



THE TEACHING MATERIALS

INTEGRATING DIFFERENT TYPES OF WRITING

Introduction

Identifying and describing a research topic; reviewing previous research; stating hypotheses/research questions

Methods

Reporting what kinds of data were collected, how it was collected and how it was analysed

Results/Findings

Describing what the analyses of the data show; identifying patterns in the results

Discussion

Interpreting and explaining results; relating results to initial hypotheses

Conclusion

Summarising most significant findings, suggesting implications and applications



INTEGRATING SKILLS

Doing science: carrying out a research project

Reading science: model texts, online information, drafts

Talking science: discussing model texts, making decisions about the research project; giving feedback on drafts

Writing science: drafting, editing and re-drafting each section of the report



INTEGRATING LANGUAGE LEVELS

Noticing and exploring patterns of organization, kinds of vocabulary and use of grammatical features typical of each section of a report.

Practicing the above in context

DOING SCIENCE: RESEARCH PROJECTS

The Suggested Projects

Ways in which different kinds of music affect people

The relationship between laughter and mood

People's ability to multitask

DOING SCIENCE: EXPLORING THE TOPIC

Discuss in your group the following questions and keep a note of the answers that you all agree on. Also note any questions you cannot answer so that you can work on them later.

- What is a person's **pulse**?
- How do we measure a person's pulse rate? Practise taking your group mates' pulse rates.
- What is a person's heart rate?
- What is the relationship between pulse and heart rate?
- What do you think heart rate tell us about someone's **mental** state?
- What effect do you think slow, gentle music might have on someone's mental state?
- What effect do you think fast, loud music might have on someone's mental state?

Do you think that the effects of music may vary with **gender** or with age or with any other factor?

DOING SCIENCE: PREPARING TO COLLECT DATA

Suggested procedure:

1. Prepare a list of questions to gather information about:
 - a. when people listen to music;
 - b. what kinds of music they listen to;
 - c. how they feel when they listen to music;
 - d. whether they believe that different kinds of music have different effects on them.
2. Prepare a recording of 2 to 3 minutes of fast, rock or pop music, followed by 2 to 3 minutes of slow, gentle classical or “easy listening” music. Make sure there is some space between the two recordings.
3. **Recruit** about 20 **volunteers** (i.e. 4 to 5 for each group member) to take part in your study.

1. For each **participant**, follow these steps.
 - a. Interview each participant using the list of questions you have prepared. Either record your interview or keep a detailed record of their answers. Make sure you also keep a record of each person's gender (male or female), age etc.
 - b. Before taking the participant's pulse, make sure he or she is calm and has been resting for 5 minutes.
 - c. Measure the participant's pulse for 10 seconds, multiply by six, and record the result in 'heartbeats per minute'.
 - d. Play some fast rock or pop music and let the participant listen for about 2 minutes
 - e. Measure the participant's pulse again.
 - f. Allow the participant to calm down and rest for 5 minutes.
 - g. Measure the participant's pulse again.
 - h. Play some slow, gentle classical or "easy listening" music and let the participant listen for about 2 minutes.
 - i. Measure the volunteer's pulse again.
 - j. Compare the results of the pulse before and after listening to fast and slow music.

READING SCIENCE: MODEL TEXT

A Study of Rubbish Disposal at a Hong Kong University

Introduction

In Hong Kong, **disposal** of rubbish is a major issue. According to statistics from the Hong Kong Environmental Protection Department (2019), the average daily quantity of solid rubbish in 2017 amounted to more than 15,000 tonnes. **Excessive** production of rubbish is leading to the filling up of all Hong Kong's landfill sites. Robson (2017) **estimates** that Hong Kong's landfill sites will become full by 2020 and will no longer be able to accept additional rubbish.

Previous research has focused mainly on collecting data on how much rubbish is produced by different sectors in Hong Kong. Our research focuses on the rubbish disposal problem at one institution, the City University of Hong Kong, and explores the **perceptions** that students at the university have of the problem. We address the following questions.

1. How is rubbish disposal managed at the university?
2. What problems are there with managing rubbish disposal at the university?
3. What are the students' perceptions of the problems?
4. What suggestions do the students have on how to solve the problems?

READING SCIENCE: FOCUS ON VOCABULARY

VOCABULARY PREPARATION

Read through Task 1 below. Find the words that are in bold type and use these words to complete the following sentences.

1. _____ is an adjective that describes something that is too large, too extreme or that there is too much of.
2. _____ is an adjective. It refers to a description of something that is more precise and more limited than a general description.
3. _____ is a verb. When we _____ something, we calculate it roughly, based on whatever evidence we have.
4. Our _____ of something refers to our awareness of it, through any of our senses. It can also mean how we think about something or what our opinion of it is.
5. The noun _____ is related to the verb _____, which means to get rid of something that we no longer want or need. Note that both the verb and the noun are normally followed by *of*.

READING SCIENCE: FOCUS ON CONTENT & ORGANISATION

Text 1 (below) is the introduction section of a research report written by some university students. Read the text through and find where in the text the following elements occur.

The research questions (RQ)

A statement of the general phenomenon that the research was concerned with (GP)

The **specific** issues that the students investigated (SI)

Previous research on the phenomenon (PR)

Specific details about the phenomenon (SD)

Questions to think about

1. Is the order of elements in this text logical?
2. Do you think that any element in this introduction should be expanded (made longer)?

READING SCIENCE: FOCUS ON GRAMMAR

Five different tenses are used in the first two paragraphs of Text 1. They are simple present, present continuous, simple past, present perfect and simple future. Please read through the examples below, identify the tenses used in them and match each one with the best description of why the tense is used.

Tenses	Uses
1. In Hong Kong, disposal of rubbish <u>is</u> a major issue. tense is used here because the sentence tells us what is happening now (and has not yet finished).
2. ... the average daily quantity of solid rubbish in 2017 <u>amounted to</u> more than 15,000 tonnes tense is used here because the sentence tells what the situation was at a specific time in the past.
3. Excessive production of rubbish <u>is leading to</u> the filling up of all Hong Kong's landfill sites. tense is used here because this sentence predicts a future situation.
4. ... and <u>will</u> no longer <u>be</u> able to accept additional rubbish. tense is used here because the sentence tells us what the situation is now.
5. Previous research <u>has focused</u> mainly on collecting data on how much rubbish is produced by different sectors in Hong Kong tense is used here because it is looking back at what some people did some time before now, but it does not tell us exactly when they did it.

COMPARING TEXTS: CONTENT & ORGANISATION

Read through Text 2 below and discuss the following questions.

1. Is there any element in this text that does not occur in Text 1?
2. In Text 1, the aims of the research are expressed as direct questions. How are they expressed in Text 2?
3. Which element in Text 2 is much longer than in Text 1?
4. Overall, do you think Text 2 is a better introduction than Text 1. Why/why not?

COMPARING TEXTS: GRAMMAR

Tense

A. Text 1 starts off using the simple present. In Text 2, however, the first sentence uses present perfect. Why is this? If simple present were used instead, how would the meaning change? Would it be better to use simple present?

B. Look at the ways previous research is referred to in paragraph three. As in Text 1, present perfect tense is used with verbs that report general conclusions based on a number of previous research studies.

1. Several studies have shown that using smartphones when driving can increase the chance of having an incident.
2. Other research has also found that pedestrians using mobile phones have lower awareness and distracted attention (Hatfield and Murphy, 2007, Hyman et al., 2010). (paragraph 3)

Other references to previous research use either simple present tense or simple past tense.

3. Jehle (2015) found that users were unable to control complex actions such as walking when they were texting on a mobile phone. (paragraph 3)
4. A statistical analysis conducted at Ohio State University (Richtel, 2010) found that from 2006 to 2008 four times more pedestrians visited a hospital emergency room due to phone-related accidents than due to other factors. (Line 18)
5. Recent research done by Richards (2018) suggests that messaging on a mobile phone may be more distracting than talking on the phone.

Can you suggest why the writers chose to use simple past in the first of two sentences above but simple present in the third sentence?

PRACTICING IN CONTEXT: FOCUS ON GRAMMAR

TEXT TWO

Chewing Gum and Concentration

1. Find 8 male **subjects** of roughly the same age and divide them into two groups.
2. Ask the 4 members of the first group to play the memory game at <https://www.webgamesonline.com/memory/index.php> 5 times.
3. Record how long it takes each subject to complete each game.
4. Give the 4 members of the second group some chewing gum and ask them to play the same memory game 5 times while chewing the gum.
5. Record how long it takes members of this group to complete each game.
6. Analyse the results. Did chewing gum increase the subjects' speed and **accuracy** in the memory game?
7. Now repeat the procedure with 8 female subjects of roughly the same age.
8. Analyse the results. Did the gender of the subjects make any difference to their speed and accuracy in the game?

1. Text Two is a set of instructions for doing research into the effect of chewing gum on **concentration**. Imagine that you have done this research and are now writing a research report about it. Use the instructions below as the basis for writing the methods section of your report. Write the methods using the personal, less formal style.

You can number each step as is done in the instructions or you can write this section as one or two paragraphs. If you write it as paragraphs, you may need to add some sequencers, such as *first, then* and *after that*. Also note that you will need to find a way to change the questions in steps 6 & 8 into indirect questions and to include them in the sentences describing these steps. If you have difficulty doing this, look back at the text in Task 1 and find where the writers talk about the purposes of doing particular steps.

Begin *We recruited ...*

2. Now rewrite the methods section you just wrote using the less personal, more formal scientific style.

Begin: *Eight male students of roughly the same age were recruited...*

WRITING SCIENCE: PREPARING THE FIRST DRAFT

Before beginning to write your individual drafts, discuss with your group the following questions.

1. How are you going to introduce the phenomenon that is the topic of your research?
Are you going to define it?
Are you going to make some generalisations about it?
2. Do you need to narrow down the general phenomenon to a more specific phenomenon or issue?
3. Are you going to say anything about why it is important, necessary or useful to do research on this phenomenon?
4. What have you found about previous research done on this phenomenon? Do you need to find more information on this?
5. What are your hypotheses or research questions?

WRITING THE FIRST DRAFT

Now write your first draft. If possible type it into google docs or a similar application so that you can easily share it with your group mates and with your teacher.

Don't worry about getting every word correct, but try to make sure you include all necessary content in a logical order. If there is information that you still need to find (for example references to previous research) just indicate in your draft where you will put the information when you have found it.

EXCHANGING AND COMMENTING ON DRAFTS

The members of each group should now read through the drafts of all their fellow group members.

Consider the following questions and give one another feedback.

1. Are there any elements missing?
2. Are there any elements that need expanding?
3. Does every sentence have at least one finite clause?
4. Does every finite verb have a subject?
5. Are appropriate tenses used?
6. Is nominalisation used correctly and appropriately?
7. Is all the information that has been taken from somewhere else properly referenced?

ASSESSMENT

Assessment Sheet for Scientific Reports

Writer's name

Class

Return email

CHECKLIST

If the assessor of your report ticks or writes **YES** against every comment in this checklist, the overall assessment of your report will be **publishable**. This means that your report is good enough to be published by being uploaded to the course website. Well done!

Content	Language
Introduction	
<p>The research area/topic is introduced and explained with some clear and relevant generalisations or definitions.</p> <p>At least two references are made to relevant previous research.</p> <p>In-text citations are used appropriately and all references are listed at the end of the report.</p> <p>The research questions or hypotheses of the research are clearly stated and follow on logically from the explanation of the research area.</p> <p>The elements within the Introduction section are logically organized</p>	<p>Appropriate choices of vocabulary, grammar and formats are made in expressing:</p> <ul style="list-style-type: none"><input type="checkbox"/> generalisations and/or definitions<input type="checkbox"/> reporting previous research<input type="checkbox"/> citing and referencing sources<input type="checkbox"/> stating hypotheses and/or research questions.
Methods	
<p>All necessary information about the context, the participants and tools used (e.g. questionnaires, video clips, mood scales etc.) is included.</p> <p>The steps in the methods used are clearly stated and the steps are arranged in a logical order.</p>	<p>Appropriate tense and voice are used consistently in describing the steps.</p> <p>Pronouns and articles are used appropriately so that it is always clear who or what is being referred to.</p>
Results	
<p>All relevant results are clearly reported and compared (where relevant).</p> <p>The elements within this section are logically organized.</p>	<p>Appropriate vocabulary and tenses are used in reporting results and referring to diagrams/tables.</p> <p>Appropriate grammatical structures are used for comparing results.</p>

ASSESSMENT

Discussion and Conclusion	
<p>The readers' attention is drawn to the most interesting/important/ unexpected findings.</p> <p>Some reasonable claims are made about possible <u>reasons</u> for the results, and/or <u>implications</u> of the results, and/or <u>applications</u> of the results.</p> <p>The elements within this section are logically organized</p>	<p>Appropriate hedging language is used to "soften" claims where necessary.</p>

General	
<p>The report has all the necessary sections (Introduction, Methods, Results, Discussion Conclusion) in the right order.</p>	<p>There are no mistakes in vocabulary, grammar or punctuation OR there are a few minor mistakes, for example, missing/wrong punctuation mark, missing/wrong article, minor spelling error; missing "s" on 3rd person sing. verb or plural countable noun, minor spelling mistake. They can all be easily fixed by a proof reader.</p>

OVERALL ASSESSMENT	Publishable	Publishable after minor revisions*
	Rejected*	Publishable after major revisions*

*Please see notes below to see explanations of these categories.

ADDITIONAL COMMENTS: