
One single storey makes the structure easier to access for the elderly with physical disabilities. Since there are no lifts, it is eco friendly due to lower electricity consumption.



Fire Evacuation

In the case of an emergency, especially a fire, the elderly can be evacuated safely from the different 'hives' easily. There are multiple routes to the gate and the gate is wide enough to allow for quick escape.

Bi-swinging doors for immediate access in and out the building.



Amenities



In the middle of the rooms, there is a small community garden where the elderly can come and grow their own vegetables and plants, fostering a close sense of community.

Idea: [SOURCE](#)

In a corner of the plot, there will be a stone-stepping area, (reflexology) where the elderly can reduce anxiety, reduce high blood pressure, improve circulation and foot mobility.

<https://www.cindyholmreflexology.com/single-post/2018/03/30/how-reflexology-benefits-seniors>



[SOURCE](#)



Close up - Café



Tinted yellow glass windows for lighting with ventilation from air con.

Beautiful views of the community garden which surrounds the café.
Gives the elderly a sense of calm with nice ambience.

Order Countertop from the Kitchen with a menu, choice of healthy beverages eg. Kopi, Teh O (Less Sweet) to accommodate for different health conditions.



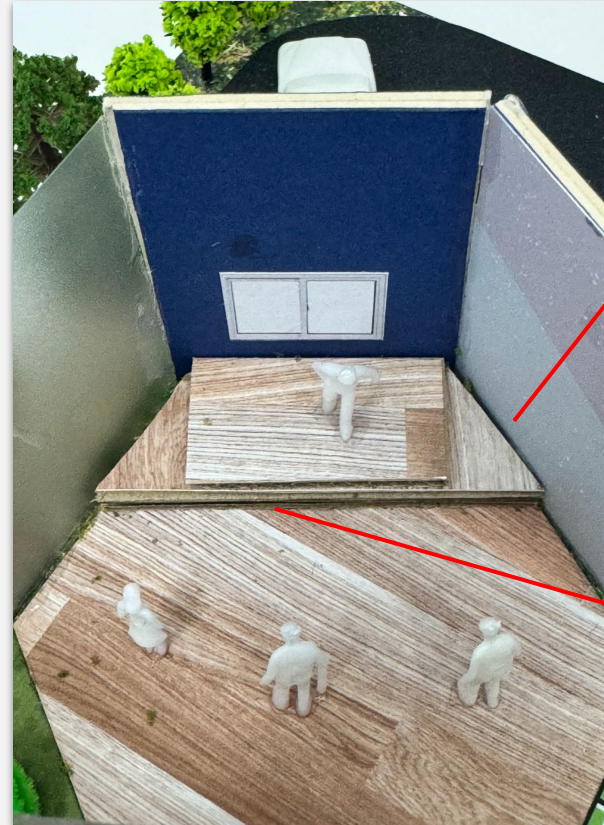
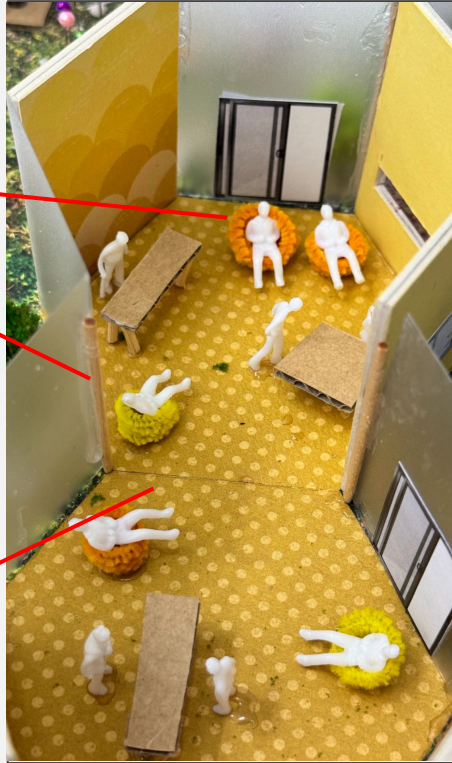


Close up - Café and Blue Hall



The café consists of multiple tables, as well as a few elevated sturdy chairs so they can easily get up at the sides.

Carpet design makes the café aesthetically pleasing



Multipurpose hall for elderly to do Zumba, Taichi, etc and for mass activities like festive celebrations



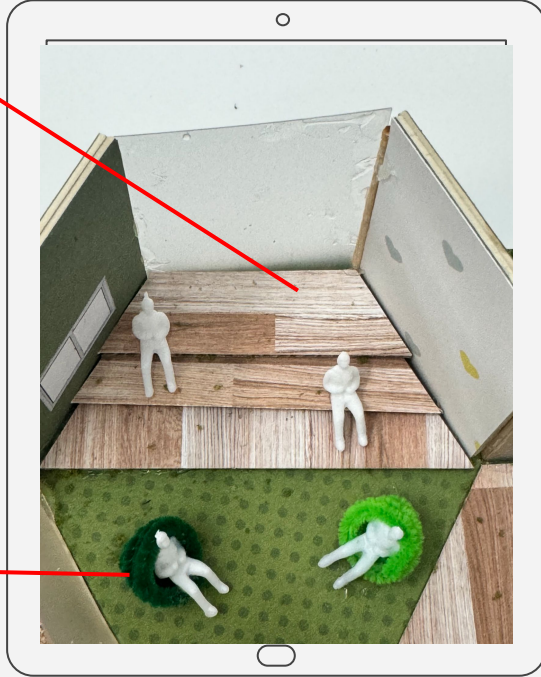
Stage for talks to be held.



Close Up - Green Hive and Purple Hive

A long bench for more people to rest. It also encourages interaction among themselves while resting in a comfortable environment

We build a lounge in the Green Hive where the elderly can come in for a rest or hang around and enjoy themselves.



In the Purple Hive, we designated the space for a multipurpose court for the elderly to play low-contact sports such as badminton or tsukball

Conclusion

The goal of The Hive 5 is to bring people together.

We created a space inspired the beehive where the elderly and common people can come together and interact with one other, through dining and activities hosted by volunteers/organisations. However, funding to build and organising such activities is a very real issue that cannot be easily tackled.

We believe that perhaps The Hive 5 can be taken into consideration by the Toa Payoh Town Council if they would wish to create a new community centre specially catered to the ageing community in Toa Payoh. The Hive 5 should be free entry and can be funded partially by the cafe, run by volunteers/active seniors. It is not just for the elderly but rather a place where they can meet younger crowd too. Possible consideration to inject some energy and life to The Hive 5 is to encourage students to visit to do VIA (Values in Action). We would like to conclude our project by thanking our mentor Mr David Tham, along with our SJI mentor Mrs Pennie Ong, for their unwavering support throughout this project.

Trailblazing Thinkers



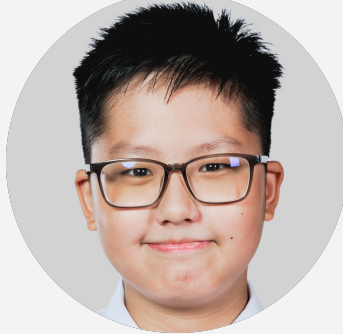
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