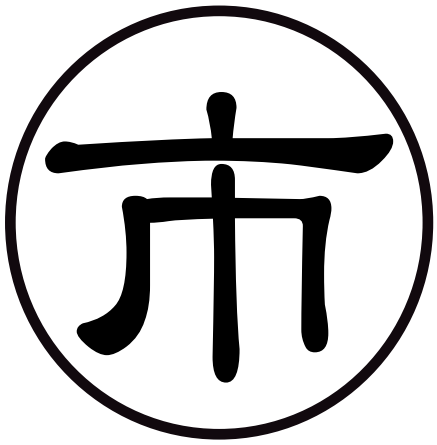

Sustainable Urban Development

Version 3.0

A. Planning and Preparation

Module

Building a sustainable city

Enquiry Question

Hypothesis 1 : ***The area with higher building age, the more serious the urban decay.***

Hypothesis 2 : ***Low income residential area has poorer living environmental quality than other residential area.***

Hypothesis 3 : ***The higher the traffic flow, the higher the amount of dust particulates.***

Hypothesis 4 : ***The higher the traffic flow, the higher the sound level.***

Key Concepts

Urban decay	Urban renewal	Sustainable development	Redevelopment	Rehabilitation
Revitalization	Heritage Preservation	Succession	Gentrification	Reurbanization

Scope of the Study

Tsuen Wan Town

Think About

List the safety risks when conducting fieldwork in urban area.

Field Work Plan

1. Map 2.4 indicates the scope of the study.

2. Carry out a fieldwork in Tsuen Wan Town based on the route shown on Map 2.4.

3. During the walk, identify the type of residential area and building ages of 6 designated buildings by observing their "Building Appearances and Urban Decay condition" according to the 4 criteria below:
   a) Condition of external wall b) Building design c) Building height d) Condition of rooftop extension
   Record your scores in Table 2.1.

4. Observe the surrounding environmental quality of 6 designated buildings, examine the environmental quality according to the 5 following items.
   a) Greening b) Walkway accessibility c) Traffic accessibility d) Air quality e) Sound level
   Record your scores in Table 2.2.

5. With the provided instruments, measure the air quality and sound level for assign time at each checkpoint (1-6). At the same time, count the number of vehicles and record the major type of vehicles. Record the data in Table 2.3.

B. Data Collection

Primary Data Items	To Examine Hypothesis				Data Collection Methods			Equipment Required (Number on the Equipment Checklist)
	1	2	3	4	Observation	Counting	Measuring	
1. Building age								
2. Urban decay condition								
3. Types of residential area								
4. Environmental quality								
5. Sound level								
6. Dust particulates								
7. No. of vehicles								
8. Major types of vehicles								

Equipment Checklist

Items	Quantity	Checked	Returned
1. Base map (Individual)	x1	❑	❑
2. Clipboard (Individual)	x1	❑	❑
3. Compass (Individual)	x1	❑	❑
4. Counter	x1	❑	❑
5. Sound meter	x1	❑	❑
6. Dust particulates meter	x1	❑	❑

Data Recording sheet

Table 2.1 Assessment form for building appearances and urban decay in Tsuen Wan

Building	Type of Residential Area	Building Age▲	Building Appearances and Urban Decay condition*				Total
			a	b	c	d	
	High/middle/low income						
	High/middle/low income						
	High/middle/low income						
	High/middle/low income						
	High/middle/low income						
	High/middle/low income						

▲Building Age: Period 1 (before 1980), Period 2 (1980-1999), Period 3 (After 2000)
*Markings for building appearances and urban decay condition (3 marks for the best, 1 mark for the worst):
a) Condition of external wall b) Building design c) Building height d) Condition of rooftop extension

Table 2.2 Assessment form for environmental quality in Tsuen Wan

Building	Greening	Walkway accessibility	Traffic accessibility	Air quality	Sound level	Total
	Sparse Dense 1 2 3	Low High 1 2 3	Low High 1 2 3	Turbid Fresh 1 2 3	High Low 1 2 3	
	Sparse Dense 1 2 3	Low High 1 2 3	Low High 1 2 3	Turbid Fresh 1 2 3	High Low 1 2 3	
	Sparse Dense 1 2 3	Low High 1 2 3	Low High 1 2 3	Turbid Fresh 1 2 3	High Low 1 2 3	
	Sparse Dense 1 2 3	Low High 1 2 3	Low High 1 2 3	Turbid Fresh 1 2 3	High Low 1 2 3	
	Sparse Dense 1 2 3	Low High 1 2 3	Low High 1 2 3	Turbid Fresh 1 2 3	High Low 1 2 3	
	Sparse Dense 1 2 3	Low High 1 2 3	Low High 1 2 3	Turbid Fresh 1 2 3	High Low 1 2 3	

Table 2.3 - Other related data in checkpoint

Checkpoint						
Time Interval	(per min)	(per 3 mins)	(per min)	(per 3 mins)	(per min)	(per 3 mins)
Average Sound level (dB)						
Average Dust particulates (μg/ m^3)						
Number of vehicles						
Major type of vehicles						

Think About

Name the sampling methods adopted in the fieldwork, and list their advantages.

Think About

List the possible errors when collecting data.

C. Data Processing, Presentation and Analysis

Qualitative data items:		**Quantitative data items:**	
Advantages:	Disadvantages:	Advantages:	Disadvantages:

Draw the most appropriate diagrams with graph papers, to show the data.

Hypothesis 1: _____ Hypothesis 2: _____

Hypothesis 3: _____ Hypothesis 4: _____

Think About

List the merits and demerits of the chosen diagrams.

D. Interpretation and Conclusion

1. Does the fieldwork result support the Hypothesis 1: "***The area with higher building age, the more serious the urban decay.***" ? Support your conclusion with the collected data and graphs. (Extended question: Which urban renewal strategy would you recommend for those areas with urban decay?)

2. Does the fieldwork result support the Hypothesis 2: ***"Low income residential area has poorer living environment than other residential area."*** ? Support your conclusion with the collected data and graphs. (Extended question: How the concept of sustainable development can be utilized to enhance the quality of living environment in urban areas?)

3. Does the fieldwork result support the Hypothesis 3: ***"The higher the traffic flow, the higher the amount of dust particulates."*** ? Support your conclusion with the collected data and graphs. (Extended question: How can urban planning solve urban transportation problems?)

4. Does the fieldwork result support the Hypothesis 4: "***The higher the traffic flow, the higher the sound level***."? Support your conclusion with the collected data and graphs. (Extended question: What other environmental problems are involved in the study scope? What are the mitigation measures?)

E. Evaluation

1. Evaluate the data collection methods used in this fieldwork and suggest ways for further improvement.

2. Suggest other primary data to be collected to enrich this fieldwork. Describe and explain how the data would be collected.

Further Reading for National Geography

Learning and Teaching Series on "Geography of China" : City

Illustration of China's urbanization (Chinese version only)