

THE INTERIOR SPATIAL DESIGN FOR THE YOUTH IN CHINA

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ABSTRACT

This thesis, titled "THE INTERIOR SPATIAL DESIGN FOR THE YOUTH IN CHINA," explores the intersection of youth lifestyles, urban development, and residential design. It aims to provide a comprehensive analysis of how targeted design solutions can enhance the quality of life for young renters.

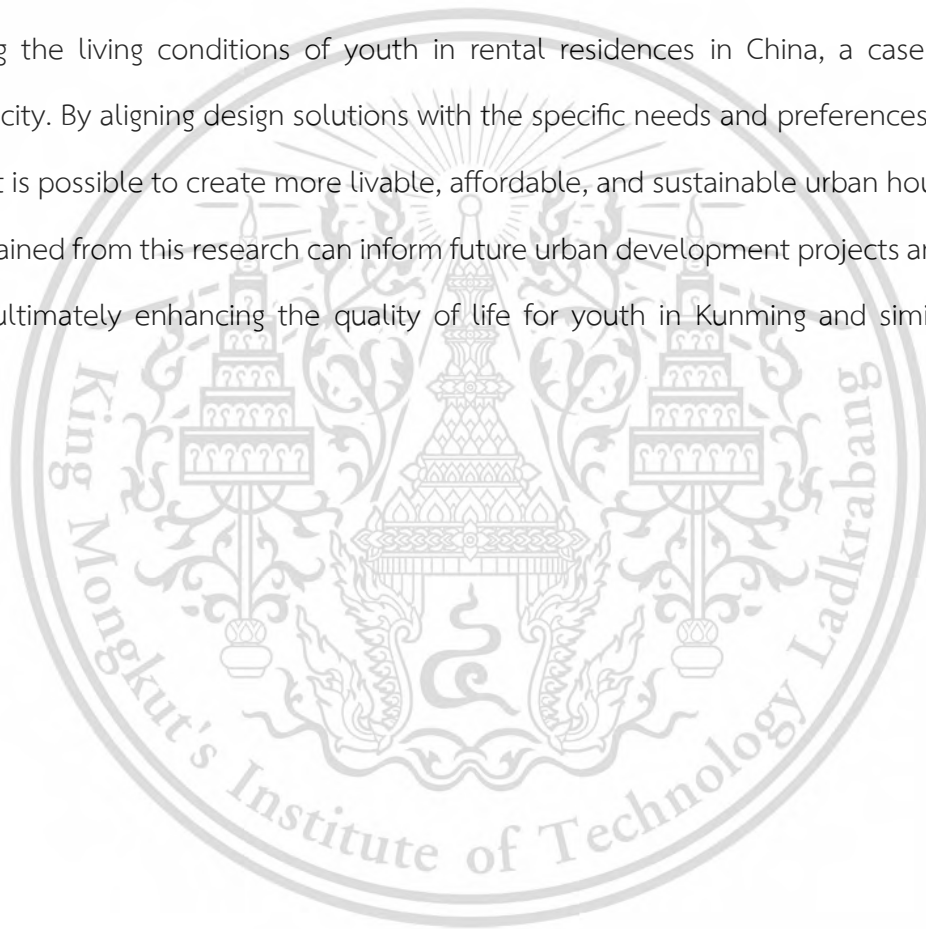
The study begins by examining the unique lifestyle patterns of youth, characterized by mobility, flexibility, and a preference for community-oriented living. These preferences are increasingly influencing urban development trends, particularly in cities like Kunming, which is experiencing rapid growth and a corresponding demand for affordable housing. However, this demand often outstrips supply, leading to significant housing challenges for young people, including high rental costs, limited space, and inadequate facilities.

Through the detailed case study of rental residence units in Kunming, this research identifies key issues affecting young Chinese renters. These include spatial constraints, lack of privacy, and insufficient communal areas. The thesis proposes innovative design strategies to mitigate these challenges. For example, multi-functional furnitures, modular layouts, and adaptable spaces are suggested to maximize utility and comfort within limited square footage. Additionally, the incorporation of communal areas and shared amenities is recommended to foster a sense of community and support social interactions among

residents.

Furthermore, the study emphasizes the importance of sustainability and cost-efficiency in design. By using eco-friendly materials and energy-efficient systems, the proposed design solutions aim to create healthier living environments while also reducing operational costs. This approach not only addresses immediate housing needs but also contributes to the long-term sustainability of urban development.

In conclusion, this thesis highlights the critical role of interior spatial design in improving the living conditions of youth in rental residences in China, a case study of Kunming city. By aligning design solutions with the specific needs and preferences of young people, it is possible to create more livable, affordable, and sustainable urban housing. The insights gained from this research can inform future urban development projects and policy-making, ultimately enhancing the quality of life for youth in Kunming and similar urban settings.



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TABLE OF CONTENTS

	Page
ABSTRACT.....	I
ACKNOWLEDGEMENTS.....	III
TABLE OF CONTENTS.....	VI
LIST OF TABLES.....	IX
LIST OF FIGURES.....	X
CHAPTER 1 INTRODUCTION	
1.1 Background	1
1.2 The importance of affordable residence for Chinese youth	3
1.3 The urgent need for rental housing for the youth in Kunming city.....	5
1.4 Research Objectives.....	6
1.5. The scope and significance of the research.....	6
1.5.1 Study of Kunming	6
1.5.2 Research on the Housing Policy about Urban Youth.....	7
1.5.3 Research on the physiological and psychological state.....	7
1.5.4 Research on urban youth interior design.....	8
1.6. Methodological approach and Research Method	9
1.7. Research stages.....	10
1.8. Keywords.....	12
1.8.1 Interior design	12
1.8.2 Youth	12
1.8.3 Rental residence	13
1.8.4 China rental residence	14
CHAPTER 2 LITERATURE REVIEW	
2.1 Kunming city in China.....	16
2.2 Housing Problems for the Young Chinese.....	18

TABLE OF CONTENTS (Continued)

	Page
2.3 Sharing Room Development.....	20
2.4 Room Design History.....	21
2.5 Modern Room Design.....	26
2.6 General Design.....	27
2.7 CMF Design System.....	29
2.8 Chinese Tenon.....	30
2.9 Cases in Copenhagen.....	30
2.10 City urbanization prices and economic research.....	32
2.11 Research about Kowloon.....	35
2.12 Summary.....	42
CHAPTER 3 CASE STUDY	
3.1 Basic Investigation.....	49
3.2 House Provided by Company	52
3.2.1 Necessary choice -- Changshui airport, Guandu District.....	52
3.2.2 Collective dormitory - Collective dormitory of Jiahua	56
3.3 Housing provided by personal.....	58
3.3.1 Economic symbiosis -- Chuanfang community, Xishan District	58
3.3.2 Seasonal gathering - University Town, Chenggong District.....	63
3.4 Common space and the survey on young people's residential status.....	67
3.5 Questionnaire About Incomes and Outcomes	69
3.6 Evaluate Team	70
3.7 Costs estimate	72
CHAPTER 4 RESEARCH METHOD	
4.1 Housing form and status of property provided by the company	73

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TABLE OF CONTENTS (Continued)

	Page
4.2 Housing form and status of property provided by individuals	78
4.3 Basic tests and method	81
4.4 Cost composition of youth rental space	86
4.5 Basic Investigation	90
4.6 Questionnaire Investigation.....	91
4.7 Identify Design Elements	91
4.8 Design Plans	92
4.9 Explanation of Research on Discretionary Costs.....	93
4.10 Color selection in design	94
4.10.1 Source of colors	94
4.10.1.1 White	95
4.10.1.2 Golden	96
4.10.1.3 Red.....	97
4.10.1.4 Green	98
4.10.1.5 Black.....	99
4.10.2 Color scheme.....	100
4.10.2.1 Standard color.....	100
4.10.2.2 Color Plan.....	102
4.11 Material selection	105
4.11.1 Material Introductions.....	105
4.11.1.1 Wood and bagasse board.....	106
4.11.1.2 Metal Parts.....	108
4.11.1.3 Polymer.....	109
4.12 Design Objects.....	110
4.12.1 Objects.....	110

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Forbidden to modify the content, and cite the document when use.

TABLE OF CONTENTS (Continued)

	Page
4.12.2 Youth's living requirements.....	112
4.12.3 Young adults' sleep-wake patterns.....	113
4.13 Material placement	115
4.14 Space layout analysis	115
4.15 Fundamental layout principles.....	115
4.16 Layout characteristics of collective & individual rental rooms.....	117
4.17 Layout characteristics of collective room.....	117
4.18 layout characteristics of individual room	118
4.19 Design list	119
4.19.1 Indoor use equipment.....	119
4.19.2 Space design	120
4.20 Standard design from	121
 CHAPTER 5 RESULTS AND CONCLUSIONS	
5.1 Design plan.....	125
5.1.1 Basic layout program for collective rental space.....	125
5.1.2 Basic Layout Program for Individual Rental Space.....	127
5.1.3 Basic layout Program for collective or individual rental space.....	129
5.1.4 Furniture Design	130
5.1.4.1 Multifunctional folding bed	130
5.1.4.2 Hanger Slide Charging Post.....	134
5.1.4.3 Combination Locker.....	137
5.1.4.4 Multi-purpose spreader bar	139
5.1.4.5 Folding table.....	141
5.1.4.6 Duplex workbench table.....	143
5.1.4.7 Folding Computer Chair.....	145
5.2 Color scheme.....	146

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Forbidden to modify the content and cite the document when use.

TABLE OF CONTENTS (Continued)

	Page
5.3 Design Assessment	148
5.3.1 After Design Spaces Analyze.....	148
5.3.1.1 Collective Rental Space.....	148
5.3.1.2 Individual Rental Space.....	151
5.3.1.3 Family Residence Rental Space	154
5.3.2 Moving and Cost Assessment.....	158
5.3.2.1 Handling and Volume Instructions.....	158
5.3.2.2 Description of production costs	161
5.4 Design Assessment	163
5.5 Brand Design and Associations.....	166
5.6 Conclusions	168
BIBLIOGRAPHY.....	170
APPENDIX.....	181
APPENDICE-A Questionnaire.....	181
APPENDICE-B Questionnaire.....	187
APPENDICE-C Research Review.....	192
AUTHOR'S PROFILE.....	200

LIST OF TABLES

Table	Page
3-1	The table indicate data.....56
3-2	The air company workers room size and years requirements.....58
3-3	The table indicate data; room size, bath room type, and rental cost.....62
3-4	Information about evaluate professors for the after research.....72
4-1	24 Hours Statistics of Usage Time Proportion.....85
4-2	Average incomes and outcomes level about youth.....87
4-3	Personal outcomes paying proportion.....87
4-4	Proportion of personal equipment selection in the home.....89
4-5	Material Advantages & Disadvantages.....106
4-6	Design Objective Functional Classification Table.....111
4-7	Youth Equipment Requirement Table.....112
4-8	Functional Integration Design Intention Form.....113
4-9	Young adults' sleep-wake equipment using patterns.....115
4-10	Common Equipment Design Dimension Reference Table.....120
4-11	Family Residence Design Dimension Reference Table.....122
5-1	Furniture design size table(self-work).....158
5-2	Table of design costs and SPR(self-work).....162

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Forbidden to modify the content, and cite the document when use.

LIST OF FIGURES

Figures	Page
1-1 Coupling Relationship among urbanization.....	5
1-2 Philosophical position of the research.....	10
2-1 Kunming's CBD.....	16
2-2 The location of Kunming city and its important location in south-west of China.....	17
2-3 Photograph shows many housing companies providing share-house and rental business.....	18
2-4 Examples of bills in 30 days.....	19
2-5 The picture shows that there is no difference between one who take opium about 100 years ago and today's situation.....	20
2-6 A standard rent bedroom in sharing house including a bed, a desk, a chair, and a simple box; nobody use air condition because no need for it in Kunming.....	20
2-7 Since 2010, every year PRC ministry of housing and urban rural development will bring a new policy out, that trying helping the most.....	21
2-8 Net house and cave house, photo'd by writer from books.....	22
2-9 Chinese couch, Ming Dynasty, using in living room, can be used as a bed.....	23
2-10 Chinese bed, Ming Dynasty, using as a small house, it can be put in the middle of room.....	23
2-11 Ear house to the left and a bedroom for daughters and guests.....	24
2-12 Moso people's room, you can see the bed is to the side.....	24
2-13 Another angle to see the bed in Moso's house.....	25
2-14 The emperor's bedroom is always small, no more than 10 square meters.....	26
2-15 The biggest app companies in China now sharing the youth market.....	26
2-16 Cape Cod Style and worker from 1950's US.....	28
2-17 The pre-products lay down at the factory.....	28
2-18 Chinese tenon drawing.....	30
2-19 Copenhagen social public space on street.....	32
2-20 The top 3 question on city development progress.....	35
2-21 Gambling Game are very popular in Kowloon, it brings a special atmosphere in this big slam city.....	36
2-22 Without city facilities supports, residents have to find a life way by themselves, such	

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LIST OF FIGURES (Continued)

Figures	Page
like set TV antennas on top of roofs; life is hard, always someone going to a wrong way, for example drug or drug dealing.....	37
2-23 A planning drawing for Kowloon city, structure just going up and stack together one after other.....	39
2-24 Some young in Hong Kong who cannot afford rent fee, sleeping in Coffee shop or 24 hours restaurant.....	41
3-1 Wuhua district government building, designed by Australia architect in 2003, it's an advanced symbolize in local.....	50
3-2 Wuhua is the center of Kunming, it contains many historical architectural complex, such as university during the war time, old building now still located in downtown.....	50
3-3 Youth Distribution Map of Kunming City.....	51
3-4 Changshui international airport T1 terminal building in Kunming; over 30,000 people working in there, including airline employees, cleaning and security crews, factories provide air-food and materials, ground service and so on.....	52
3-5 Photographs show number of crews waking up in early morning and interior space of their rental place.....	54
3-6 The photograph shows existing living conditions; The accommodations are for those with established families, and companies will provide larger rooms for them. However, the conditions are often not as ideal as we might imagine.....	55
3-7 Images of the Jiahua Food Co., Ltd.'s dormitory building. More than 3,000 people reside here, primarily young individuals aged 18 to 22. They need to work in the factory for at least 10 hours, so staying close to their workplace is a practical choice.....	58
3-8 Chuanfang village in Kunming, farmers, workers, external population are all living in there.....	60
3-9 Images of the Chuanfang city; till now, Chuanfang village still have large groups of old buildings waiting for government dismantle, which has slowing down for the financial difficulties.....	61
3-10 Chuanfang village's living space style; it is too old for today, but because of the price young are still like to check in there.....	62
3-11 The photograph shows the existing problems the community are facing; the community is designed to accommodate many people in Chenggong, it also brings a big	

LIST OF FIGURES (Continued)

Figures	Page
problem for us when epidemic coming; right, one is the public resource of sharing bike; no one use it when students not in Chenggong.....	64
3-12 A standard student rental room will cost 800 at least; house owner will provide a bed, a chair and a desk but not else.....	65
3-13 An existing condition of living room; it is a public place for tenants; most of student will not use it a lot. They prefer to pile up some necessities like water and clothing; and most of student are live alone which has never happened before.....	65
3-14 Images about a group of apartment in Kunming, they had been sold to customer for each, who wants rent from them must though APP or property agent, which are not cheap at all. Most of apartment are close to downtown, and needs ¥1500 at least per month.....	67
3-15 Images about a signed normal rental contract, information including rent date, price and agent fee. Except those, tenant needs pay water, power, gas, internet bill and property management fee. It's a big money for young.....	68
4-1 Images about 6-person room and a single bad for 2. Some standard configuration such as trash can, public cabinet are all in one. This kind of structure are very popular in university, but some of them not have suite bathroom.....	74
4-2 A standard cabinet in room. It has 6 parts for save and preserve, but not enough for hang clothing or big personal thing. This is only a preparatory measure, most people will have their belongings stuffed into their luggage, which makes the space even more crowded.....	74
4-3 A standard small room for 3 man's family, which provide by Jiahua food company. It has a living room, balcony, kitchen, single bedroom and a bathroom only.....	76
4-4 Most Chinese families put decorations and snacks in the living room. Personal belongings are kept in the bedroom. Other debris will be scattered and stacked beside the wall, which is caused by insufficient cabinets.....	77
4-5 Images for two different type rooms. First and second one is sharing flats; they're separate from a big house. Picture blew are normal apartment.....	79
4-6 The spatial design of houses built after 2017 is more reasonable, and this model is being emulated by more and more apartments. Such houses include independent bathrooms, clothes hanging corridors, wide sofas, and foldable coffee tables. But this type	

LIST OF FIGURES (Continued)

Figures	Page
of house is expensive and its contents are difficult to move. Sometimes residents have to show their beds to others, which can cause some confusion.....	80
4-7 Generally, bedrooms with more than two bedrooms will using rent to different people. Landlords will put beds and cabinets in every room, and will raise the rent for the room which has a separate bathroom.....	81
4-8 α and β spaces for Testing.....	83
4-9 α and β average using situation in 24 Hours.....	84
4-10 CMF design system must think over some local elements, such as landmark buildings, representative animals, natural landscape and colourful ethnic feature.....	92
4-11 The source of the white feathers of a red-billed gull.....	95
4-12 The source of the golden color used in architectural decoration.....	96
4-13 The source of the color red in traditional Chinese hues and the natural colors of flowers.....	97
4-14 The common plants in Kunming region and the color of the lake water are the sources of the color green.....	98
4-15 The color commonly used in science fiction works and the basic colors frequently seen in Yunnan ethnic regions are the sources of the color black.....	99
4-16 Selected white color and a comparison chart of similar whites.....	100
4-17 Selected golden color and a comparison chart of similar goldens.....	101
4-18 Selected red color and a comparison chart of similar reds.....	101
4-19 Selected green color and a comparison chart of similar greens.....	102
4-20 Selected black color and a comparison chart of similar blacks.....	102
4-21 Pure Living Color Plan.....	103
4-22 My Cool Life Color Plan.....	104
4-23 Colorful Dreams Color Plan.....	104
4-24 Common Types of Wood.....	108
4-25 Collective Rental Space Floor Plan.....	122
4-26 Individual Rental Space Floor Plan.....	123
4-27 Family Residence Floor Plan.....	124

LIST OF FIGURES (Continued)

Figures	Page
5-1 Floor plans of collective rental spaces (self-work).....	125
5-2 Elevation of collective rented space (self-work).....	125
5-3 Schematic diagram of collective rental space adjustment (self-work).....	127
5-4 Floor plan of individual rental space (self-work).....	127
5-5 Elevations of individual rented spaces (self-work).....	128
5-6 Family house living plan (self-work).....	129
5-7 Elevations of family house rented spaces (self-work)	130
5-8 Bed folding schematic (self-work).....	131
5-9 Folding bed support structure expansion drawing (self-work).....	131
5-10 Structural drawings of rotating auxiliary components (self-work).....	132
5-11 Bed surface lying flat and sitting effect (self- work).....	133
5-12 Change sofa effect (self-work).....	133
5-13 Auxiliary structure effects (self- work).....	133
5-14 Design drawings for slide charging equipment (self-work).....	135
5-15 Hanger & Trunk Structure Diagram (self-work).....	136
5-16 Schematic diagram of base socket (self-work).....	136
5-17 3D drawings of design effects (self-work)	136
5-18 Cabinet combination schematic (self-work).....	137
5-19 3D drawings of design effects (self-work).....	138
5-20 Multi-size storage cabinets and placement forms (self-work).....	138
5-21 Schematic diagram of spreader bar tensioning (self-work).....	139
5-22 3D drawing of the design effect of the tension part of the strut (self-work).....	140
5-23 3D drawing of spar design effect (self-work).....	140
5-24 Schematic diagram of the combination of multifunctional spacer and cabinet (self-work).....	140
5-25 Tabletop folding schematic (self-work).....	141
5-26 3D drawings of desktop design effects (self-work).....	142
5-27 3D drawing of tabletop folding design effect (self-work).....	142
5-28 3D drawings of desktop design effects (self-work).....	142
5-29 3D drawings of the design effects of the components of the duplex workbench (self-work).....	143

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LIST OF FIGURES (Continued)

Figures	Page
5-30 3D drawing of the design effect of the upper part of the duplex worktable (self-work).....	144
5-31 3D drawing of the design effect of the lower part of the duplex workbench (self-work)	144
5-32 3D drawing of the effect of the combination of duplex workstations (self-work)...	144
5-33 Folding seat design drawing (self-work).....	145
5-34 3D drawing of seat design effect (self-work).....	146
5-35 Color scheme for Pure Living (self-work)	146
5-36 Color scheme for My Cool Life (self-work).....	147
5-37 Color scheme for Colorful Dreams (self-work).....	147
5-38 Collective Rental Space Floor Plan (self-work).....	148
5-39 Collective Rental Space Side-stored plan (self-work).....	150
5-40 Collective Rental Space Side-stored plan for cooking (self-work).....	151
5-41 Individual Rental Space Set Plan (self-work).....	152
5-42 Individual Rental Space Set Plan (self-work)	153
5-43 Individual Rental Space Set Plan (self-work)	153
5-44 Individual Rental Space Set Plan (self-work)	154
5-45 Family Residence Set Plan (self-work).....	155
5-46 Family Residence Set Plan (self-work).....	155
5-47 Family Residence Set Plan (self-work).....	156
5-48 Family Residence Set Plan (self-work).....	156
5-49 Family Residence Set Plan (self-work).....	157
5-50 Family Residence Set Plan (self-work).....	157
5-51 Cabinet packing and holding position(self-work).....	159
5-52 Packing Velcro using means(self-work).....	159
5-53 Minivan packing map(self-work).....	160
5-54 Table of cabinet capacity(self-work).....	161
5-55 LOGO design for this program (self-work).....	167

CHAPTER 1

INTRODUCTION

1.1 Topic Background and Source

Young people in the 21st century is becoming the main driving force for the urban development. According to the United Nations World Health Organization's definition, young people's ages ranging from fourteen to twenty-four years old (World Health Organization, 2019). However, different definitions of youth around the world have been varied and changing due to the political, economic, and socio-cultural environment in a particular country. In China, recent research also revealed that Chinese young people personality, aged between 14 to 24 years old, shows sensitive behaviors, high independence, and critical thinking (Mackie, 2016). Psychologically, these young people are self-centered and active and self-realization with full of passion for life (Brown, 2015), and they are important human resources, for their society. In many big cities in China, the phenomenon of migration, moving from rural areas to big cities, for living and work, has been continuing for decades. This migration inevitably affects young Chinese people's everyday-life and causes problems such as personal financial problems, self-adaptation to new environments, and finding a new living place. Especially, finding a residential unit in a new living place and adapting ways of living to the new urban context becomes critical concerns for young people. For Kunming City (KC), the local statistic shows that the number of youths, moving from adjacent rural areas to KC and finding new jobs in KC, has been increasing every year since 2010 (Lei, Xu, & Zhang, 2021). One of the important problems these young people have been facing is finding suitable living place in the new big city. So, the rental residence has been one of available options for young people, however, the existing rental building environment has been unable to solve young people's needs and confronting problems, such as the rental price per capita area, moral constraints and culture changes, urban-rural contradictions, and personal living habits (Fan Gang, 2021). The current physical conditions of rental residences in China's big cities, such as Kunming, have

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deteriorated, having limited space, and unaffordable (Qin Hong, Renmin University of China, 2019). In such a case, the young people can find the right location for their rental residence, however, these rental residences may be required modifications or renovations to suit the youth live styles. In contrast landlords or owners of the rental residences may not allow the tenant to renovate the whole interior spaces, but a little decoration may be allowed (Qing, 2020, p.40). Therefore, the main objective focuses on the concept of "youth habitat".

With the rapid urban development in China, land and housing prices in big cities have been continuously rising for a few decades (Zheng, Chen, & Yuan, 2021). Urban development also brings about new public facilities projects and upgraded public services (Xu et al., 2022), and this also requires many workforces. Studies of urban sustainable development indicate that young people, as the driving forces for building cities, are considered very important human resources for urban development (J. Wang, Qu, Peng, & Feng, 2019). Moving to the big city, these workforces need affordable living places. From an urbanist point of view, the bigger the city is, the more affordable housing is required to serve both local residents and migrant populations (Liu, Li, & Greene, 2020). In a big city, having sufficient affordable housings can abate population mobility to continue stream of demographic dividends for urban development. For the ideal sustainable city, the balance between housing prices, people's demand, and people's affordance has been considered (Kauko, 2016), and this balance is one of the key factors for the success of urban development (Cai & Gao, 2022).

In China, the success of the implementation of family planning has shown effective results, so the proportion of young people in China will reach a very low level in 2035 (Xie, Wang, & Chen, 2018). The demographic dividend in first-tier cities will be minimized, and the cost of raising children will further increase (C.-F. Chen, Hui, & Chiang, 2021; Han, Han, Wu, & Liu, 2021). Recently, China launched a series of documents in 2021 to help alleviate this situation, such as cancelling children's training classes, extending children's school hours, and suppressing the second-hand housing market (Cheng et al., 2020). However, the situation has been optimistic. The difficulties of changing the living environment in first-tier

cities require high maintenance costs for residential property, and it has been continuously haunting Chinese young people for the next 30 years (Yi, Li, & Zhang, 2021). Even, if the first-hand-house can be loaned, the price will be gradually high, which Chinese young people will not be able to afford the first-hand-house. In addition, second-hand housing loans will be tight, so Chinese young people will face difficulty in buying those houses. This situation has been more prominent in first-tier cities (C.-F. Chen et al., 2021). The single ones will possibly live by themselves, on the other hand, the married ones, with their children, the family will be forced to live in a smaller house (Sun & Ho, 2020).

1.2 The importance of affordable residence for Chinese youth

There is a method used to calculate the number of affordable houses in a particular city and the difficulty of finding an affordable house in the urban area (Mundel, Soopramanien, & Huddleston, 2021). The median house price in a city is an economic index to measure the difficulty for an individual to obtain a house in a city. Its calculation method is to calculate affordability by dividing the median house price of a specific city by the median household income, excluding tax (Wang & Li, 2022). Taking Singapore as an example, its median house price is Singapore \$408,000 and the median household income is Singapore \$88000. Its house price-income ratio is 4.6, that is, the house price in Singapore is 4.6 times the median annual income of ordinary families. In short, if an ordinary Singaporean family does not eat, drink, or pay taxes, it will take about 4.6 years to buy a house. From this data, the international common division standard is that when the median house price is below 3, it belongs to affordable house price; when it is at 3.1 to 4.0 times, it is a moderately unaffordable house price; when it is at 4.1 to 5.0 times, it is a serious unaffordable house price; when it exceeds 5.1 times, it is extremely unaffordable (Chen, Jiang, Phang, & Yu, 2021). The higher the ranking of the median urban house price, the more a city needs to supplement in the form of affordable housing, to balance this basic development relationship (State Council, 2019). At the same time, the higher the median house price, the higher the development level of this region, which is also an interesting

phenomenon. In the global ranking for the median house price, the first rank is in Hong Kong, China (20.9 times), followed by Vancouver, Canada (12.6 times), Sydney and Melbourne, Australia (11.7 times). So, this makes these three cities the most expensive cities to live (Daily Mail, 2022). In China, compared with the global median house price ranking, the median house price is 36.1 times in Shenzhen, 30 times in Hainan, 24.9 times in Beijing, 10 times in Kunming, and 6.4 times in Changsha, Hunan. However, the populations in these areas have been continuously increasing (International public policy in USA, 2019). This could mean that there are more and more people willing to go to those cities. Also, this is an inevitable phenomenon of urban development.

The coupling phenomenon of the relationship among urbanization, housing price subsystem, and affordable housing subsystem, has become the representative of modern cities (Figure 1-1). One of the key successes of urban development is the number of young people, as valued workforces for the city (Wang, Yang, 2010). In addition, the influx of a large number of workforces can also require more rooms and rise housing prices in Chinese big cities. In return, these Chinese young people, as the workforce in urbanization, require affordable accommodations provided in the city by the local or central government, in response to the everyday needs of individuals and family members (Wang, Yang, 2010). In many Chinese big cities, data also reveals that affordable houses have been required by both residents and immigrant young workforces (Jiang, Luo, 2021). Initial research found that affordable housing deficiency is not only a difficulty the young people, as immigrant workforces, have been encountering when they move to Chinese big cities but also the limitation modification and redesign spaces, functions, and appearances, of existing rental residences (Jiang, Luo, 2021). In most cases, the interior spatial redesign and rearrangement are considered limitation limited only to young people, as the tenants to modify their living spaces to suit their activities and needs (Jiang, Luo, 2021). Moving into rental residences, the tenants are looking for better and more qualities for interior living spaces.

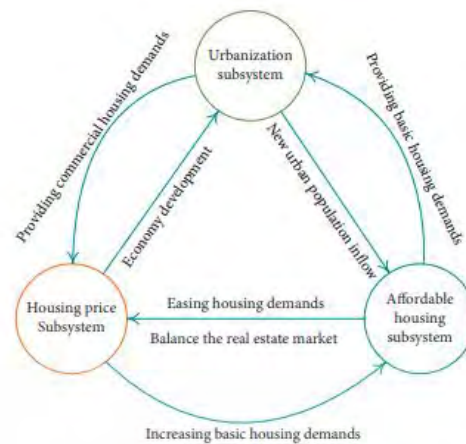


Figure1-1: Coupling Relationship among urbanization, housing prices, and affordable housing

Today's interior design for living spaces concerns not only required functions but also concepts of personalization, diversification, and sustainable environments (Cao Yong, 2010). Professionally, the designers follow the design principles, design interior space scientifically and reasonably, and consider enough personalized integration to endow space with vitality (He Rui, 2021).

1.3 The urgent need for rental housing for the youth in Kunming city

Affordable rooms are crucial for young people living in Chinese big cities, such as Kunming. In China normally people prefer to rent rooms or share houses, and their rental savant is 19.9% of their total income (Tsinghua University, 2022). The average personal use areas are one room and one living room (People's Daily Online, 2020). For most rental residences' conditions, the kitchen, living room, and bathroom are shared as a public area. With the high cost of living in adjacent areas around Chinese big cities, in 2021 China government launched the "996" working habits policy; working hours start from 9:00 am to 9:00 p.m., and working days are limited to only 6 days. These conditions also affect young people's working times, lifestyles, and living spaces. Thus, the living place of young people is required to undertake more functions, break through the limitation of such spaces as a

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bedroom or a living space, and psychologically bring a better life experience. For shearing space, the bedroom is also the most indispensable functional space among other spaces. But it is not the only space young people mostly use. In contrast, there are some unused spaces in the house.

This research will explore spaces in the rental houses and rethink the way young people use interior spatial in the rental unit and optimize unused spaces, bringing more functions and life to the spaces the young people live for long, safe and sound.

1.4 Research Objectives

1.4.1 Explore existing interior special conditions of the city sharing houses through the reflections of cases of the young people living in Kunming city.

1.4.2 Identify social, cultural, and economic factors influencing Chinese youth housing in Kunming City.

1.4.3 Identify the young people's spatial activities and behaviors in rental residences in Kunming city.

1.4.4 Propose the framework for the interior design of the rental-residential unit for the young people in Kunming city.

1.4.5 Proxied recommendations for future research that facilitates further development of young people in the urban context.

1.5. The scope and significance of the research

1.5.1 Study of Kunming

The studied units in this research were be obtained from the rental residences in Kunming city. The main reason for selecting Kunming city as the study area was that it is one of the fast-growing cities in China (Yi Cai Shanghai, 2021). Kunming has been categorized as the new-tire city in China, which means that lots of Chinese young people will come to Kunming to live, learn, and start a new life or business. For more steps, the new tier-one city is a concept created by China's most authoritative financial evaluation organization. Its

purpose is to evaluate the comprehensive development level of Chinese cities and provide a reference for employment and industrial investment (Yi Cai Shanghai, 2021).

The bluebook of urban rental life in China which was written in 2021 said, in the next ten years, there will be over 2 billion people who want to rent living places. In 2022 this number will reach 2.4 billion, even the COVID-19 still effective. Over 56.16% of people choose to rent; others 43.84% choose to buy (Xinhua net, 2021). Without a doubt, because of the high costs of the house, the younger will choose to continue their lives in rent rooms. By this report, 65.75% of people can agree live in rent one for their marriage; the other 34.25% cannot (Xinhua net, 2021).

The Covid-19 pandemic also affected the research activities, and it also caused constraints, such as travelling between cities, doing an on-site interview, and doing on-site surveying. In addition, Kunming city is the closest city to the researcher's hometown, so it was the most saving place to conduct the research during the COVID-19 pandemic situation.

1.5.2 Research on the Housing Policy about Urban Youth

In this research, the set of theories and government policies were considered and studied as the research framework. Firstly, this study involved research on economic policies, guidance, and the establishment of a consumption system for young people to buy houses. This study also includes methods of developing and standardizing the housing rental market and the construction of a youth housing security system from the perspective of politics and economics (Chinese Government, 2000).

1.5.3 Research on the physiological and psychological state

The definitions of young people are different among countries around the world. Due to the political, economic, social, and cultural environment (Chongqing Morning Post, 2017). The definition given by the World Health Organization (WHO) announced that the age between 14 to 24 years old is considered as young authentication (WHO,1997). From 1995 to 2000, the estimated number of young people in the world increased from \$10.26

billion to \$10.66 billion, and the proportion of the world's youth population decreased from 18.1% to 17.6% (WHO, 2000). The proportion of youth in the global population is expected to continue to decline to 13.2% by 2050, and then the total number of young people aged 15 to 44 will reach 11.76% billion (Baidu Baike, 2020). Hall (1904) started began studying youth psychology systematically. Working as president of Clark University, he directed students to study youth psychology and wrote his monograph "Youth" (Hall, 1904). Taking Hall's research as the beginning, the research on youth psychology in the United States gradually developed (Hall, 1887). After the First World War, European psychologists, especially German psychologists, paid the attention to the study of youth psychology and published influential monographs, such as "youth's spiritual life" by C. Biller (Charlotte Malachowski Bühler, 1893-1974). In Asia, the study of youth psychology, especially in Japan, was influenced by studies from European and American research. In 1910, Yujiro abridged Hall's works, "Youth Period" with the book titled "Study of Youth", which translated as the title "The Psychology of Youth" (1937). After the Second World War, Japan gradually developed its own approach for youth psychology. In the early 1950s, Yujiro published "the youth psychology (1950)" and co-edited a youth psychology lecture (1955) with Shinichirou Kameda together. In recent years, he has also published youth psychology written with Sawada Keisuke and so on.

1.5.4 Research on urban youth interior design

There are six different approaches in this area of research. (China Publicity Department, 2022).

The first one focuses on nature increasing the awareness of environmental concerns, the demand for the quality of living spaces (Huang, 2022). The second one is considering the artistic aspects of the Interior space design which inclined to the overall design, including the product of space, shape, color, artistic conception and so on. The third one considers the modernization. This approach focuses more on how to combine interior design with modern technology, such use.

as the matching effect of sound, light and color shape; function integration and digital control technology, AR and VR technology; and some practical new materials, such as temperature-sensitive coating which changes color with temperature, dust-free materials and so on (Zeng, 2021). The fourth one is studying the interior design culture, including two aspects. The first aspect nationalization of interior design space. Design should be highlighted under the premise of modern science and technology. Another approach is focusing on the protection and opening of traditional villages, which is a certain process of taking advantage of the local cultural foundation (Zhang Yuxiang, 2021). The fifth approach is to study the individuation of in-door structure distribution. The same room type is very monotonous, interior space transformation can ensure the safety of the premise. (Zhao Yue, 2020). The sixth one is to study high-tech services in youth interior design such as automation equipment, and smart homes (Xu Yaqing, 2020). After all, youth interior design is continued to be a big challenge to for study. Young is always changing, and at the same time cities in our world never stop developing (Zeng, 2020). That means there is always a new way can use to set the interior phenomenon.

1.6. Methodological approach and Research Method

Determining the philosophical position of the research is the one of important starting points of the research. It also helps the researcher to form the research framework and direction (Bleiker, Morgan-Trimmer, Knapp, & Hopkins, 2019). As mentioned in the research, objectives are exploring existing situations and phenomena reflecting individuals' subjective perspectives. For this research, a qualitative approach with subjectivism points points of view can reflect research participants' in-depth attitudes and opinions.

At the same time, research will do some relativism approach for getting the inductive evidences and focus on them. It will lead me to reveal the truth of young

interior design in our country, and known more details that never been thinking before.

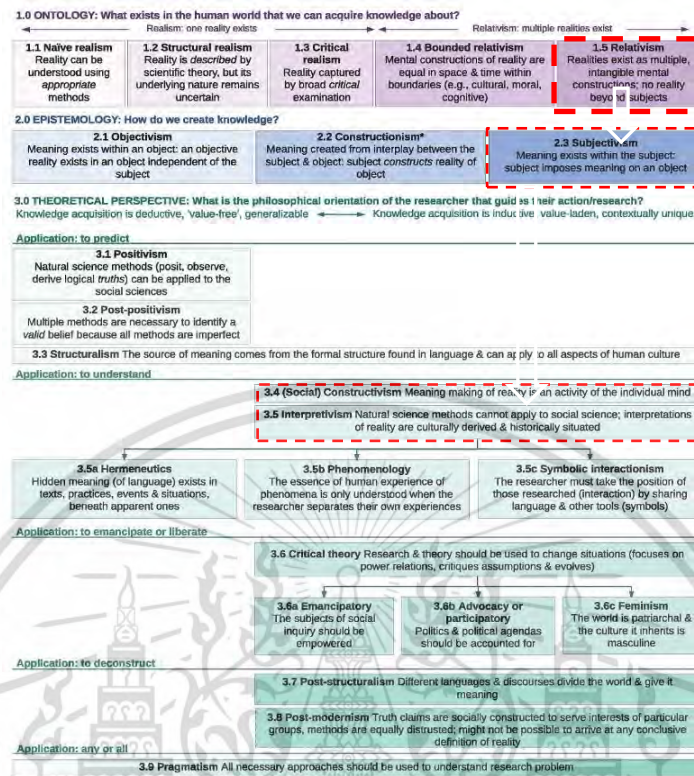


Figure 1-2: Philosophical position of the research

1.7. Research stages

In this paper, an analysis is carried out on the needs of young people for two different sources of housing types. One of them is the rental housing type provided by housing companies. The study cases mainly involve large enterprises in Kunming, that companies that own public rental housing. Another type is the rental housing provided by individuals, and the study cases are selected from houses privately owned and actually rented out in Kunming. In order to keep the study objective as much as possible, we will fully compare two types of housing, obtaining a common and universal space and layout plan. The more interview and survey were adopted in this paper, and then 500 participants were asked to answer interview questionnaires to ensure that the data can serve as a solid basis for design.

Overall, this research can be divided into three stages. The first stage is the

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exploration and research formation stage. The literature review will be conducted by constructing theoretical framework by exploring books, relevant research papers, the current situations and policy of urban youth living in Kunming city, urban youth psychological research, urban youth interior design style and other related information. The research began with the pilot investigation of actual current situations including 1) amount the youth migration into the urban areas, 2) available residences for the youth in Kunming, and 3) difficulties of which the youth encounter. The first and second set of data were collected from official data and records. The third one was conducted through the interview and questionnaire survey. Then, the main investigation about participants' activities and behaviors within the rental residences was comprehensively investigated with in-depth interview. Interviewing key informants to make adequate psychological preparation for the subject research or research participants.

The second stage is the on-site investigation, interview, experiment, and measurement. This stage also includes the initial observation, questionnaire survey, and telephone interview, to explore the youth's actual life and living conditions. The condition also includes specimens and their specific needs or expectations. After collecting all data, the quantitative data will be analyzed by SPSS to demonstrate descriptive information. At this stage,

Reliability and validity of the research questions and interview topics will be evaluated by the experts. As the basis for research and improvement, the experts will be invited to review interview questions and questionnaire before making a formal questionnaire.

In the third stage, the finding of this research will be proposed as the framework for designing the rental-residential unit for the young people, Kunming city as the case. This stage also includes making 3D models for the proposed residential units' interior design and the proposed design will be evaluated by the youth in Kunming City.

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1.8. Keywords

1.8.1 Interior design

Interior design is the art and science of enhancing the interior of a building to create a healthier and more aesthetically pleasing environment for the people using the space. It involves a combination of architecture, furniture, colors, lighting, and other elements to develop a functional and attractive interior. Key aspects of interior design include space planning, color schemes, lighting, furniture selection, materials and finishes, and accessories, all of which contribute to the overall ambiance and usability of a space.

Interior design is especially important for young people living in cities due to the unique challenges of urban living. Space optimization is crucial in urban areas where living spaces are often small, requiring efficient space planning and multifunctional furniture. Functional design is essential to cater to dynamic lifestyles, incorporating home offices, entertainment areas, and ample storage solutions. Aesthetically pleasing environments enhance the quality of life and provide a sense of personal identity and comfort. Additionally, sustainable design choices can reduce environmental impact and promote a healthier living environment. Thoughtful interior design positively affects mental health, productivity, and overall well-being through the use of natural light, ergonomic furniture, and calming color schemes.

1.8.2 Youth

Youth, in an international context, refers to the period of life between childhood and adulthood. The definition of youth can vary widely across cultures and institutions. Generally, it encompasses individuals who are transitioning into greater independence and responsibility. Youth is often characterized by a time of exploration, learning, and development, during which individuals establish their identities, values, and goals.

The age range that defines youth varies globally. The United Nations, for instance, defines youth as individuals between the ages of 15 and 44. However, other organizations and countries might extend this range, recognizing that the transition to adulthood can

continue into the early thirties. This variation acknowledges the differing cultural, social, and economic factors that influence when an individual is considered to have fully transitioned into adulthood.

1.8.3 Rental residence

A rental residence refers to a type of housing where individuals or families live in a property owned by someone else, paying rent for the use of the space. Rental residences can include apartments, houses, condominiums, and other types of dwellings. The arrangement typically involves a lease or rental agreement that outlines the terms and conditions of the tenancy, including the duration, rent amount, and responsibilities of both the tenant and the landlord.

Rental residences are crucial for city development for several reasons. Firstly, they provide flexible and accessible housing options for a diverse population, including young professionals, students, and low-income families. This flexibility is particularly important in urban areas where the cost of homeownership can be prohibitive. By offering a range of rental options, cities can attract a wider demographic, supporting a dynamic and inclusive urban environment.

Secondly, rental residences contribute to economic stability and growth within cities. The rental market generates significant revenue through rent payments, property management services, and related industries. Additionally, a healthy rental market can stimulate investment in property development and maintenance, leading to job creation and economic activity. For landlords and investors, rental properties represent a steady source of income and a reliable investment opportunity, further bolstering the city's economic landscape.

Moreover, rental residences support urban mobility and flexibility. As individuals and families move for work, education, or personal reasons, the availability of rental housing allows for smoother transitions and reduces the barriers to relocation. This mobility is essential for a dynamic labor market and can help cities adapt to changing economic

conditions and population trends. By accommodating the needs of a mobile population, cities can remain competitive and resilient in the face of economic shifts.

1.8.4 China rental residence

China's rental residence market has become increasingly prominent in the world due to several key factors. Firstly, the rapid urbanization and economic growth in China have driven a high demand for housing in major cities. With millions of people moving from rural areas to urban centers in search of better opportunities, the need for accessible and affordable rental housing has surged. This massive migration has made the rental market an essential component of urban development in China.

Secondly, government policies and initiatives have played a significant role in promoting the rental housing market. Recognizing the importance of rental housing for urban stability and economic growth, the Chinese government has introduced various measures to encourage the development of rental properties. These include providing financial incentives for developers, simplifying regulatory processes, and supporting the construction of rental housing projects. Such policies have created a favorable environment for the expansion of the rental market.

Additionally, the rise of the middle class and changing lifestyle preferences have contributed to the prominence of rental residences in China. As more young professionals and families prioritize flexibility and mobility, renting has become an attractive option. The cultural shift towards valuing experiences over ownership, particularly among the younger generation, has further boosted the demand for rental properties. This trend is supported by the availability of modern, well-designed rental apartments that cater to the needs and preferences of urban dwellers.

Moreover, technological advancements and innovation have significantly impacted the rental market in China. The adoption of digital platforms and mobile apps for property search, rental transactions, and tenant services has streamlined the rental process and made it more efficient. These technologies have enhanced the transparency and

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convenience of the rental market, attracting both local and international tenants. The integration of smart home technologies in rental properties has also elevated the living experience, making renting a more appealing option.



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CHAPTER 2

LITERATURE REVIEW

For the young generation, living independently in a big city, taking care themselves, and supporting the family require a lot of effort. Finding a good affordable place has been one of the critical problems belongs to the young generation.

Here, the research topic focuses on housing designs, which are the affordable houses for young generation with in-depth analysis on the characteristics of youth in Kunming city and other related factors. Most of the existing residential areas take family residence as the starting point of design. Naturally, this kind of house is the favorite type of joint tenants. However, the rental situation of most young people is not optimistic, and there are problems in spatial complexity, sense of form and variability, specific the space design, use of circuits, walls, mezzanine, etc., (Huang, Li & Chen, 2017). Although some houses designed for young have been launched, but because of the truth about brand and capital operation works, their rental cost and usage are not as convenient as ordinary, which is difficult to be effectively guaranteed.

2.1 Kunming city in China

Kunming known as Spring City, it is the Capital of Yunnan Province, and the most important center city western China (Local Government of Kunming Official Website, 2016). With import and export commodities fair, although with international tourism function, Kunming has become one of the major cities in China's history, selected as one at China's "New Tier-One Cities", 2019 (National development, 2020).



Figure 2-1: Kunming's CBD, photographed by author, May 2020

Kunming city is located in Southwest of China, the middle of Yunnan-Guizhou Plateau. It is at the intersection of the North-South International Corridor and the third East-West Eurasian Continental Bridge starting from Shenzhen (XINHUA net, 2011). It is China's gateway city opening to Southeast Asia and South Asia. The location is also the ASEAN "10 + 1" free trade area economic circle, the Greater Mekong Sub Region Economic Cooperation Circle, and the Pan Pearl River Delta regional economic cooperation circle where China has the China's one belt, one road strategy for the western region (Zhu, Li, 2021). In January 2011, Kunming launched the strategy of one belt and one road. Kunming became the first station for South Asia and Southeast Asia, and an important node for future trade and cultural exchanges. It is not only China's city but also for South Asian and Southeast Asian countries. Kunming city can provide ample employment opportunities and employment prospects, with excellent entrepreneurial conditions (Zhu, Li, 2021).



Figure 2-2: The location of Kunming city and its important location in south-west of China (Source: https://www.gov.cn/guoqing/2017-07/28/content_5043915.htm)

Kunming also link to a name “new tier-one city”. This name is an authentication signed by YICAI WEEKLY. It is based on the fact of one’s commercial resources, urban transportation, population, lifestyle, and future development possibility. The municipality directly is under the central government with a great economic resource and a great number of middle-class people. There are 337 cities in China, only 15 of them can join the group and can be called as new tier-one city (Yi Cai Shanghai, 2021).

Results of this authentication made the world knows Kunming as one of the fastest developing cities in China. On the other hand, authentication inevitably cause those cities' housing price increasing, and it dispersed some concerns to existing tier-one cities, and bring lots of pressure for young generations who lives there.

2.2 Housing Problems for the Young Chinese

In December 2020, the Ministry of Housing and Construction of the People's Republic of China hosted a national conference of housing and urban rural construction proposed, that by 2021 China should vigorously develop rental housing and solve the prominent housing problems in China big cities. Chinese government will strengthen the construction of the housing market system and the housing security system, accelerate the completion of the short board of rental housing, and solve the housing problems of new citizens. The government will accelerate the construction of a housing security system dominated by affordable rental housing and rooms with common property rights. This will expand the supply of affordable rental housing, ensure public rental housing, and focus on the development of rental housing policy with population inflow. Many construction companies are doing rental housing business (shown in Figure 2-3). The government will standardize the development of the housing rental market, accelerate the cultivation of specialized and large-scale housing rental enterprises, and establish a service platform to improve housing rental management.



Figure 2-3: Photograph shows many housing companies providing share-house and rental business, by author, Feb 2021

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Figure 2-4: Examples of bills in 30 days; a person may spend over 1,500,000 Baht per month

Overall, youth housing is still not enough to meet public demand. Many rural surplus labors forcing "urbanization" will challenge the urban housing security mechanism (Zhang, 2020). In the process of urbanization, due to historical reasons, these urban migrant populations lack education, cultural quality, and legal awareness. Most of those migrants are vulnerable youth groups living in the city for a certain period and they were in a low-income groups. Then, for such a consumer group, facing the high rising house price in the city, their housing problem become particularly serious. Solving the housing problem for this vulnerable group has been essentially a challenge to security our cities and towns (Zhao, 2020). Understanding the current housing situation and housing problems of youth at this stage is the key to urban development and social stability. Without the support current situation is that young person either choose to be a housekeeper and paid monthly compensation loans, so they can only rent a single room in the city. Their quality of life and work seriously threatened (Song Cheng, 2020), such as increasing food costs, playing with mobile phones, and accompanying with other loans becoming the standard configuration for the difficult youth generation.

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Figure 2-5: The picture shows that there is no difference between one who take opium about 100 years ago and today's situation; people playing video game, cell phone, and app (Source:

<https://baijiahao.baidu.com/s?id=1746886419555531949&wfr=spider&for=pc>)

2.3 Sharing Room Development

The actual situation is that the low returning rate on housing lease makes it difficult to achieve long-term sustainable investment return whether operating rental housing through new construction, reconstruction, or acquisition. It is also difficult to carry out relevant equity financing with rental income, which fundamentally restricts the supply of new rental housing. In theory, there are two ways to solve this problem: one is to decrease the rental costs, and another is to reduce the housing construction budget. In this way, the younger generation will either face a greater rental crisis pressure, or they can only wait for the completion of new public low-cost houses. At the present time, due to the huge inventory of second-hand housing market, there was a small possibility for individual purchasing of new houses as their rental properties. (People's Daily Online, 2020).

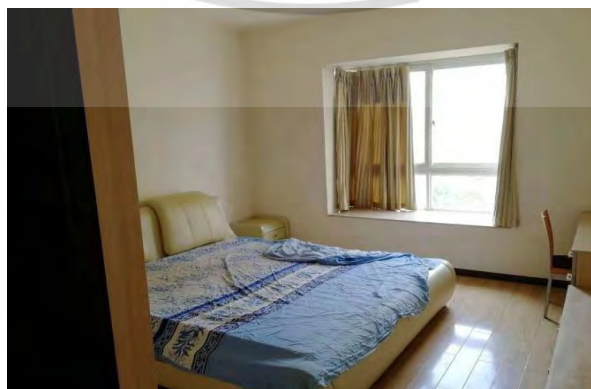


Figure 2-6: A standard rent bedroom in sharing house including a bed, a desk, a
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chair, and a simple box; nobody use air condition because no need for it in

Kunming, photograph by author, March, 2021

In addition, from the perspective of national strategy, China hopes to develop a long-term and stable demand for housing leasing. In a short time, China should replace "purchase" with "leasing", reduce the pressure on young people, eliminate their idea that they may "wander on the streets", and constantly improve the consumption capacity of housing leasing. Trying to solve this pressure requires multi-directional efforts, including changing people's housing consumption concept and making more people willing to rent, as well as efforts in public services, the main body of rental housing supply, stabilizing house prices and rents (People's Daily Online, 2020).

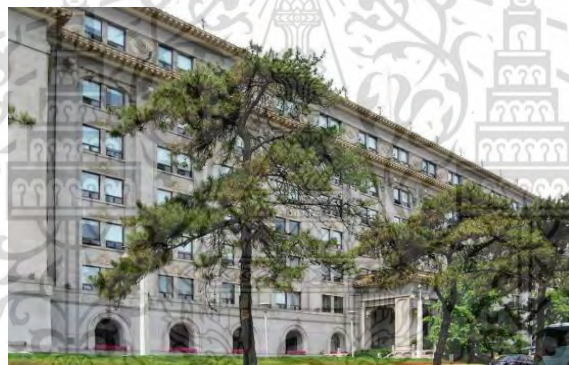


Figure 2-7: Since 2010, every year PRC ministry of housing and urban rural development will bring a new policy out, that trying helping the most, photo'd by writer, February, 2007.

2.4 Room Design History

In past, before interior design was concerned as, people's bedroom and living room were mixed-function and there was no precise bedroom division. According to China's chronology, by the end of the Neolithic age, with the emergence of power institutions, the bedroom become an independent's space.



Figure 2-8: Net house and cave house, photo'd by writer from books, July, 2021

In pre-historic time, there was no separated bedroom in the cave dwelling. There are two main spatial arrangements in a bedroom. One is the rest area, and the other is a sleeping area. (Gu & Gao, 2019).

At present time, cave dwelling was transformed into today's draped roof house and courtyard, and the nest building has been transformed into today's dry building and stilted building. In second stage of dwelling development, the bedroom has become one of the standards. Through centuries, bedroom has been developed with added functions. For example, boudoir and ear room, which means a place for daughters and guests to rest and sleep. The bedroom has also become the main basis for family expansion in the old times, which means that when the son grows up and gets married, he needs to start a new family independently. Therefore, in the past when material conditions were not rich, separation means dividing the bedroom and becoming a small house independently. Of course, this separation is only a separation of consciousness. In essence, the house is still a complete system (Cui-Jiaying, 2020). Examples of Chinese ancient furniture shown in Figure 2-9 and Figure 2-10.



Figure 2-9: Chinese couch, Ming Dynasty, using in living room, can be used as a bed.
(Source: <https://baijiahao.baidu.com/s?id=1694903090131219660&wfr=spider&for=pc>)



Figure 2-10: Chinese bed, Ming Dynasty, using as a small house, it can be put in the middle of room. (Source: <http://www.jia360.com/new/183660.html>)

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Figure 2-11: Ear house to the left and a bedroom for daughters and guests. (Source: <http://www.duitang.com/albums/tag/?name=%E5%8F%A4%E4%BB%A3%E6%88%BF%E5%B1%8B&type=new>)

A special case was the living space used by nomads, such as yurts. However, this architectural form was also very clear in the division of internal space, with the door as the center, the living room and guest bedroom on the left, the master bedroom on the right and the kitchen in the center; the isometric shown in Figure 2-12. Mosuo people, a branch of Naxi nationality, also use a similar design. Their center is the fire place of the house, and behind the fireplace is the grandmother's bed. This orientation is the most important, reflecting the main position of family women (Jin, Li, 2018).



Figure 2-12: Moso people's room, you can see the bed is to the side, photograph by the author, August, 2016.

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Figure 2-13: Another angle to see the bed in Moso's house, photograph by the author, August, 2016.

Interestingly, the Chinese believe that the size and orientation of the bedroom can affect a person's destiny. There is a saying called "gathering Qi", which means that people's spirit will not dissipate easily during sleep. To do this, the bedroom must be small. Therefore, even if there is an independent bedroom, the bed will still be designed as the center furniture in traditional Chinese house. In the Imperial Palace, the emperor's bedroom is also designed to be very small. It is also hoped that people can have a full rest in it. Regarding the house orientation, we need to consider the direction of getting up, the placement position of the head, and things people face when they make up. For example, turning the to head in the north and the feet to the West are better sleeping positions; People's feet should not face the window; People cannot face the mirror when they get up, etc. Corresponding to "gathering Qi", these behaviors are "dispersing Qi" and are not desirable.



Figure 2-14: The emperor's bedroom is always small, no more than 10 square meters, March, 2003. (Source: https://v.youku.com/v_show/id_XNDE1NzQyMTM1Ng==.html?)

2.5 Modern Room Design

The bedroom is the place where modern people spend most of their times at home and is the main rest area in the house. With the progress of Internet technology and the development of APP (shown in Figure 2-15), the enrichment of mobile phone business also allows people spend their times more in the bed. Due to the limitation of space, the design of modern bedroom still focuses on the bed design.



Figure 2-15: The biggest app companies in China now sharing the youth market July, 2021. (Retrieved from China <https://www.baidu.com/>)

In the modern bedroom design, the room can be divided into four parts, including rest space, storage space, cleaning space and auxiliary space (Lu & Gong, 2006). The auxiliary space can be used for catering, entertainment, fitness, games or supplement the deficiency of other space, and accessories in each space are different.

2.6 General Design

After the second world war II, in the 1950s, with increasing numbers of disabled people increased significantly, in order to remove their obstacles in life, American architect Michael Bednar began to put forward a broader and comprehensive design concept to remove obstacles, improving the living environment of disabled people. In the 1970s, in order to bring more profits to factories and reduce enterprise production costs, prefabricated building materials and prefabricated buildings became popular in the United States, with possibility of machine production after greatly simplifying the architectural form. In 1989, prefabricated buildings began to break through the restrictions on the production of large buildings. With the efforts of Walker Warner architecture firm in San Francisco, prefabricated techniques were used in housing production for ordinary people. Until now, this is still a typical style of American folk houses. The prefabricated elements include wall materials, bathroom and serictory wares, wash table, wardrobe, and other items, which greatly reduces people's living cost. Since the company first completed its first work in Cape Cod, the name of this American folk house is also called Cape Cod Style (Zhang, 2021).

Universal design is different from traditional handicraft workshops, and it is a

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more efficient and cheaper production method, which is especially important at the design stage of this paper. It's obvious that such large-scale approaches are more suitable for helping young people obtain a relatively cheap design. It also means that finally, design will fully put the elements of universal design into consideration, making the livable equipment for young people easier to produce and popularize.



Figure 2-16: Cape Cod Style and worker from 1950's US, photograph from, Sep. 2010. (Source: <https://www.163.com/dy/article/EK9BP73J05158VDP.html>)



Figure 2-17: The pre-products lay down at the factory, photograph by author, June 2021. (Source: <https://v.qq.com/x/page/z3550wnw7g3.html>)

2.7 CMF Design System

Color, Material, & Function (CMF) design system is the abbreviation of color material finishing. It is a noun in the field of industrial design, which means color, material, and technology. In industrial design, CMF is a unit of appearance design, and the other unit coexisting with it is form design. It means that when the article has the basic form, the specific details need to be refined by CMF (Chen Jianying, 2017).

For furniture design, the basic form of furniture is the composition of lines, surfaces and corners, and the details of these forms are the contents covered by CMF. Good design can bring good economic benefits. According to the calculation of American Industrial Design Association, for every \$1 invested in design, you can get \$1500. Not only that, it can also change people's psychological state in the process of use and improve user experience. In the specific implementation process, CMF can also help enterprises reduce costs, improve the acceptance probability of users, increase the added value of products, make objects more premium for product upgrading, drive the synchronous rise of market supply and demand as a whole, and provide sufficient brand building foundation for a product.

Among various studies, the impact of color on people's psychological formation has been confirmed. Designing for young people, it is very helpful to use colors for psychological comfort and show local design characteristics and styles to some extent.

2.8 Chinese Tenon

The Chinese tenon has a long story. It is very helpful and popular in the past and now (Zhang, 2021). By single pieces of wood, tenon can connect to two parts tighter without using any glue or nail.

As a complement to general design, the advantage of mortise and tenon structures is that they can provide a more stable structure for furniture, increasing the safety for young people. Also, mortise and tenon joints can minimize using of furniture on screws and metal components, which saves costs in disguised form and reduces the weight of furniture, making it to be easier be moved and adjustable.

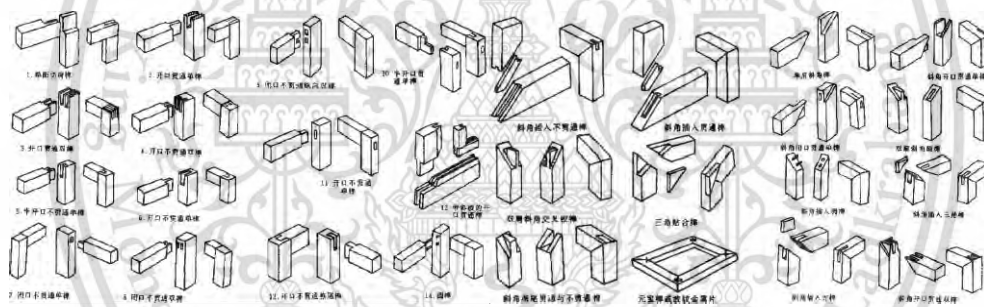


Figure 2-18: Chinese tenon drawing, photograph by author, June, 2021.

2.9 Cases in Copenhagen

The urban compact living in Denmark which has a great link of my own research that talking about Young's living space in modern city.

Firstly, in Denmark everyone gets a great take care by their government. The young people live in town because they need to work and study, but others like being family are always living outside the town. However, living outside the town means you

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need more resources and support. So, most of middle class has been staying in town for that advantage, but for their family; kids, husband or wife, they need more spaces.

Secondly, Jansen mentioned that the key to know this answer for how people choose rooms in divertive world is economic and population.(Jansen,2019) At the same time, somebody like the writer called as Boterman think that the more a city advanced, the more people want stay in the city core and compact living is not traditional. In 2020, Boterman told that the one who choose to stay are always been well educated, like family who has knowledge and smart. Point like, the middle class in town.

Furthermore, Marianne Gullestad gives more explanation about family. She said family can means a lot, including society culture psychology politic and history. Family can be growing; everyone and everything around it can be part of it. So middle class family will grow with everything around them, that's why they want to stay with their history even that place maybe too small for crash. Something keeps them inside of city, such as interpersonal relationship. Like they said, compact is just pointing the space, but no means the real compact to people, at least not a psychology problem.

To prove that article use social sciences way to do the compact living research. It found 2 of them in Copenhagen, gave the room plans and analyst after. Analysts are not just about rooms, but also linking around, such as streets, shops, friend and local facilities. It found, have a wide-good living space not means you have wide-good community. Different is, if you have a wide-good community, you will accept your own compact living space. The truth answers about this situation. They're not just society, culture, psychology, politic, and history only, but also linking to sense of worth, world

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view and taste. Key to open the happiness is never about space only, but about community stuff more.

In densely populated cities, it has yet to be developed for the intersection of multi bedroom or multiple independent residential areas. The typically examples are as follows: spaces are separated from each other, people become more independent, and public areas fail to play their due role. Therefore, what the Copenhagen case inspires us is the use of public space, including both material and non-material forms. The former refers to the functional enrichment or redesign of public spaces, while the latter refers to "cloudy neighbor-hoods" constructed by the Internet and applications. All these contents will be reflected in the research.

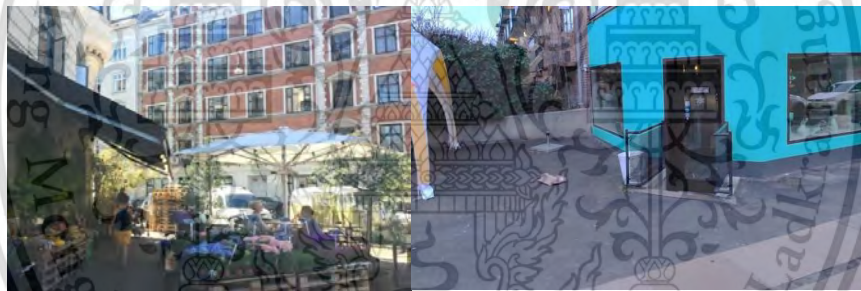


Figure 2-19: Copenhagen social public space on street. (Source: <https://quanjing.com/imgbuy/QJ6810671232.html>)

2.10 City urbanization prices and economic research

With China's increasing level of city, a social problem of the living standards has been shown up. In this article (Jiang, Luo, 2021), it mentioned that cities, connecting with near areas and towns, set up organized system for the exchange of materials and man-power. When population flows to the urban areas, the development of the city

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brings about an interaction between urbanization and the real house market, the demand for housing increases, and the development of the real house markets in the urban center areas is upgraded.

In the process of urbanization, most people moving into urban areas, such as graduate students and workers, have basic housing needs as they do, but they not have enough money to spend for it. So, the relationship between urbanization, housing prices, and affordable housing can reflect a cities' rank. The writer put a map to show this relationship, and trying to bring a theory called the coupling coordination degree, also as known as CCD to help us understand it.

So, the study set up a model to evaluate the overall system, including the urbanization, housing prices, and affordable housing. These three parts affect each other. So, the problem is, how can the three parts work together, to reach the final state. Eventually, those pointed to three parts, population, money and people's demands.

For telling this part, there are two different ways for analyst. First one is coupling coordination degree model. The CCD model we have been motioned before. The CCD model can fix the interaction relationship between two or more sub-systems in a big system. Another one is entropy weight model. To do that you need follow by steps. First is find right numbers for entropy weight, which can ID that entropy. Jiang Luo chooses 12 for it; for example, urbanization sub-system, housing prices sub-system, affordable housing sub-system and so on. (Jiang, Luo, 2021) Then he used a math way

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for investigate, such as which is low level, and which is high level. I never use this way to do my research; I think this is the one I need to learn in my next study.

Based on studies, the real big markets are in a developed country, such as in the US, starts and develops fast, since the affordable housing system was set up earlier. For such countries, the affordable and commercial housing systems have a stable common development. Additionally, the construction of the affordable housing system is relatively completed; with a relatively large investment in the construction part the contribution value of affordable housing to housing prices in developed countries, such as the US, is about 3 to 7. Singapore, the important value ratio of affordable housing to housing prices is about 2 to 8.

So, sustainable development of city plays an important role in urban social and economic development, which is also related to the degree of mix between the urban population and cities. Besides, as one of the key problems of population flow into cities, the residential housing problem also affects the process of sustainable development of urbanization. Furthermore, the coupling and coordination relationship between the supply of affordable housing and the prices of commercial housing in the real market, in the process of urbanization, has become a big research issue.

However, commercial housing in China was proposed and has been known since the 1980s, while the policy on affordable housing has been put in market since 1999. Compared with the real estate markets in other developed countries, China's originated lately and developed relatively slowly. However, with the fast development of China's society and economy, the Chinese government has increased investment in

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the construction of an affordable housing system to meet people's demand for basic housing. Therefore, the sustainable development of China's real estate market, against the background of fast development, has become an area of hot research interest in recent years.

The relationship between urbanization development and economy is the proof of the young people's competitive survival pressure, which further demonstrates the prominence of youth issues and the urgency of settling these problems.

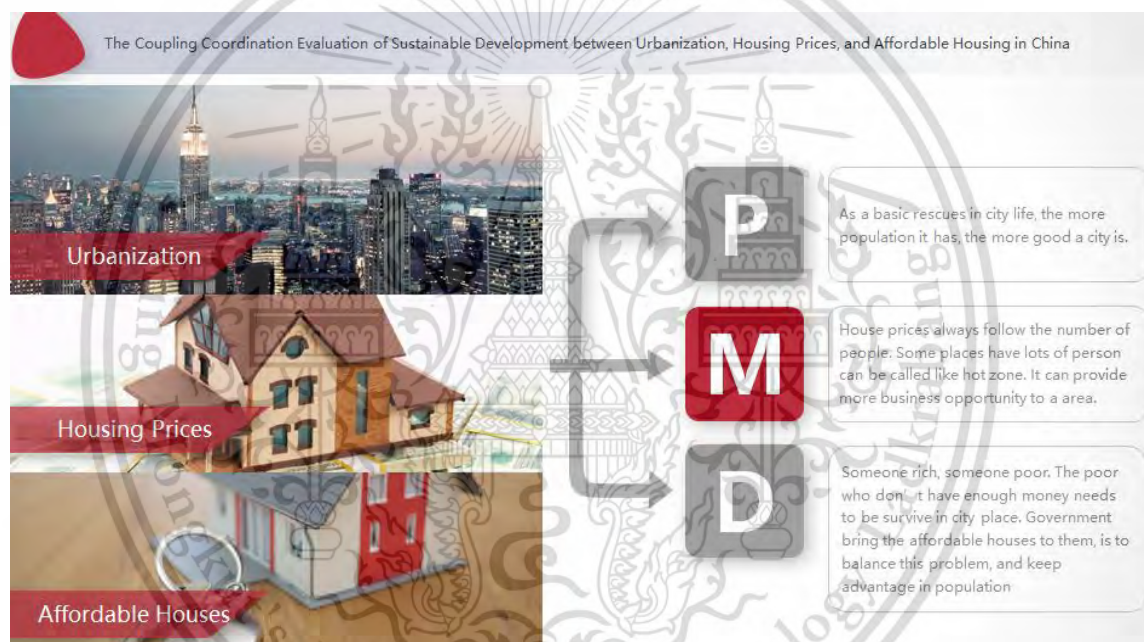


Figure 2-20: The top 3 question on city development progress.

2.11 Research about Kowloon

The Kowloon Walled City is the most mixed and diverse population living area in China's history. It has a small geographical area, but it has the highest population density in China. Before its demolition in 1993, the Kowloon Walled City was

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considered a filthy, chaotic outlaw that neither the Chinese, nor British Hong Kong governments could manage effectively. It was not until the Chinese government took back Hong Kong that everyone understands of the Kowloon Walled City deepened. Kowloon has been a living community with order, rules and stability. It not only accommodated an astonishing population, but also continued to export labor for Hong Kong's economic development. It has become one of the key factors in the rise of Hong Kong (Zhang, 1997).



Figure 2-21: Gambling Game are very popular in Kowloon, it brings a special atmosphere in this big slam city, Jan. 1979 (Source: https://zhuanlan.zhihu.com/p/204109464?utm_id=0)

The Kowloon Walled City began in the Song Dynasty. It was originally a fishing village on the Kowloon Peninsula, and was later built into a block. After the British took over Hong Kong in 1898, it became the last gathering place of the Qing government (Peng, Creg, 2018). In 1941, the British government decided to start the

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construction of Kai Tak Airport starting from Boundary Street in the north of the Kowloon Walled City, which completely separated Kowloon from modern society. Due to the mixed population in Kowloon, it is difficult to rectify. The British government has not restricted the area, but only stipulated that Boundary Street to the north belongs to the United Kingdom and is called the New Territories; Boundary Street to the south belongs to Kowloon and continues to be under the jurisdiction of the Qing government. After the fall of the Qing Dynasty, and there was no clear jurisdiction over the country, Kowloon became a "three no-holds-barred" zone for a while. Many people who violated the law in Hong Kong fled here, and then settled down. Smuggling, murder, and robbery continued. Coupled with the influence of the Second World War, many refugees and homeless people entered the Kowloon Walled City for refuge. Because there was no place to live, people began to build arbitrarily, arbitrarily arranging auxiliary facilities such as circuits and waterways, and there was no fixed power supply equipment in the city. All resources are provided by illicit means from the vicinity. The Kowloon Walled City is therefore known as the largest slum in Hong Kong (Yao, 2019).

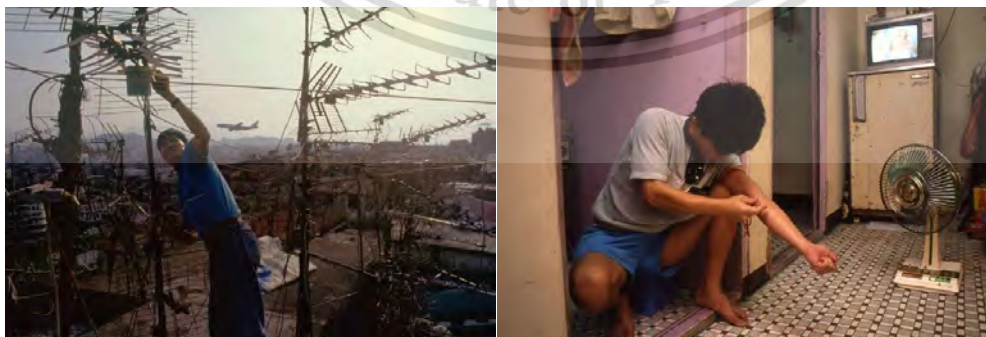


Figure 2-22: Without city facilities supports, residents have to find a life way by

themselves, such like set TV antennas on top of roofs; life is hard, always

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someone going to a wrong way, for example drug or drug dealing, 1983.

(Source:<https://baijiahao.baidu.com/s?id=1804004278053263476&wfr=spider&for=pc>)

By the late 1960s, the city had a resident population of 50,000 and an area of only 0.026 square kilometers, equivalent to the area of three and a half football fields. The crowded space contains houses, schools, workplaces, Chinese medicine, Western medicine, dentists, shops, churches, temples, altars, etc. The Walled City has all the necessary characteristics of a small town. And there are not many of these service institutions, such as more than 80 dental clinics. Many practitioners have no professional qualifications at all, and people living in the Kowloon Walled City don't care about these, as long as they can be cured. Most of the Kowloon Walled City residents are not from Hong Kong, they come from mainland China, Singapore and some surrounding areas. The language used here is extremely complex, including Teochew, Hakka, and Mandarin, Cantonese, English and some other languages. This city is extremely inclusive, and most people bring their own skills and make a living here. Because the functions of the community are extremely comprehensive, many residents of the Kowloon Walled City do not know the outside world. Some kind-hearted residents have started to open drug rehab centers and gospel churches to help young people in the city get out of their predicaments, so that they can live a better life outside. For those in need, the city also opens a free canteen inside the city, which provides free meals from Monday to Saturday (Zheng, 2020).

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九龙寨城



Figure 2-23: A planning drawing for Kowloon city, structure just going up and stack together one after other, 2003. (Source: https://www.douban.com/note/648631891/?type=rec&_i=6968102Df1VGO)

After the Walled City, Hong Kong's slums disappeared. While the city's appearance has improved, Hong Kong's dynamism is spreading to the other extreme. Because young people cannot find cheap rental housing, their sensitivity to national economics and politics is also rising. Coupled with Hong Kong's past shortcomings in education issues, many Hong Kong young people have begun to express their demands in extreme ways. In the past, for a period of time, Hong Kong independence and rioters have become synonymous with Hong Kong. To this end, the SAR government has made

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a lot of efforts, including introducing foreign capital to create job opportunities, optimizing the public rental housing system in Hong Kong, and encouraging young people from Hong Kong to work in the surrounding areas of the mainland, such as Shenzhen and Guangzhou, which have eased the development of the city to a certain extent. However, in the long run, the development of the Hong Kong SAR still lacks enough optimization.

On the contrary, a 1998 poll by the SAR government showed that 63% of the people still expressed nostalgia for the way of life in the Kowloon Walled City (Peng, Creg, 2018). They believe that life in the city is more convenient, the neighbors are close, and the law and order is relatively safe. According to the 2021 poll, 71% of Hong Kong's indigenous people believe that Hong Kong lacks security, lacks communication between neighbors, and the cost of living is rising. As of 2021, the average median salary in Hong Kong is 19,000 Hong Kong dollars, but under this data, 52% of people earning less than 20,000 Hong Kong dollars. 30.6% of people have a monthly salary of 20,000 to 39,000 Hong Kong dollars. The real high-income group in Hong Kong accounts for 2.8%, and their monthly income exceeds 100,000 Hong Kong dollars, mainly engaging the international trade and real estate development. At the same time, the average income of public administration and social services in Hong Kong is about 21,000 Hong Kong dollars per month, and most other types of work, except for leadership positions, are around 20,000 yuan

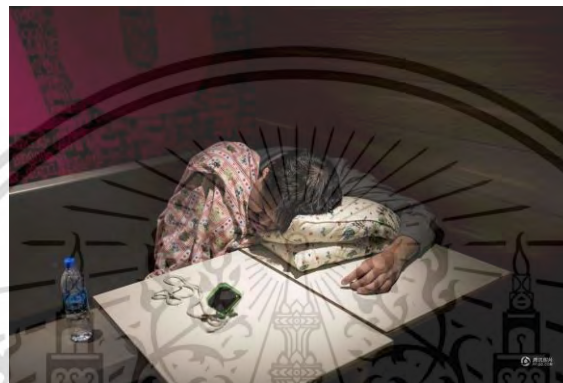


Figure 2-24: Some young in Hong Kong who cannot afford rent fee, sleeping in Coffee shop or 24 hours restaurant, 2016 (Source: https://zhuanlan.zhihu.com/p/59807229?utm_id=0)

By comparison, the cost of living in Hong Kong is staggering. As of 2021, the average housing price in Hong Kong is HK\$15,000 per square foot, which is equivalent to about HK\$135,000 per square meter. In addition, according to the data released by Numbeo, Hong Kong ranks 16th in the world in terms of prices, 1st in Asia and 2nd in the world in rent, and 5th in Asia in terms of household food expenditure. Although the cost-of-living ranks behind Japan, Israel, Singapore and South Korea, it is still in a high position.

In this paper, the experience of Kowloon City can offer references to the

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housing problems of urban young people today, for there are some situations highly similar. For example, urban young people's identity as workers, the dense living environment, and similar hygiene and energy use issues. From the positive perspective, the close interpersonal relationships and cooperative social status in Kowloon City are also the ideal living status for young to gather in the city nowadays.

2.12 Summary

First, youth status is a key factor for the future development of a city. This has been made clear in the study of the urban coupling effect. Although industrial development and economic indicators are very important, the youth group cannot be ignored. Once the supply of youth labor and creativity in cities is insufficient, new problems and crises will arise in urban development.

Second, the community environment is no longer a simple problem. Population growth brings the expansion of communities, and the gradual increase of communities leads to the continuous enlargement of cities. However, not every community in every country can be divided, and their respective characteristics are very distinct.

The third, some of countries has much worse condition in young's problem, it give us more confidence to push the young to new step. In Abuja, Nigeria, a segment of the population is called the occupants of formal spaces. Although the houses are dilapidated, these people still have the corresponding infrastructure, housing,

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transportation, entertainment and economic development conditions. Rather than destroying the lives of residents here, poor construction has spawned a unique slum economy; the other part is Nigeria's open-air dwellers, who also host informal spaces. The living conditions of these people are equally worrying, and they also need to face a series of hidden dangers such as health and disease. These people gather in a scattered way, and most of them choose to live near water resources, caves or densely wooded places. Although there is no hardware, the community of these people is much better. Because of the openness, the communication between people has increased, and the grouping of open-air communities has made these loose communities relatively safe. The Nigerian government clearly does not encourage this state to persist for long. So, they took the necessary steps to make life better for more people. Instead of bringing people directly into the city, however, they took the approach of building new buildings and functions to set up new neighborhoods to see if they could possibly come together to form new satellite cities. When the development reaches a certain level, new communities will naturally join the city and complement a certain function of the development.

Fourth, in Europe with relatively better conditions, people are more beginning to choose compact housing for living, which give me a chance to think. Their furniture designs are compatible with better functions such as storage, display, dining and more. For others that cannot be achieved, they are often left to the community to solve. This is true in Denmark, Belgium, Sweden and Switzerland.

Based on those four lines, they all might be in some help if when we build a

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young community, and helping us bring a completely very new concept in furniture, space, and social intercourse pattern.

Finally, affordable housing can alleviate housing demand to a certain extent. Research shows that the real estate market in developed countries such as the United States started and developed rapidly because the affordable housing system was established earlier. For these countries, the affordable housing and commercial housing systems have stable and common development. In addition, the construction of the affordable housing system is relatively complete, and the investment in construction scale is relatively large. The contribution of affordable housing to housing prices in developed countries such as the United States is about 3:7. Representing Singapore, a newly industrialized country, the Housing Authority has a relatively well-established affordable housing system: the important value ratio of affordable housing to house prices is about 2:8.

Therefore, the sustainable development of urbanization plays an important role in the social and economic development of the city, which is also related to the degree of integration between the urban population and the city. As one of the key issues of population influx into the city, the housing issue also affects the sustainable development of the city. In addition, in the process of urbanization, the coupling and coordination relationship between the supply of affordable housing and the price of commercial housing in the real estate market has become a key research issue. That is to say, the lever of housing supply will always be biased towards the disadvantaged groups, but the difference between the speed of supply and the speed of economic

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development will cause this bias to be slow or fast (Lida Wang, 2021).

Maslow's pyramid of needs states that D needs, including physical, safety, social, and esteem, is the foundation, while B needs self-actualization can only be carried out on the basis of completing D. It should be noted that Maslow's Class D requirements are not in order, and in some special cases, the order of these requirements can be interchanged. Therefore, if you go back to the origin of the problem, it is not difficult to find that the Kowloon Walled City in the Hong Kong SAR, as well as the young people in Hong Kong today, have intersections with the problems that have emerged in the above research. From the perspective of the Kowloon Walled City, the slum economic system it constitutes has a lot in common with Nigeria, India, and Malaysia. These commonalities are manifested in three aspects, which are also the inspirations the slums have given us.

Just like in Kowloon City's life style, it provides a patten which completely override the city building hard drive. They are basically like rules running for city living. Rule number one, security is the premise of a stable society. The safety of slums is relative. Compared with developed urban areas, the safety environment of slums is "unsafe" in the eyes of the city. Because of lack of understanding, slum residents will also think that the danger in the city is greater, so they will spontaneously form organizations to maintain this state, and be careful to deal with the influence of the outside world on you. This relatively safe environment allows people to relax and better integrate and think about their place. Therefore, whether it is safe or not is not entirely related to the level of economic development. On the one hand, the 93

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provinces of France and the Johannesburg District of South Africa are because the economy is difficult to drive, and more importantly, the local black people and immigrants do not have a complete sense of community and cannot form a good security foundation, which also led to long-term local unrest. (ON Bons, 2021).

Rule number two, man is the main medium of functional perfection. Any city needs different functions to be combined. In modern cities, these functions have been decomposed and perfected, and many tasks do not need to be completed by humans. For example, Japan, which has the highest degree of automation, has achieved unmanned transportation in many fields such as public transportation and transportation. In most parts of China, water supply, electrical circuits, and gas systems are relatively complete and so-called occupations such as water transportation, well drilling, and coal sales have disappeared one after another. These all benefit from the gradual improvement of urban development. But in slums or relatively backward areas, if there is no corresponding management system and equipment, people need to make up for the missing link. The part that people make up for is the gap between backward areas and modern cities. In other words, people in backward areas cannot be willing to bear the living environment that is inferior to that of cities. Their needs are not changed by economic conditions, but are based on the times. The advanced nature of urban life has an all-round impact on slums, and good money will not drive away bad money. This is also a key factor for modern cities to attract people from backward areas.

Rule number three, empathy is the harmonious foundation of community

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relations. The slums have their own circle culture. Some people with similar backgrounds and dreams gather together and have a natural ability to empathize. This makes the relationship between them closer and makes it easier for them to form cooperation. The more difficult, the more the relationship will be strengthened. With the help of empathy, many inconvenient problems can also be ignored, such as cramped living space and poor eating conditions. Slum dwellers are more likely to find places to figure out, and are happy to find places to figure out, to help them integrate more quickly into the environment. Among the common options, common poverty, single parent or orphan, fellow villagers, same age, etc. are all reasons for them to seek team life. The main reason for the formation of this psychology is lack of self-confidence, loneliness or some other personal reasons. Almost all young people think that living in a slum is a transitional choice, and no one wants to live forever, even if most people will miss it when they leave.

CHAPTER 3

CASE STUDY

3.1 Basic Investigation

The living space in Kunming mainly includes four types: low-density villas, medium and high-grade apartments in the downtown, ordinary houses on the edge of the city, villages and shanty towns near suburbs.

Among them, low-density villas are generally located in areas with beautiful suburban environment and have relatively scarce resources in the city, such as natural landscape, high-quality environment, high-grade entertainment and leisure facilities; good property management. Most of the buyers are wealthy classes such as individual and private business owners, managements of foreign-funded or joint venture enterprises.

Medium and high-grade apartments are located in the center of the city. They mainly live in urban class and white-collar workers. Commuting is relatively convenient, but it takes a long time. At the same time, due to the development of housing in the urban area, developers should not only bear the high land cost, but also be responsible for the demolition and resettlement costs, resulting in the housing price are not low, which is unbearable for the urban low-income class, especially the ordinary workers who provide services for the urban population.

Ordinary houses on the edge of the city are mainly concentrated in the northern part of Kunming, where the traffic and environmental conditions are relatively poor

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and far away from the high-quality education and commercial resources in the urban area. However, due to the limited conditions, the development land price is also relatively cheap, which has become an ideal choice for low - and middle-income family.

Finally, there are villages in the city and shanty towns in the suburbs. This is due to the rapid expansion of urban space, which has surrounded many villages that have not been assimilated by urban life into the scope of the city. Most of the residents are indigenous people who are unable to improve their living conditions, as well as a large number of migrant workers, which is also known as mobile manhole. The houses in these areas have been built for a long time, the proportion of dilapidated houses is large, and the road traffic system is seriously poor. Imperfect municipal infrastructure and serious lack of living supporting facilities. There are few public green spaces and the living environment of residents is poor. A large number of low-cost rural labor force is attracted by urban enterprises, and service industry is showing an increasing trend, and the population density of "villages in cities" is also increasing. The mass gathering of low-income people has also brought serious social problems and affected the harmonious development of urban space (Lan, Zhao, Guo, Xiao, 2022).

According to the census data of Kunming, the resident population of Kunming is 8.46 million; there are about 17.92% of the population in Yunnan Province, with an annual average growth of 2.78%. Among them, the population aged 15 to 59 is 5.97 million, accounting for 70.62% of the total population, including 3.47 million young people. Among all the youth echelons, 1.23 million people have a high school

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education or above experience (Lan, Zhao, Guo, Xiao, 2022).



Figure 3-1: Wuhua district government building, designed by Australia architect in 2003, it's an advanced symbolize in local, photograph by author, Jan, 2021.

(Source: https://www.sohu.com/a/441492818_120458027)



Figure 3-2: Wuhua is the center of Kunming, it contains many historical architectural complex, such as university during the war time, old building now still located in downtown, May, 1935. (Source:

<https://www.163.com/dy/article/FRD6A49K0511J4QF.html>)

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In terms of total population distribution, among the five administrative districts under the jurisdiction of Kunming, Guandu District has 1,602,300 people, which is the highest level; Followed by 1,143,100 people in Wuhua District, 988,000 people in Panlong District, 960,700 people in Xishan District and 649,500 people in Chenggong district. The proportion of youth in each district is 43.2% in Guandu District, 38.6% in Wuhua District, 31.7% in Panlong District, 35.2% in Xishan District and 67.9% in Chenggong district (Sun, He, 2021).

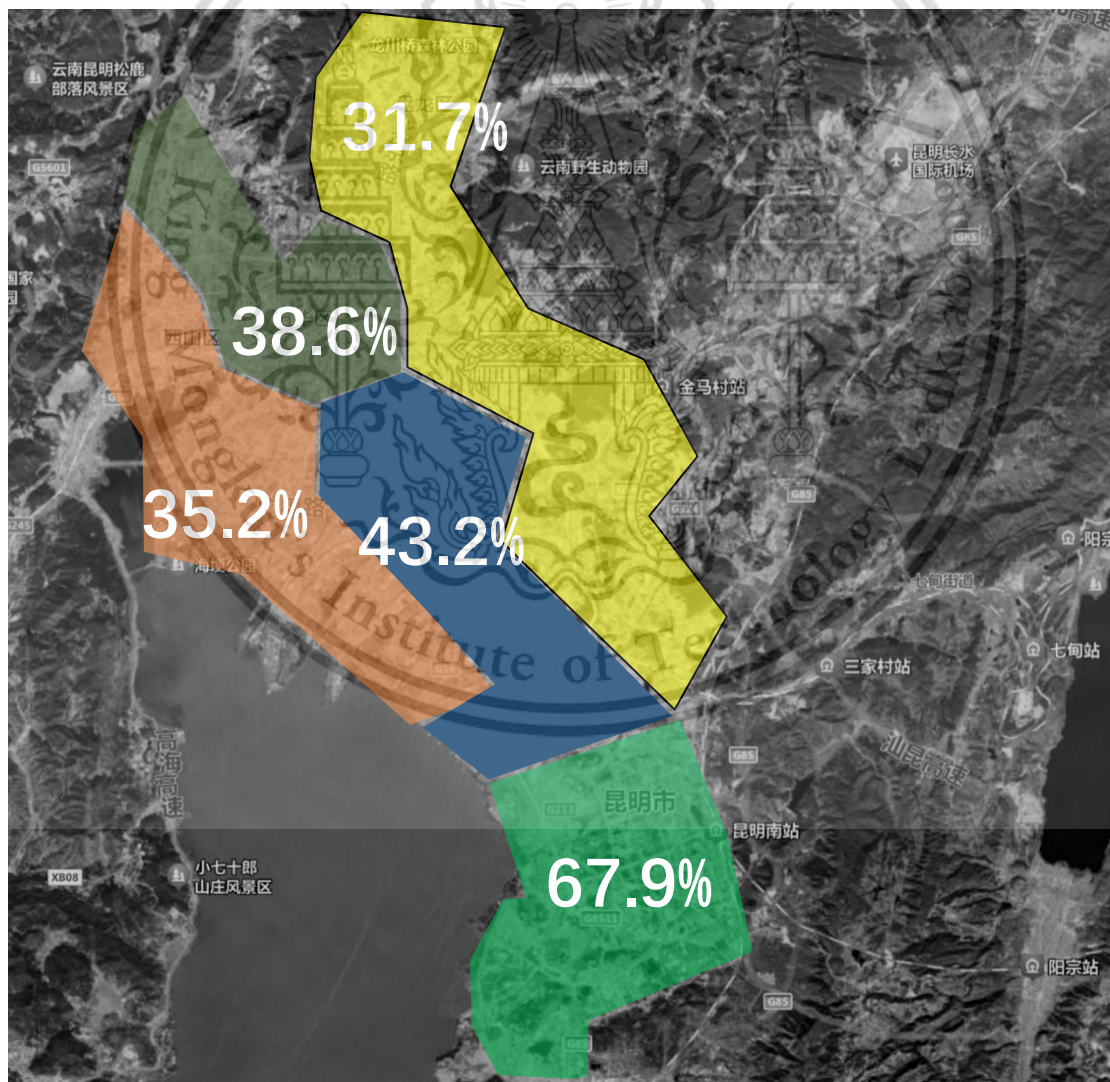


Figure 3-3: Youth Distribution Map of Kunming City

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3.2 House Provided by Company

3.2.1 Necessary choice -- Changshui airport, Guandu District

Changshui International Airport is 30 kilometers away from the urban area. It is the largest airport facility facing Southeast Asia in China. Its main terminal is up to 7 floors, including 3 floors above the ground and 4 floors underground (Zhang, 2013). The whole airport has 200 aprons, with an annual passenger throughput of 38 million, with an average of 100,000 people entering and leaving here every day. More than 440,000 people are stationed here, serving more than 120,000 passengers and cargo companies for a long time.

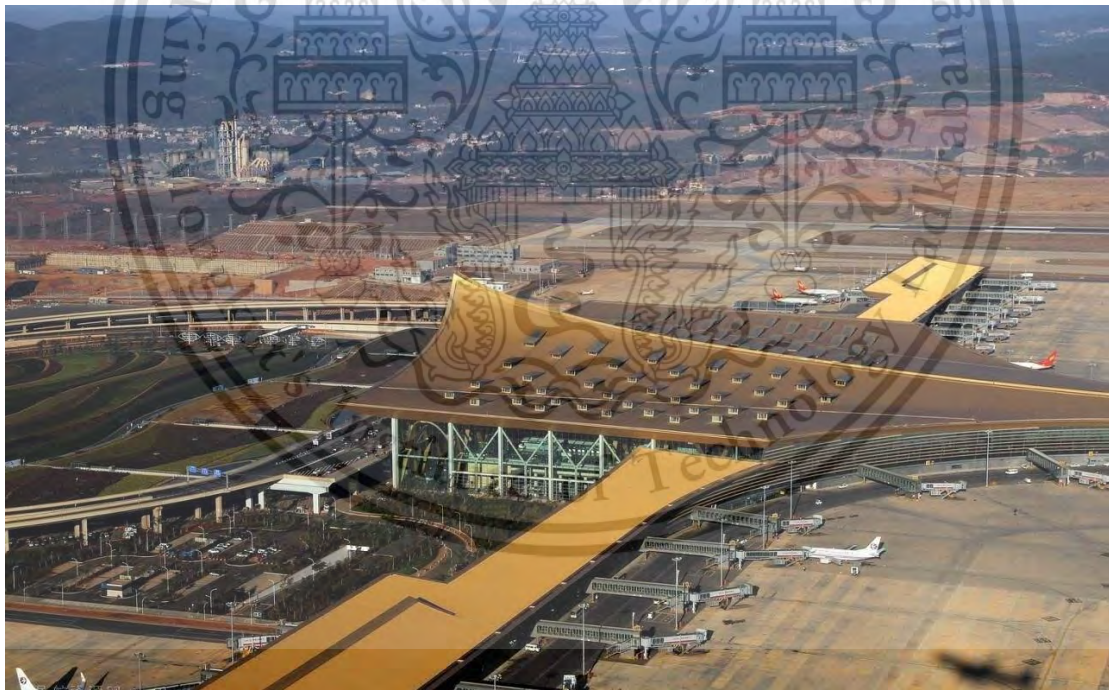


Figure 3-4: Changshui international airport T1 terminal building in Kunming; over 30,000 people working in there, including airline employees, cleaning and security crews, factories provide air-food and materials, ground service and so on,

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July, 2015. (Source:

<https://weibo.com/ttarticle/p/show?id=2309404598002974065073>)

The huge service team involves airport staff, including pilots, flight attendants, maintenance, ground service, air control, etc, and a large number of personnel providing supporting services, such as cleaning, security, food preparation, fuel management, hotels and so on. Their commuting time is much harder than that of the outside world. More than 90% of the company's working hours are between 7:30 and 8:30 in the morning, and some VIP service windows will be earlier. The off-duty time is often not fixed. In case of flight delay or emergency, the off-duty time will be extended indefinitely. This also causes most of them to choose to live in Changshui to shorten the fatigue caused by long-distance commuting (Xu, Zhu, Xie, 2021).

In the 500 samples, only 11.83% of the people need to bear their own accommodation near Changshui airport. The income level of these people is not high, and the rent expenditure (about 800-1200 a set of housing) will account for about 30% of their income. 77.4% of the remaining people will be provided with housing by their units in Changshui, and another 10.77% will take buses and drive to and from the urban area and units. Finally, most of these people are leaders or backbones of enterprise departments.



Figure 3-5: Photographs show number of crews waking up in early morning and interior space of their rental place. They need to start work early and catch a bus at 5:00 AM to the airport. Most of them are single, so airlines offer accommodations similar to the image on the right, photograph by author, Feb, 2022.

After visiting the standard dormitories, it is found that the dormitories provided by the company are basically the same. There are beds, sheets and pillowcases, wardrobe, electric water heater and necessary writing desk. Unlike school dormitories, these living spaces do not have the problem of power restriction, but there is still no stable Internet broadband. For people who work, it is obviously not enough to have these conditions, so most employees who stay for a long time will bring in their laptops, install televisions, and connect to the Internet service here through a third party. Among the interviewees, the vast majority are young people who have worked for less than three years, and less than 8% have worked here for more than five years. Because of the high internal flow rate, the company doesn't want to spend too much on the

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actual decoration of the dormitory.



Figure 3-6: The photograph shows existing living conditions; The accommodations are for those with established families, and companies will provide larger rooms for them. However, the conditions are often not as ideal as we might imagine, photograph by author, Feb, 2022.

In terms of housing, the main houses of Changshui airport belong to public shared houses. This kind of housing are provided according to the working level. The specific accommodation allocation of each company is shown in the table below.

COMPANY	ROOM SIZE	WORK YEARS REQUIREMENTS	CAPACITY
China Eastern Airlines	15 m ²	0.3	2
	45 m ²	1	1
China Southern Airlines	18 m ²	0.3	1
	21 m ²	1	1
	50 m ²	1	3+

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Yunnan Airlines	21 m ²	0	2
	55 m ²	1	2
	78.5 m ²	5	3+
Air China	15 m ²	0.3	1
	25 m ²	1	1
	38 m ²	1	1
	55 m ²	2	2+
	80 m ²	5	3+
Kunming Airlines	21 m ²	0.6	1
	45 m ²	1	2
	55 m ²	1	2
	78 m ²	3	3+

Table 3-1: The table indicate data; room size, numbers of employment status, and number of persons living in the room, for the Airline Company's employee dormitory.

3.2.2 Collective dormitory - Collective dormitory of Jiahua

Kunming Jiahua Food Co., Ltd., established on August 8, 1988, is a professional bakery enterprise integrating pastry R&D, production, sales, and service. After more than 20 years of development, the marketing network of Jiahua Food has spread throughout the province, with more than 100 self-operated stores and more than 500 cooperative merchants. The production scope covers the whole Yunnan Province.

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For better production, the new factory of Jiahua Food was officially invested and constructed in 2008. The new factory under construction is located in Chenggong Qidian Green Industrial Base, with a total area of 208 mu, and the construction area of the central factory is nearly 15000 square meters, including bread workshop, Chinese Dim Sum workshop, cake workshop, Western-style cakes and pastry workshop, semi-finished product workshop and modern independent product R&D room. The total investment of the project exceeds RMB150 million, most of which is spent on infrastructure construction and the remaining RMB50 million is used for the construction of employee dormitories, so as to meet the requirements of the factory's regular production.

The Jiahua staff dormitory exists as a unit building, with a total height of 6 floors and no elevators. Two types of rooms are provided, saying collectively rented multi-people rooms and family rooms. When arranging accommodation, men and women live separately, and family rooms are arranged on the lower floors of women's rental rooms. Multi-people rooms are designed for six people, who must share the toilet and bathroom. The family rooms are equipped with relatively complete facilities, with an independent toilet and kitchen.

The conditions for room application are relatively simple for the purpose to make production carried out smoothly. The application for a collective dormitory can be processed at the time on boarding. The company provides necessary bedding and pillows, as well as shelves used collectively. For the application of a family room, staff have to serve in the company for at least 3 years and hold a marriage certificate.

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ROOM TYPE	ROOM SIZE	WORK YEARS REQUIREMENTS	CAPACITY
Group Living	20 m ²	0	6
Family Living	45 m ²	2	3+

Table 3-2: The air company workers room size and years requirements.



Figure 3-7: Images of the Jiahua Food Co., Ltd.'s dormitory building. More than 3,000 people reside here, primarily young individuals aged 18 to 22. They need to work in the factory for at least 10 hours, so staying close to their workplace is a practical choice, photograph by Jiahua, 2020.

3.3 Housing provided by personal

3.3.1 Economic symbiosis -- Chuanfang community, Xishan District

Chuanfang community was originally a village. Because it is located in a better area occupied by the city center, the transportation is very convenient. As the largest

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urban village in Kunming, Chuanfang village has a floating population of nearly 100,000. It is one of the most concentrated areas of floating population in Kunming and the area with the largest number of rental houses and migrant population in Kunming. Chuanfang village is a typical example of "low-end urbanization", a marginal area in the center of prosperity. Compared with the upscale business district on the other side of the river, it is like two worlds. The buildings in Chuanfang village are very old, in sharp contrast to the tall buildings next to them. The houses here are basically five or six floors (shown in Figure 3-7). The first floor is generally shops, and the upper floors are used as houses. The exterior of the building is not uniform. Some exterior walls are pasted with ceramic tiles, and some are only painted with a layer of cement, and some are completely built with laterite bricks. The gap between the Chuanfang Village building and the building is very narrow, which is commonly known as the "handshake building". The alley formed between houses is so narrow that only two or three people can pass side by side or by electric vehicles. Because the gap between the buildings is too narrow, it is difficult for the sun to shine into the alley, so in summer, the alley is dark and cool. Water pipes, wires, and clotheslines are still very chaotic. A single room is rented here. If there is no bathroom, the price is about 300 ~ 400 yuan. It is a great choice for many migrant workers with low wages. The area of a single room is not large. It can put down a bed and one or two cabinets.



Figure 3-8: Chuanfang village in Kunming, farmers, workers, external population are all living in there, photograph by author, Feb, 2022.

According to the survey, less than 2% of the 100,000 floating population belong to those who have stayed there for more than 24 months. Another 17% work nearby, and the other 39% work in other developed areas of Kunming. In their professional composition, 62% of them work in private enterprises, the income level is very unstable, and the educational composition conditions are relatively low. 21% of people choose to start their own businesses to provide necessary life support for Chuanfang community in exchange for wealth. According to the census report provided by the government, the proportion of indigenous people living in Chuanfang community is less than 14%, and most of them have moved to better areas. Meanwhile, the average income of the population remaining in the region is about 2,120-yuan, accounting for only 61% compared with the average wage level of 3470 yuan in Kunming. The reason for this embarrassment is that people with relatively low education level gather here. The survey shows that 37.5% of them are those who have not completed university education, and more than 1 / 3 of them have completed

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nine years of compulsory education only in accordance with Chinese law. Among these people, 79% of the families have rural or migrant backgrounds, and they are currently responsible for providing various service posts to the city center, including retail, express, takeout, housekeeping and other important services.



Figure 3-9: Images of the Chuanfang city; till now, Chuanfang village still have large groups of old buildings waiting for government dismantle, which has slowing down for the financial difficulties, left photograph by author, Feb, 2022; right photo photograph, 2019.

In addition, it should be noted that according to the financial report from 2019 to 2021, the service-oriented residential population of Chuanfang community changes with the economic form. The population growth in the past three years has been 3.5%, 1.2% and 0.3% respectively. The main reason for this situation is closely related to the epidemic situation. With the decrease of the activity of the overall served objects, the number of personnel providing services in the community has also been reduced, which also proves the identity characteristics of residents in Chuanfang community.

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Figure 3-10: Chuanfang village's living space style; it is too old for today, but because of the price young are still like to check in there, photograph by author, Feb, 2022.

From the housing situation, the houses in Chuanfang community belong to low-cost private share-houses. Among the 114 landlords participating in the survey, the rent price is calculated in "room", "day" and "bed" units respectively. The total number of heads of Households Participating in the survey accounts for 21% of the total number of boathouse communities. The specific rent is shown in the table below.

TYPE OF RENT	ROOM SIZE	BATH ROOM TYPE	COSTS / DAY /MONTH
ROOM	40 m ² —70 m ²	PRIVATE / SHARE	¥400—¥800 / Month
DAILY RENT	10 m ² —55 m ²	PRIVATE	¥80—¥220 / DAY
BED	3 m ²	SHARE	¥10—¥15 / DAY

Table 3-3: the table indicate data; room size, bath room type, and rental cost; Chuanfang rent fee situation, which is lower than the average level about ¥1100 per month in other places of Kunming.

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3.3.2 Seasonal gathering - University Town, Chenggong District

Chenggong is a New District of Kunming. Since 2010, ten universities, thirteen middle schools and several primary education institutions have been relocated here with the Kunming municipal government. The total population is 370,000, accounting for about 5.13% of the total population of Kunming (7.21 million people). There are about 150,000 college students and graduate students (aged 18-35) and 30,000 civil servants. Before the relocation, Chenggong district had 140,000 people, of which more than 1/2 of the population increased after the relocation.

According to the statistics of universities in Chenggong District, 57.33% of the 150,000 young students in school belong to the migrant population, that is, those who live in Chenggong due to learning needs. Since 2010, the government and real estate developers have purchased a large amount of funds to build a community in Chenggong district to provide basic housing security for the future development here. However, the latest data shows that Chenggong houses are obviously over developed. The minimum occupancy rate of the community is less than 12%, and the maximum is 71.3%, and the occupancy rate varies greatly with the school semester. This particularity has created a large fluctuation in the housing problem in Chenggong District, so this area is also known as the "ghost city". High population mobility has brought many uncertain factors here. Under the influence of the epidemic, Chenggong district has never been a particularly safe place. In the first quarter of 2022 alone, there were two outbreaks, and the scale was larger and larger.

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Figure 3-11: The photograph shows the existing problems the community are facing; the community is designed to accommodate many people in Chenggong, it also brings a big problem for us when epidemic coming; right, one is the public resource of sharing bike; no one use it when students not in Chenggong, left photograph by author, Mar, 2022; right photograph by author, Jan, 2022.

The larger population mobility also has an impact on housing. Due to the low house prices in the early stage of development and the existence of a large number of rental demands, the rental proportion of young people in Chenggong district has always been the highest in Kunming, and the actual controllers of a large number of houses live in the urban area. In addition to individual rental users, some companies have gathered a large number of vacant houses and set up rental companies to earn some stable rental income from universities. In all the 17 districts, the proportion of hotels and rental companies is as high as 90%. They often only provide some basic service facilities, such as bed, wardrobe, sofa and tea table. The remaining items need to be provided by the tenant.

It is convenient for many young people to rent. Among the 500 people sampled, 34% stayed for one year, 27% stayed for two years, 21.71% stayed for three years and

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5% stayed for four years. Among them, 8.63% started renting in the first year, 1% in the second year, 12.33% in the third year and 21% in the fourth year. Among the reasons for renting, the needs of couples, postgraduate entrance examination and joint company are the top three.



Figure 3-12: A standard student rental room will cost 800 at least; house owner will provide a bed, a chair and a desk but not else, photograph by author, Mar, 2022.



Figure 3-13: An existing condition of living room; it is a public place for tenants; most of student will not use it a lot. They prefer to pile up some necessities like water and clothing; and most of student are live alone which has never happened before, photograph by author, Mar, 2022

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In terms of housing, the residence in Chenggong university town is a private rental house. Of the 162 rental samples surveyed, 44% are independent tenants and 56% are joint tenants. At the same time, because it has a certain price advantage, the purchase proportion of private houses here is also the highest in all areas.

3.4 Common space and the survey on young people's residential status

Based on the current housing types in Kunming, young people mainly live in residential apartments (APT) and share flats, without the cases that young people rent a single house. In terms of price, apartments are relatively expensive and share flats are relatively inexpensive. Please be noted that the apartments in Kunming are different from Condo in Thailand, because each household has independent property right and can be freely traded and rented. In addition, the supporting property service is also incomparable to that in Thailand. They are only responsible for maintaining the public facilities of the apartments and do not provide other forms of services. Furthermore, there are two types of share flats discussed in this paper: one is the share flat included in the apartment, which will be decided by the property owner on whether to rent to several people. The other is the apartment provided by the company with a define rule specifying to be used for collective rental. There are great differences in structural design between the two. The reality is that apartments are generally small houses owned by individuals, while share flats are ordinary residential housing. However, in order to meet the demand for shared rent, the housing originally with bedrooms as the unit is divided into several spaces.

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Figure 3-14: Images about a group of apartment in Kunming, they had been sold to customer for each, who wants rent from them must through APP or property agent, which are not cheap at all. Most of apartment are close to downtown, and needs ¥1500 at least per month; photograph by author, 2020.

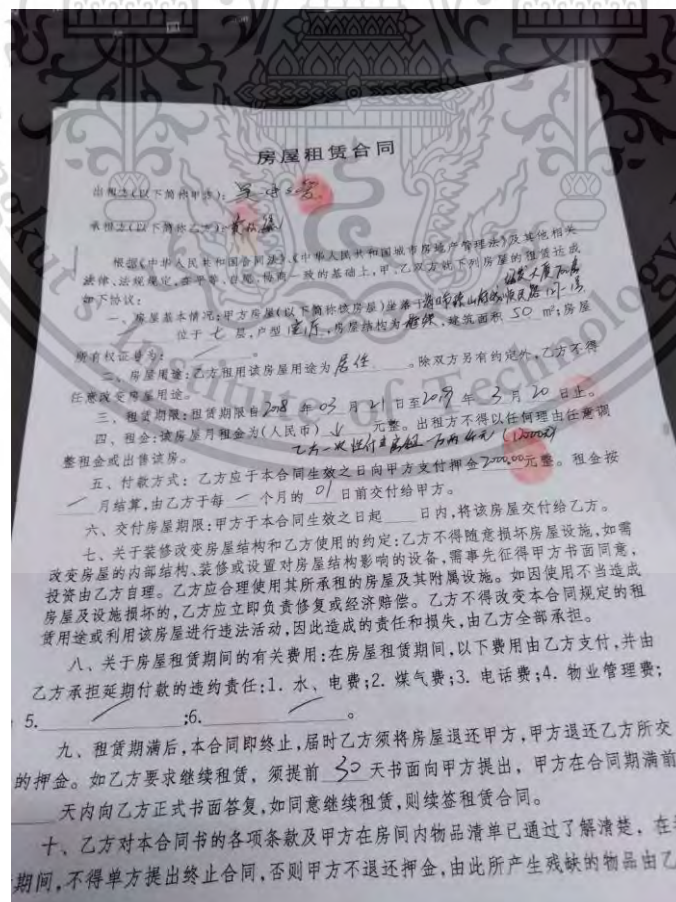
The method of paying rent is also different from that in Thailand. For housing sources found by themselves without being entrusted to an intermediary service company, the general rule is to "pay for three months with one month deposit", that is to pay three-month rent and a month deposit, and the water and electricity fees are paid according to national or regional water and electricity fees standards. For those with the service provided by an intermediary company, in addition to the above fees, the tenant also needs to pay an additional month rent to the intermediary company as an intermediary service fee. Generally, the validity period of a contract is generally three months, and when renewing the contract, a new contract needs to be re-signed, in case that the leaser will raise the price.

Housing contracts are generally provided by the intermediary company or leasers themselves, with no great difference in the form. The basic points include the

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agreed information like rental time, rent, basic water and electricity data, and require the tenant to be responsible for all incidents take place in the house during the lease term. The leaser will roughly check the items in the house, and state that compensation is required for damage based on the original price. For furniture and facilities added by the tenants themselves, the contract will not involve occupation or compensation, but if the house is damaged or destroyed due to the use of them, compensation is also required, and the leaser has the right to deduct the compensation from the rent paid in advance. Because of these preconditions, the housing in Kunming does not clearly indicate that tenants cannot "cook", instead, tenants have a great deal of free space during the renting term, which also greatly improve their life.



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Figure 3-15: Images about a signed normal rental contract, information including rent date, price and agent fee. Except those, tenant needs pay water, power, gas, internet bill and property management fee. It's a big money for young.

Photograph by author, 2018.

3.5 Questionnaire About Incomes and Outcomes

When designing an investigation into youth incomes and outcomes for those living in urban areas, several key considerations need to be addressed to ensure the study is comprehensive, accurate, and meaningful. Urban environments often have higher living costs, more diverse job markets, and greater access to education and services compared to rural areas. These factors can significantly influence the income levels, employment opportunities, and financial management strategies of young people. Therefore, the questionnaire should include questions that capture the specific impact of urban living, such as the cost of housing, transportation, and the availability of job opportunities.

One of the primary focuses of the investigation should be on the employment status and income sources of urban youth. Questions should explore the types of employment (e.g., full-time, part-time, internships), sectors of employment (e.g., retail, technology, service industry), and the stability of these jobs. Additionally, it is important to inquire about secondary income sources, such as gig economy work, scholarships, or family support. This section should also address the average income levels and any fluctuations due to the nature of the job market in cities, which can often be more

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volatile than in rural areas.

On the other hand, Urban youth might face unique financial challenges, including higher living costs and different spending patterns. The investigation should include questions about monthly expenses, major cost categories (e.g., rent, transportation, food), and financial management practices. Understanding how young people budget their income, their saving habits, and any financial support they receive from family or external sources is crucial. This will help identify areas where they might need financial education or support to manage their finances effectively in a high-cost urban environment.

Finally, it is important to understand the future aspirations and perceived barriers faced by urban youth. Questions should explore their career goals, desired income levels, and long-term financial objectives, such as homeownership or starting a business. Additionally, identifying perceived obstacles, such as lack of job opportunities, high living costs, or limited access to education and training, can provide valuable insights into the challenges they face. This information can inform policy recommendations and targeted interventions to support urban youth in achieving their financial and career goals.

3.6 Evaluate Team

Every design plan will give to patent office in China; to give the authentication to use and prove they are uniqueness, means no one will look




same in the market. At the same time plans will show to someone that has a great

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reputation in linking research, every feedback will be on list when they're done. The specific modification measures and the modified scheme will also be presented in the research result.

Except my thesis tutor, the experts for evaluation will include the following experts.

Evaluate Professor	Details
	<p>Chen Jinsong, Professor, Vice President of Yunnan Arts University, Hand Crafts Expert.</p>
	<p>Yang Chunsuo, Associate Professor, Teacher of Yunnan Arts University Design College, Landscape Design Expert.</p>
	<p>Zou Zhou, Associate Professor, Teacher of Yunnan Arts University Design College, Interior Design Expert.</p>

	Cai Jin, Engineer, Design Director of Guoguang Yiye Design Research Institute.
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Table 3-4: Information about evaluate professors for the after research.

3.7 Costs estimate

In the process of scheme design, cost of materials and processes will involve and calculated. The cost does not include other costs incurred after the product enters the market, but only the material and development price of the product. The excluded parts include the sales cost of products, such as storefront, operation and maintenance, etc. The cost estimation will base on the market research. By visiting Internet suppliers and the markets around Kunming, we can get the specific reference price of the developed products.

CHAPTER 4

RESEARCH METHOD

4.1 Housing form and status of property provided by the company

The collective space provided by the company adopts standard design. The room size is controlled between 20 and 35 square meters. Common collective spaces have a depth of 7 meters, a width of 3.3 to 3.5 meters, and a height of 3 meters. Toilets and balconies are for public use, which are mostly set on the same floor or the first floor, without a kitchen.

The property arranging method of collective space is relatively compact, generally equipped with 1 meter by 1.9-meter beds, and upper and lower bunks. For the four-people rooms, the beds are arranged on the upper level, and desks and lockers are placed under the beds. No articles are placed in the middle aisle. While for the six-people rooms, upper and lower bunks are equipped, and two tables and chairs with drawers are placed in the middle aisle for public storage and placement of articles. In terms of space utilization, items can be placed under the bed and in the space between the beds.

In terms of supporting facilities, the collective space is equipped with basic lighting and incandescent tubes are generally used indoors. And in outdoor drying areas, as well as in toilet areas for public use, voice-controlled lighting is more commonly used.

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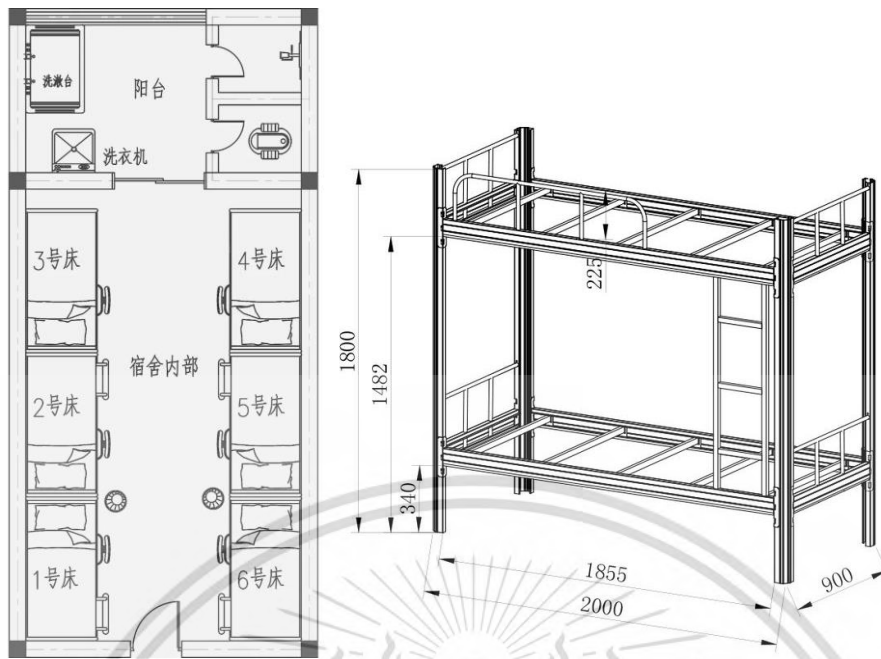


Figure 4-1: Images about 6-person room and a single bad for 2. Some standard configuration such as trash can, public cabinet are all in one. This kind of structure are very popular in university, but some of them not have suite bathroom.

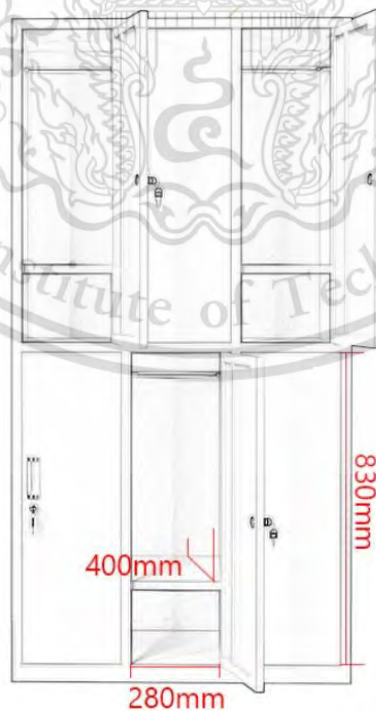


Figure 4-2: A standard cabinet in room. It has 6 parts for save and preserve, but This material is reserved for educational use only, not allowed for commercial use.

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not enough for hang clothing or big personal thing. This is only a preparatory measure, most people will have their belongings stuffed into their luggage, which makes the space even more crowded.

The flat space provided by the company is relatively compact, with the room size controlled between 30 and 50 square meters, and some larger flat can reach about 80 square meters. The flats have independent bathrooms and kitchens, and a few of them are connected to gas, so the cooking cost is lower than that of using electricity. The hot water in flats is generally supplied by solar energy, and electric water heaters are relatively rare. The flat will be equipped with a bed, a desk, and a wardrobe, without refrigerators, rice cookers, bedding, etc.

The article arranging method of the plat space is relatively flexible. In addition to using desks and wardrobes, residents can also add furniture like cabinets by themselves to meet the living needs of different families. A slight difference is that the internal facilities in the flats provided by the company cannot be sold off, and it's only allowed to add facilities in the flats.

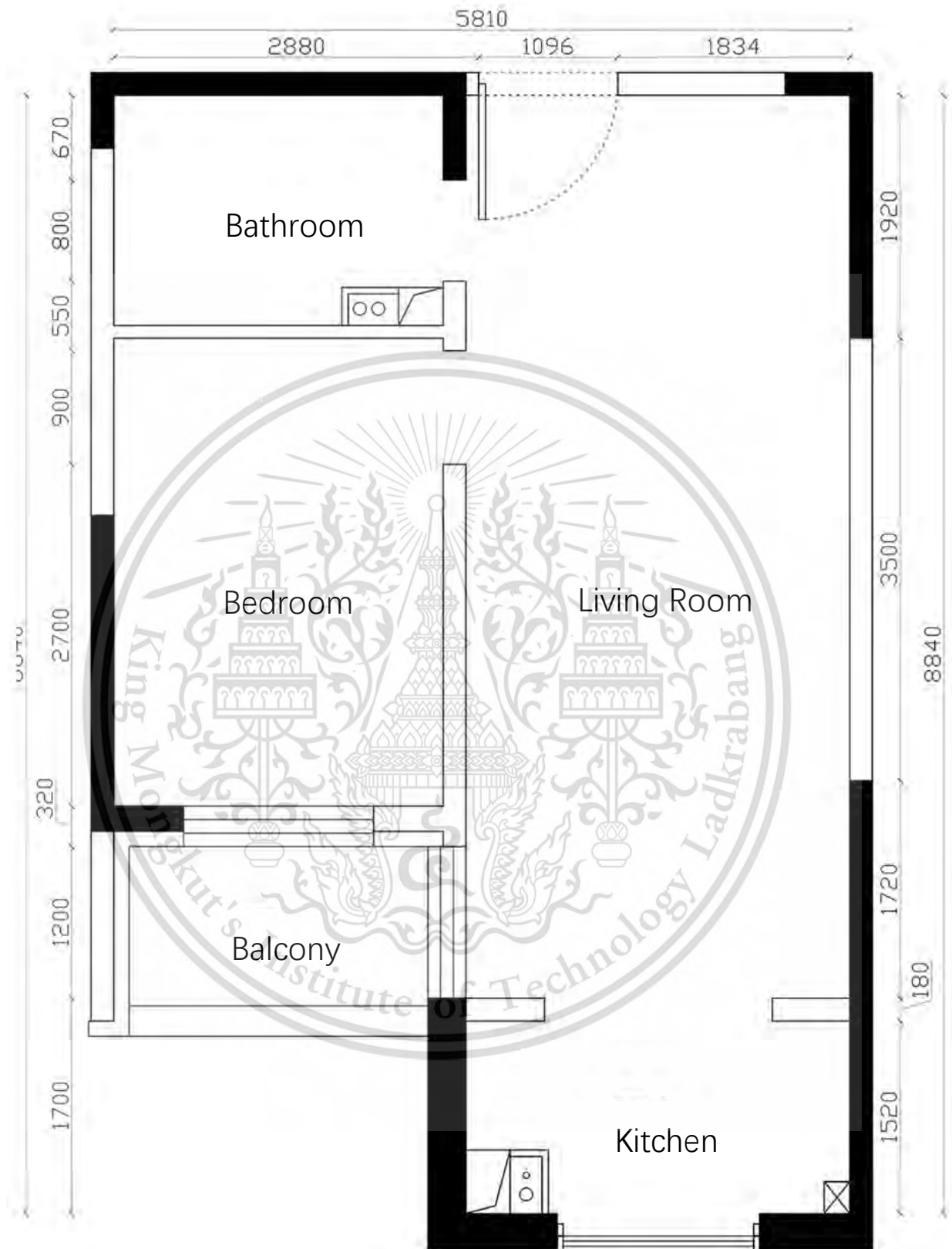


Figure 4-3: A standard small room for 3 man's family, which provide by Jiahua food company. It has a living room, balcony, kitchen, single bedroom and a bathroom. This material is reserved for educational use only, not allowed for commercial use. Forbidden to modify the content, and cite the document when use.

bathroom only.

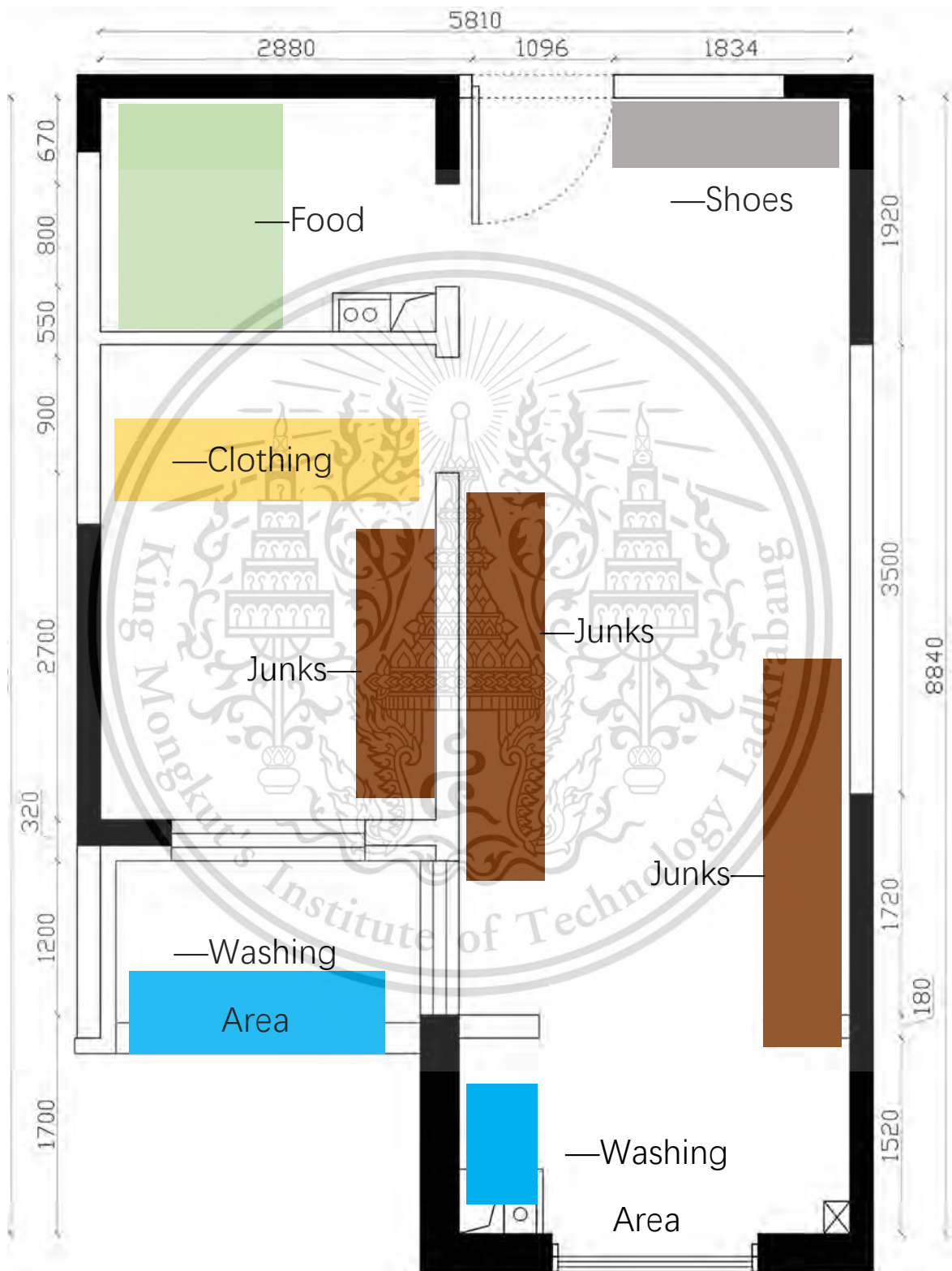


Figure 4-4: Most Chinese families put decorations and snacks in the living room.

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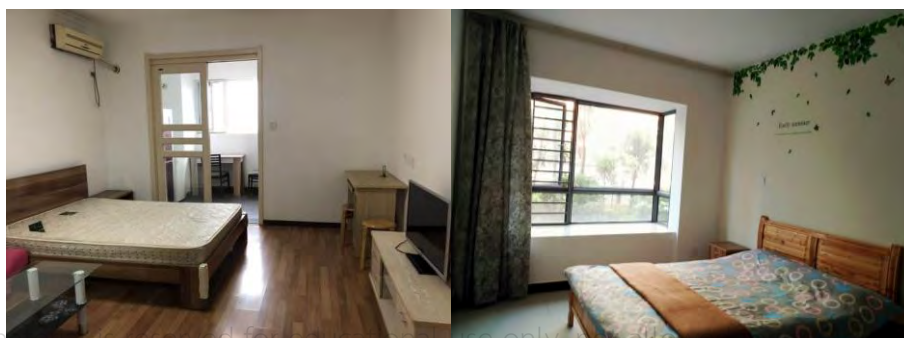
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Personal belongings are kept in the bedroom. Other debris will be scattered and stacked beside the wall, which is caused by insufficient cabinets.

4.2 Housing form and status of property provided by individuals

Because Chinese developers have to build houses in compliance with national regulations, there is no significant difference for the apartment space provided by individuals in terms of housing type. In some remote areas, the housing type has slight change, which will also be similar to the flat space provided by companies. What can be sure is that in the youth rental space, the original "Khrushchev Tower" originally existing in the city no longer exists, and the collective kitchen has become a story of history. What's more, the most common form of individual provided housing is still in the form of the share flat, which has a great advantage in rental prices and is popular among ordinary young people from the working class.

Apartments provided by individuals generally cover a space between 30 and 50 square meters, with a maximum area not exceeding 60 square meters. They are equipped with a bathroom and a kitchen fixed in the hallway. The supporting facilities are relatively complete, including beds, nightstands, wardrobes, desks, chairs, etc. For electrical appliances, generally they will provide a television, kettle, and refrigerator.

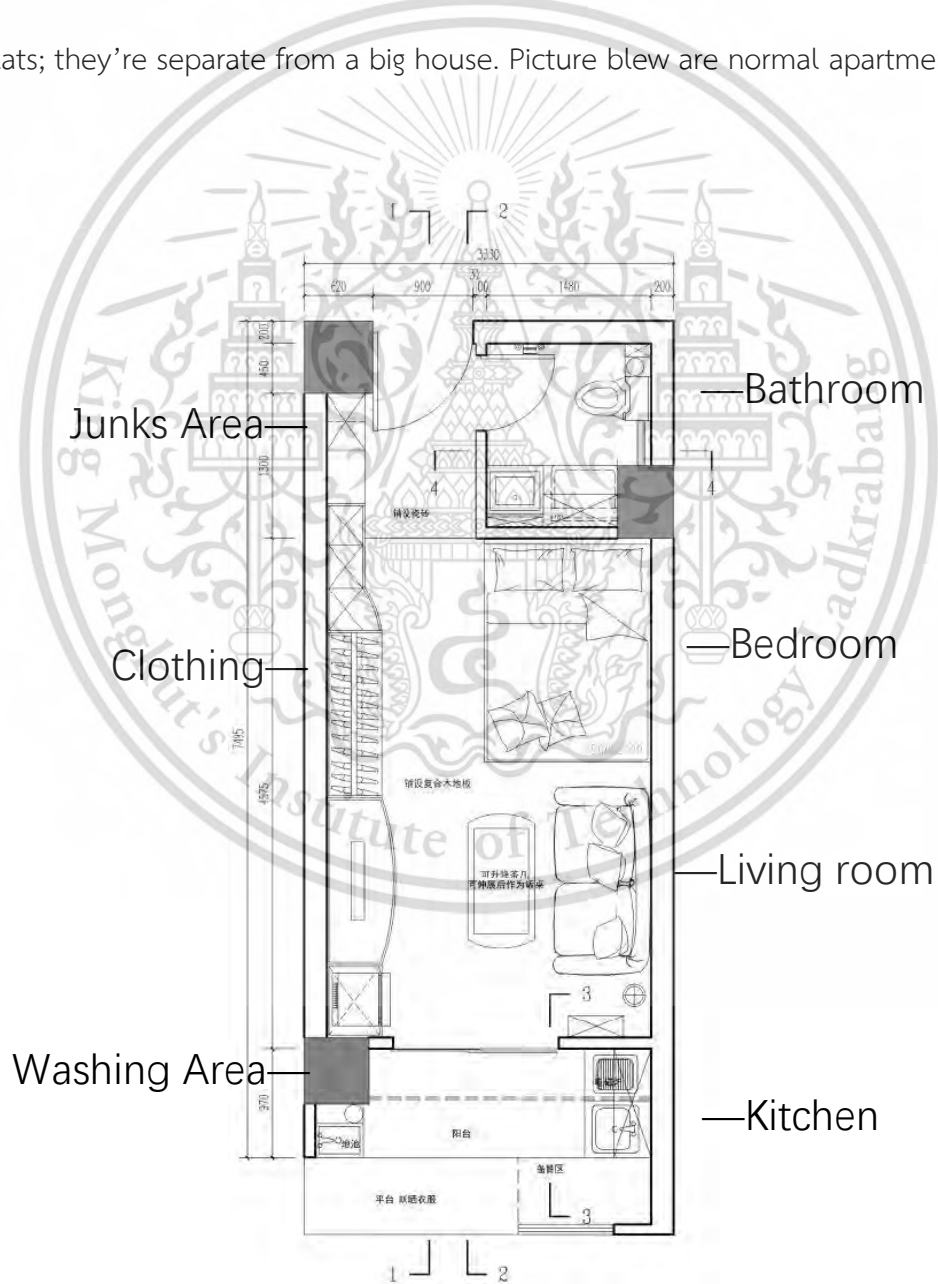


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Figure 4-5: Images for two different type rooms. First and second one is sharing flats; they're separate from a big house. Picture blew are normal apartment



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Figure 4-6: The spatial design of houses built after 2017 is more reasonable, and this model is being emulated by more and more apartments. Such houses include independent bathrooms, clothes hanging corridors, wide sofas, and foldable coffee tables. But this type of house is expensive and its contents are difficult to move. Sometimes residents have to show their beds to others, which can cause some confusion.

The share flat space provided by individuals is a bit larger, typically between 80 and 160 square meters, with 3 to 5 bedrooms that can be used for rent. There are three sizes of bedrooms - large, medium, and small. The small bedroom generally covers an area of about 6 square meters, the medium-sized bedroom has an area from 9 to 13 square meters, and the large bedroom will have an area from 15 to 25 square meters. The size of a single bedroom is generally 9 square meters, with 1 or 2 bathrooms, including 1 independent bathroom for the large bedroom, and the rest is shared. There is one kitchen, but it is seldom used. The sitting room is mostly used as a public space, which also serves as a space for storage. The source of tenants for share flats is relatively complex, and generally, lessors will set conditions in advance for screening, such as stipulating that they mainly rent the flat to girls or boys.

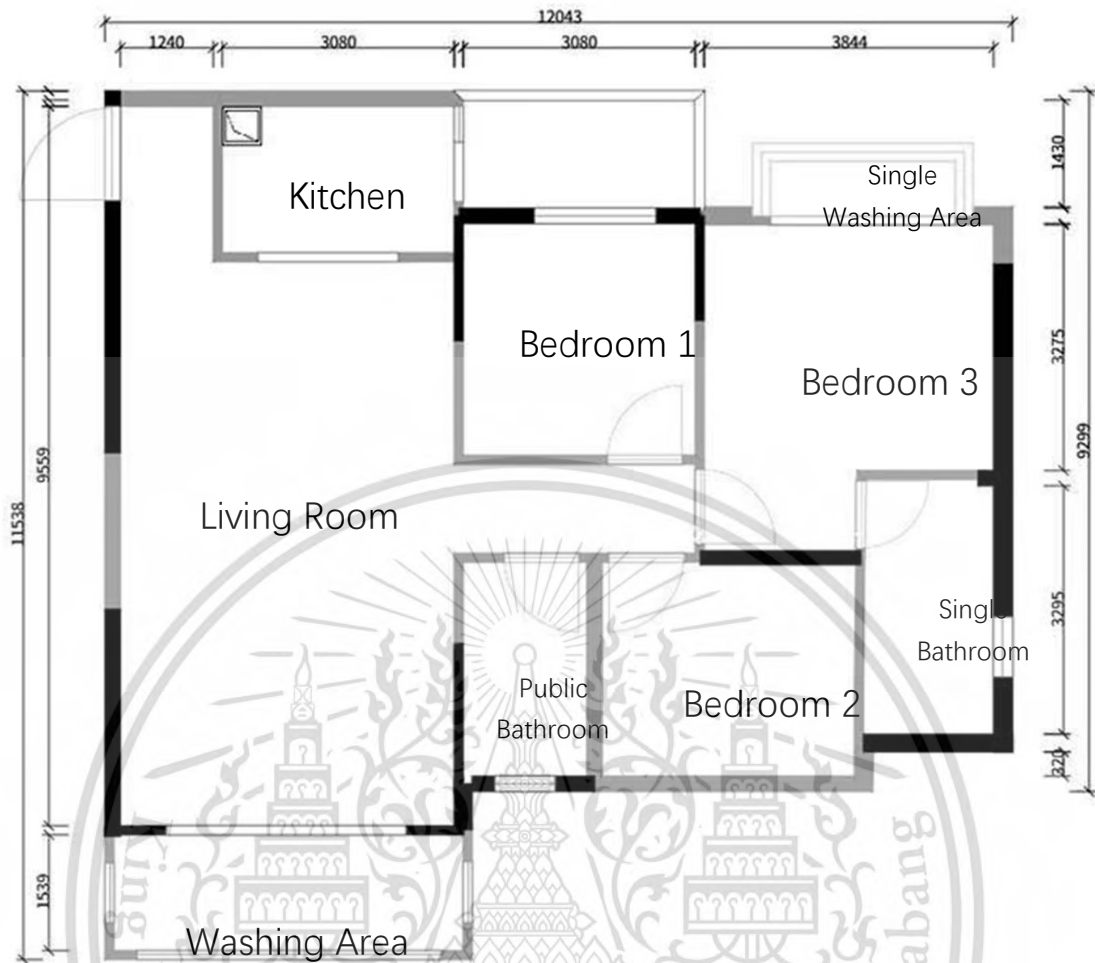


Figure 4-7: Generally, bedrooms with more than two bedrooms will use rent to different people. Landlords will put beds and cabinets in every room, and will raise the rent for the room which has a separate bathroom. The living room is basically unused, and young people are not familiar with each other, making the living room space as a wasted zone. Unless everyone knows each other, this also increases the possibility of room damaged.

4.3 Basic tests and method

Space utilization is often used to measure the frequency of space use. In a system composed of several spaces, the utilization can tell researchers which places

belong to the "hot zone" and which places belong to the "cold zone", so as to make more reasonable spatial planning. In the research, I chose to measure the space utilization rate of young people in two different houses. One is when there is plenty of space, both in the single rent commercial housing, the activity track and residence time of young people; The other is the activity track and residence time of young people when the space is tight, both in the jointly rented commercial houses. Each person will live in two different spaces for 3 days, and the data will be recorded every 24 hours. A total of 6 people participated in the survey. These data are the reference basis to help me make judgment and analysis, so as to what kind of basic functions young people need and how much they need these basic functions.

The test objects are divided into two groups, group A and group B, with 3 people in each group, covering the two age sections with the strongest demand for commercial housing. The subjects in group A were A1, A2 and A3 (24 years old), and those in group B were B1, B2 and B3 (35 years old). The space is divided into α and β , and among α it is a standard space commercial house, equipped with a perfect kitchen, two bedrooms, two balconies, two bathrooms, a living room, a cloakroom and a study. It is a standard shared house with only one bedroom. The bathroom, kitchen and balcony are public areas. It should be noted that due to the limitation of test conditions, we use enclosure to target a space α and β . The transformation of two different needs is also designed to ensure the fairness of the experimental results as much as possible. When entering or leaving the room, the subjects need to record in a specific book, that we can observe the time they stay in room. At the end of the

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experiment, each test object should complete a needs questionnaire to help us find out what they have done and what their needs are like.

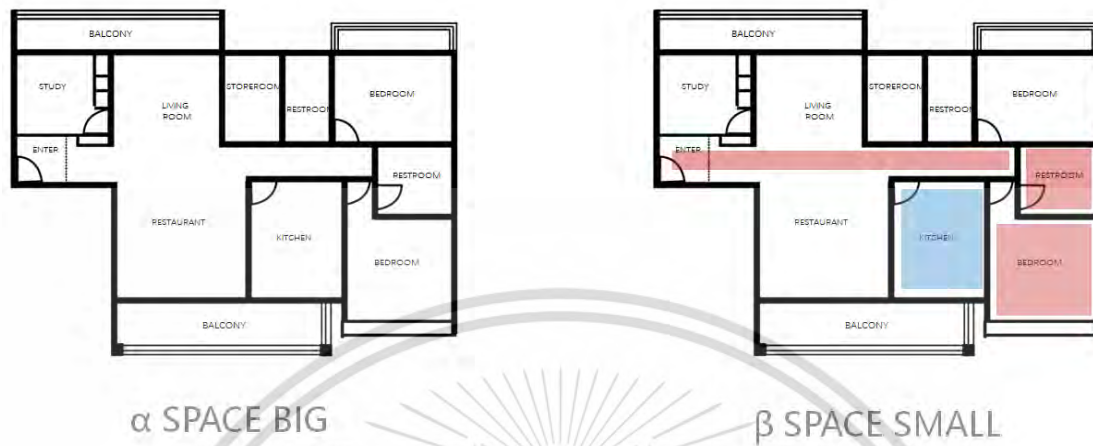


Figure 4-8: α and β spaces for Testing.

After testing, it was found that, α Space satisfaction and β . The degree of satisfaction with space is basically the same, which means that the key factor affecting youth's living experience is not space. From α according to the data of space, the highest proportion is bedroom, study and toilet, and finally balcony and kitchen, of which the proportion of kitchen, is less than 2%. From β , according to the spatial data, the time spending in the bedroom is significantly higher than that in other places, and the people who rest in the small bedroom use the bed more than 20%, but they don't rest, they spending their time for playing instead. Therefore, in the final data, it was found that although the time spending in bed is basically the same, the sleep quality and time in a small space cannot catch up with that in a large space. They like to watch their mobile phones and brush some apps to coax themselves to sleep, but it often takes a lot of time, and the effect is not good. There is always a lack of

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distractions in the room.



Figure 4-9: α and β average using situation in 24 Hours.

From the perspective of living habits, the study used several common indicators in life to investigate. From the big classification, it can be divided into dynamic and static, in which dynamic includes some common learning, labor and sports; static includes normal work and rest, rest and relatively static work activities. It can be seen that although the proportion of dynamic and static time is similar, in a small space, people are more likely to indulge in their own world and prefer to be alone. The sleep time in personal life is much less. In fact, a lot of time is spending on matters that do not need exercise. For example, more time is spending in bed, 1/3 more time is spending on using the computer, and twice as much time is spending on the toilet in a small space. In reading, people with large space are willing to make

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time, while people with small space spending no more than 3 minutes reading every day.

α SPACE (min)		β SPACE (min)	
Washing Machine	30	Washing Machine	10
Water Tank	8	Water Tank	2
Shower Heater	20	Shower Heater	34
Closes tool	15	Closes tool	30
Rice Cooker	5	Rice Cooker	5
Wash Basin(Toilet)	2	Wash Basin(Toilet)	2
Wash Basin(Kitchen)	17	Wash Basin(Kitchen)	14
Take care Plant	2	Take care Plant	5
Pillow	120	Pillow	180
Carpet	60	Carpet	87
Bed	240	Bed	300
Computer	120	Computer	400
Bookshelf	57	Bookshelf	3
Sleeping Time	744	Sleeping Time	368
Dynamic Time: 99mins		Dynamic Time: 102mins	
Static Time: 1341mins		Static Time: 1338mins	

Table 4-1: 24 Hours Statistics of Usage Time Proportion.

In the final questionnaire, α Space and β the proportion of people who feel
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happy in space is 80% and 95% respectively. Among them, the praise and expectation of some functions are highly consistent. For example, α Space thinks it's comfortable to lie down and read in the study, β Space wants to place a bookshelf on the bed. Although they don't read, they need an atmosphere. Obviously, small space can bring more happiness to people. As shown in the above table, the content with high coincidence degree proves that everyone has needs, and these data are also the key to guide the final design. In addition, devices such as washing machines are used in β the average utilization rate of space are very low. Residents prefer to save their clothes and wash them together. They are not willing to go in and out of their rooms frequently, which should be improved in the future, design.

4.4 Cost composition of youth rental space

The core problem of youth rental space comes from housing cost. Lower and reasonable living costs can bring better rental feeling and reduce other pressures. On the contrary, higher living costs may bring bad experiences, and these pressures may be material and spiritual. The statistics include not only the cost of the house itself, but also some additional costs caused by the location relationship, such as higher transportation and commuting costs, logistics costs, etc.

In order to get the cost of renting space for young people, 1000 questionnaires were adopted and conducted in a survey for four categories of people for two months. Finally, the paper lists the key data in the table, so as to get what the cost composition of different types is and where the most frequent expenditure of youth is.

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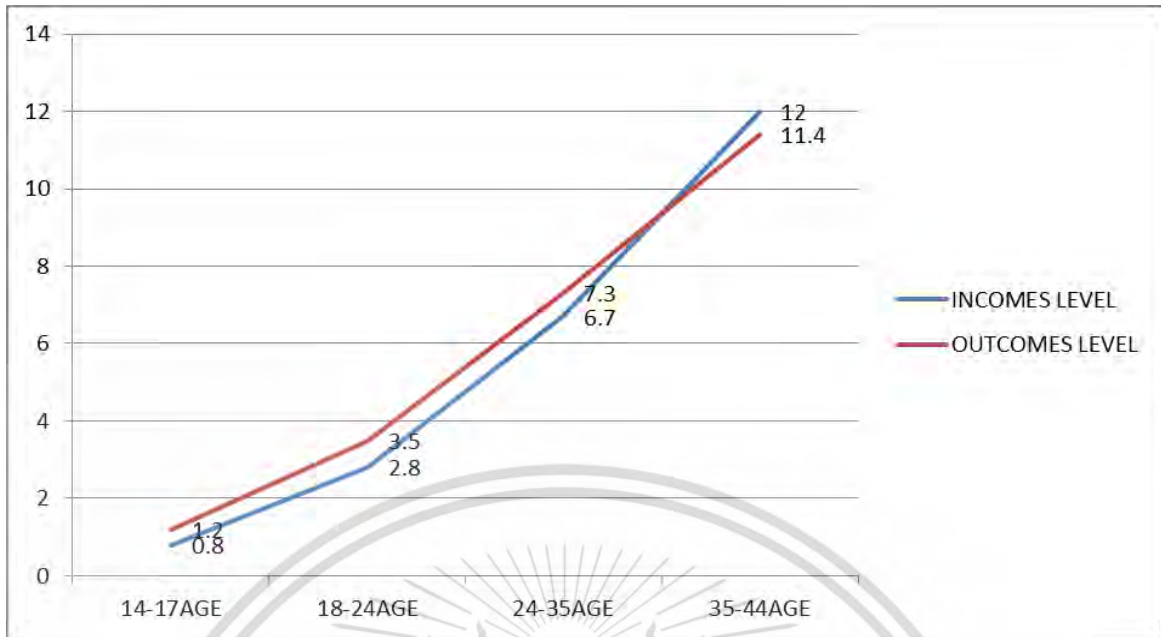


Table 4-2: Average incomes and outcomes level about youth.



Table 4-3: Personal outcomes paying proportion.

It was found that in terms of cost allocation, fixed expenses such as rent, property and hydropower broadband account for most of the daily expenses.

According to the location difference, the projects with these expenses will show polarization.

However, compared with the income index, it was found that even if this

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figure changes greatly, the proportion of monthly income was basically flat. Obviously, if the proportion of income is too large, the resident will directly face the pressure of life, so the youth has to choose to lower the standards in other aspects, or make sacrifices in some things, such as sharing a broadband with others.

After calculation, it was found that if the proportion of fixed expenditure in wages was less than 30%, there could be more non fixed expenditure in other aspects, which means better living conditions and experience. On the contrary, if it exceeds 50%, the happiness of life will be greatly reduced. With the growth of age, the proportion of fixed expenditure is also rising, mostly due to housing loans, car loans, etc. According to the proportion of expenditure, the most popular non fixed expenditure is furniture, decoration, household appliances and maintenance. Because of the shortage of basic equipment, storage bins and garbage cans in furniture have become the first two types of items needed; then there are necessary decorations, mainly personal items. 47% of the respondents need a fixed display space in this part. They will choose to display some necessary items, such as the side of the laptop, the top of the computer mainframe, the wall, bedside partition, and windowsill and so on. Followed by home appliances, 73% said they would consider buying or carrying some home appliances after check-in. The top ones were rice cookers, lamps and Bluetooth stereo. Some tenants with better conditions would buy refrigerators, televisions and some massage equipment to relax. The proportion of this part is shown in the table.

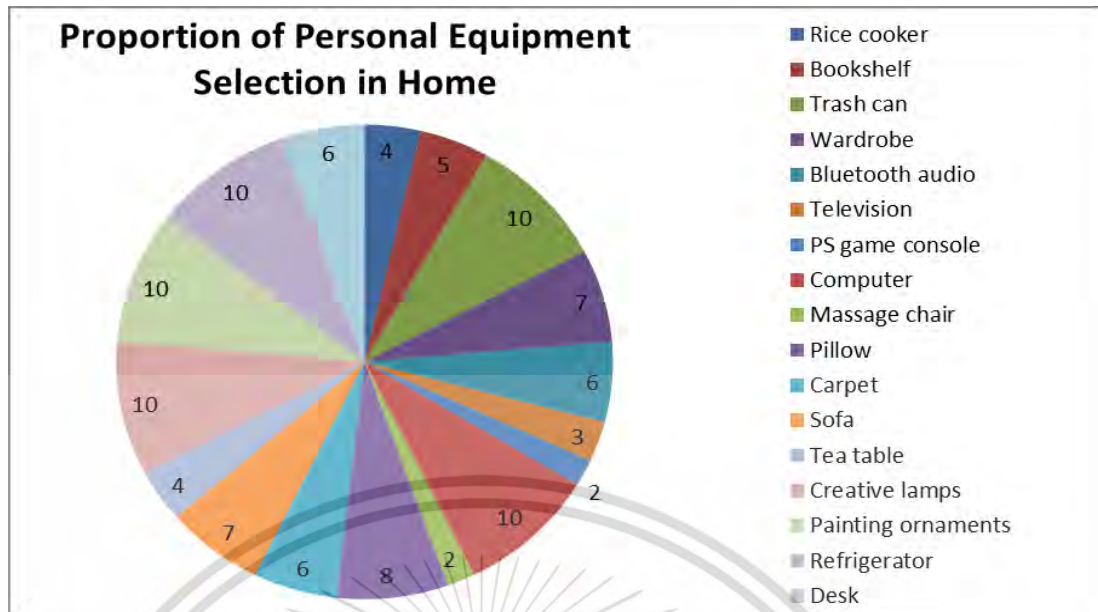


Table 4-4: Proportion of personal equipment selection in the home.

A special data is transportation expenditure. Transportation includes two aspects of expenses. Firstly, it is the fixed transportation expenses to work or leisure areas in living space, such as taxis, subways and buses. For those who need to go back to their parents' home, in addition to paying for air tickets, they also need to bear the cost of returning to and from the airport and residence. In fact, this cost is relatively large. Secondly, the expenses incurred when they move. For those who buy large household appliances and have sufficient shopping reserves, the expenses of moving are also very high. This leads them not to choose to move out of their rental house when it is not necessary, even if they may face the price increase of the landlord next.

Finally, the daily living expenses, including takeout and catering production, are basically the same in the survey data. For families with a large population base, the project will increase to a certain extent, but it is not the main expenditure.

Based on the research data of this part, it was found that the proportion of fixed

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expenditure is about 37%, and the rest is 21.5% of non-fixed expenditure and 14.5% of transportation. Based on the average monthly income of 2682 yuan in Southwest China in 2021, the monthly disposable fixed expenditure is 885.06 yuan and the monthly disposable non fixed expenditure is 576.63 yuan. This is the minimum monthly budget standard when we carry out house reconstruction in the later stage.

4.5 Basic Investigation

Research will focus on basic investigation, especially in Kunming. It will take pictures and VCRs to reflect the true situation about sharing house bedroom in new tire-one city. Including current situation, room layout, space materials, and costs and real rent process. On the other hand, research will give interview to those young who are still living in sharing room. By face to face talking, I can get first-hand messages that can help for going deeper on this research.

About documents and books, research will collect some cases and information, including unsuccessful cases about bedroom design. For that can help me set up some reflection thinking, which can make a better improve for design. Meanwhile I will do research about other theories, like Interior design, general design and industrial design (which including CMF system) etc. All those works should be helpful and provide theoretical support for this topic.

About mapping and surveying job, research will test sharing house in Kunming, to get numbers and details like space size, structure, basic conditions

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about construction. Prepare for next stage design progress.

4.6 Questionnaire Investigation

Design a questionnaire paper, which linking to new tire-one city sharing house bedroom for young, help me known their space and functional requirements for room. The question paper will point to young group, which can be separated for 3, including students, office and professional workers. Papers will tell their information about occupation, ages, income level situation and future planning details.

At the same time, question paper will show the information about those people's behaviours, such as space needs, colors and materials, finishing requirement, price level, use needs and special ask. Every date will put into TENCENT WIX application, which can analysis them by SPASS system. It will tell every last detail about numbers we collect, and give the result that can help to finish the research. After all those steps, every date will be saved.

4.7 Identify Design Elements

After questionnaire investigation did, date will be cut for 6 parts, namely space, colors, materials, finishing, prices, using and especially requirements. By CMF design system ask, colors mean C, materials mean M, finishing means F. Prices can give advices for cost control. Using and especially requirements can definition for furniture design details.

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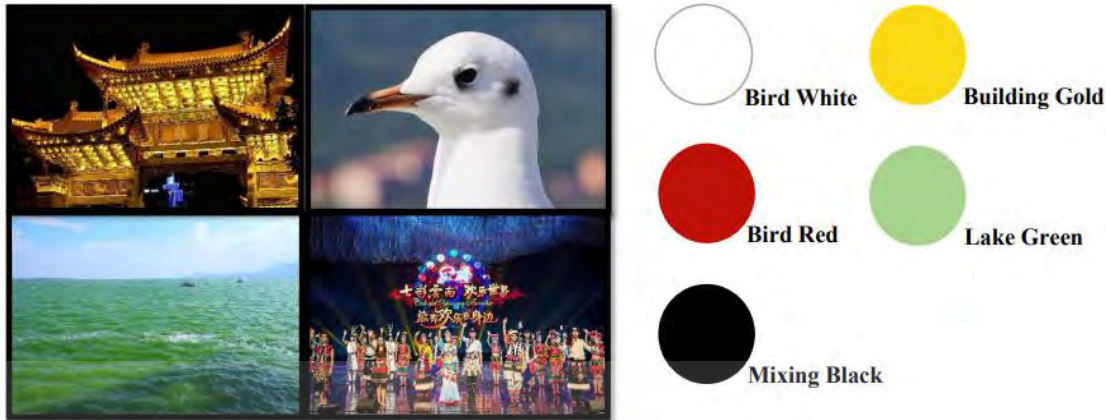


Figure 4-10: CMF design system must think over some local elements, such as landmark buildings, representative animals, natural landscape and colourful ethnic feature.

4.8 Design Plans

The design plan includes two parts: design sketch and implementation drawing. Space design is not included. Date about it will just use in basic parts about new tire-one city sharing house bedroom design, which can give some standard space for using. Space date will include the floor area, wall area, height and materials. Among them, basic materials refer to cement, ceramic tile, emulsion paint, etc., which are used to distinguish whether the space has been basically decorated or not. Design works are all based on basic standard space. Including space soft improvement, furniture and lights design. Space soft changing means not change the hard parts of room, like make a hole or break walls will not happen. What I will do is using some auxiliary means to fix unsuitable room space. It will not a lot but can give lots of help. Furniture design means the furniture used in the

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space, including the types mentioned in Chapter 2. Lighting design refers to the lighting used in the space, which is used to enhance or express the space feeling.

The design part of the implementation drawing will be made according to factory requirement that means it can reach the products conditions of the factory ask. After the contents of all designs are recognized, they will apply for intellectual property protection and obtain patents in China. Lay the foundation for the next brand operation.

4.9 Explanation of Research on Discretionary Costs

Based on chapter three investigation results (3.5, Page 75), the average monthly expenditures of young individuals can be divided into two parts.

The first part consists of non-discretionary expenses, including 37% for fixed expenses and 14.5% for commuting costs. These two components cannot be saved or used for purchasing additional items and are essential for basic living expenses. Therefore, these expenses cannot be considered as part of the research's final cost.

The second part is the discretionary income, which accounts for 21.5% and is related to the personal hobbies and lifestyle habits of young individuals. This portion of income can be used for improving living conditions.

Taking Kunming as an example, the average income in 2021 was 2682 yuan, and the disposable income was 576.63 yuan. This amount will serve as the research's disposable cost for the design results. It should be noted that this fund will be used for the purchase and installation of facilities, and research and development expenses

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are not included.

In conclusion, for the sake of convenient statistical calculation, the research has adjusted the disposable cost to 577 yuan per month. Considering that the typical rental period for housing is usually between 1 to 12 months, young tenants can allocate renovation costs for a duration of 1 to 12 months. Assuming no additional expenses are considered, the total disposable cost would range from 577 yuan to 6924 yuan. For the purpose of calculation and reference, the research has set the cost in US dollars, with a fixed range not exceeding 80 US dollars per month, a payment duration not exceeding 12 months, and a total not exceeding 970 US dollars.

It should be emphasized that the proportion of disposable income and average income figures may vary with changes in cities, regions, or countries. This means that developed areas may offer a better living experience, but further experiments and examples are needed beyond the scope of this research paper.

4.10 Color selection in design

4.10.1 Source of colors

According to chapter three identify design element's data (3.7, Page 80), to retain some regional elements, the color selection in the design will strive to incorporate information relevant to local characteristics. At the same time, limitations will be imposed on the placement and scale of color usage to achieve cost savings. Based on research findings, five colors, namely white, gold, red, green, and black, have been identified as the permissible color palette. Each of these colors corresponds to

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specific cultural elements, as follows:

4.10.1.1 White

White has the highest brightness. By mixing the three primary colors of light in certain proportions, such as red light, green light, and blue light, white light can be obtained. The combination of all visible light in the spectrum also results in white light. Emotionally, white represents purity. In commercial design, white symbolizes sophistication and a technological image. It is usually used in combination with other colors because pure white can give people a cold and austere feeling. Therefore, when using white, it is often paired with other colors. In this design, the cultural background of white corresponds to the color of the Red-billed Gull in Kunming.



Figure 4-11: The source of the white feathers of a red-billed gull, photograph by author, Nov, 2023.

4.10.1.2 Golden

Gold color is highly lustrous, specifically referring to the color of metallic gold. It symbolizes nobility, glory, luxury, and splendor. Gold has an extremely eye-catching and dazzling effect. It possesses a marvelous property that, even in situations where various color combinations may seem discordant, the use of gold instantly harmonizes them, creating a bright, magnificent, and brilliant visual effect. However, if gold is extensively applied, it demands a high level of space and individual requirements. Carelessness can lead to color coordination issues and cause discomfort.

In this design, the source of gold color is from the decorative elements of traditional buildings in Kunming, such as the Golden Horse and Jade Rooster Archway and other representative structures, which extensively feature the use of gold.



Figure 4-12: The source of the golden color used in architectural decoration,
photograph by author, Nov, 2023.

4.10.1.3 Red

Red has the most powerful visual impact. It represents courage, fighting spirit, revolution, passion, and intense emotions, seemingly forming strong contrasts with many other colors. From a cultural perspective, red is also believed to possess the function of warding off evil. For example, in ancient China, many palace and temple walls were painted red, and officials' residences and clothing often featured bright red, referred to as "vermilion gates" and "scarlet robes." In traditional Han culture, the color red corresponds to the element of fire in the Five Elements and is symbolized by the Li hexagram in the Eight Trigrams.

As the Chinese consider red to be a symbol of auspiciousness, celebration, and beauty, it is commonly used in expressions like "red attire" to describe a woman's festive dress, and "red face" to compliment a woman's beauty. In this design, red represents flowers and also depicts the red-billed gull's distinctive beak features.



Figure 4-13: The source of the color red in traditional Chinese hues and the natural colors of flowers (Source:

https://m.mafengwo.cn/photo/12683/scenery_735240/2367208.html)

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4.10.1.4 Green

Green is a common color in nature, and its symbolism is remarkably diverse. It represents freshness, hope, safety, tranquility, comfort, life, peace, serenity, nature, environmental protection, growth, vitality, youth, and relaxation, among others. It should be noted that although there are various shades of green, their effects are almost similar. Research has found that green can induce relaxation and carries auspicious meanings in culture. From a professional perspective, green signals approval or success and is even associated with a rising stock market.

In this design, green represents the color of the lake water and nature, symbolizing the landmark of Kunming, Dianchi Lake.



Figure 4-14: The common plants in Kunming region and the color of the lake water are the sources of the color green, photograph by author, Jau, 2024.

4.10.1.5 Black

Black, in contrast to white, is a particularly common color. It is also a color of concealment and secrecy. In the definition of the word "black," one interpretation includes "secretive" and "illicit." However, black also conveys a cool meaning and is a color that young people often favour, possessing considerable charisma. Those who like black are generally skilled in utilizing it. For example, urban and sophisticated white-collar professionals enjoy using black to project their rationality and intelligence onto others.

In this design, black represents the blending of the 26 unique ethnic minorities in Yunnan, expressed in a chaotic manner to symbolize inclusivity.



Figure 4-15: The color commonly used in science fiction works and the basic colors frequently seen in Yunnan ethnic regions are the sources of the color black

(Source: <https://www.puxiang.com/galleries/cbb43fc260a9065bd5f911868f5f1aba>,

<http://dz.cppfoto.com/news/detail.aspx?id=1511>)

4.10.2 Color scheme

4.10.2.1 Standard color

In summary, the design will utilize a pre-planned color scheme for decoration, with an overall focus on highlighting cultural characteristics and emphasizing a relaxing environment. To create better design standards, the color selection will be in line with the overall style and positioning of the product. It incorporates various elements, including warm tones, distinct contrasts, and soft neutral colors. Each color serves a unique purpose and meaning, adding visual depth and personality to the design.

Below are the specifications and differences for each color:

White comes from the Scandinavian design style, representing a color between pure white and pearl white, closely resembling the natural color of animal fur. Compared to pure white, this shade of white is softer and more readily accepted. The RGB color value is 252, 250, 253. The contrasts with other similar colors are as follows, with the first being the chosen color.



Figure 4-16: Selected white color and a comparison chart of similar whites

The use of gold color leans towards a medium brightness. Unlike the commonly used gold color in architecture, this particular gold shade has a higher luminance while maintaining an overall sense of color without conflicting with the dazzling feeling associated with actual gold, preventing the design from becoming overly extravagant.

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In fact, this color is widely used in the decoration of Chinese-style architecture. The RGB color value for this chosen color is 255, 192, 0. Contrasts with other similar colors are as follows, with the first being the selected color.

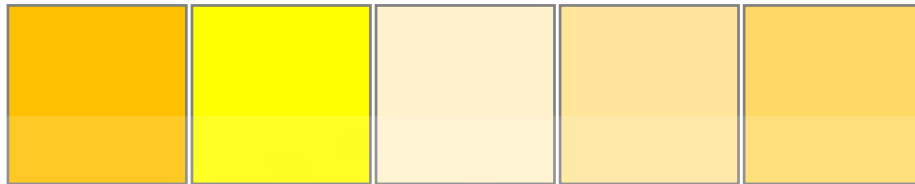


Figure 4-17: Selected golden color and a comparison chart of similar goldens

The red color used is based on the Chinese red, which has been extensively tested and widely used in architecture. To complement the theme, the color's value has been appropriately reduced to visually diminish an excessive sense of "darkness." The final selected red color has an RGB value of 230, 0, 0. Contrasts with other similar colors are as follows, with the first being the chosen color.



Figure 4-18: Selected red color and a comparison chart of similar reds

The final green color used has a reduced color value to match the authentic colors of the lake water and vegetation, while avoiding being too dull. The RGB value for the chosen green color is 0, 180, 0. Contrasts with other similar colors are as follows, with the first being the selected color.

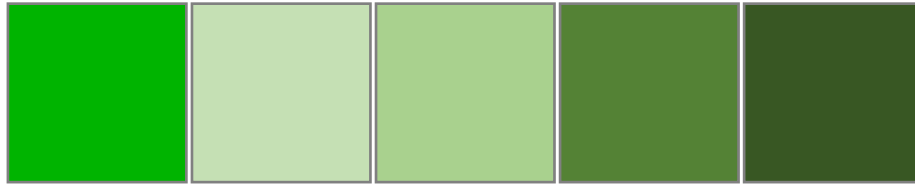


Figure 4-19: Selected green color and a comparison chart of similar greens

The final black color used is the common RGB value of 0, 0, 0, which is often used to represent the universe and science fiction. It is also a common color in the traditional clothing of ethnic regions. Variations will be expressed through materials. Contrasts with other similar colors are as follows, with the first being the chosen color.



Figure 4-20: Selected black color and a comparison chart of similar blacks

4.10.2.2 Color Plan

In the design, three different color schemes are planned to cater to the preferences of different young individuals. For easy understanding and selection, each set of scheme has its own name, as follows:

Plan One, named "Pure Living," features a primarily white color palette. It aims to convey a fresh, tidy, and tranquil atmosphere. By incorporating design elements predominantly in white, it intends to evoke the youth's awareness of a clean environment and inspire them to pursue a clean lifestyle. The overall design will maintain a minimalist style, emphasizing simple and smooth lines. Through the

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interaction of design details, walls, furniture, accessories, and lighting, the color scheme will create a bright and transparent spatial experience. By reducing clutter and excessive decoration, the goal is to offer the youth a sense of simplicity and purity, alleviating anxiety and stress caused by work.

In terms of color usage, white and black are the primary exterior colors, while gold, red, and green are used for interior elements. The color scheme is shown in the following image.



Figure 4-21: Pure Living Color Plan

Plan Two, named "My Cool Life," features a primarily black color palette. The entire design emphasizes modernity and a sense of technology, incorporating sleek and linear design elements. Throughout the process, the black background will make the vibrant elements stand out, creating a unique contrast effect that delivers a strong impact and aligns with some young individuals' understanding of "cool." In terms of detail treatment, there will be a focus on using materials with a reflective surface to enhance the space's modern and tech-savvy ambiance. Additionally, black furniture and accessories will be strategically positioned to create an environment of dynamic light and shadow, providing a sense of vitality and stimulation, and offering ample relaxation space for the youth.

In terms of color usage, black is the primary exterior color, while red, white,

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yellow, and green are used for interior or decorative elements. The color scheme is shown in the following image.



Figure 4-22: My Cool Life Color Plan

Plan Three, named "Colorful Dreams," features a balanced color palette. Adopting a style similar to the Memphis or Dutch Style, it aims to create a vibrant, fantastical, and creative atmosphere. Through vivid colors and unique shapes, it seeks to awaken the youth's imagination and spirit of exploration. The entire design is filled with diverse elements and bold combinations. Bright colors such as red, yellow, blue, and green will exist independently. Additionally, geometric shapes and abstract patterns will be used to create a dramatic effect in spatial composition, providing a relaxed and enjoyable resting environment for the youth.

In terms of color usage, each color is evenly distributed. The color scheme is shown in the following image.



Figure 4-23: Colorful Dreams Color Plan

4.11 Material selection

4.11.1 Material Introductions

In the design, materials that are eco-friendly, easy to process, and relatively cost-effective will be chosen for the production of furniture to ensure affordability for the majority of young individuals. However, this approach also brings about certain pros and cons, as specified in the following table.

Material Advantages & Disadvantages	
Advantages	Disadvantages
<p>A. Affordability: Using relatively low-cost materials to manufacture furniture can reduce the product's price, enabling more young people to afford high-quality furniture and improve their quality of life.</p> <p>B. Environmental Sustainability: Opting for eco-friendly materials can reduce the consumption of natural resources and lessen the environmental burden, promoting sustainable development and environmental consciousness. It also safeguards the well-being of the youth.</p> <p>C. Easy Processing and Customization: Materials that are easy to process facilitate</p>	<p>A. Potential Sacrifice in Quality: Lower-cost materials may not possess the same durability and quality as higher-priced materials, and there might be some limitations in terms of lifespan, strength, or stability.</p> <p>B. Limited Design Choices: Economical materials may be visually restricted, unable to provide the same sense of luxury or unique design styles as high-end materials, resulting in relatively limited options.</p> <p>C. Possible Lack of Personalization: Due to cost and processing constraints, furniture made with inexpensive and easily processed</p>

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<p>a more efficient and flexible manufacturing process. They allow for customization and personalized design based on individual needs, meeting the diverse demands and preferences of different users.</p>	<p>materials might lack uniqueness and personalized features, making it challenging to meet certain young individuals' pursuit of individuality and taste.</p>
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Table 4-5: Material Advantages & Disadvantages

In conclusion, selecting environmentally friendly, easily processable, and cost-effective materials for furniture manufacturing allows for lower prices, reduced environmental impact, and personalized choices. However, this approach may come with certain restrictions concerning quality, design, and customization, all of which need to be carefully considered and addressed. Therefore, when making decisions, it is crucial to weigh various factors and ensure meeting the rental needs of young people while striking a balance between environmental conservation and sustainability.

4.11.1.1 Wood and bagasse board

Using wood to make furniture has multiple advantages. Firstly, wood gives furniture a natural beauty, with its natural texture and color adding unique charm to interior spaces. Secondly, wood's durability and strength make furniture long-lasting, especially hardwood varieties. Wood also has excellent workability, making it easy to shape and customize, enabling the creation of various shapes and designs for furniture.

Furthermore, selecting wood from sustainable sources ensures the furniture's sustainability and environmental friendliness, promoting the responsible use of

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resources. Lastly, wood's comfort and insulation properties make it an ideal choice for creating warm and cozy living environments.

Considering the fluctuating prices of wood, the design also includes bagasse board as an alternative option. Using bagasse board for furniture offers multiple advantages as well. Firstly, bagasse board is an eco-friendly and sustainable material made from bagasse fibers and adhesive, effectively utilizing agricultural by-products, reducing waste generation, and decreasing the demand for natural wood. Secondly, the production cost of bagasse board is relatively low, making furniture more economically affordable and improving the quality of life for more people. Additionally, bagasse board has good workability, making it easy to cut and customize, providing higher flexibility.

However, bagasse board also has some drawbacks. For instance, it has relatively weak moisture resistance, making it susceptible to moisture and water, which may lead to swelling, deformation, or damage, requiring additional protection and maintenance measures. In terms of appearance, bagasse board has a relatively simple appearance, lacking the natural wood texture and color variations, which might limit the choices for furniture aesthetics and personalization in certain situations.



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Figure 4-24: Common Types of Wood

4.11.1.2 Metal Parts

Metal fittings are commonly used and common furniture connecting tools, and they are the best choice for places where mortise and tenon joints cannot be used. However, using metal fittings as substitutes for wooden joints in furniture has a series of advantages and disadvantages. The main advantages of metal fittings lie in their strength and durability, providing more stable and reliable support for furniture, making it sturdier and more durable. Additionally, the design flexibility of metal fittings adds a modern and stylish appearance to the furniture, enhancing its aesthetic appeal. However, the high cost and larger weight of metal fittings may increase the manufacturing cost and overall weight of the furniture, making them less suitable for furniture that needs to be moved frequently. Moreover, metal fittings may not be well-coordinated in some traditional-style furniture.

Commonly used metal fittings include bolts, nuts, screws, bearings, clamps, and hinges, among others. The selection of appropriate fittings should be based on factors such as the furniture's design style, purpose, and budget, and it is crucial to choose high-quality fittings to ensure the stability and durability of the furniture.

4.11.1.3 Polymer

In the design, polymers mainly refer to plastics, such as polyethylene, polypropylene, and so on. In furniture design, using plastics as connecting fittings also has a series of advantages and disadvantages. The main advantages of plastic fittings lie in their lightweight, corrosion resistance, and wide range of colors, which contribute to the furniture's portability, adaptability to humid environments, and ability to achieve personalized designs. Additionally, plastic fittings have insulating properties, making them safer and more reliable in specific applications. However, the strength and durability of plastic fittings are relatively low, which may lead to breakage or deformation during long-term use or under heavy pressure. Moreover, some plastic materials are sensitive to high temperatures and are not suitable for high-temperature environments. In the context of increasing environmental awareness, the consideration of eco-friendly plastic fittings is also necessary. Commonly used plastic fittings include screw caps, clips, plastic support feet, and connecting joints, among others. When choosing plastic fittings, it is essential to consider their strength, environmental adaptability, and furniture design requirements. Reasonable selection of plastic fittings can enhance the furniture's lightweight, corrosion resistance, and aesthetics. However, for furniture with higher load-bearing and structural requirements, cautious selection or consideration of other more durable connection methods is necessary.

4.12 Design Objects

4.12.1 Objects

According to chapter 3 basic tests and method reason (3.4.3, Page 71), electronic device stand, storage cabinet, chair, and lighting fixtures. It should be noted that these items do not exist independently; there may be combinations among them. From a need's perspective, these items are essential and sufficient conditions to achieve convenience and even a comfortable living experience.

Furthermore, from a functional and practical standpoint, these types of items encompass different meanings. For example, the function of a bed is to rest and sleep, which is relatively straightforward. However, from a practical perspective, the bed can be used not only for lying down but also for activities such as exercise, reading, relaxation, and massage. These extended functionalities are inherent and represent the expanded features users expect. The main functions and practical uses of the relevant design objects are shown in the following table

Item	Main Function	Practical Uses
Bed	Rest and sleep	Exercise, reading, relaxation, massage, etc.
Electronic device stand	Supporting devices	Hands-free usage, video calls, watching media, etc.
Storage cabinet	Storage	Organizing belongings, keeping the space tidy

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Chair	Seating	Sitting, studying, socializing, etc.
Lighting fixtures	Illumination	Creating a comfortable and well-lit environment

Table 4-6: Design Objective Functional Classification Table

Absolutely, clarifying the functions and practical significance of design objects is crucial for the design process. It allows young individuals to have a better living experience in their space. Additionally, it provides a foundation for holistic design by integrating items with similar functionalities, leading to space and cost efficiency.

However, considering the practical functionality of design objects is only one aspect of the design process. Designers also need to take into account the specific needs and lifestyle of the young individuals to create more targeted design solutions. This ensures that the design works are not only practical but also relevant and tailored to the users' requirements.

By understanding the specific needs, preferences, and habits of the target audience, designers can create more thoughtful and user-centered designs. Incorporating elements that resonate with the users will result in design solutions that are not only functional but also aesthetically pleasing and emotionally satisfying. A well-designed living space that addresses the needs and desires of young people can significantly enhance their quality of life and overall satisfaction with the environment they inhabit.

4.12.2 Youth's living requirements

According to chapter 3 cost composition of youth rental space table, which is proportion of personal equipment selection in home data (3.5, page 77), young individuals listed 17 essential life items that they believe contribute to a good and joyful life. These items may appear diverse, but they actually serve various functions and indicate different usage scenarios.

Category	Item Name
Furniture	Bookshelf, Wardrobe, Sofa, Coffee Table, Refrigerator, Desk, Creative Lighting
Appliances	Bluetooth Speaker, Television, PS Game Console, Computer, Massager
Kitchenware	Rice Cooker
Hygiene	Trash Bin
Home Decor	Carpet, Art Decorations
Daily Necessities	Pillow

Table 4-7: Youth Equipment Requirement Table

Based on the study of design objects, these items can be integrated in functionality to meet cost control and space layout requirements. By further refining the types of needs and item functions, the design solutions will be reclassified, and

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their elements will be grouped into specific design objects. The proposed concept is as follows table.

New Classification	Items/Functionalities	Corresponding Design Object
Lying & Resting Class	Desk, Bluetooth Speaker, Computer, Pillow	Bed
Mobile Support Class	Phone shelf, Trash Bin	Electronic Device Stand
Comprehensive Storage Class	Refrigerator, PS Game Console, Television, Rice Cooker	Storage Cabinet
Sitting & Relaxing Class	Sofa, Bookshelf, Coffee Table, Massager	Chair
Lighting & Decoration Class	Creative Lighting, Carpet, Art Decorations	Lighting Fixtures

Table 4-8: Functional Integration Design Intention Form

4.12.3 Young adults' sleep-wake patterns

The sleep-wake schedule of young individuals is typically influenced by various factors. The overall tendency of the youth population is to stay up late and wake up late, which may be related to their physiological clocks and circadian rhythms.

Furthermore, due to academic, work, or social activities, the sleep schedules of young

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individuals often lack regularity. They may go to bed at different times and wake up at varying hours. Young people are fond of nightlife and enjoy socializing, attending parties, or engaging in other entertainment activities during the evening, leading to later sleep schedules on workdays.

Considering the time characteristics of young people's lives, the frequency of use for design objects may also vary accordingly. This is an essential factor to consider in the design process. The frequency of use for different types of design objects is as follows table.

New Classification	Corresponding Design Object	Using Time		
		Morning	Afternoon	Night
Lying & Resting Class	Desk			√
	Bluetooth Speaker			√
	Computer	√	√	√
	Pillow		√	√
Mobile Support Class	Phone shelf	√		√
	Trash Bin	√	√	√
Comprehensive Storage Class	Refrigerator	√		√
	Television			√
	Rice Cooker	√		√
	PS Game Console			√
Sitting &	Sofa			√

Relaxing Class	Bookshelf			√
	Massager			√
	Coffee Table	√		√
Lighting & Decoration Class	Creative Lighting	√		√
	Carpet		√	√
	Art Decorations			√

Table 4-9: Young adults' sleep-wake equipment using patterns

4.13 Material placement

Based on the above, wooden materials will be utilized for constructing the main body components, while metal materials will be employed for fabricating connectors in areas that require adjustment, variability, or have switch requirements. Plastic polymers will be used for creating durable surfaces that need to withstand wear and tear, as well as for locations that require regular cleaning and maintenance.

4.14 Space layout analysis

This part according to chapter 2 modern room design principles and cases (2.6 to 2.12, Page 27 to 40), giving analysis for design guiding lines. Such as space layout and equipment's plan.

4.15 Fundamental layout principles

Based on space design summary at chapter 2 (2.13, page 41), the interior space
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should adhere to the following requirements:

Firstly, functionality. The interior space layout should primarily meet functional needs, ensuring that the design and arrangement cater to the actual requirements and lifestyle habits of the users. Based on the diverse functions of rooms and areas, furniture and items should be arranged in a way that enhances space efficiency and convenience.

Secondly, space zoning. Consider the activity paths and flow of people within the interior, ensuring smooth and natural movement without congestion or obstruction. Simultaneously, divide the space reasonably, separating areas with different functions to give each zone a clear purpose while maintaining overall coherence.

Thirdly, proportional dimensions. The dimensions and proportions of furniture and items should harmonize with each other to ensure visual balance and harmony. Avoid using overly large furniture in small spaces or too small furniture in large spaces to prevent the space from feeling cramped or empty.

Fourthly, spatial focal points. Set one or more focal points in the interior, arranging captivating furniture, decor, or art pieces to draw attention and emphasize the theme of the space. Hence, focal points should be positioned at key visual points within the design space. Properly establishing focal points can enhance the design and individuality of the space. Additionally, creating spatial hierarchy through appropriate and thoughtful decoration adds richness and depth to the space.

Overall, the space should adhere to the principle of overall harmony to ensure that the interior layout and style are mutually coordinated and unified.

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4.16 Layout characteristics of collective & individual rental rooms

This part according to space characteristics from test in chapter 3 (3.4.1 to 3.4.2, page 63 to 71), which shows layout of collective and individual rental spaces are differs significantly, corresponding to their respective needs.

4.17 Layout characteristics of collective room

Collective spaces are fundamentally based on sharedness and are typically shared by multiple individuals, such as dormitories, apartments, or hotel rooms. Therefore, they need to consider situations where multiple people use the space simultaneously, and the furniture and facilities are usually set up as shared, such as communal kitchens and bathrooms. The layout needs to be arranged reasonably to ensure that each individual has enough personal space and privacy while facilitating interaction and communication among all occupants.

Secondly, it emphasizes cost-effectiveness. Collective accommodations often have relatively smaller areas since their design objective is to provide affordable housing options. Therefore, the layout needs to prioritize space compactness and efficient utilization to avoid space wastage.

Based on the principles of sharing and cost-effectiveness, collective spaces are typically provided by companies, enterprises, etc., and they emphasize versatility. Collective accommodations usually need to meet various functional requirements, providing comfortable resting and sleeping spaces while also considering functionalities

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like work and storage. Therefore, their layout needs to accommodate these diverse purposes and flexibly arrange furniture and functional areas.

Lastly, collective spaces need to achieve a balance between privacy and social interaction; not everything can be shared. Collective accommodations require balancing the needs for privacy and social interaction. While residents share some spaces, they also need to have some private areas, such as partitioned bed spaces and individual lockers, to meet their privacy needs.

4.18 layout characteristics of individual room

Firstly, privacy. Individual accommodations are used by single occupants or families, thus offering higher privacy. Each room typically has its own bedroom, bathroom, and kitchen, and the furniture and facilities are more oriented towards private use.

Secondly, personalization. Individual accommodations are more likely to meet the personalized needs and preferences of the residents. The selection of furniture and decorations considers individual preferences, allowing for greater freedom to showcase personal style. While such individualized demands might be restricted in collective spaces due to company policies, it does not mean that there cannot be personalized requirements in collective accommodations.

Next is space planning. The layout of individual accommodations focuses more on individual needs and is more flexible. Furniture and functional areas can be arranged based on the resident's lifestyle and preferences to enhance the overall

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comfort of living.

Lastly, storage space. Individual accommodations typically provide more storage space to accommodate the personal belongings of the residents.

Overall, collective accommodations emphasize sharing, cost-effectiveness, and multifunctionality, while individual accommodations emphasize privacy, personalization, and flexibility in space planning. These layout characteristics aim to better cater to different residential needs and usage scenarios.

4.19 Design list

4.19.1 Indoor use equipment

In this part, we need according to youth personal equipment size linking to next design step (3.4.1 to 3.4.2, page 77). In furniture design, some functional spaces are used for storage and organization. Hence, accurate measurements of frequently used items are essential. Considering the varying purchasing needs of different users, equipment dimensions are based on commonly used size statistics. The dimensions of commonly used equipment are summarized in the table below.

New Classification	Corresponding Design Object	Reference Size (cm)		
		Length	Width	Height
Lying & Resting Class	Desk	100	60	74
	Bluetooth Speaker	40	25	20
	Computer	38	26	3.5

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	Pillow	70	50	20
Mobile Support Class	Phone shelf	--	35	140
	Trash Bin	30	--	50
Comprehensive Storage Class	Refrigerator	65	55	55
	Television	70	40	15
	Rice Cooker	25	30	30
	PS Game Console	39	26	11
Sitting & Relaxing Class	Sofa	80	80	100
	Bookshelf	60	20	90
	Massager	40	30	20
	Coffee Table	100	80	50
Lighting & Decoration Class	Creative Lighting	--	--	120
	Carpet	60	60	--
	Art Decorations	80	40	5

Table 4-10: Common Equipment Design Dimension Reference Table

4.19.2 Space design

The primary task of space design is to provide a venue for equipment usage and placement. Based on the above, the main design tasks are as follows.

In common aspects, both design groups will delineate the perspectives of collective or individual accommodations. The positioning of perspectives will take into account the main channels of lighting. Next is the circulation design, which includes

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the movement range and habits of individuals in the two different spaces. This is related to the specific functional arrangements. The design aims to provide a "Youth Living Guide" as the final design specification and offer some life advice to young individuals.

In different aspects, the emphasis of the two design groups will be focused on the characteristics of the spaces. Collective spaces prioritize sharing and multifunctionality, which will be fully reflected in the circulation and furniture carrier design. Conversely, individual spaces emphasize space planning and flexibility, which will also be expressed in the circulation and furniture design.

4.20 Standard design from

Given the diverse layout variations in rental properties, both collective and individual rental spaces can undergo various changes. Thus, based on the survey, we have decided to choose the most common configurations for collective and individual rental spaces as the standard design spaces (3.4.1, Page63). To ensure adaptability and expandability, both types of spaces will be set to their minimum values to simulate design scenarios under different circumstances.

The size of the collective rental space is 20 square meters. The living area measures 3.5 meters in width, 5 meters in length, and 3 meters in height. The balcony has dimensions of 3.5 meters in length and 1.8 meters in width.

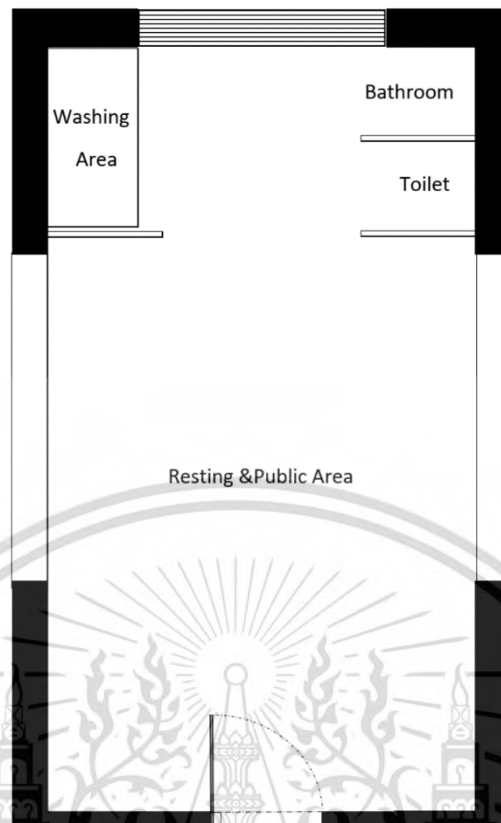


Figure 4-25: Collective Rental Space Floor Plan

The dimensions of each room are listed as follows table.

Room	Room Size		
	Length (Depth)	Width	Height
Bathroom	0.8	0.9	2.2
Toilet	0.8	0.9	2.2
Washing Area	0.6	1.8	3
Resting & Public Area	3	3	3

Table 4-11: Collective Rental Space Design Dimension Reference Table

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Individual rental spaces are divided into two categories: one is for renting single rooms, and the other is for accommodating families.

The size of a single room rental is 15 square meters, with dimensions of 5 meters in length, 3 meters in width, and 3 meters in height. The bathroom is a shared area and is not included in the measurement.

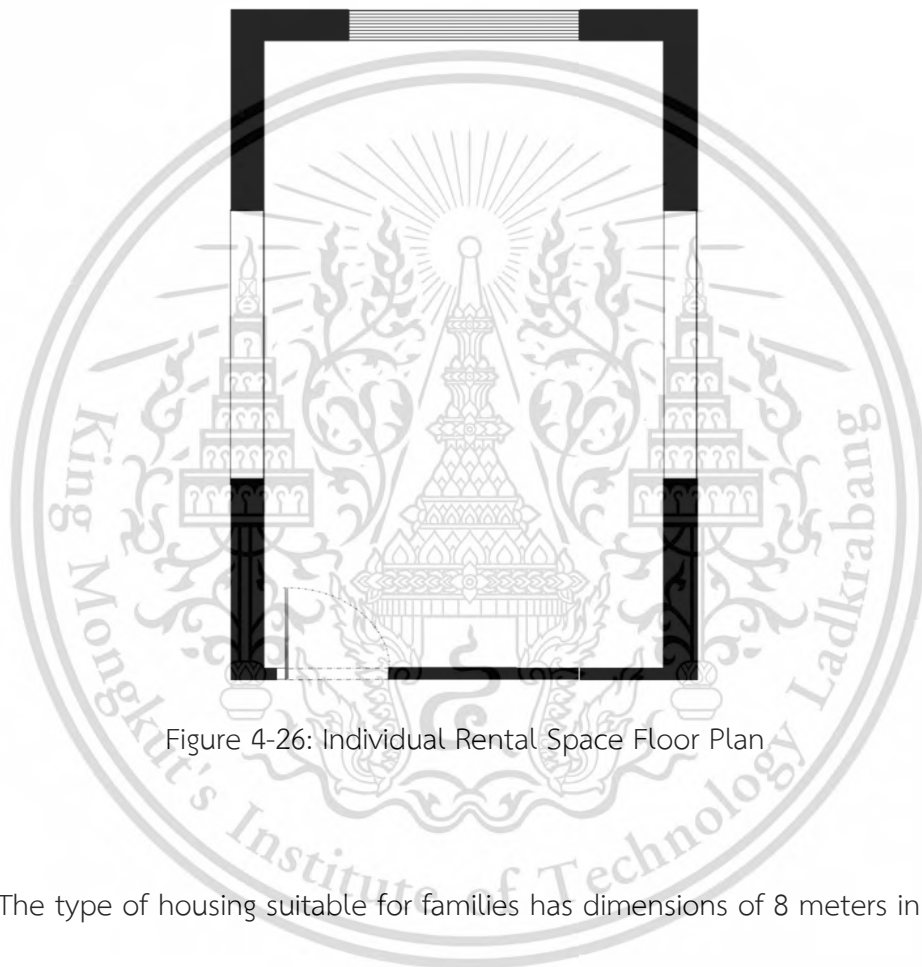


Figure 4-26: Individual Rental Space Floor Plan

The type of housing suitable for families has dimensions of 8 meters in length, 5 meters in width, and 3 meters in height, totaling 40 square meters. It is important to note that while the analysis of single room rentals is based on individual needs, the functional design of this layout is equally applicable to collective rental family rooms.

The room layout diagram is as follows picture.

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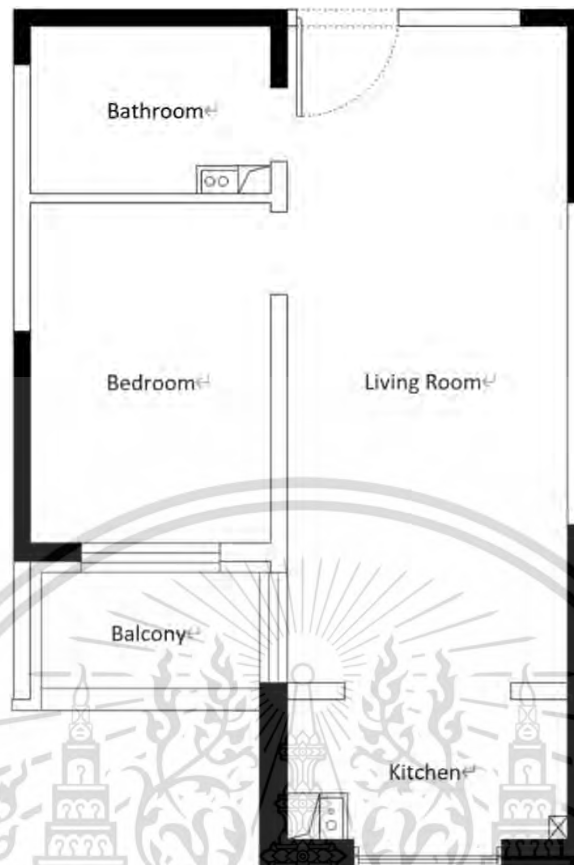


Figure 4-27: Family Residence Floor Plan

The dimensions of each room are listed as follows table.

Room	Room Size		
	Length	Width	Height
Bathroom	2.8	1.92	3
Bedroom	3.5	2.8	3
Living Room	7	2.9	3
Balcony	2.8	1.2	3
Kitchen	2.9	1.5	3

Table 4-11: Family Residence Design Dimension Reference Table

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CHAPTER 5

RESULTS AND CONCLUSIONS

5.1 Design plan

5.1.1 Basic layout program for collective rental space

According to the design parameters provided in Chapter 4 (4.8, page 115), the size of the collective rental space is 20 square meters. The accommodation space is 3.5 meters wide, 5 meters long and 3 meters high; the balcony is 3.5 meters long and 1.8 meters wide.

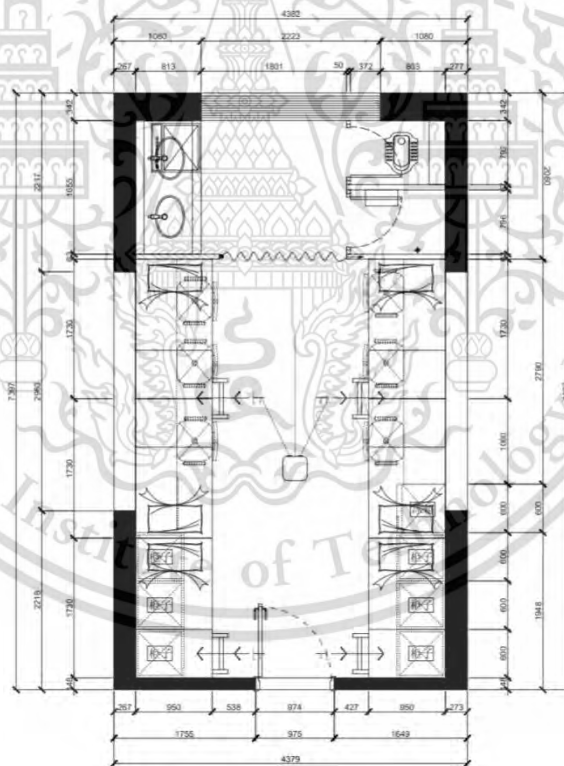


Figure 5-1: Floor plans of collective rental spaces (self-work)

The space is designed to be divided into two zones, upper and lower, in order to balance collectively and privacy.

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The lower half of which is divided into private areas. From left to right are the storage area, the study area, and the living area. The storage area is based on various types of lockers. The study area is dominated by tables, chairs, bookshelves, etc., and the desktops are connected to each other to maximize the use of space. Through the bookshelf, curtain partition, can also be separated on the desktop of a number of independent small space. The living area is divided into two spaces, covering the toilet, washing area and bathroom respectively.

The upper half is divided into a common area. The direction of the beds can be adjusted to follow the position of the pillows, and the ladder used in the center can be used as a multifunctional bookshelf. When all are adjusted to one direction, the curtain between the living area and the common space can be pulled up as a curtain for the projector to show a film. The individual beds are equipped with special multifunctional bookshelves that can be used as a personal audio-visual system. Thus, it is possible to carry out collective and individual entertainment spaces.

The elevations are shown below.

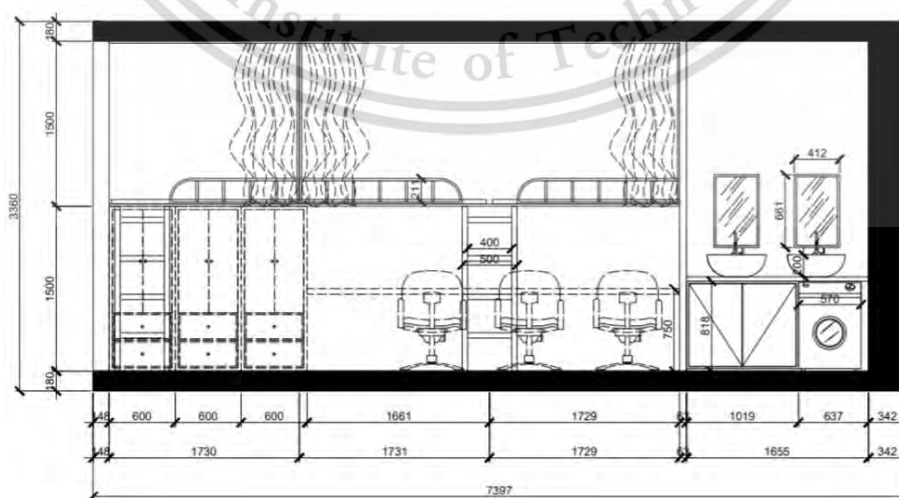


Figure 5-2: Elevation of collective rented space (self-work)

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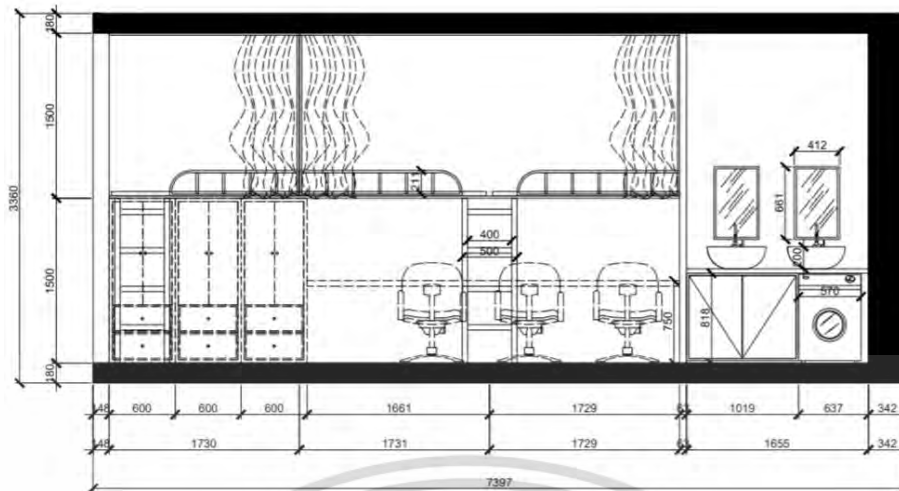


Figure 5-3: Schematic diagram of collective rental space adjustment (self-work)

5.1.2 Basic Layout Program for Individual Rental Space

Based on the design parameters provided in Chapter 4 (4.8, page117), the size of the individual rented single room is 15 square meters, 5 meters long, 3 meters wide and 3 meters high.

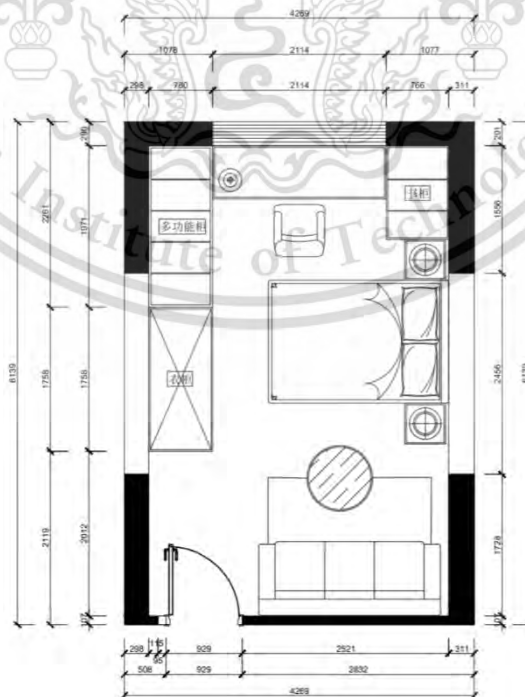


Figure 5-4: Floor plan of individual rental space (self-work)

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Personal spaces, due to their size constraints, incorporate as many functions as possible to meet the richness of youth housing. The design components that may be used in public spaces are described elsewhere in this chapter (5.1.4, page).

Starting from the entrance, the room is divided into four areas at a time: meeting area, living area, storage area and study area. Considering the lighting and working needs, the study area where the computer is placed uses a back-to-light design, with a wide workbench connected to a multi-functional cabinet that can also be used as a dining table if necessary. The wardrobe is placed on the opposite side of the bed to provide the basic function of hanging and folding clothes. And the sofa, coffee table and carpet form a simple meeting area that can also be used as a daily resting space. In the design section, apart from addressing the need for simple storage, these facilities can also provide simple functions such as display and cooking operations to enrich the personal life of the youth. The facilities will be presented in detail in the design section below.

The elevations are shown below.

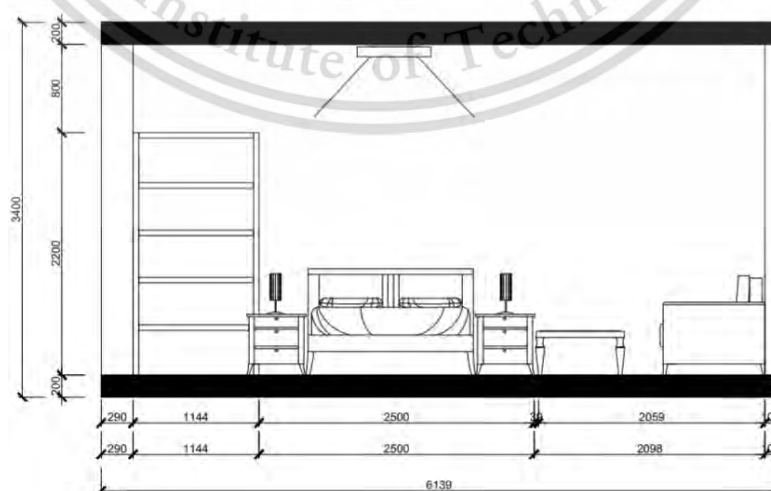


Figure 5-5: Elevations of individual rented spaces (self-work)

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5.1.3 Basic layout Program for collective or individual rental space

Based on the design parameters provided in Chapter 4 (4.8, page 118), the space is 8 meters in total length, 5 meters in width and 3 meters in height, totaling 40 square meters.

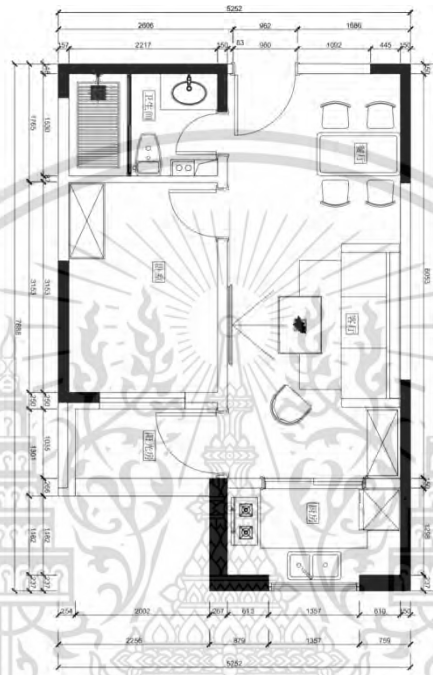


Figure 5-6: Family house living plan (self-work)

The family home is an integrated space. Starting from the entrance, it includes the bathroom, dining room, living room, bedroom, kitchen and balcony. The layout takes into account the various functions of the space and differentiates them as a result.

The elevations are shown below.

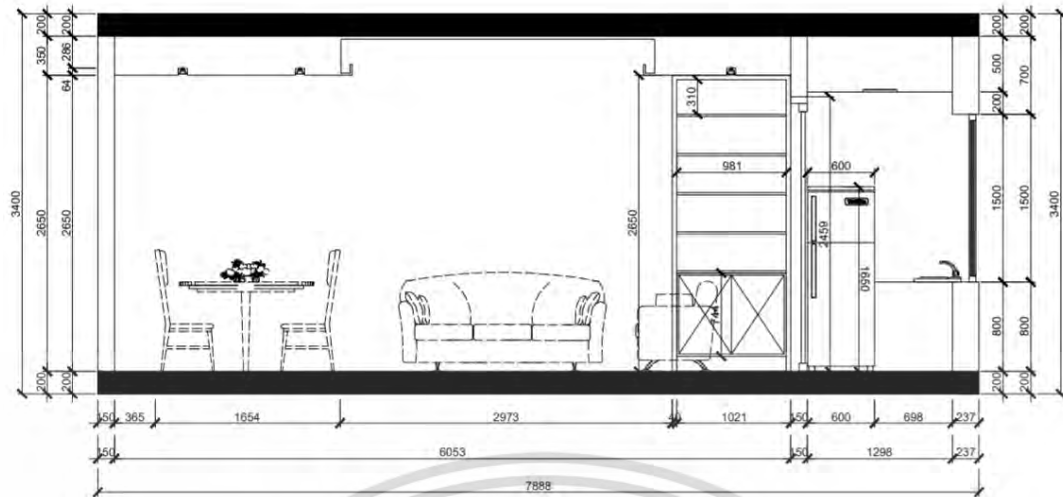


Figure 5-7: Elevations of family house rented spaces (self-work)

5.1.4 Furniture Design

5.1.4.1 Multifunctional folding bed

Design Purpose Aspects. Beds are a necessity in a wide range of living spaces and are a central area where youth consume more time. In smaller spaces, the bed also takes on the function of a sofa; while in larger spaces, the bed can exist as an auxiliary facility, such as a couch for resting, or supplementing more beds when the number of family guests increases. Therefore, multi-functional, integrated beds can better take into account the needs of individual or family living space. It should be noted that group living spaces are more compact in design, and therefore are not considered in this design.

Structure composition. The folding bed is divided into three parts: the main structure, the support structure, and the auxiliary structure. Considering the cost factor and easy to move factors, did not use the space under the bed for storage compartments, and did not increase the excessive multi-functional space on both

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sides of the bed. The main structure is a bed surface that can be folded on both sides, which can be extended and converted into at least three forms according to the needs to meet the needs of lying, lying and sitting.

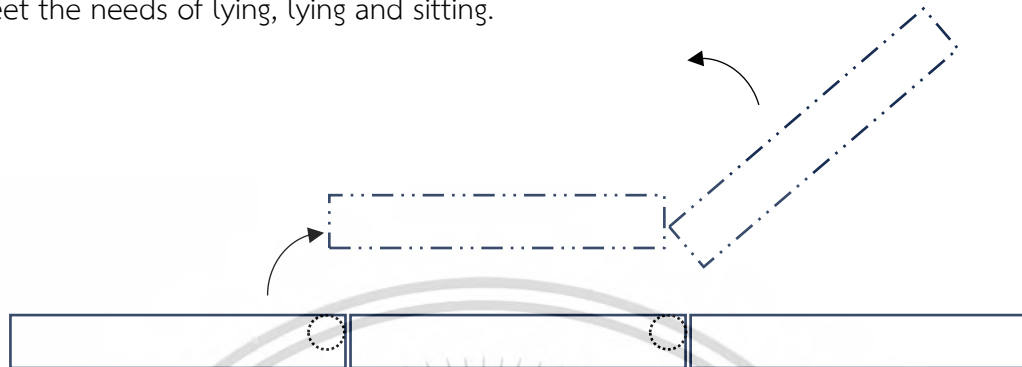


Figure 5-8: Bed folding schematic (self-work)

The support structure consists of four sets of posts and two wooden boards. Two of the four sets of posts can be folded for income, and the side planks can be rotated and converted for use as handrails.

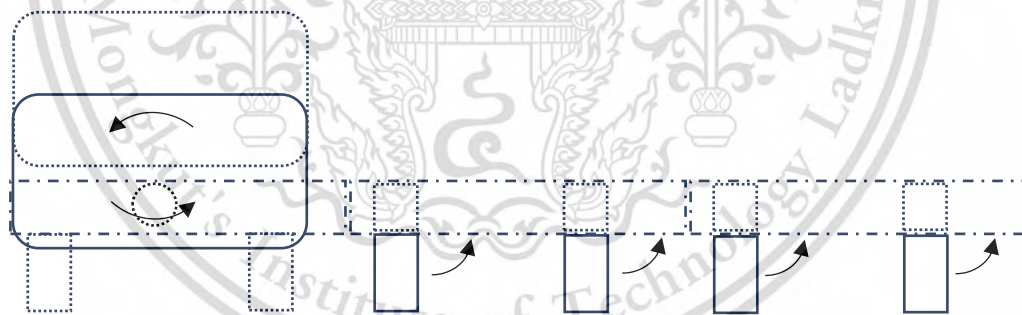


Figure 5-9: Folding bed support structure expansion drawing (self-work)

The auxiliary structure is a swiveling tabletop that also serves as storage. The tabletop is 60cm at its longest and 30cm at its widest, and when closed can be used as a small projection device, vase decoration or bookcase. When open, the tabletop

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has a built-in mirror, which can be used as a make-up mirror, and a storage area for various small items.

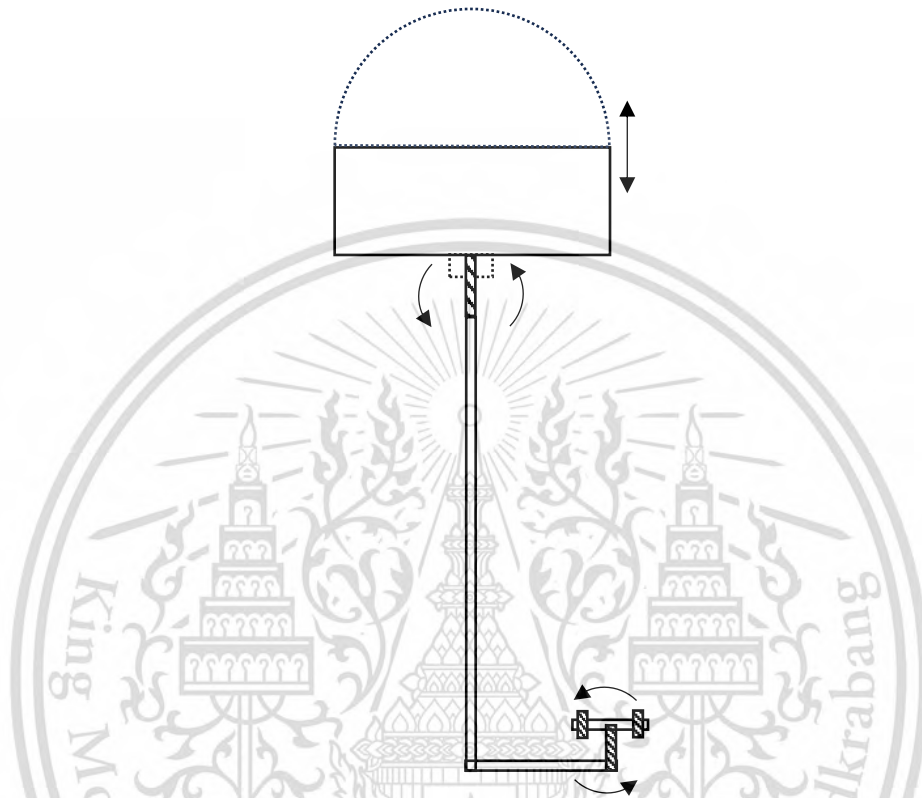


Figure 5-10: Structural drawings of rotating auxiliary components (self-work)

Main features. The main structure and support structure can be folded, and the auxiliary structure can be disassembled into two parts: storage compartment and shelf, which is easy to carry. The weight of individual pieces after disassembly are all within 15kg and can be moved by individuals.

Design effect is shown below.



Figure 5-11: Bed surface lying flat and sitting effect (self- work)

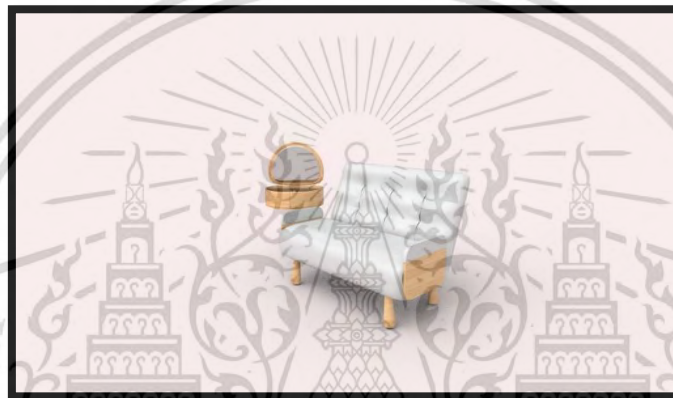


Figure 5-12: Change sofa effect (self-work)



Figure 5-13: Auxiliary structure effects (self- work)

5.1.4.2 Hanger Slide Charging Post

Design Purpose Aspects. The popularity of mobile devices makes the need for charging more and more urgent, especially in the collective, individual or family rental space are used frequently. Therefore, the design is extended based on the need for charging, integrating three functions such as charging, lighting and clothes storage. To meet this demand, the charging post is designed in the shape of a tree, and presents two forms of tree trunk and branches through the main part and auxiliary structure respectively.

Structural Composition. The hanger is divided into three parts, which are the main area, the charging area and the auxiliary area. The main area is a support column with built-in lamps, sockets and hanger mounting slots. The charging area is at the base position and is fitted with two standard 100Wh batteries for DC or mobile charging. The batteries can power the lamp for up to 10 hours or charge two mobile phones simultaneously for up to 2 hours. The secondary area is the hanger mounting slot with six removable hangers that can be used to hang clothes or removed for clothes drying if necessary.

Key feature aspects. The unit comes with hangers for hanging clothes or removing for partial drying of clothes in case of emergency. The base is equipped with rollers that can be easily moved with the user's position within the home. In the charging area, USB and basic charging ports are provided for plugging in various types of electronics for charging, or placing electronic devices on the base for charging. The charging base can be connected to AC power for charging, or it can rely on the two

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built-in 100Wh charging battery mobile charging, which stores four times more power than an ordinary mobile phone. The main structure is set up with LED lighting tubes with adjustable white and yellow lights.

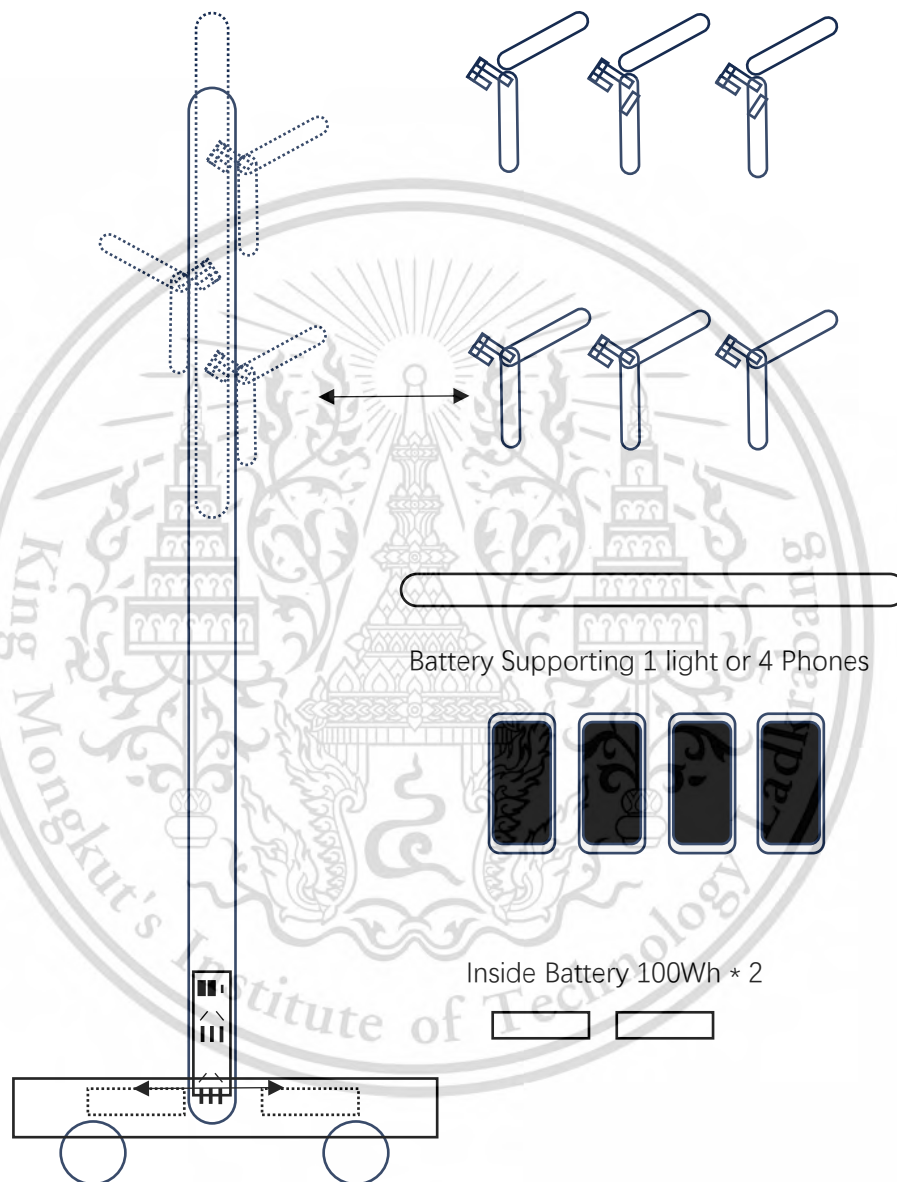


Figure 5-14: Design drawings for slide charging equipment (self-work)

Design effect is shown below.

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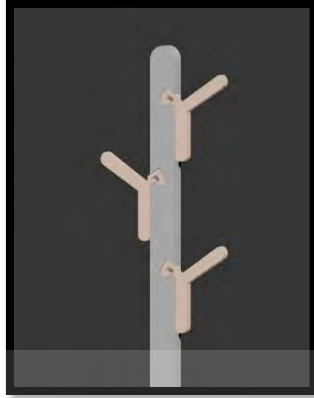


Figure 5-15: Hanger & Trunk Structure Diagram (self-work)

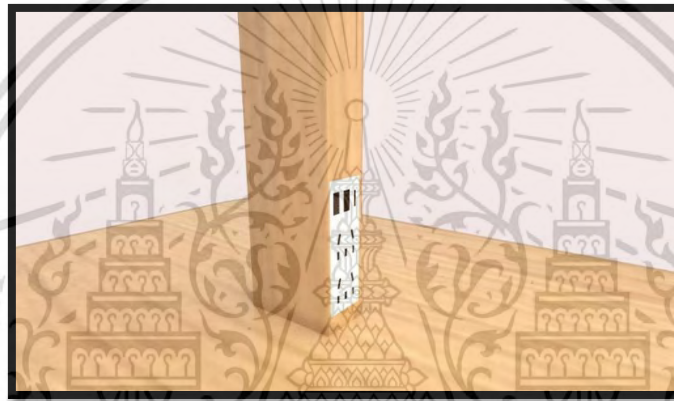


Figure 5-16: Schematic diagram of base socket (self-work)

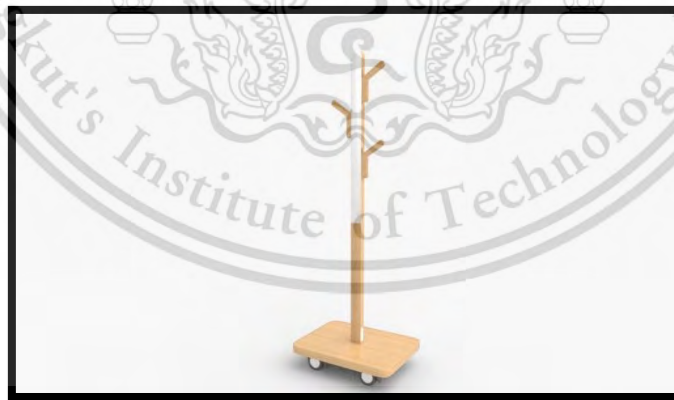


Figure 5-17: 3D drawings of design effects (self-work)

5.1.4.3 Combination Locker

Design purpose. In order to adapt to the use of different rooms and different people's characteristics, the design does not use the standard cabinet design. Instead, it adopts the design of combined storage cabinet, which is convenient for users to build the required cabinet form by themselves according to the actual demand. In order to avoid the friction between the cabinets is too low to cause sliding, at the same time, in order to work with the back of the design of the multifunctional support rod, for the cabinet below the increase of the S-shaped design, the two cabinets inverted with each other, can be locked to avoid slipping.

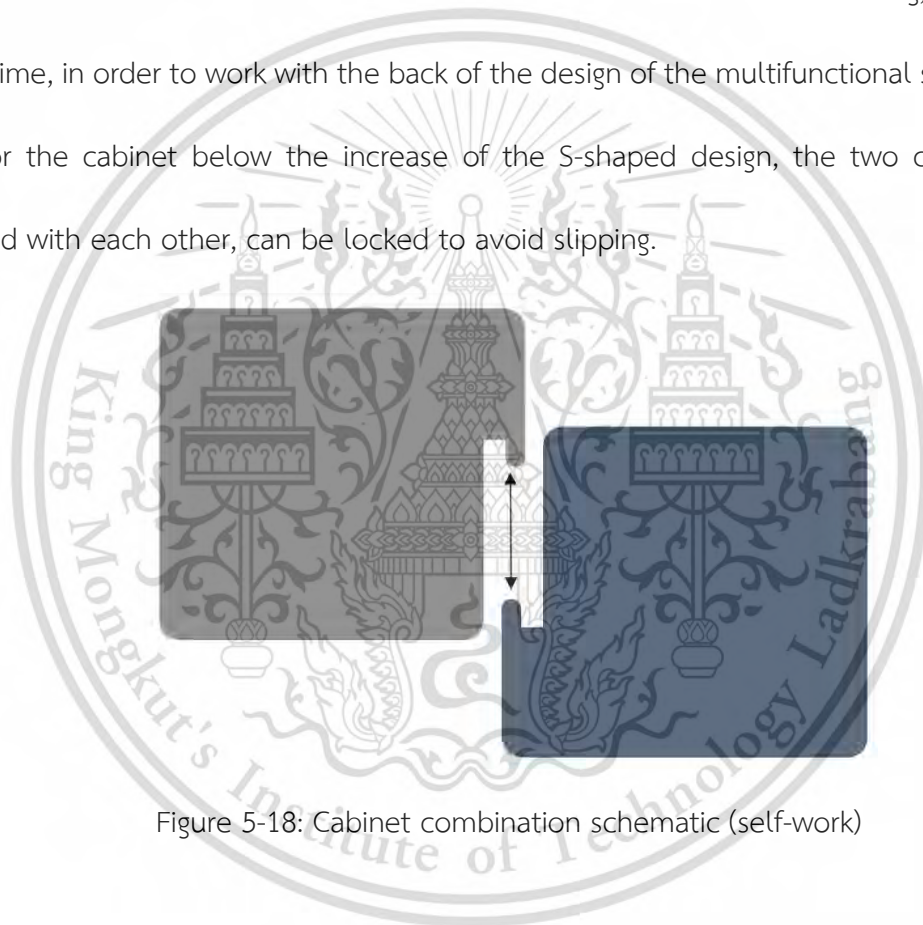


Figure 5-18: Cabinet combination schematic (self-work)

Structural Composition. The structure of the box is simple and there are two sizes to choose from. The small size is 60cm long, 60cm high and 55cm deep, and the large size is 120cm long, 60cm high and 55cm deep. The top and middle area can store items. You can flexibly put in kitchenware, sundries, books, computer mainframes, game consoles, clothes, etc. The top can be used to place decorations, every two

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cabinets as a group. Front and side can be placed.

Main Features Aspects. When you need to move, simply lap the sides of the cabinet with adhesive strips and then stand the cabinet upright to get small boxes of varying sizes for easy transfer of items.

Design effect is shown below.

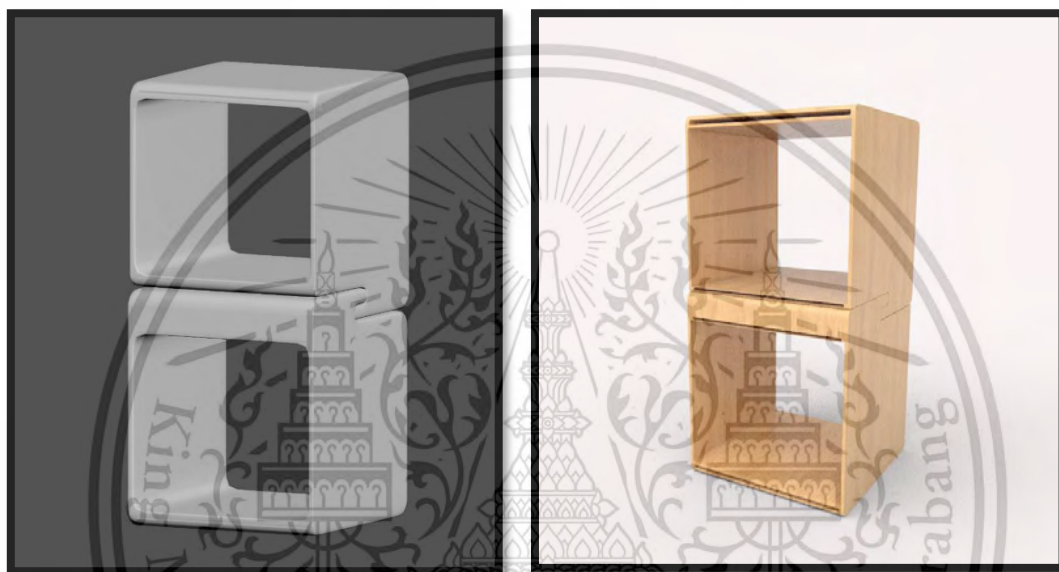


Figure 5-19: 3D drawings of design effects (self-work)

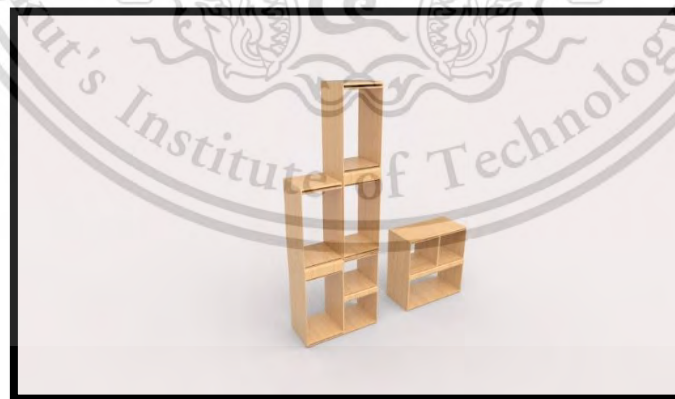


Figure 5-20: Multi-size storage cabinets and placement forms (self-work)

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5.1.4.4 Multi-purpose spreader bar

Design purpose aspect. The spacers can be used in conjunction with the cabinet and can also take into account the function of clothes hanging. To facilitate the hanging process, the spreader can be adjusted to different widths to suit different rooms.

Structural composition. The spreader bar consists of two support bars, a cross bar equipped with a telescopic structure. The material of the spreader bar is made of welded metal tubes and can carry a weight of up to 30kg. It is possible to hang two small sized, or one long sized cabinet.

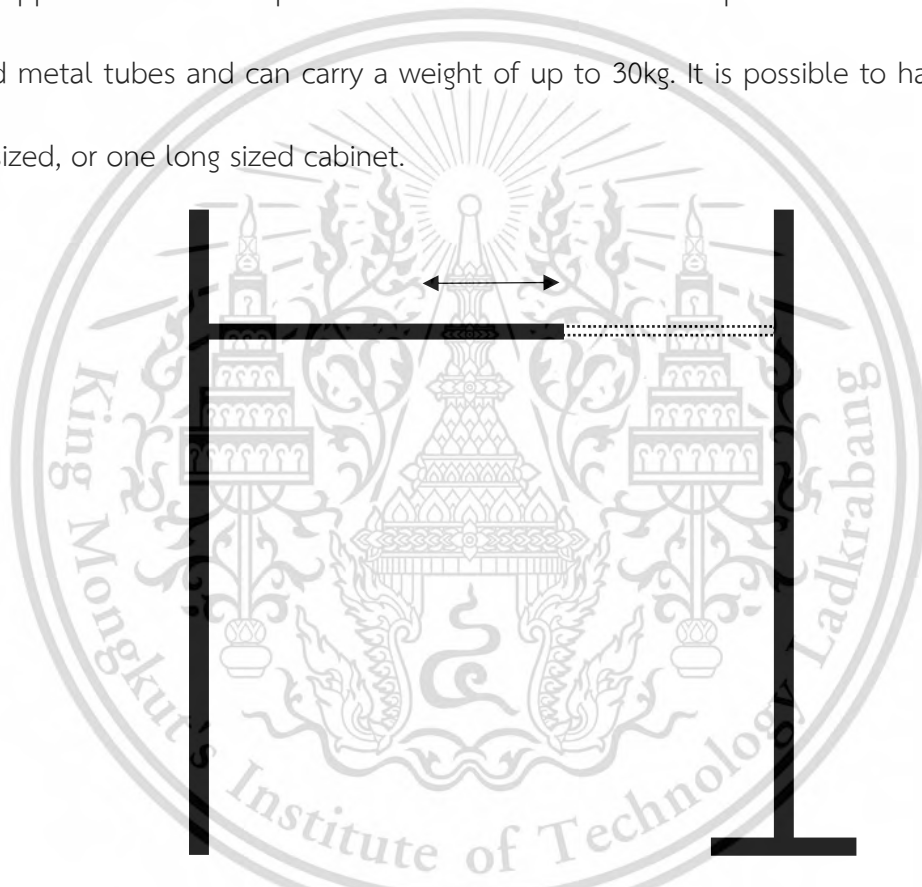


Figure 5-21: Schematic diagram of spreader bar tensioning (self-work)

Design effect is shown below.



Figure 5-22: 3D drawing of the design effect of the tension part of the strut

(self-work)



Figure 5-23: 3D drawing of spar design effect (self-work)



Figure 5-24: Schematic diagram of the combination of multifunctional spacer
and cabinet (self-work)

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5.1.4.5 Folding table

Design Purpose Aspects. The overall simplicity of the desktop design allows it to carry the weight of a typical desktop computer, books and other items, and the table is made of timber pressed plywood for reliable structural strength. The desktop has standard cup holders for cups and pens. The desktop recess is used for arranging network buried wires, or placing Bluetooth devices, etc.



Figure 5-25: Tabletop folding schematic (self-work)

Structural Composition. The desktop consists of two parts, namely the desktop panel and the folding stand. The stand can be retracted from both sides when moving, and the total weight is about 10kg, which can be carried by a single person.

Design effect is shown below.

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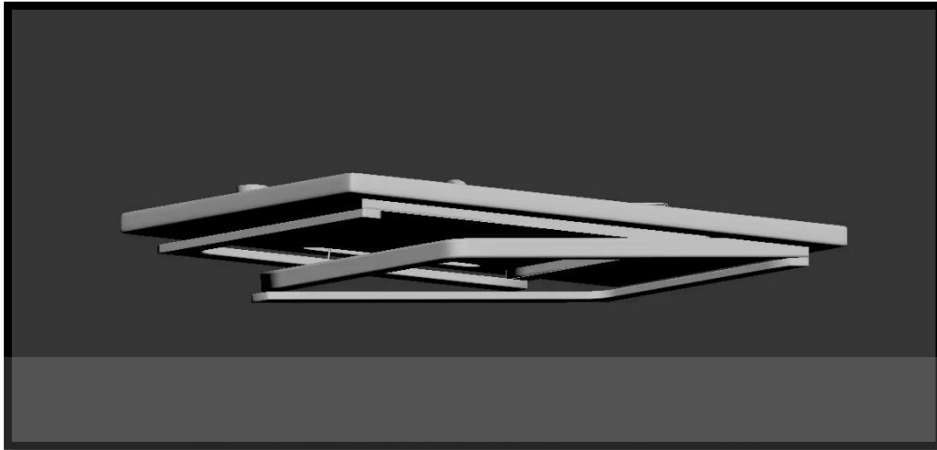


Figure 5-26: 3D drawings of desktop design effects (self-work)



Figure 5-27: 3D drawing of tabletop folding design effect (self-work)

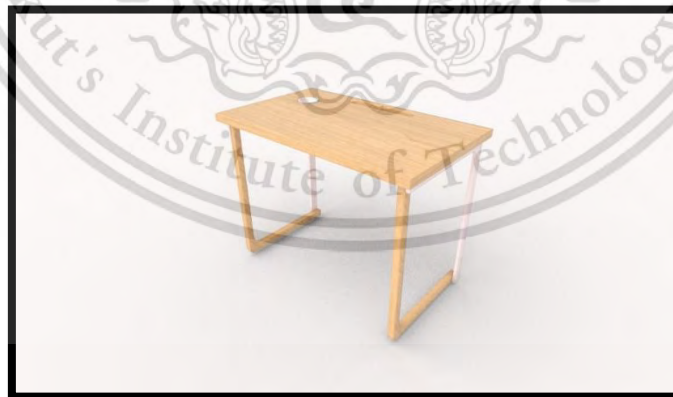


Figure 5-28: 3D drawings of desktop design effects (self-work)

5.1.4.6 Duplex workbench table

Design purpose. For users who do not have the daily use needs of a large desktop computer, the duplex desktop can better provide for different use needs. The desktop provides a workspace with a multifunctional storage area in the center area that can be used for storing sundries or provide space for pets to play.

Structural components. The workbench consists of two three parts, of which the main tabletop can be removed and used separately. The auxiliary desktop needs to be used with the enclosure, which can be used as a resting space for pets. When the upper half of the desktop is assembled, the retest desktop is complete.

Key features. When not in use, the retest tabletop can be split into two parts and used as easy seating when the enclosure is removed.

Design effect is shown below.

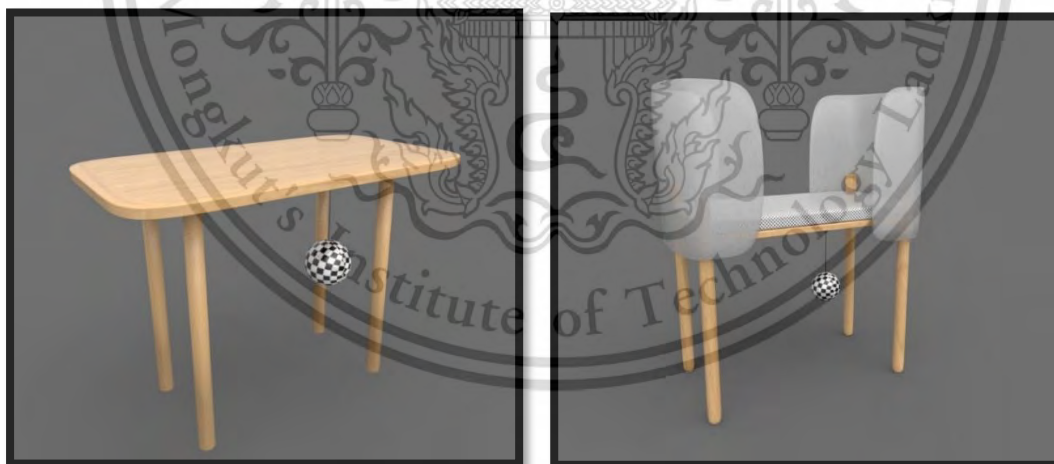


Figure 5-29: 3D drawings of the design effects of the components of the duplex workbench (self-work)



Figure 5-30: 3D drawing of the design effect of the upper part of the duplex

worktable (self-work)



Figure 5-31: 3D drawing of the design effect of the lower part of the duplex

workbench (self-work)



Figure 5-32: 3D drawing of the effect of the combination of duplex

workstations (self-work)

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5.1.4.7 Folding Computer Chair

Design purpose aspect. The folding computer chair is an easy to carry and assemble chair. In the support structure, a traditional triangular structure is used to achieve the necessary stability. The chair panel is wide enough to accommodate people of all sizes. A special storage space is designed underneath the seat, which can be used as a rubbish or snack storage space for easy access.

Structural Composition. The seat is made up of two parts, the body of the chair and the storage space. The storage space is located underneath the seat and is a square structure that can be opened and closed, capable of holding up to 5kg of debris. Plastic bags can be hung inside the square to be used as rubbish bags.

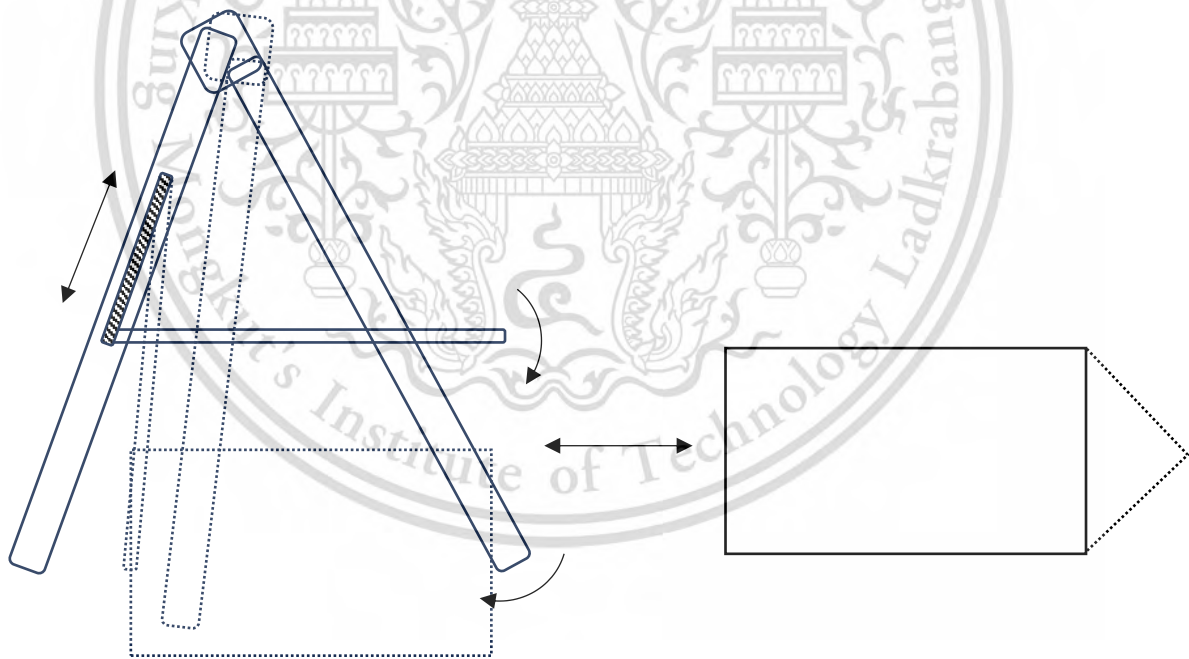


Figure 5-33: Folding seat design drawing (self-work)

Design effect is shown below.

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Figure 5-34: 3D drawing of seat design effect (self-work)

5.2 Color scheme

The color scheme was designed according to the color scheme (4.3.2.2, Page 100) and the model was colored as shown.



Figure 5-35: Color scheme for Pure Living (self-work)

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Figure 5-36: Color scheme for My Cool Life (self-work)



Figure 5-37: Color scheme for Colorful Dreams (self-work)

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5.3 Design Assessment

In the design analysis section, the previous layout plan will be used as a basis to put in the designed furniture for comparison to better illustrate the advantages that exist in the new furniture design. In addition to this, the analysis in this section will also include handling analysis, cost analysis, and expert and young user reviews to further illustrate the features of the new furniture design.

5.3.1 After Design Spaces Analyze

5.3.1.1 Collective Rental Space

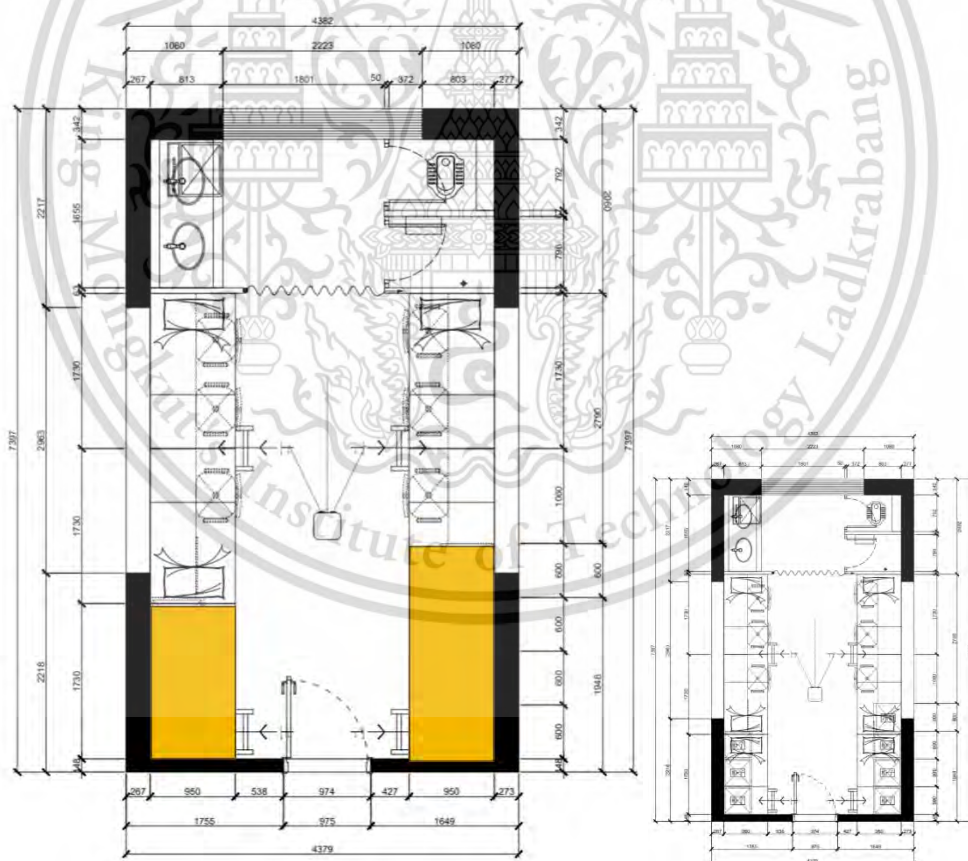


Figure 5-38: Collective Rental Space Floor Plan (self-work)

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The space is primarily arranged using combination storage cabinets. The layout area is in the cabinet area to the left and right of the entrance door. The new combination lockers offer more storage options than the old iron cabinets and can be adapted to the needs of different occupants.

Further, although it is a collective living space, the needs of the people living there are not consistent. Apart from the basic space for resting and washing, the space designed in the past was not very compatible. For example, in school life, fire prevention in dormitories is the primary requirement, so no space can be set up for the configuration of kitchenware. Most of the remaining space, therefore, would be used for storing items such as clothing, shoes, suitcases, and so on. However, due to the lack of planning, these items cannot be categorized and are difficult to move between dormitories. When it comes to schools that require frequent dormitory transfers, the burden on students is very heavy. Another example is in the group accommodation spaces provided by companies. Due to changes in the nature of work and age, workers will need more space for recreation and rest, and will want to make their dormitories accommodate a sufficient number of items that can enhance their quality of life, including kitchenware, decorations and small electrical appliances. In reality, however, it is often difficult for their living spaces to meet these requirements, with small private spaces and standardized communal space design making it difficult to add any new items.

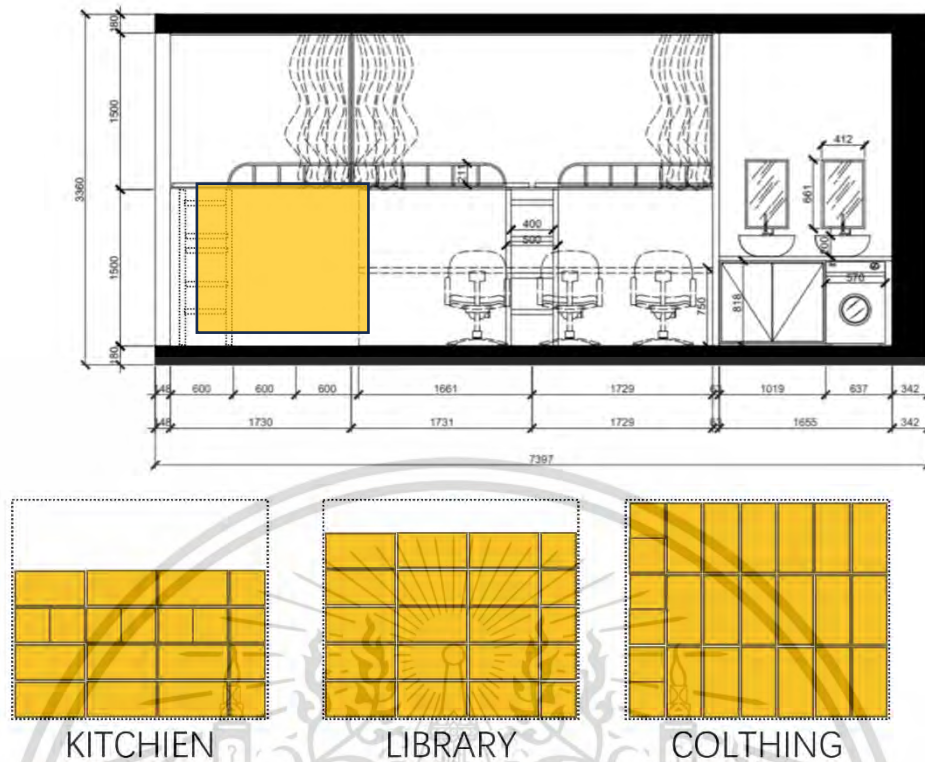


Figure 5-39: Collective Rental Space Side-stored plan (self-work)

With the use of the new multi-functional lockers, the above problems can be alleviated to a certain extent. Firstly, the space on both sides of the dormitory area can be deployed with different configuration options. By stacking two different sizes of cabinets, various sundries, clothing, kitchenware and electrical appliances can be accommodated. The front and back pass-through design of the cabinets facilitates the energization of electrical appliances for use, and the whole is easy to clean. When moving the dormitory, you can pack in place and take all your personal belongings with you just by moving the cabinet. As shown in the picture, the cabinets can be combined to form a kitchen, bookshelf and wardrobe. In the case of the kitchen, for example, the free upper space can hold some of the appliances, such as a coffee maker, rice cooker, microwave, etc. Some areas that will not be used can be added with decorations to increase the beautification space of the dormitory. And areas

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where cabinets are not placed, such as obviously vacant space locations, can be stacked with suitcases and other miscellaneous items for relieving the problem of crowded group living.



Figure 5-40: Collective Rental Space Side-stored plan for cooking (self-work)

5.3.1.2 Individual Rental Space

In self-contained rental spaces, newly designed furniture saves more space and offers at least two different functions. In contrast, the old form of space design did not save enough space to provide more options for youth living, even taking into account factors such as lighting and ease of use. However, even with a similar arrangement, there is still plenty of space left over in the new space arrangement for increased living flexibility. Cabinets integrate storage for clutter, clothing and decoration, and some of

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the space can accommodate small electrical appliances such as rice cookers; flexible bedside tables can be used to arrange clutter, as well as to hold decorative, projector and other ancillary equipment; folding beds can be used for lounging, or transformed into sofas when friends visit; mobile and fixed hangers can be used to store more clothes; and spare space can be used for rugs to provide valuable space to move around. . Examples include reading, yoga and proper indoor fitness exercises.

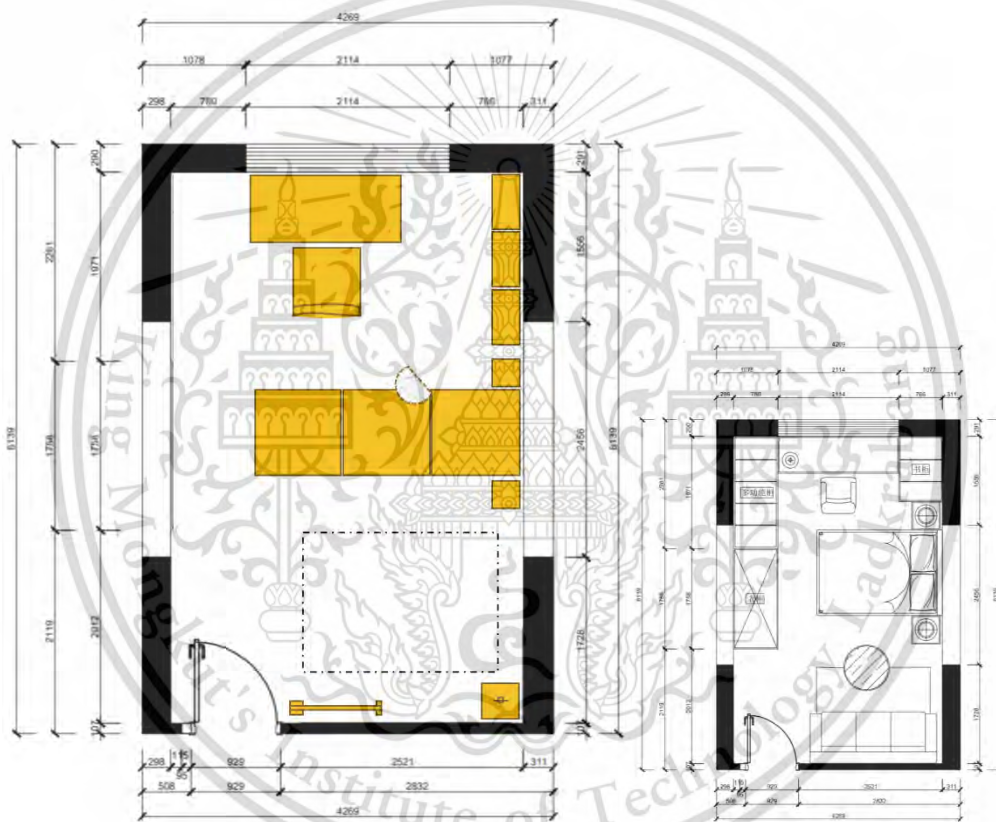


Figure 5-41: Individual Rental Space Set Plan (self-work)

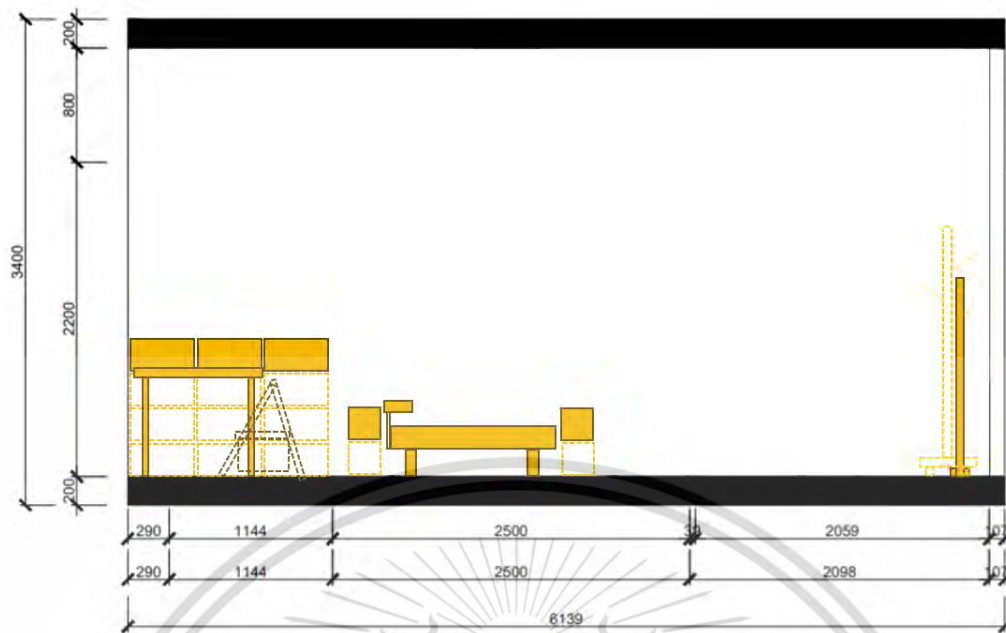


Figure 5-42: Individual Rental Space Set Plan (self-work)



Figure 5-43: Individual Rental Space Set Plan (self-work)

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Figure 5-44: Individual Rental Space Set Plan (self-work)

5.3.1.3 Family Residence Rental Space

In the living space of a home, newly designed furniture can be reused in order to be arranged in different spatial areas. In the living room, a multifunctional bed can be transformed into a sofa; a desk can double as a dining table; and mobile charging hangers can provide charging and lighting in the living room and kitchen. In the bedroom, the bed can be used for its own design function; the storage cabinets can be used to arrange sundries, clothing and other household items, and display a certain amount of decorations; and the coat racks can be used to arrange clothes. When it's time to move, or when a child is born, the interior space can be adjusted to allow more room for activities, for use such as placing a baby enclosure, a toy area, and so on. The incorporation of new furniture allows for increased flexibility of the space

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Figure 5-47: Family Residence Set Plan (self-work)



Figure 5-48: Family Residence Set Plan (self-work)

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Figure 5-49: Family Residence Set Plan (self-work)



Figure 5-50: Family Residence Set Plan (self-work)

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5.3.2 Moving and Cost Assessment

5.3.2.1 Handling and Volume Instructions

The new furniture is all designed to be folded and lightweight to meet the needs of single person moving and handling. The dimensions are designed to meet general building handling conditions and can be moved via stair corners, lifts, etc. When transported over long distances, the new furniture is designed to fit into the cargo compartment of a lorry and is not easily folded, deformed or damaged. The illustrations and dimensions of the components are listed below.


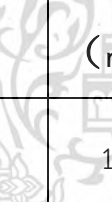
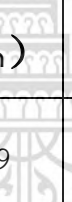


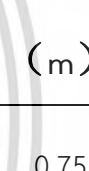
Items	Legend	Length (m)	Width (m)	Height (m)
Multifunctional folded bed		1.9	1.2	0.75
Hanger Slide Charging Post		--	0.45	1.8
Combination Locker		0.3/0.6	0.3/0.6	0.3/0.6
Multi-purpose spreader bar		--	0.5	2
Folded table		1.2	0.6	0.75
Folded Computer Chair		0.6	0.6	0.8

Table 5-1: Furniture design size table(self-work)

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For packing of items, the lockers can provide sufficient storage space for miscellaneous items. Empty lockers are designed for weights of 0.5kg to 1kg and can hold miscellaneous items from 2kg to 5kg respectively. The curved section can be used as a carrying handle, making it easy to carry out multiple pick-ups and transfers. When packing, the loading can be completed by sealing one side of the cabinet with a plastic sheet, and then finally securing it again with Velcro.

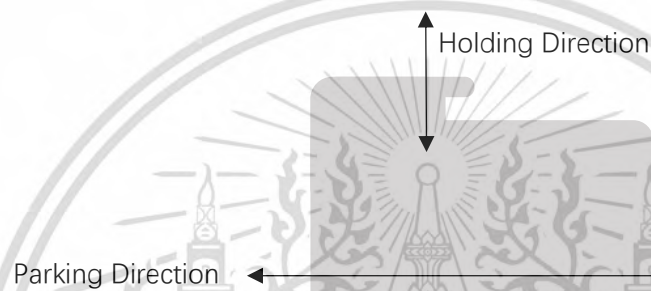


Figure 5-51: Cabinet packing and holding position(self-work)

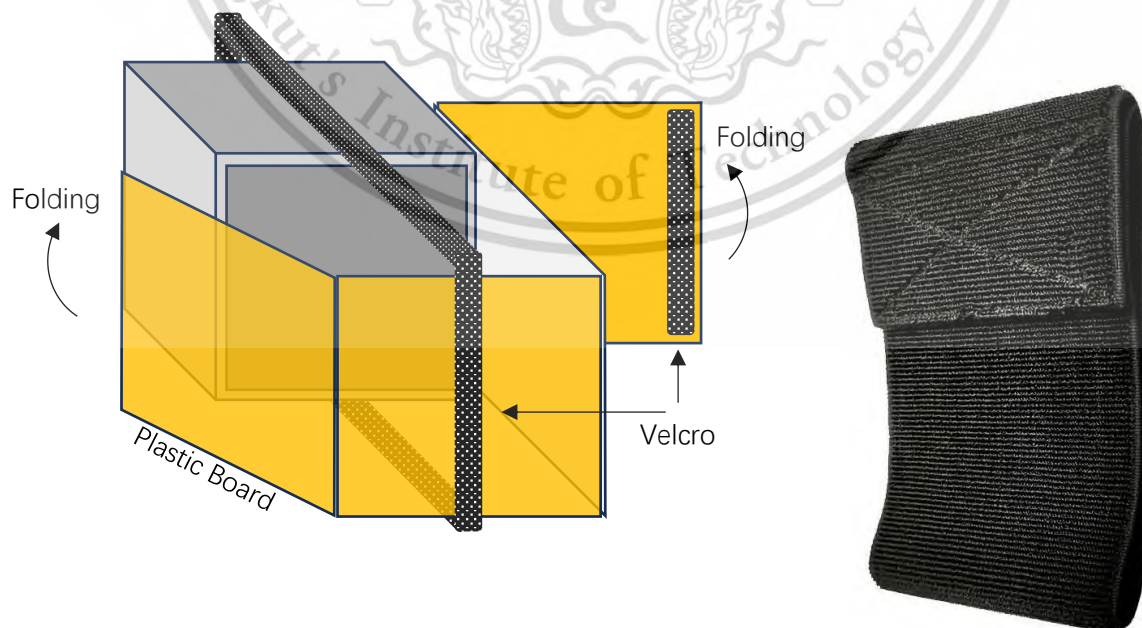


Figure 5-52: Packing Velcro using means(self-work)

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For transport, the dimensions of the cargo box of an ordinary lorry, for example, are 2.1 meters long, 1.2 meters wide and 1.4 meters high. The internal space can accommodate a full set of furniture and carry 30 to 40 lockers. And because of the open design of the cabinets, miscellaneous items can be accommodated in the box without the need to add other storage tools. Excluding the storage cabinets, the total weight of other furniture is designed to be 70kg, and the weight of each piece is designed to be 0.5kg to 15kg. Larger pieces can be dismantled and transported to reduce the weight even further.

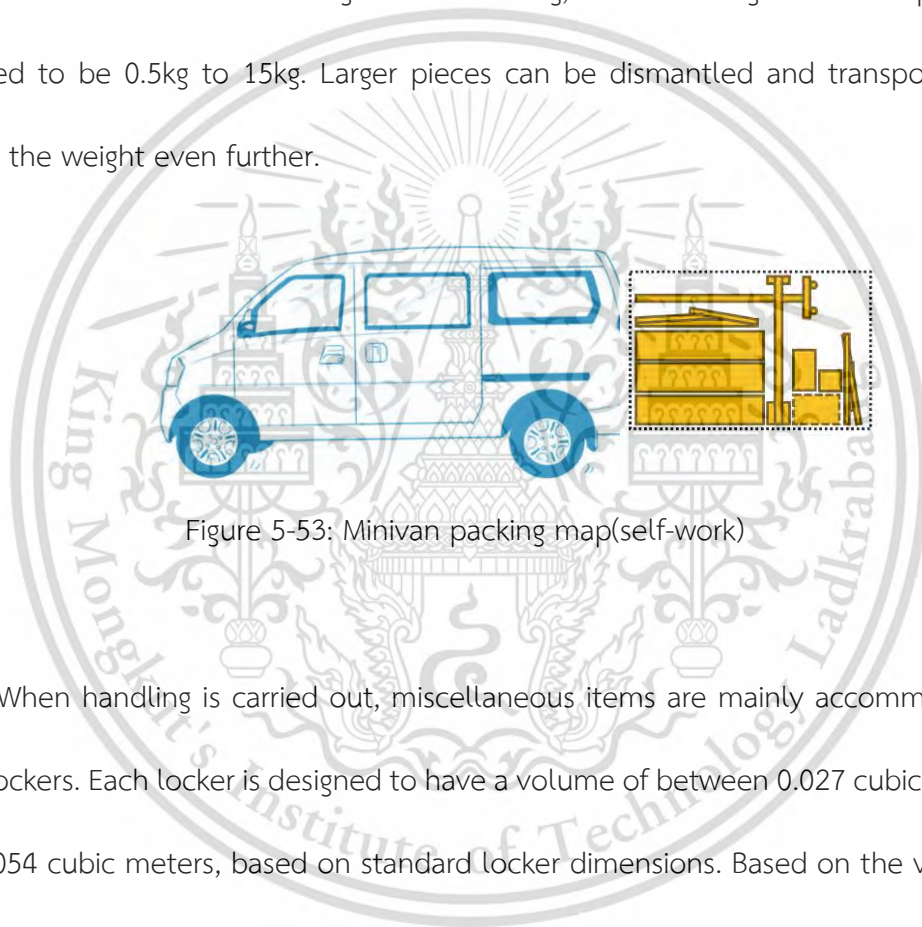


Figure 5-53: Minivan packing map (self-work)

When handling is carried out, miscellaneous items are mainly accommodated using lockers. Each locker is designed to have a volume of between 0.027 cubic meters and 0.054 cubic meters, based on standard locker dimensions. Based on the volume, every 18 to 37 lockers of different sizes can hold 1 cubic meter of materials. This is equivalent to the holding volume of 50 to 70 pieces of clothing, or 150 books, according to the data table commonly used by Japanese moving companies. In other words, the new locker design not only saves time and money on packing, but also holds more items, making it easier for young people to move between different workplaces in the city. Other materials are accommodated as follows.

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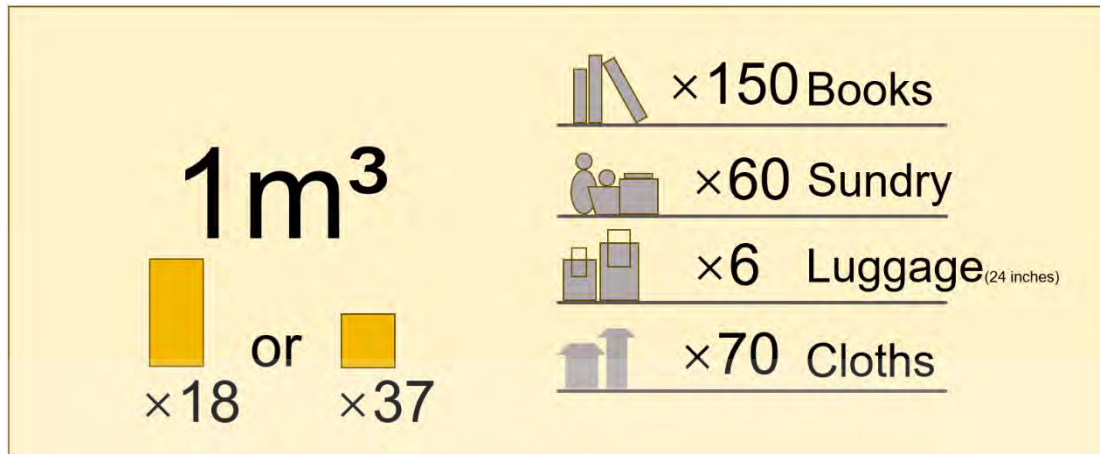




Figure 5-54: Table of cabinet capacity(self-work)

5.3.2.2 Description of production costs

Based on the situation of the design drawings, the experts of the manufacturers of the furniture production were consulted to give a quotation for the production of all the furniture designs. The production quotation of the furniture is taken as the cost of design (Cost), and the actual selling price (SPR) is calculated at about 60% above the cost price according to the market custom (the exchange rate between RMB and Thai baht is calculated at 4.8). The projected market quotation is shown in the table below.

Items	Legend	Working Procedure	Cost (¥/฿)	SPR (¥/฿)
Multifunctional folded bed		Soldering, Sewing, Screw Connections	¥ 240 ฿ 1152	¥ 599 ฿ 2875.2
Hanger Slide Charging Post		Plastic Lamp, Cords, Charging Unit, Roller	¥ 160 ฿ 768	¥ 399 ฿ 1915.2

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Combination Locker		Wood, Polished	¥ 40/ ฿ 192 ¥ 28/ ฿ 134.4	¥ 99/ ฿ 475.2 ¥ 69/ ฿ 331.2
Multi-purpose spreader bar		Stainless Steel Tube, Expansion Thread	¥ 60 ฿ 288	¥ 149 ฿ 715.2
Folded table		Wood, Polished, Screwed Interface, Stainless Steel	¥ 120 ฿ 576	¥ 299 ฿ 1435.2
Folded Computer Chair		Wood, Polished, Engineered Plastics, Leather, Screwed Interfaces	¥ 80 ฿ 384	¥ 199 ฿ 955.2
Total			¥ 947 ฿ 4545.6	¥ 2367 ฿ 11361.6

Table 5-2: Table of design costs and SPR(self-work)

Based on the research survey (3.5, Page 75) and the summary (4.1, Page 93) situation, the new furniture design can satisfy the purchase requirements of the average youth living in line with their financial ability. According to the calculation, by investing 2,367 RMB (about 11,361.6 baht), they can have the basic living facility security. Based on the calculation of economic earning capacity, the average youth can use disposable income to obtain relatively good material conditions within 2 to 4 months, including 1 piece of bed, mobile clothes rack, spreader bar, table, chair, and 4 small and 4 large lockers. The remaining disposable income can be used to purchase appliances,

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decorations, etc., to gradually improve the quality of life.

From the point of view of landlords who provide accommodation for youth, the cost of putting in a full set of furniture remains at RMB 2,367 (about 11,361.6 baht) per room, which includes a bed, mobile coat rack, spreader bar, table, chair, and four small and four large storage lockers. According to the rental survey (3.3.1, Page 54), landlords in the Chuanfang neighborhood need 3 to 6 months to recover their costs, whereas the average rent in the rest of Kunming is about 1,100 RMB (about 5,280 baht), with cost recovery taking only 2 months. Once costs are fully recovered, higher occupancy rates can be achieved due to the relatively good conditions and space.

5.4 Design Assessment

From professional design assessment, experts believe that the living environment for young people should cater to commonalities. Designers should create versatile and neutral spaces, emphasizing functionality to ensure basic needs are met. Choosing neutral colors and materials helps avoid religious or cultural biases, while respecting personal privacy to prevent exposure of sensitive information. Additionally, understanding diverse cultural and religious needs and offering flexible solutions helps mitigate potential conflicts. Young people typically require a comfortable space for leisure and relaxation, alongside areas suitable for work and study. To address this, designers can employ clever design techniques like movable partitions or screens to delineate different functional zones. Moreover, considering the rise of the digital age, providing adequate power and network interfaces ensures connectivity, enhancing

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functionality and user experience. It's important to note that enhancing functionality often incurs increased costs, but it's a valuable investment for young people's living environments. For instance, designing shared leisure areas with recreational facilities and gyms to meet social needs may require additional funding. However, such amenities increase the attractiveness of residential experiences, attracting more young tenants and ultimately boosting returns. Additionally, designers can utilize sustainable building and decorating materials to reduce long-term operating costs and align with young people's sustainability concerns. These issues are addressed to some extent in design solutions. Regarding color preferences, young people don't have exclusive colors, but they tend to favor bright, lively, and vibrant colors like cheerful white, blue, green, orange, and pink, or colors with certain psychological implications like black, red, yellow, etc. These colors are often associated with youthfulness, energy, and creativity. While there aren't distinct taboo colors among young people's color choices, individual preferences and cultural factors may influence their acceptance of certain colors. Generally, young people prefer to avoid dull, depressing colors and opt for bright and lively colors that enhance positive emotions. However, this varies based on personal taste. In design schemes, the selection of three-color choices caters to different audiences, with more colors needing further development and refinement in the future.

From potential user assessment, for collective spaces, there has been a significant increase in freedom. I believe providing a place for cooking or reading is beneficial. For office workers, communal living can easily become monotonous,

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leading to loss of purpose and susceptibility to external influences. But if there's a reading space, everyone would be influenced positively, enriching their leisure time and avoiding meaningless activities, promoting a more proactive approach to life.

Regarding personal space, many respondents favor it. "I currently live alone. Due to the need for exercise, I always find it challenging to have enough space in the room, and there are too many things to store, making movement a big problem. But looking at the current space design, there is plenty of overall spare space, and basic living space needs are met." I believe this can enhance the living experience significantly.

For family spaces, surveyed families find this layout suitable for short-term needs or people with frequent moving requirements. For long-term residence, it might feel a bit monotonous, especially for households with more than two members, as there would be more diverse needs.

Most respondents' income comes from wages. When moving, they prioritize landlords who provide furnished accommodation, saving a lot of time. "But based on my more than ten years of renting experience, in most cases, I still need to buy some furniture myself, such as cabinets, lamps, bookshelves, and so on, to enhance my quality of life. In reality, every time I move, I spend a lot of money. The one-time investment in rent and necessary items would cost around 10,000 RMB, with monthly expenses around 1,500 yuan." At the time of moving, these items either get discarded or new needs arise. The overall expenditure is significant.

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5.5 Brand Design and Associations

Based on the thesis design Program, the brand "DESIGN FOR YOUNG" was designed. It is a design company dedicated to creating ideal living spaces for young people, with the aim of making it easy and enjoyable for young people to live, work and live in the city. Vibrancy, comfort and affordability are the main demands of the brand and the main idea of the design.

The slogan of the brand design is "EASY TO LIVE EASY TO BUY EASY TO MOVE", which expresses the three concepts of the design. The details are as follows.

EASY TO LIVE: We understand the lifestyle of young people and focus on simplicity, convenience and versatility. We design your living space to be easy to live in, full of convenience and comfort.

EASY TO BUY: We are committed to offering competitive prices to ensure that you can easily purchase your favorite furniture and decorative items. We believe that design should not be a luxury, but a pleasure that everyone can enjoy.

EASY TO MOVE: Young people often need to move, whether for work, study or to explore new opportunities. Our furniture and layout solutions have been designed with mobility in mind, and are simple and light enough so that you can move easily without the need for tedious renovation and re-furnishing, and save a fortune on moving costs.



Figure 5-55: LOGO design for this program (self-work)

The logo design uses the box and line structure of the furniture design scheme, which is relatively simple overall and represents the storage cabinet squares, tables and chairs that are common in the design scheme. The absence of tightly connected lines is used to indicate that the furniture can be altered, folded or combined. Styles stacked on top of each other look much like layout plans. The overall presentation of the outline of a house suggests that this is a company associated with a home manufacturing operation.

Because of the need to create some distinction from the furniture, the overall logo does not use the original color system, but rather the more recognizable orange color, which, as in the previous scheme drawing, can be found in product brochures to illustrate the use of the furniture, arrangements suggestions, and installation instructions.

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5.6 Conclusions

This thesis underscores the significant positive value of interior spatial design in addressing the housing dilemmas faced by youth in urban environments, specifically in the context of rental residence units in Kunming City, China. The study successfully highlights the critical role that thoughtful, innovative design solutions can play in enhancing the quality of life for young renters. By focusing on the unique lifestyle patterns and preferences of youth, the research provides valuable insights into how design can be leveraged to create more livable, affordable, and sustainable urban housing.

The positive value of this study is multifaceted. Firstly, it demonstrates how multi-functional furniture, modular layouts, and adaptable spaces can maximize utility and comfort within limited square footage, addressing the spatial constraints commonly faced by young renters. Secondly, by incorporating communal areas and shared amenities, the proposed design solutions foster a sense of community and support social interactions among residents, which is essential for the well-being of young people. Thirdly, the emphasis on sustainability and cost-efficiency through the use of eco-friendly materials and energy-efficient systems aligns with broader goals of urban sustainability and long-term cost reduction.

At the same time, the findings of this research have practical implications for urban development and policy-making. By aligning design solutions with the specific needs and preferences of young people, this study offers a roadmap for creating more effective and responsive housing strategies that can be applied in Kunming and other

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rapidly growing urban centers.

However, the study also acknowledges certain limitations. The case study approach, while providing in-depth insights, may not fully capture the diversity of youth experiences and housing conditions across different urban contexts. Additionally, the proposed design solutions, though innovative, may require significant initial investment and buy-in from stakeholders, which could pose challenges in practical implementation. Furthermore, the rapidly changing dynamics of urban development and youth lifestyles mean that continuous adaptation and refinement of design strategies are necessary to keep pace with evolving needs and preferences.

In conclusion, this thesis highlights the transformative potential of interior spatial design in improving the living conditions of youth in rental residences. Despite the noted limitations, the study provides a robust foundation for future research and development, offering practical, sustainable solutions that can enhance urban living for young people. The insights gained from this research are poised to inform future urban development projects, contributing to more vibrant, inclusive, and sustainable cities.

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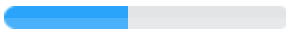
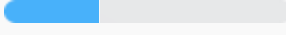

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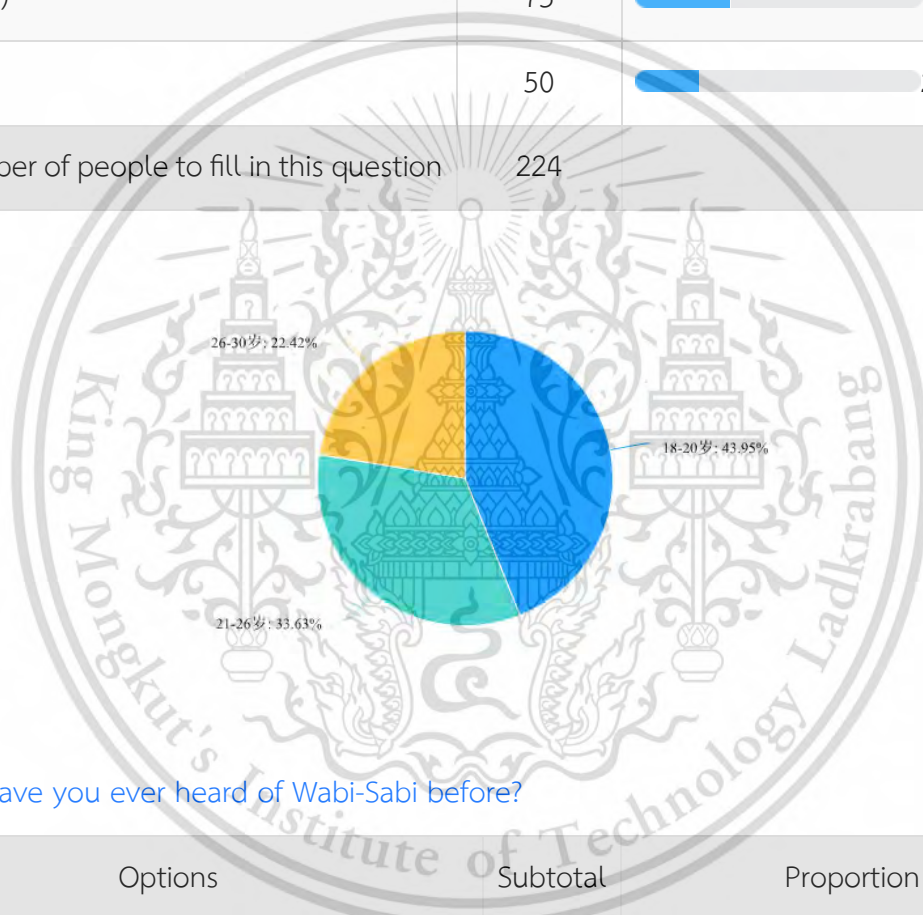
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APPENDICE-A Questionnaire

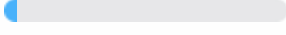
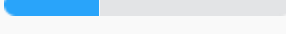

- Do you want have a Wabi-Sabi Home

No.1 How old are you?

Options	Subtotal	Proportion
18-20 (Age)	99	 44.2%
21-26 (Age)	75	 33.48%
26-30(Age)	50	 22.32%
Valid number of people to fill in this question	224	

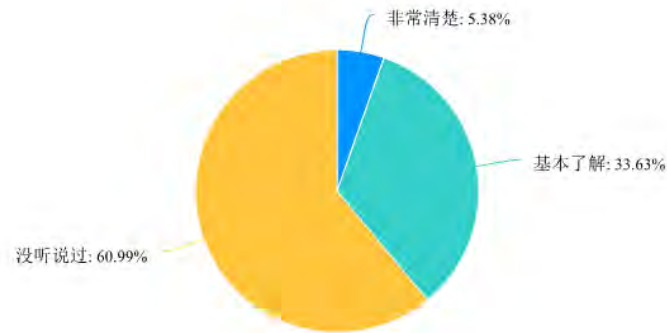


No.2 Have you ever heard of Wabi-Sabi before?

Options	Subtotal	Proportion
I know it well	12	 5.36%
I know some	75	 33.48%
Never heard of it	137	 61.16%
Valid number of people to fill in this question	224	

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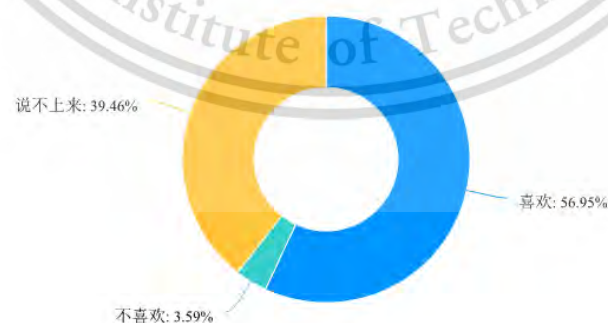
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After play the tiny video for 224 people, the one who choose [**I know some**] has up to **74.56%**

No.3 What is your opinion about Japanese dry landscape, tea ceremony and kimono?

Options	Subtotal	Proportion
Like it	128	57.14%
Don't like it	8	3.57%
Hard to say	88	39.29%
Valid number of people to fill in this question	224	


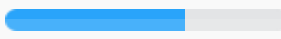


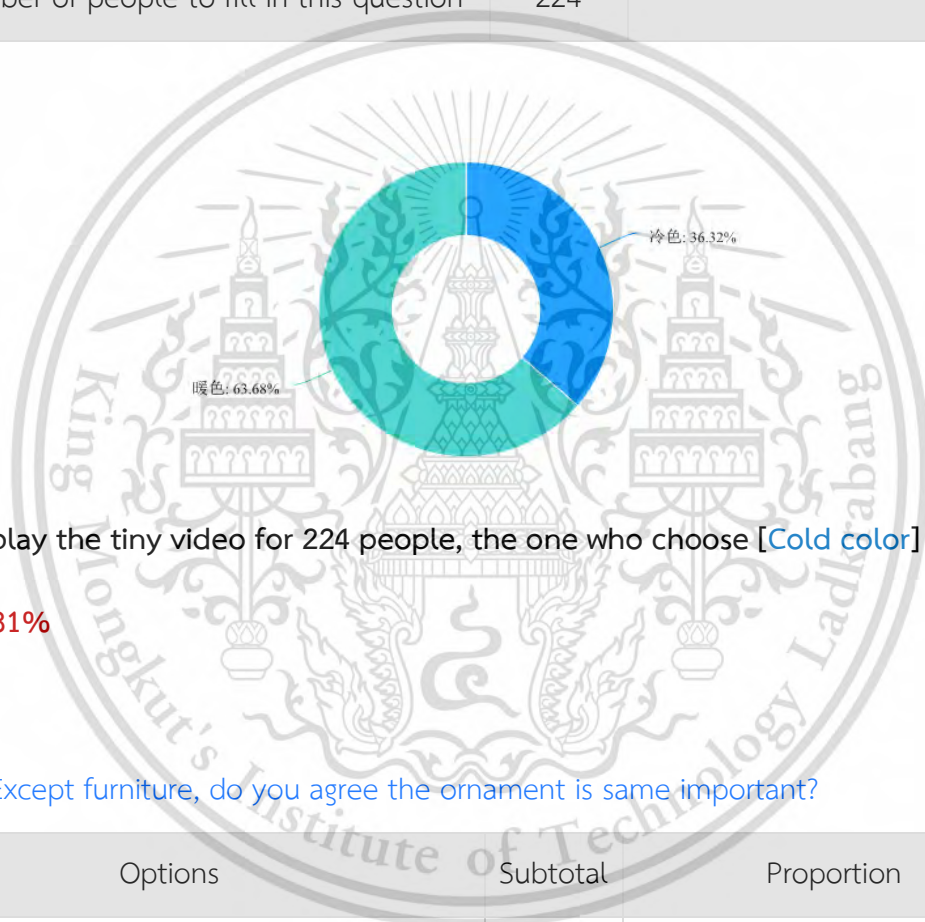
After play the tiny video for 224 people, the one who choose [**Like it**] has up to **66.32%**

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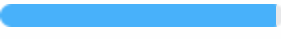
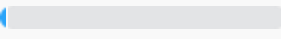
No. 4 What kind of color you like in your house?

Options	Subtotal	Proportion
Cold color	81	 36.16%
Warm color	143	 63.84%
Valid number of people to fill in this question	224	



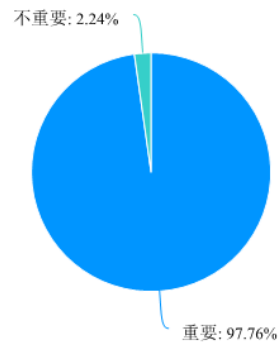
After play the tiny video for 224 people, the one who choose [Cold color] has up to **51.81%**

No. 5 Except furniture, do you agree the ornament is same important?

Options	Subtotal	Proportion
Important	219	 97.77%
Not important	5	 2.23%
Valid number of people to fill in this question	224	

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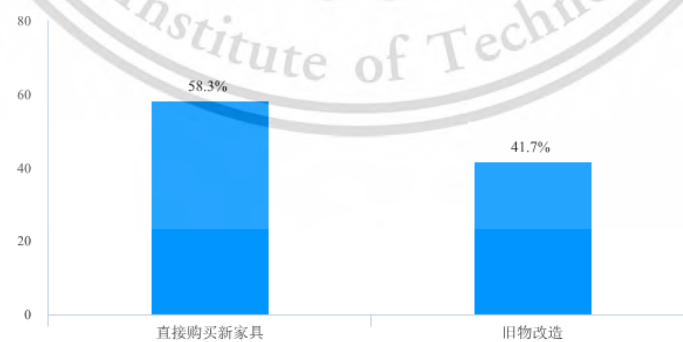
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After play the tiny video for 224 people, the one who choose [Important] has drop to **89.54%**

No. 6 Between changes your furniture or adds some functions in your old stuff, what you will choose?

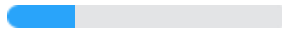
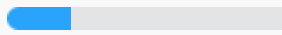
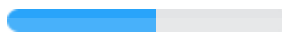
Options	Subtotal	Proportion
By the new one	131	58.48%
Reform the old one	93	41.52%
Valid number of people to fill in this question	224	

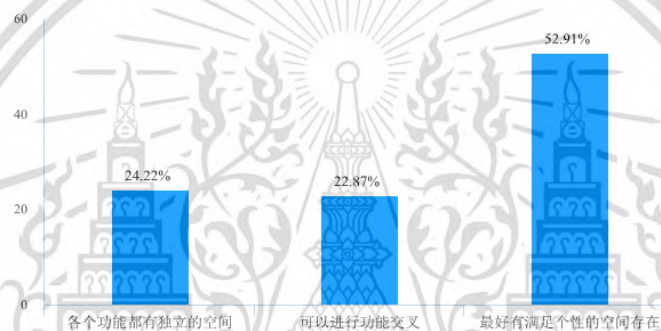


No. 7 What is the ideal space you want in your home?

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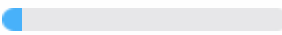
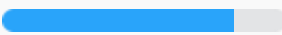
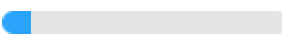
Forbidden to modify the content, and cite the document when use.

Options	Subtotal	Proportion
Independent functions and space	54	 24.11%
Not independent space with mix functions	52	 23.21%
Completely personalized space	118	 52.68%
Valid number of people to fill in this question	224	



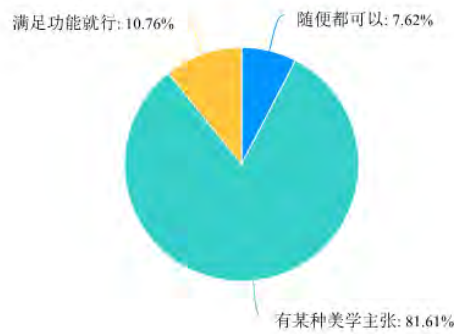
After play the tiny video for 224 people, the one who choose [**Completely personalized space**] has up to **54.32%**

No. 8 About decoration style, what are you like in home?

Options	Subtotal	Proportion
Whatever	17	 7.59%
Linking to some esthetics idea	183	 81.7%
Satisfy function	24	 10.71%
Valid number of people to fill in this question	224	

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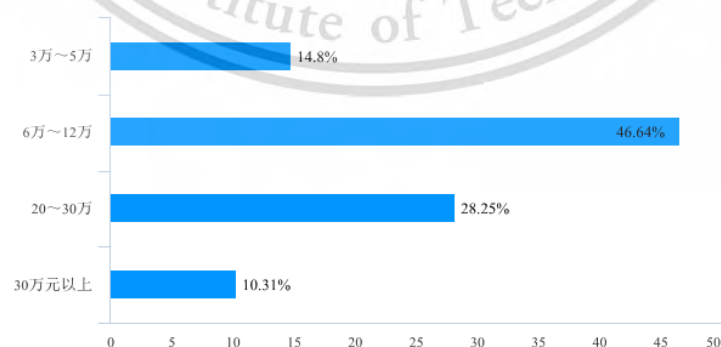
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After play the tiny video for 224 people, the one who choose [[Linking to some aesthetics idea](#)] has up to **98.71%**

No. 9 How much money you wish to spend in home decoration?

Options	Subtotal	Proportion
¥30,000 to ¥50,000	33	14.73%
¥60,000 to ¥120,000	105	46.88%
¥200,000 to ¥300,000	63	28.13%
¥Over ¥300,000	23	10.27%
Valid number of people to fill in this question	224	



After play the tiny video for 224 people, the one who choose [[¥200,000 to ¥300,000](#)] has up to **37.38%**

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APPENDICE-B Questionnaire

•Incomes, Outcomes and Furniture that youth like

Personal Finance and Home Preferences Questionnaire

Section 1: Demographics

1. Age:

- 18-24
- 25-34
- 35-44

2. Gender:

- Male
- Female
- Non-binary
- Prefer not to say

3. Employment Status:

- Employed full-time
- Employed part-time
- Self-employed
- Unemployed
- Student
- Other: _____

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Section 2: Income

4. Monthly Income (after taxes):

- Less than \$1,000
- \$1,000 - \$2,499
- \$2,500 - \$4,999
- \$5,000 - \$7,499
- \$7,500 - \$9,999
- \$10,000 or more

Section 3: Expenditure

5. Monthly Fixed Expenses (e.g., rent/mortgage, utilities, insurance):

- Less than \$500
- \$500 - \$999
- \$1,000 - \$1,499
- \$1,500 - \$1,999
- \$2,000 or more

6. Monthly Non-Fixed Expenses (e.g., groceries, dining out, entertainment):

- Less than \$500
- \$500 - \$999
- \$1,000 - \$1,499
- \$1,500 - \$1,999
- \$2,000 or more

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Section 4: Home Appliances and Furniture Preferences

7. Which of the following kitchen appliances do you currently own? (Select all that apply)

- Refrigerator
- Oven
- Microwave
- Dishwasher
- Coffee maker
- Blender
- Other: _____

8. Which of the following living room furniture items do you currently own? (Select all that apply)

- Sofa
- Coffee table
- Television
- Bookshelf
- Armchair
- Other: _____

9. Which of the following bedroom furniture items do you currently own? (Select all that apply)

- Bed
- Wardrobe

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- Nightstand
- Dresser
- Desk
- Other: _____

10. Which of the following home office equipment do you currently own?

(Select all that apply)

- Computer
- Printer
- Desk
- Office chair
- Filing cabinet
- Other: _____

11. Which of the following home entertainment devices do you currently own? (Select all that apply)

- Television
- Gaming console
- Sound system
- Streaming device
- Other: _____

12. How often do you purchase new home appliances or furniture?

- Every 6 months
- Once a year

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- Every 2-3 years
- Every 4-5 years
- Less often

13. What is your preferred style for home decor?

- Modern
- Traditional
- Rustic
- Minimalist
- Eclectic
- Other: _____

Section 5: Additional Comments

14. Do you have any additional comments or suggestions regarding your income, expenditures, or home preferences?

- [Text box for open-ended responses]

Thank you for participating in this questionnaire! Your responses will help us understand the spending habits and home preferences of individuals aged 18-44.

APPENDICE-C Research Review

Chen Jinsong, Professor, Vice President of Yunnan Arts University, Hand Crafts Expert.

Designing rooms and homes for young people is important in many ways. A personalized space enhances a young person's sense of self-identity and belonging and promotes mental health. Comfortable furniture and sensible room layouts not only provide a sense of relaxation and security, but also reduce stress and anxiety and enhance a sense of well-being.

Most importantly, functional design is crucial to improving learning and work efficiency. Reasonable division of study, work and rest areas with good lighting and ergonomic furniture can enhance concentration and productivity. Meanwhile, creative design can stimulate inspiration and creativity, especially important for young people engaged in creative work.

Additionally, designing spaces that are sociable can help promote interaction with friends and family, while sensible room separation and private space design can meet their needs for independence and privacy. Affordable design can reduce the financial burden, while the use of environmentally friendly materials and sustainable design can help foster environmental awareness and promote sustainable development.

Yang Chunsuo, Associate Professor, Teacher of Yunnan Arts University Design College, Landscape Design Expert.

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There are various ways to understand the needs of youth, and information can be obtained through social surveys, market research, online questionnaires and even feedback on social media. Youth usually do not feel pressurized to participate in these surveys, but it is important to ensure that the surveys are anonymous and respect the privacy of individuals so that they will share their needs and opinions openly. That's why good survey design is so important for getting accurate information. The link between young people's needs and the space they rent is very strong. They usually want to rent a place that is comfortable and convenient, as well as social and affordable. If rental space meets these needs, it will not only improve young people's quality of life, it will also make them more likely to choose to rent there, increasing occupancy rates. Young people's needs change frequently as they are in the midst of evolving career development and life stages. In a place like Kunming, young people's needs are influenced by a variety of factors, such as the economic situation, job opportunities, and cultural atmosphere. For example, if the local economy improves, young people may seek more upscale housing, while changes in job opportunities may lead them to choose to relocate elsewhere. Young people's needs can often be changed, especially bad habits. By providing education, training and social support, they can be helped to develop positive lifestyles and housing habits. In addition, good design and management of rental space can act as an incentive to encourage young people to develop healthier and more positive behaviors. For example, providing a safe and clean environment and encouraging social interaction and healthy lifestyles can help young people improve their ZBA lifestyles.

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**Zou Zhou, Associate Professor, Teacher of Yunnan Arts University Design College,
Interior Design Expert.**

In order to maximize commonalities in a young person's living environment, designers should consider creating a generic, neutral space. This can be achieved by, firstly, focusing on functionality to ensure that the space meets basic needs such as comfort, safety and convenience, which are required by both young professionals and students. Secondly, choosing neutral colors and materials and avoiding overly complex decorations to ensure that the space is not influenced by religious or cultural preferences. For example, using neutral shades of grey, white and wood can provide a clean, modern environment for young people. At the same time, respect personal privacy and ensure that the layout and design of the space does not reveal personal information or habits that could be controversial. Finally, understand the needs of different cultures and religions to avoid potential conflicts. For example, in a multicultural living environment, provide flexible space for religious worship or dining options to cater for young people from different backgrounds.

Where two functions are considered, for example, juggling work and play in a young person's living space, this may indeed bring about usage disturbances. Young people usually need a livable space for rest and recreation as well as an area suitable for work and study. To avoid problems, designers can adopt clever design methods, such as using movable partitions or screens to separate different functional areas. In addition, given the rise of the digital age, providing young people with appropriate power and network interfaces so that they can stay connected across a range of

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activities is a way of adding functionality while also enhancing the experience of use.

Adding functionality usually leads to an increase in cost investment, but for young people's living environments, this can be a valuable investment. For example, to cater for the socializing needs of young people, consideration could be given to designing a shared leisure area with recreational facilities and a gym, which may require additional funding. However, such facilities can add to the appeal of the living experience, attracting more young tenants and ultimately improving returns. Additionally, designers can use sustainable building and renovation materials to minimize long-term operating costs and in line with young people's concerns about sustainability, which is also a factor to consider.

Cai Jin, Engineer, Design Director of Guoguang Yiye Design Research Institute.

Young people do not have an exclusive color palette when it comes to color choices, but they usually tend to prefer bright, lively and energetic colors, such as bright whites, blues, greens, oranges and pinks, or certain psychologically suggestive colors, such as black, red, yellow and so on, which are usually associated with young people's energy and creativity. When making color choices, young people show an interest in variety and innovation, are more willing to experiment with novel color combinations and have an open aesthetic sense, but also make choices based on personality and emotional needs. From a Kunming perspective, colors are inspired by the local natural landscape, such as sunny skies, colorful vegetation and rich cultural traditions, as well as being influenced by a number of aspects of social media, fashion

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trends, art and design fields. Although there are usually no obvious taboos in the colors used by young people, personal preferences and cultural factors may influence their acceptance of certain colors. In general, they prefer to avoid dull, depressing colors, preferring instead bright and lively colors that enhance positive emotions, although this also varies according to personal taste.

On the other hand, the accuracy of the cost estimate in a design proposal depends on the designer and the specifics of the project. Cost estimates may fluctuate to a certain extent as they are affected by a variety of factors such as market price fluctuations, choice of materials, labor costs, etc. Typically, cost estimates fluctuate between 10 and 20 per cent, but may be higher in complex projects. The program usually includes integrated cost factors, such as construction materials, labor, design and management costs, which are allocated a proportionate weighting in the project budget, and it is particularly important that all aspects of cost factors are considered together in cost control. At the same time, there are a variety of cost-optimization options that can help young people with their purchasing behaviors, including choosing affordable materials and finishes options, considering sustainability and energy efficiency to reduce long-term operating costs, and comparing quotes from different suppliers to get the best price. Ultimately, careful cost analysis and effective cost management during the budgeting and design process of a project are critical to ensuring its success.

Xu Ping, Professor, City University of Macau, Art Theory Research.

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This practice of designing rooms and furniture for young people has had significant positive effects on modern design research. It promotes the development of personalized design. By catering for the individual needs of young people, designers are able to explore more diverse design styles and functional layouts, which injects more innovative and creative elements into modern design.

I can certainly argue that this approach promotes the study of functional design. In order to improve learning and work efficiency, designers need to conduct in-depth research on how to optimize young people's daily activities through rational spatial layouts and ergonomic furniture. This not only promotes the development of functional design, but also enhances the scientific and practical nature of design research.

In addition, the focus on affordable and sustainable design needs has had a positive impact on modern design research. Designers have to explore new materials and technologies in meeting the economic and environmental needs of young people, thus promoting the development of green design and economic design. This not only contributes to resource conservation and environmental protection, but also fosters designers' sense of responsibility and creativity. By incorporating cultural elements and diversity considerations into design, designers are able to better understand and respect different cultural backgrounds and individual needs, and promote inclusiveness and diversity studies in design. This approach not only enhances the social value of design, but also strengthens its adaptability and inclusiveness in the context of globalization.

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- **Design Review**

Chen Xiaoyu, 24, designer, working in Shen Zhen, China

I like the design of this space, which is very open and has good space for activities. This design not only enhances the sense of openness of the interior, but also promotes the free movement and creative play of the occupants, providing a flexible and versatile living environment for young people.

Shen Xiuke, 20, student, study in Yunnan Arts University, China

I really like this color design and feel that it reflects our psychological state, such like black and white. The clever use of colors can regulate emotions and psychological state, making the occupants feel more relaxed and happier, and at the same time, it can also reflect the personality and style through the combination of different colors, enhancing the space for self-expression.

From my person's point of view, black is loved mainly because it represents style and coolness, conveying a minimalist and premium feel. Black is not only versatile, able to easily match any color and style, but also expresses individuality and taste. In addition, black has a sense of mystery and uniqueness that highlights the independence and individuality of young people.

Li Na, 33, staff member, working in Kunming, China

I Love the functionality and the ability to provide a lot of convenience in youth life. Functional design focuses on practical needs and increases the convenience and

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comfort of life. For example, the application of smart furniture and multi-functional storage space makes life more efficient and organized, meeting the requirements of young people's fast-paced life. The design of being able to put snacks on the chair is really appealing to me and it reduces my need to move around. I'm already tired after a long day at work and I can still play on my phone and watch a film when I'm lying down, which is fun to think about.



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