

**Appendix A**  
**A Sample Unit of Work for a Secondary**  
**One (Grade Seven) Integrated**  
**Science Class**

## S1 Language Across the Curriculum (LAC) Programme

### Unit 1: What is a scientific investigation?



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S1 LAC – Integrated Science		Click here to know the meaning of the icons
<h3>Unit 1: What is a scientific investigation?</h3>		
Activities	Skills involved	
<b>Activity 1:</b> Which brand of tissue paper absorbs the most water?	Getting to know the topic 	
<b>Activity 2:</b> What is a scientific investigation? -Read an explanation text -Extract key information with a graphic organizer	Reading an explanation text Discussion 	
<b>Activity 3:</b> Understanding lab reports	Reading a lab report 	
<b>Activity 4:</b> A scientific investigation in our everyday life	Designing and carrying out an experiment Discussion 	
<b>Activity 5:</b> Understanding lab reports 	Writing a lab report 	
<b>Extended activity:</b> Enjoying a rap song 	Listening to a rap song 	

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**ACTIVITY 1:**  
**Which brand of tissue paper absorbs the most water?**

Have you used *Tempo* before? What do you think of it? Let's watch a short video clip. What is the video about?



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**Which brand of tissue paper absorbs the most water?**

Have you used *Tempo* before? What do you think about it? Let's watch a short video clip. What is the video about?

**Tempo**    
Broadcast Yourself

*Click icons to play*

The video is about (1) \_\_\_\_\_  
**Tempo tissue paper and how much water it can absorb**

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### Which brand of tissue paper absorbs the most water?

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- Have you watched any *Tempo* TV commercials before?
- Tempo* claims that their tissue paper is the best. Do you think so?
- What about other brands of tissue paper? Which brand is better? Which brand absorbs the most water?

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### Which brand of tissue paper absorbs the most water?

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<i>Kleenex</i>	<i>Tempo</i>	<i>Vinda</i>

- What brand absorbs the most water?**
- I guess (2) \_\_\_\_\_  
absorbs the most water.

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## Which brand of tissue paper absorbs the most water?

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- ❑ **The method used in the video clip**
- ❑ Let's think about the method used in the video.
  1. Is it a good method to test how well the tissue paper absorbs water?
  2. Can you think of a better test?
  3. Do you know how to do it scientifically?



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## ACTIVITY 2:

### What is a scientific investigation?

Read the **explanation text** below, and extract the key information to complete the flow chart on page 4. Use the English phrases in the box on page 3 to help you.

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An **explanation text** tells you how something works or explains some phenomenon.

This text explains what is a scientific investigation.

### What is a Scientific Investigation?

This sentence gives a definition.

A **scientific investigation** is an activity carried out by scientists to answer questions and solve problems. In general, it involves five steps.

This sentence describes the first step of a process.

The **first** step of a scientific investigation is **making observations**. Scientists notice interesting things around the world through observation. They rely on different senses, e.g. sight, hearing and touch to make observations. Sometimes, they use instruments to help them.

**Take a look..**

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The **second** step is **asking questions**. Based on the observation, scientists gather information to set a question.

The **next** step is **proposing a hypothesis**. A hypothesis is a reasonable guess. It offers a reasonable explanation for the question set in step two. Note that a hypothesis is not made by simply guessing. It is made based on the information collected.

The **fourth** step is **designing and carrying out experiments and recording results**. Scientists design and conduct experiments to test the hypothesis. They might need to repeat the experiments several times and conduct them in a fair manner. They record the results carefully.

Pages 2 & 3

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The final step is analysing results and drawing a conclusion.

Scientists analyse the results carefully and check whether the results support their hypothesis. They can then draw a conclusion from the results.

A scientific investigation helps scientists to provide an explanation to some observations or answer some questions.



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 **Important English phrases!**

scientific investigation	making observations
asking questions	proposing a hypothesis
designing and conducting experiments	recording results
analysing results	drawing a conclusion

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## Language for learning Science: Defining

- Scientific texts can contain a lot of **definitions**.
- A **definition** tells you what exactly a term means. It helps you to answer the question “What is [X]?”
- The following sentences **define** technical terms:
  - The **scientific investigation** is an activity carried out by scientists to answer questions and solve problems.
  - A **hypothesis** is a reasonable guess.
- Their sentence frame is like this:
  - **[X] is [Y].**
    - [X] is the technical term to be defined.

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## Language for learning Science: Defining

[X]	is	[Y].
A <b>scientific investigation</b>	is	<b>an activity</b> carried out by scientists to answer questions and solve problems.
A <b>hypothesis</b>	is	<b>a reasonable guess.</b>

  

[X]	is	[Y].
Biology	is	<b>the study</b> of living things.
An <b>experiment</b>	is	<b>a test</b> which is carried out to find out whether a hypothesis can be accepted or not.
A <b>scientist</b>	is	<b>a person</b> who studies science.

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## Language for learning Science: Describing a process

- The following sentences **describe** the steps in the scientific investigation **process**:
  - The **first step** of the scientific investigation is **making observations**.
  - The **second step** is **asking questions**.
  - The **next step** is **proposing a hypothesis**.
  - The **fourth step** is **designing and carrying out experiments and recording results**.
  - The **final step** is **analysing results and drawing a conclusion**.
- Their sentence frame is like this:
  - **The (#) step is [Y].**

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## Language for learning Science: Describing a process

The (#) step	is	[Y].
The <b>first step</b> of the scientific investigation	is	<b>making observations</b> .
The <b>second step</b>	is	<b>asking questions</b> .

A challenge for you:  
There are other kinds of sentence frames for describing a process. Can you find some examples in this unit or in your I.S. textbook?

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## Important sentence frames!

Sentence frame	Function	Example
<b>[X] is [Y].</b>	<b>to define a term</b>	<b>A scientific investigation is an activity carried out by scientists to answer questions and solve problems.</b>
<b>The (#) step is [Y].</b>	<b>to describe steps in a process</b>	<b>The first step of the scientific investigation is making observations.</b>

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## Language for learning Science:

- There are also some special technical words in the passage:
  - scientific investigation
  - designing an experiment
  - making observations
  - proposing a hypothesis
  - carrying out an experiment
  - analyzing results
  - drawing a conclusion

These are the **keywords**.

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## The Scientific Investigation

- In groups, read the passage again and discuss its main points.
- Use the **graphic organizer** below to summarize the steps in the scientific investigation process.

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**Introduction:**  
What is the definition of scientific investigation?

Scientific investigation is (a) **an activity carried out by scientists to answer questions and solve problems.**

The steps in scientific investigation are:

- Step 1: **Making observations**
- Step 2: **Asking questions**
- Step 3: **Proposing a hypothesis**
- Step 4: **Designing and carrying out experiments and recording results**
- Step 5: **Analyzing results and drawing a conclusion**

**Explanation:**  
The different steps in scientific investigation

**Conclusion:**  
Why is scientific investigation important?

Scientific investigation is important because it (b) **helps scientists to answer questions and solve problems.**

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## ACTIVITY 3: Reading a Lab Report

Last year, some students carried out a similar experiment to find out which brand of tissue paper absorbs the most water. This is their lab report.

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**Lab Report**

**Title of the Experiment:**  
Finding out which brand of tissue paper absorbs the most water

**Problem:**  
Does Tempo tissue paper absorb more water than Kleenex tissue paper?

**Hypothesis (假說):**  
Tempo tissue paper absorbs more water than Kleenex tissue paper.

**Apparatus (儀器):**  
4 beakers  
Electronic weight

**Materials (材料):**  
1 litre of water  
1 piece of Tempo tissue paper  
1 piece of Kleenex tissue paper

**Procedure (步驟):**

- (1) Weigh an empty beaker on the electronic weight.
- (2) Weigh the 2 pieces of tissue paper.
- (3) Pour 500ml of water into a beaker.
- (4) Put one piece of tissue paper into the beaker with water.
- (5) Let the tissue paper absorb the water for 30 seconds.
- (6) Put the wet tissue paper into an empty beaker.
- (7) Weigh the beaker with wet tissue paper.
- (8) Repeat the procedure with another piece of tissue paper.
- (9) Calculate the amount of water absorbed by each piece of tissue paper.

**Observations and results (觀察及結果):**  
Both pieces of tissue paper absorbed water. The weight of water absorbed by Tempo tissue paper is 10g and the weight of water absorbed by Kleenex tissue paper is 7g.

**Conclusion (結論):**  
Tempo tissue paper absorbs more water than Kleenex tissue paper.

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This is a **lab report** written by the man in the video.  
A lab report includes some **special elements**:

**S1 LAC – Inte** **Lab Report** **Title of the Experiment:**

Finding out which brand of tissue paper absorbs the most water

**Problem:**  
Does *Tempo* tissue paper absorb more water than *Kleenex* tissue paper?

**Hypothesis (假設):**  
*Tempo* tissue paper absorbs more water than *Kleenex* tissue paper.

**Apparatus (儀器):**  
4 beakers  
1 electronic weight

**Materials (材料):**  
1 litre of water  
1 piece of *Tempo* tissue paper  
1 piece of *Kleenex* tissue paper

**Procedure (步驟):**

- (1) Weigh an empty beaker on the electronic weight.
- (2) Weigh the 2 pieces of tissue paper.
- (3) Pour 500ml of water into a beaker.
- (4) Put one piece of tissue paper into the beaker with water.
- (5) Let the tissue paper absorb the water for 30 seconds.
- (6) Put the wet tissue paper into an empty beaker.
- (7) Weigh the beaker with wet tissue paper.
- (8) Repeat the procedure with another piece of *Kleenex* paper.
- (9) Calculate the amount of water absorbed by each piece of tissue paper.

**Observations and results (觀察及結果):**  
Both pieces of tissue paper absorbed water. The weight of water absorbed by *Tempo* tissue paper is 10g and the weight of water absorbed by *Kleenex* tissue paper is 8.5g.

**Conclusion (結論):**  
*Tempo* tissue paper absorbs more water than *Kleenex* tissue paper.

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**We usually use action verbs to write instructions.**

**We usually use the past tense to write observations and results.**

**We usually use the present tense to write the conclusion.**

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**ACTIVITY 4:**  
A scientific investigation in our everyday life: Does adding sugar help cut flowers to stay fresh longer?

*Some people believe adding sugar helps cut flowers to stay fresher. Some people say adding sugar doesn't help. What do you think about this problem?*

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## Does adding sugar help cut flowers to stay fresh longer?

□ *Some people believe adding sugar helps cut flowers to stay fresher. Some people say adding sugar doesn't help. What do you think about this problem?*

		
<i>cut flowers</i>	<i>fresh (adj.)</i>	<i>Withered (adj.)</i>

□ Does adding sugar help cut flowers to stay fresh longer? Let's carry out a scientific investigation.

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## A scientific investigation in our everyday life

□ **Step 1: Making observations**

- You observed that some cut flowers stayed fresh longer while some did not.

□ **Step 2: Asking questions**

- You started thinking about this observation. You asked the question:
  - Does (1) **adding sugar** help cut flowers to stay fresh longer?

□ **Step 3: Proposing a hypothesis**

- (2) **Adding sugar** helps cut flowers to stay fresh longer than (3) **not adding sugar**.

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## A scientific investigation in our everyday life

□ **Step 4a: Designing a fair test**

Variables	Independent variable (the variable to be changed)	Dependent variable (the variable to be measured)	Controlled variables (variables to be kept constant)
1. Adding sugar	✓		
2. No. of days for which the flowers stayed fresh		✓	
3. Type of flowers			✓

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## A scientific investigation in our everyday life

□ **Step 4a: Designing an experiment**

■ Instruments and materials needed:

instruments	materials
beakers	flowers water sugar

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## A scientific investigation in our everyday life

- **Step 4b: Carrying out the experiment and recording results**
  - Draw the set-up and write down the steps of your experiment.



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## A scientific investigation in our everyday life

- Carry out the experiment and record the results.

	No. of days for which the flowers stayed fresh
adding sugar	
without adding sugar	

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### A scientific investigation in our everyday life

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**Step 5: Analysing results and drawing a conclusion**

1. Do the results support the hypothesis?  
\_\_\_\_\_?
2. Write down your conclusion.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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### Reflection on how to improve the experiment

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- A. What do you think of your experiment?
- B. When you designed your experiment, what were the important things to consider?
- C. Do you want to improve your experiment? Why? How?

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# ACTIVITY 5:

## Writing a Lab Report

Use the writing frame below to help you write your lab report for your experiment.

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 11 LangguageArts dan Komunikasi, 21st Century  
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**Activity for Writing a Lab report**  
 Use the writing frame below to help you write your lab report for your experiment.

**WRITING FRAME**

**Title of your experiment** \_\_\_\_\_

**Problem** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Apparatus** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Procedure** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Observation/ results** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Conclusion** \_\_\_\_\_

LAC\_E1\_L\_writing\_labreport\_04f page 9

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## EXTENDED ACTIVITY

Let's enjoy a rap song about scientific investigation. Fill in the blanks in the lyrics while you listen to see how many words you can get!




<http://www.youtube.com/watch?v=8Xg4bIpuvRw>

*Click icons to play* Pages 11-13

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*Scientific method rap*

The (1) **scientific method** is really kind of neat \_\_\_\_\_  
 To make it even more fun  
 Let's put it to a beat

A (2) **problem** \_\_\_\_\_ is a question  
 The answer we will find  
 Let's state it very carefully with a scientific mind

A prediction of the answer  
 Comes from the things we know  
 (3) **Observations** \_\_\_\_\_ and past info  
 Lead the way in which to go  
 We call this a (4) **hypothesis** \_\_\_\_\_  
 A silly word we say  
 To guide us in the (5) **process** \_\_\_\_\_  
 The scientific way

The (1) **scientific method** is really kind of neat  
 To make it even more fun  
 Let's put it to a beat

A scientist must (6) **experiment** \_\_\_\_\_  
 Five senses and tools we use  
 Collecting lots of data  
 (7) **Organizing** \_\_\_\_\_ it how we choose

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To design a good experiment  
There're a few things we will need

The (1) **scientific method** is really kind of neat  
To make it even more fun  
Let's put it to a beat

So we've seen all of the data  
Our (8) **conclusion** to review  
It's time to answer the problem  
We've learnt a thing or two  
Conclusions must be supported  
By data we have seen

To keep or toss our experiment  
I'll show you what I mean  
If your data is incomplete  
Your observation's very weak  
The variable change was faulty  
Controls you did not keep  
Well you can't (9) **support** your hypothesis  
Refute it we will say  
But do not stop from trying

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The scientific way \_\_\_\_\_

The (1) **scientific method** is really kind of neat  
To make it even more fun  
Let's put it to a beat

Repeating a solid experiment  
Is the only way to go  
Other scientists will then challenge you  
To see what you still know

This ends our science story  
Science inquiry is a tool  
That scientists use for (10) **learning**  
This is our golden rule

Let's bring it to a close now  
In a rhyming for one day  
And close up with the chorus  
The scientific way  
All together

The (7) **scientific method** is really kind of neat  
To make it even more fun  
Let's put it to a beat

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S1 LAC – Integrated Science Go back to unit 1

## Meaning of the icons

Icons	Activities / Skills involved
	<b>Getting to know the topic</b>
	<b>Reading a text</b>
	<b>Discussion</b> <b>Talking about the text(s) and/or the activities</b>
	<b>Writing a text</b>
	<b>Extended activity</b>
	<b>Homework for consolidation</b>

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## Appendix B

### Online Resources

In this appendix, resources on CLIL and LAC for secondary and primary school teachers and researchers are first presented, followed by resources for college/university (tertiary) teachers and researchers. The websites included in these two sections have been selected from over a hundred relevant websites. They are selected because they are ‘meta-websites’, which summarize and organize resources from various sources and can be used as guides to other websites for a specific purpose or subject. At the end of the appendix, selected online corpus resources and tools are listed in tables, which can be used as reference tools for language learning and teaching for all levels of learners and teachers as well as for LAC and CLIL researchers. As with most sites found on the Web, readers are encouraged to exercise their critical minds to judge whether the resources are useful for them or not.

### Useful Websites for Secondary and Primary School Teachers

- <http://www.readingtolearn.com.au/index>
  - What it offers: ‘reading to Learn (R2L) is one of the world’s most powerful literacy programmes’. This website sets out the principles of the Reading to Learn programme. Reports and articles on the methodology can be downloaded for free, and the teacher resource package can be ordered online, with some samples shown on the site.
  - Special features: a handy introductory website to the R2L programme; it outlines the purposes and effectiveness of the programme with strong support from the research literature.
  - Suitable for: secondary school teachers who want to know about the R2L programme and to order their workbooks and videos online and researchers who want to know about this programme in depth.

- <https://www.teachers.cambridgeesol.org/ts/teachingqualifications/clilTest>
  - The official website for a specialist module of the Teaching Knowledge (TKT) that focuses on CLIL and content and language integrated teaching in an additional language. It introduces the module briefly but clearly, with purposes, free downloadable training materials for the test (and also for learning about CLIL approaches).
  - Special features: good for learning about how CLIL teachers are trained; help in-service teachers (across all levels) learn, assess the knowledge of and train themselves to be CLIL teachers; with handbooks, sample test papers and keys, and teacher guides (for knowing about CLIL and the TKT-CLIL test): can be a quick and systematic introduction to one version of the CLIL approach; the short, workable, self-trainable worksheets with answer keys are particularly useful; registration valid for only 7 days, or one has to re-register when it expires.
  - Suitable for: all levels of teachers who want to know about CLIL and how to qualify as a CLIL teacher. However, bear in mind that CLIL is an umbrella term for a great variety of approaches and the CLIL approach introduced here is one of the many possible approaches.
- <https://sites.google.com/site/englishforclilteachers/Home>
  - What it offers: A collection of Web resources for primary teachers; it can be seen as a virtual learning centre for individual development of the specific language and teaching competences that each teacher needs in his/her specific CLIL context.
  - Special features: well organized; list the kinds of competences that a CLIL teacher would need for effective teaching, especially linguistic competences including learning strategies, pragmatic competences and academic English.
  - Suitable for: mostly primary CLIL teachers and other teachers as well.
- <http://www.teachingenglish.org.uk/clilsimple>
  - What it offers: This is a BBC teaching support website for CLIL, an introductory website.
  - Special features: simple, introductory, with a limited number of CLIL activities as illustration, and an introduction of manageable simple tools and teaching resources for novice CLIL teachers. It provides several other very useful links about CLIL, including one with lesson plans, videos and activities which can be downloaded by grade level and topic. <http://teachunicef.org/> (from prekindergarten to grade 12).
  - Suitable for: teachers who are completely new to CLIL. Again, bear in mind that the activities and teaching approaches need to be adapted for different contexts.

- <http://www.isabelperez.com/clil.htmprojects>
  - What it offers: A comprehensive introduction to CLIL provided with Internet resources about its origin, projects, articles and, most importantly, portals and encyclopaedias for many school subjects: a resource bank with hundreds of links to CLIL resources, including suggested ratings.
  - Special features: the resources section provides a comprehensive list of practical websites with teaching support tools and resources (grouped by language and subject), but one has to sort out the most useful ones by himself/herself; useful for teachers involved in implementing bilingual education in European schools; multiple languages (English, French and German are featured).
  - Suitable for: primary and secondary school teachers.
- “CLIL 4 Teachers” <http://clil4teachers.pbworks.com/w/page/8427859/CLIL4teachers%20Front%20Pagea>
  - What it offers: A wiki for sharing teaching resources of CLIL of different languages. It is part of the Association for Language Learning’s FLAME initiative to support cross-curricular approaches to language learning. Teachers are free to upload their own teaching materials to share with other teachers, including PowerPoint slides, documents, photographs and audio files.
  - Special features: ready-made PPT slides and worksheets for download (access upon email request); ‘the resource bank’ is a collection of uploaded resources, which were organized by subject and by language; multilingual materials (English and French are featured); teaching materials are provided by any teacher who is interested in sharing.
  - Suitable for: primary and secondary school teachers who want to share teaching materials with other CLIL teachers.
- “CLIL Teachers’ Web Guide” (<http://webguide.wordpress.com/>)
  - What it offers: An Internet guide of interactive resources for CLIL teachers.
  - Special features: extensive lists of resource websites for CLIL teachers of four broad subject areas (mathematics, natural sciences, physical education and social sciences); support and resources for technology teachers; these websites are mostly interactive and interesting, which can be used to motivate learners.
  - Suitable for: secondary school teachers
- <http://digifolio.rvp.cz/artefact/file/download.php?file=14043&view=2893according>
  - Another good summary of useful CLIL websites, listed to subjects.

- <http://patins-training.wikispaces.com/Free+Online+Resources+for+Teaching+Across+the+Curriculumof>
  - What it offers: This is a free online resource hub ‘teaching across the curriculum’.
  - Special features: list the free online LAC resources for different curriculum areas, including mathematics, science, social studies, reading/language arts, writing and special education; teacher resources are also available such as those for quizzes, tests and classroom social networking and management; the links are selected from many relevant ones, and each is annotated; generally good in organization, quality and amount.
  - Suitable for: primary and secondary school teachers.
- <http://gzhemily.wix.com/hkuqefproject> (password: hkuqefproject)
  - What it offers: The website ‘*Content and Language Integrated Learning (CLIL) for South Asian Students: Building Teacher Capacity to Cater for Learner Diversity*’ is one of the deliverables of the Hong Kong Education Bureau (EDB) Quality Education Fund (QEF) Project developed by the CLIL Project Team at the Faculty of Education, the University of Hong Kong. The website provides examples of CLIL curriculum materials and pedagogical strategies for the subject of integrated science at junior secondary levels (Grade 7–9). Video clips of CLIL classroom activities, teacher workshops and student learning strategy workshops as well as curriculum materials (PowerPoint slides, worksheets, teacher notes, handouts, pictures) and research articles are available for download.
  - Special features: lesson video excerpts and samples of student work to illustrate CLIL teaching and learning processes. Feedback and reflections from the teacher participants and research team members are also available which may offer a helpful window on CLIL classroom practices. Teachers visiting the website can also share CLIL teaching experiences and exchange ideas by joining the ‘HKU-QEF PROJECT’ Facebook group and becoming a member of the project community.
  - Suitable for: both secondary and primary school teachers in CLIL/LAC programmes in English as an additional language (EAL) contexts. It may also serve as a useful resource for CLIL/LAC teacher professional development workshops and university teacher preparation programmes.

## Useful LAC/CLIL Websites for College/University (Tertiary) Teachers and Researchers

- <http://mon.uvic.cat/clil/>
  - What it offers: A website created by Universitat de Vic (UVic), which introduces CLIL for tertiary contexts and provides support for teachers. There are two main kinds of resources: teaching support and language support. In teaching support, one can find templates to help plan lessons and tasks in class, plus other resources. In language support, one can find examples of classroom and academic language and glossaries of subject-specific language.
  - Special features: a neatly organized website with very clear goals; one can gain an overall and macro-view of CLIL in tertiary contexts as well as guidelines for professional development in CLIL; the teaching support section sets out the goals about what constitutes good teaching practice in CLIL. The ‘language support’ section discusses three different ‘languages’ needed in the CLIL classroom: classroom language (general), academic language and subject-specific language, which echoes the framework proposed in this book. In the bibliography section, one can find references on CLIL in higher education, using an online journal search utility “Refworks”. Links to multilingual CLIL are also listed.
  - Suitable for: teachers and researchers in tertiary/university contexts.

There are several developments of LAC: FLAC (Foreign Languages Across the Curriculum), CLAC (Culture and Language Across the Curriculum) and WAC (Writing Across the Curriculum). The LAC movement in the USA started out from colleges and universities, and LAC programmes in the USA are often offered at the tertiary/university level. Links to universities offering LAC/FLAC programmes are provided in the website below. On this website, when one checks out each link to the LAC programme in a college, one can visit its own ‘resources’ or ‘links’ sections for further information and resources about LAC other than the programme they offer.

- <http://languagesacrossthecurriculum.com/resources>
  - What it offers: resources and information for teachers interested in expanding their use of foreign languages beyond the traditional foreign language curriculum. It provides links to LAC articles, knowledge about LAC models, current issues and terminologies, and also links with other institutions offering LAC courses.
  - Special features: the “Higher Education Web Sites” section provides links to LAC programmes in the universities in the USA.
  - Suitable for: tertiary researchers and teachers in LAC.

The origins of WAC—Writing Across the Curriculum and Writing/English in the Disciplines. The website below provides resources for WAC and information on WAC international networks:

- ‘The WAC Clearing House’ (<http://wac.colostate.edu/intro/>)
  - What it offers: ‘The WAC Clearinghouse, in with the International Network of Writing Across the Curriculum Programmes, publishes journals, books, and other resources for teachers who use writing in their courses’. It is a specific guide for information about WAC, from its origin, definition and purpose, to practical teaching tips and resources.
  - Special features: well organized for researchers and teachers, from beginner to advanced levels; introduction to the field, with information about research and teaching; for researchers, there are journals, books and conference information, building up a research community; for teachers, the ‘WAC links’ provides selected resources under a numbers of categories including programme design, assessment, teaching and technology.
  - This website provides a list of institutions offering WAC programmes in the USA with annotations on each. One can find more information about LAC programmes following these links (<http://wac.colostate.edu/programmes/>).
  - Suitable for: researchers and teachers interested in WAC at all levels.
- <http://clacconsortium.org/>
  - This is an introductory website for CLAC.

## Free Online Corpora and Corpus Tools

The following section presents a table of some free online corpora and corpus tools which may be useful for language researchers and teachers. Corpora can be used not only for corpus linguistics and corpus-based research, but also for language teachers and learners to study word usage in authentic contexts, e.g. check the corpus data to learn about trends in the usage of specific language items or lexical phrases. Researchers have investigated the positive effect of hands-on online concordancing tools for language learning, although there are also some other concerns about problems in the use of computer and concordancing programmes (Boulton 2009). For practical guides in using online corpus tools and concordancers, please refer to a website created by Burgess and Cargill (2013) for a very simple example to illustrate the use of concordancing programmes in exploring language use patterns: ([http://www.writersresearch.com.au/\\_html/concordancing\\_help.html](http://www.writersresearch.com.au/_html/concordancing_help.html)).

For those who are not very comfortable using software or looking at a huge amount of texts, the writer suggests that it is better to see the corpora as reference tools, e.g. dictionaries with authentic examples.

- Selected major corpora of texts from various genres

Name of the corpus/corpus tool	Description	Advantages and special features	Suitable for
PolyU Language Bank <a href="https://www.polyu.edu.hk/eng/research/corpus-resources">https://www.polyu.edu.hk/eng/research/corpus-resources</a>	Over 12 million words of multilingual, multigenre corpora	User-friendly; various corpora (including Brown Corpus, LOB) of different genres and disciplines can be selected for concordance searches, using the bank's built-in Web-based concordance	Teachers, researchers and learners
British National Corpus (1980–1993) <a href="http://www.natcorp.ox.ac.uk/">http://www.natcorp.ox.ac.uk/</a>	A 100-million word collection of samples of written and spoken language. For phrase search, see <a href="http://phrasesinenglish.org/">http://phrasesinenglish.org/</a>	Free concordance sampler; only 50 examples provided. no KWIC (key word in context) for BNC; good phrase search at 'phrase in English'	Researchers, teachers and learners
The Corpus of Contemporary American English (COCA) (1990–2012): representative of modern American English <a href="http://www.americancorpus.org">http://www.americancorpus.org</a>	450-million words, the largest freely available corpus of American English, equally distributed among spoken, fiction, popular magazines, newspapers and academic texts	Built-in concordancer with comprehensive search functions; lots of related resources are available: collocates, N-grams, academic vocabulary, word and phrase; full-text data can be purchased	Teachers, researchers and learners
GloWbE (Global Web-based English): <a href="http://corpus2.byu.edu/glowbe">http://corpus2.byu.edu/glowbe</a>	1.9 billion words from 1.8 million web pages in 20 different English-speaking countries	The largest Web-based corpora for examining variation in English—by dialect, genre and over time; the same built-in concordancer as COCA	Researchers, teachers and learners
Enron email corpus: <a href="http://www.cs.cmu.edu/~enron/">http://www.cs.cmu.edu/~enron/</a>	Focusing on business-related emails; personal messages and jokes are avoided	The only corpus of email that is available for free downloading; no searching concordancer is offered	Researchers
ELISA—English Language Interview Corpus as a Second-Language Application <a href="http://www.uni-tuebingen">http://www.uni-tuebingen</a> .	A small audiovisual corpus of spoken English developed with pedagogical goals	Provides easy access to full interview texts and videos; can be browsed by topic index; online	Teachers, researchers and learners

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Name of the corpus/corpus tool	Description	Advantages and special features	Suitable for
<a href="http://de/elisa/html/elisa_index.html">de/elisa/html/elisa_index.html</a>		concordancer (KWIC)	
WebCorp (basis: Google) <a href="http://www.webcorp.org.uk/live/">http://www.webcorp.org.uk/live/</a>	Search in the entire Web as the corpus	KWIC concordances and word lists; but not language-specific	Researchers, teachers, learners
CHILDES (Child Language Data Exchange System) <a href="http://childes.psy.cmu.edu">http://childes.psy.cmu.edu</a>	The world's largest child language database covering 32 languages, 44 million words, 750 GB of media files, 130 corpora; over 3200 published research articles used data from CHILDES	Need to learn the CHAT transcription system and the CLAN programmes; manuals and online tutorials available; more suitable for researchers than teachers	Researchers interested in children's spoken language development, conversation analysis (CA) of mother-child interactions, code-switching, or microanalysis of lexical, grammatical development

*Notes* KWIC Key Words in Context, a popular function in concordancing, denoting a corpus search in which the keyword is shown highlighted in the middle of the display, with the text forming its context on either side

- Selected major corpora of academic and professional texts

Name of the corpus/corpus tool	Description	Special features	Suitable for
Michigan Corpus of Academic Spoken English (MICASE) <a href="http://quod.lib.umich.edu/m/micase/">http://quod.lib.umich.edu/m/micase/</a>	1,848,364 words; transcripts of academic speech	Can browse and search by speech event, discipline, participant and interactive level; all results can be viewed and downloaded, with KWIC	Researchers, teachers and learners
British Academic Written English (BAWE) corpus <a href="http://www2.warwick.ac.uk/fac/soc/al/research/collect/bawe/">http://www2.warwick.ac.uk/fac/soc/al/research/collect/bawe/</a>	6-million-word collection of 2761 high-standard student assignments, across 35 disciplines and across four levels of study (undergraduate and taught masters' level)	Both written and spoken corpora can be searched on the Web concordancer it provides: <a href="https://the.sketchengine.co.uk/open/">https://the.sketchengine.co.uk/open/</a>	Researchers, teachers and learners
The Oxford Text Archive: <a href="http://ota.ahds.ac.uk">http://ota.ahds.ac.uk</a>	Thousands of texts in more than 25 different languages (literary and linguistic resources)	Downloadable archive; easy access to the information about other 70 corpora and sources of texts	Researchers

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Name of the corpus/corpus tool	Description	Special features	Suitable for
Corpus of research articles (CRA) <a href="http://rpce.engl.polyu.edu.hk/RACorpus/">http://rpce.engl.polyu.edu.hk/RACorpus/</a>	A large 5,609,407-word collection of research articles from 39 disciplines	Built-in concordancer with KWIC; can browse by discipline and by sections of research articles	Teachers, researchers and learners
Springer Exemplar <a href="http://www.springerexemplar.com">www.springerexemplar.com</a>	A website powered by Springer where the contents of its academic journals and books (6,985,111 documents) are made available as a corpus for limited searching using their Web-based concordancer	Very simple concordancer, large data set; but limited results are shown; no full-text view of results if they are not in the purchased documents	Teachers and learners

As suggested by Burgess and Cargill (2013), for purposes of teaching and learning, and revision of articles in specific fields, the use of self-made corpora plus a concordancing software program can be a more effective tool. For a discussion of corpus compilation, see: [http://www.writeresearch.com.au/\\_html/corpora.html](http://www.writeresearch.com.au/_html/corpora.html) and also see: [http://v.youku.com/v\\_show/id\\_XNDU50TE5MzU2.html](http://v.youku.com/v_show/id_XNDU50TE5MzU2.html) for a video guide.

**Free concordancing programs** (three user-friendly ones are suggested here)

Concordancing programs are used for corpus search. One needs to have at least a corpus (a collection of texts often in 'txt' format) in order to incorporate it/them into the program and perform the searches. These programs have similar functions as the online concordancing tools mentioned above, but can be run on one's own computer, and some have more comprehensive features.

- AntConc can be downloaded at: [http://www.antlab.sci.waseda.ac.jp/antconc\\_index.html](http://www.antlab.sci.waseda.ac.jp/antconc_index.html)
  - Works in Windows and Linux; reads txt, html and xml files; self-contained application (no installation needed).
  - Main functions: concordances, citation of search term in its context, collocates, word clusters, frequency lists and text profiling through key word lists; very handy.
- TextSTAT, at <http://neon.niederlandistik.fu-berlin.de/en/textstat/>
  - Works in Windows, Linux and *Mac*; Reads txt, html, *Word* and *Open Office files*; Web spider facility for *corpus creation* directly from Internet sources.

- Main functions: concordances, citation of search term in context and frequency lists; multilingual: corpora in 11 different languages are supported including English (no Chinese).

For comprehensive packages for corpus researchers, other tools are suggested, including MonoConc Pro and WordSmith Tools, which are not free.

## Online Linguistic/Text Analysis Tools and Guides

This section lists a selection of simple text analysis tools that can be used online, i.e. without installation. These tools allow you to create concordances, word lists and text profiles from your own texts or from web pages of your choice. These tools are especially good for learners (analysing their own texts) and are also potentially useful for researchers and even teachers.

- <http://www.lextutor.ca/>: Compleat Lexical Tutor ('concordance' section)
  - KWIC concordance for each word in the text.
  - See also 'phrase extractor section' to build concordance with word clusters.
  - A very comprehensive website with different sections of interesting tools designed for learners and researchers.
- <http://www.spaceless.com/concordancer.php>: Spaceless
  - Returns document statistics with a text aloud and a variety of word lists.
- <http://www.staff.amu.edu.pl/~sipkadan/lingo.htm>: TurboLingo
  - KWIC concordance for all words in the text/web page.
  - Frequency lists and other features (sentence length count, concordance, etc.).
- <http://www.writersdiet.com/WT.php>: Writers diet
  - Diagnose your verbal fitness levels by entering your own writing for a test.
  - Test results show how fit your writing (in terms of sentence-level grammatical features) is and give practical tips on improvement.
- <http://www.wordle.net>
  - Wordle is a tool for generating 'word clouds' from a text that you provide.
  - Good for learners to try out and see the words they have used more frequently than others.
  - Interactive and fun.

## Online Virtual Learning Centres for Academic Studies

- <http://www.virtuallrc.com/>
  - The Virtual Learning Resources Center indexes thousands of academic information websites, selected by teachers and library professionals worldwide, in order to provide students and teachers with current, valid information for school and university academic projects. Simply search whatever you want, and a list of websites would be presented for your choice.

Most academic learning centres (especially for academic writing) are offered for university and college students. Just google it, and one can find a great number of them; the following are selected examples with comprehensive lists of online resources:

- <http://writingcenter.fas.harvard.edu/pages/resources>—Harvard Writing Center
- <http://writingcenter.gmu.edu/writing-resources/wc-quick-guides>—George Mason University
- <http://writing.wisc.edu/wac/browse>—Writing Across the Curriculum at UW Madison
- <http://writingcenter.unc.edu/esl/online-tools/>—University of North Carolina
- <http://www.amherst.edu/academiclife/support/writingcenter/resourcesforwriters>—Amherst College

There are still many other writing centres which provide well-organized and selected lists of online writing resources. By referring to the sections with names such as ‘online tools’, ‘links’ or ‘further resources’ (other possible names as well) on these websites, one can find a sufficient amount of resources for self-learning.

Apart from these online resources and tools (for specific problems in writing), the most famous online writing laboratory that provides a full course-like tutorial of academic writing is the Purdue Online Writing Lab (OWL):

- <https://owl.english.purdue.edu/>
  - This writing laboratory is the best representative of online academic writing laboratories. There are many others at other universities too.

# Glossary

**‘2-in-1’ teacher** Teachers who have both the awareness and capacity to perform the dual roles of content teacher and language teacher; i.e. a teacher who can integrate content teaching with language teaching

**Academic literacy/ies** This term (in both plural and single forms) is often used to ‘signify courses intended to enable student writers to meet the demands of writing in the university’ (Lillis and Scott 2007, p. 6). By extension, it can be used to refer to the capacity/ies to read/write in academic contexts at all levels

**Access paradox** refers to the paradox that on the one hand, students should have access to the dominant variety of language to avoid being marginalized in the society; on the other hand, however, such access to the dominant language perpetuates and reinforces the dominance (Lodge 1997)

**Adjunct language classes** the adjunct language class is part of an adjunct model in a cross-curricular programme. According to Snow and Brinton (1988), the key feature of an adjunct model is that it is a ‘cross-curricular program in which students are enrolled concurrently in two linked courses—a language course and a content course—that share the content base and complement each other in terms of mutually coordinated assignments’ (p. 556)

**BICS** Basic Interpersonal Communication Skills. We use BICS in our everyday life, such as in face-to-face conversations with family members and friends, informal interactions with shop assistants when we go shopping or casual chit-chat on Facebook, WhatsApp, email or Internet forums. They are said to be used in context-embedded conversations

**Bilingual education** defined broadly, it involves teaching academic content in two languages (usually the native language and an L2) with varying amounts of each language used in accordance with the programme model. Bilingual programmes can be broadly classified into three types of models (Fishman 1976) based on their educational/societal aims: maintenance, transitional and enrichment programmes. The first two types have arisen from the needs of the linguistic minority/immigrant students in the society of another dominant language (L2). Enrichment programmes, in contrast, have been designed for majority language

students who want to master a high level of proficiency in a socio-economically important L2 (e.g. immersion). There are, however, many other possible criteria to classify bilingual education programmes

**Bridging pedagogy** Pedagogy that aims at bridging between students' existing levels of knowledge and skills and the required levels of knowledge and skills required by the school curriculum

**CALP** Cognitive Academic Language Proficiency. As opposed to BICS, CALP refers to the academic language knowledge and skills useful in understanding and speaking about formal academic topics in the classroom and in reading and writing about these topics in school assignments and examinations. They are necessary for context-reduced communication

**Classroom scaffolding strategies** Scaffolding means the appropriate kind of support provided by the teacher or expert peer (usually through classroom talk and interaction) to help students complete a task (above their current level) progressively and reach a higher level of proficiency and understanding with reference to their current level

**Cognitive discourse functions (CDF)** Generic academic language functions that learners are required to perform across different content curricular areas; examples of these functions are 'defining', 'comparing', 'classifying', 'analysing', 'explaining', 'hypothesizing', etc.

**Cognitive tradition in science education** Teachers in the cognitive tradition tend to believe that the main goal of teaching science is to *understand the basic concepts* of physics, chemistry, biology or whatever field is being studied. The primary goal of 'understanding the concept' assumes a fundamentally mentalist approach to learning, under which concepts are seen as mental objects and understanding as essentially a mental process. This often characterizes a content curriculum with little concern about language and communication as an integral part of the content (the other side of the same coin)

**Construe** Construct and organize/classify using semiotic resources

**Content and Language Integrated Learning (CLIL)** CLIL has originated in Europe in the 1990s as an umbrella term to describe a wide variety of programmes in which a second or additional language (e.g. a foreign, regional or minority language and/or another official state language) is used to teach certain content subjects in the curriculum (Eurydice Report 2006)

**Content-based instruction (CBI)** An umbrella term encompassing a wide range of 'instructional approaches that make a dual, though not necessarily equal, commitment to language and content-learning objectives' (Stoller 2008, p. 59). Lyster (2007) has also used the term CBI in a broad sense to refer to 'classrooms where subject matter is used at least some of the time as a means for providing second language learners with enriched opportunities for processing and negotiating the target language through content' (p. 1). Although CBI has come to be

more associated with second or additional language (L2) contexts, CBI as a broad curricular framework includes work done in first language (L1) contexts as well (Stoller 2004). At the core of this approach to curriculum design is the belief that language instruction is most effective when it focuses on ensuring that students learn the language for communication in meaningful and significant social and academic contexts (Genesee 1994). There is a range of CBI models along a continuum varying from ‘content-driven’ to ‘language-driven’ learning goals (Met 1998)

**Context-embedded communication** Refers to everyday face-to-face conversations in which there are many cues to the listener such as facial expressions, gestures and concrete objects of reference

**Context-reduced communication** Refers to communication that takes place in formal lectures or academic writing where there are supposed to be fewer non-verbal cues and the language is more dense and abstract

**Contextualized language teaching** As the term content-based instruction (CBI) covers a number of different models and approaches with different emphases, Davison and Williams (2001) developed a framework in which language and content integration is seen as ‘a cline ranging from “contextualised language teaching” to “language-conscious content teaching”’ (p. 90). In general, contextualized language teaching means teaching language in a communicative way using authentic contexts of language use

**Critical pragmatic approaches** Critical pragmatic approaches aim at helping students to become critically aware of multiplicity of norms across different disciplines as well as the changeability of linguistic conventions to meet different new functions and new interests. This kind of critical awareness and genre/linguistic analysis can serve both the pragmatic function of providing access to dominant genres and varieties while encouraging critical awareness of diversity and changeability of norms in different disciplines

**Cross-referencing** An instance in a text referring to the related information mentioned elsewhere in the same document

**Cultural capital** A term used by Bourdieu (1973, 1991) to refer to language use, skills, competencies and orientations/dispositions/attitudes/schemes of perception (also called ‘habitus’) that a person is endowed with by virtue of socialization in her/his family and communities

**Curriculum mapping** To bridge the intra- and intercurriculum disconnects, teachers and curriculum developers can identify the language demands of different academic subjects and conduct horizontal (from input genres to output genres) and vertical (from junior to senior levels) mapping of language needs within and across different academic subjects

**curriculum** In a broad sense, this term can cover a wide range of components, including the selection and sequencing of academic content taught in a school or

in a specific course or programme, as well as the teaching and learning objectives, teaching materials, pedagogical approaches and assessment methods

**Deconstruction** One stage of the teaching/learning cycle (TLC). In this stage, teachers and students jointly analyse a text. The teacher usually engages the students in discussing the main communicative purpose and main ideas of the text and how the writer organizes these ideas systematically through different genre stages in order to achieve the main communicative purpose. The focus is thus on guiding students to notice both the global genre structure of the text and how the academic content (i.e. field) unfolds through the different stages of the genre. Students' attention is also drawn to language features specific to different stages and phases

**Detailed reading** This is an important stage in the renewed version of the teaching/learning cycle (TLC) in the Sydney School genre-based pedagogy (Rose and Martin 2012). In detailed reading, the teacher guides students to identify specific wordings in a short text. 'A highly designed mode of teacher-class interaction is used to prepare all students to identify each word group, which they highlight as they go. As each word group is identified, its meaning may be elaborated with definitions, explanation or discussion' (Rose 2012a, p. 8)

**Dialogic strategy of teaching** Teaching by engaging students in dialogues, such as student debates, student inquiry projects, pair/group work and teacher-student dialogue

**Discourse semantics** A term in systemic functional linguistics (SFL); it refers to the analysis of how a text is schematically structured into stages, phases and messages to achieve its primary social goal

**Disintegrating approach** In traditional language education, language is taught in systemic disintegrated contrasts moving from the lower level system (such as sounds and letters) to the higher (such as sentence grammar) in separate language activities in different classes and courses. For example, learners need to acquire phonics and letter-sound relationships before they could move on to words. This approach is criticized by proponents of top-down approaches such as the whole-language approach which emphasizes literacy learning in holistic meaningful contexts and de-emphasizes explicit teaching of bottom-up patterns and skills

**EAL** English as an additional language; intended as an umbrella term to cover a wide range of different scenarios, where English is learned as a language in addition to one's native or familiar language

**Embedded literacy** Systematic planning of embedded language support during content teaching

**English medium education** An education provision that uses English as the primary medium of instruction—in particular, where English is not the first language of the students

**Entextualize** To express/recode the information from notes, visuals, mind maps and graphic organizers in appropriate (academic) language

**ESP** English for Specific Purposes—a field of study that focuses on the teaching and learning of English for specific (professional) purposes, such as English for business, medical care, science and technology, and tourism. ESP is used in this book to refer to one tradition of genre study with a focus on the analysis, application and instruction of academic language in university and professional settings. Representative researchers in this tradition include John Swales, V. J. Bhatia, John Flowerdew and Ken Hyland

**Explicit instruction** Usually involves deductive and explanatory approaches to teaching. For example, an explicit instruction on genre structure would involve analysing the stages and phases in a model text to the students first before asking students to identify these stages and phases in another text from the same genre

**Field** The subject matter of the text

**Focus on Form (FonF)** A pedagogical approach defined by Long (1991) as drawing learners' attention to linguistic elements during a communicative activity, a modification on the entirely meaning-centred communicative language teaching (CLT) approach

**Focus on meaning** A communicative instructional approach which is meaning-centred. The proponents believe that comprehensible input and meaning-oriented tasks are necessary and sufficient for language acquisition

**Form readers** This is an extension by Cai (2014) on Hirvela's (2004) categories of readers with reference to the characteristics of Chinese learners. Chinese students in EFL (English as a foreign language) contexts are often reported to be form readers—linguistic or language readers who tend to mainly 'focus on form' when they are reading a text in English; i.e. they are actively analysing grammatical structures and accumulating new vocabularies for future reading and writing

**Formative assessment** Also known as assessment *for* learning, or assessment *as* learning, with the aim to use assessment (e.g. portfolios, projects) as a tool for students to learn

**Genre analysis** This term was originally proposed by Swales (1990). It is a process of analysing a sample text or exemplar text of a genre from top-down; i.e. from its purpose and audience, its macro-stages, to its lexico-grammatical choices

**Genre-based pedagogy** A cluster of teaching approaches that offer principled ways (usually through identification and analysis of text stages and linguistic features) of teaching literacy practices through involving students in understanding the features of different genres. 'By enabling teachers to ground their courses in the texts that students will need to write in occupational, academic, or

social contexts, they help guide learners to participate effectively in the school and the world outside the ESL classroom' (Hyland 2007, p. 149)

**Genre** Genre is defined differently under different theoretical traditions (see a comprehensive review by Hyon 1996); the author of this book finds the Sydney School's definition most useful to teachers in general: '...genres are 'staged goal-oriented processes': they are goal-oriented because a text unfolds towards its social purpose, and staged because it usually takes more than one step to reach the goal. Genres evolve in a culture to achieve common social purposes that are recognized by members of the culture so that the stages they go through are generally predictable for members of the culture'. (Rose 2012a, b, p. 1)

**Grammatical metaphor** Grammatical metaphor is closely linked to, but not the same as, nominalization. When a nominalized word or group functions *as if* it were a grammatical *participant* (e.g. grammatical *subject* or *object* in traditional grammar terminology), it is called a grammatical metaphor (Halliday 2004). For instance, the verb 'move' which functions as a *process* in the original clause 'an electron moves in an orbit' becomes nominalized as *motion* and functions as a *thing* (and a grammatical *subject*) in the nominal group in the sentence 'The orbital motion of an electron is studied with SPS'

**Graphic organizer** Using graphics (e.g. flow charts, tables, tree diagrams) to organize and structure ideas, concepts and information systematically

**High challenge and high support principle** Gibbons (2009) proposes that instead of being presented with dumbed-down tasks, students can be led gradually towards higher levels of performance through carefully designed challenging tasks with built-in language and cognitive support

**High-stakes tests** Tests that are used to make important decisions about students, educators, schools or districts and carry significant socio-economic or public consequences

**Immersion** Immersion is usually classified as a type of content-based instruction and is meant to be a kind of additive bilingualism (Cummins 1979) programme in which students coming from the same language background who speak the society's majority language as their first language (L1) are taught (some of) their content subjects in a target language (L2) other than their first language to attain a high level of proficiency in the target language without compromising their content attainment and first language attainment. The prototypical example of immersion is Canadian French immersion where English-speaking children are taught (some of the) content subjects in their L2, French. There are many different kinds of immersion programmes in the world, and the target languages usually include socio-economically important (trade) languages; e.g. Japanese and Chinese immersion programmes in Australia.

**Implicit instruction** Usually involves inductive and discovery approaches. Unlike explicit instruction, the instructor does not outline the rules or make direct

explanations, but involves students in inquiry-based tasks that allow students to explore and discover the concept or information through inquiry-based activities

**Information readers** Using Hirvela's (2004) analogy, there are two levels of processes in reading for gaining knowledge about writing: mining and writerly reading. Information readers are more attentive to information, meaning or 'content'; i.e. the *what* in a text.

**Input genres** The kind of genres that students are exposed to and taught in

**Inquiry-based pedagogy** Similar to 'problem-based learning' (PBL) approaches—which start by posing questions, problems or scenarios, rather than simply presenting established facts or memorizing information/knowledge from instructional materials

**Instantiation of meanings** 'Instantiation refers to the relation between features in language systems and instances of meaning in actual texts. Thus each genre and its attendant register variables (field, tenor, mode) is a specific instance of the language system as a whole. Instantiation occurs at all language levels, for example, sequences of phonemes in a word instantiate phonological systems' (Rose 2012a, b, p. 1). In short, systemic functional linguistics (SFL) theorizes language as a hierarchical system of different stratified layers (i.e. strata) of patterns of different combinations of elements, which together instantiate meanings

**Integrating approach** Rose's (2012a, b) notion of the *integrating* approach is different from the top-down approach, which to Rose (2012a, b) errs in not providing enough scaffolding to the learner in acquiring the bottom strata patterns. Rose's integrative approach is situated in the Sydney School genre-based pedagogy, which seeks to integrate both bottom-up and top-down approaches by proposing a *teaching/learning cycle* (TLC)

**Intercurricular disconnect** Disconnects *across* the curriculum, including those found among the different curriculums of content subjects (e.g. science, mathematics, history, social studies, geography) as well as a deep disconnect between the content subject curriculums and the curriculums of the language subjects (e.g. English as a foreign language subject, Chinese as the first language subject)

**Intracurricular disconnect** Disconnects *within* the curriculum. There are two types. The first type is horizontal disconnect: a mismatch between the input genres and the output genres that characterize a content curriculum. The second type is vertical disconnect, referring to the abrupt change in the nature and kinds of assessment tasks that students are required to do in the curriculum when transiting from junior levels to senior levels

**Joint construction** The students are engaged by the teacher in co-constructing a new text based on the notes that they have made during the first stage of text analysis. In this second stage of joint construction, the teacher provides ample language scaffolding to students as they jointly reconstruct a new text based on

the notes made, with the teacher constantly pointing at the notes made on the blackboard to provide clues to the students to answer his/her questions. With information genres and evaluative genres (e.g. classifying report, explanation, discussion, exposition), the new text looks very similar to the original text in terms of content, but new wordings are used. With narrative genres (e.g. stories, recounts), the new text looks very similar in terms of the structure and wordings, but new content is used

**LAC** Language across the curriculum; it emerged in the 1970s in Britain as a whole-school approach to address the language and literacy needs of students studying in different subject areas. It originally targeted all students (i.e. students study content subjects in their first language, not just linguistic minority students). The rationale behind LAC is that language aspects should be given due attention by teachers across different subject areas. LAC spread to the USA in the form of the Writing Across the Curriculum (WAC) movement in the 1980s mainly in the context of helping English as a second language (ESL) students in content areas to learn both content and the language that mediates that content. LAC has also spread to Europe as a way towards plurilingualism. LAC has been defined as both a concept and a policy ‘linking different forms and aspects of language education within the school, particularly emphasising the role of language in all subject-matter learning’ (Vollmer 2007, p. 177)

**Language/academic functions** A range of functions that are commonly found in academic texts and realized with various lexico-grammatical patterns (e.g. sentence patterns): e.g. comparing and contrasting, exemplifying, defining, classifying, hypothesizing, predicting, giving evidence and expressing conditional or causal relationships. Language functions are also called rhetorical functions in the literature. In this book, the term ‘academic functions’ is used to emphasize the role they play in academic contexts

**Language modelling** Lemke (2010) suggests that teachers can provide help to students by modelling how communication in science is achieved through language in both spoken and written forms in all kinds of school genres such as those found in textbooks, assignments and tests

**Language strata (stratification)** A term from systemic functional linguistics (SFL). ‘Stratification refers to the organization of language and its social contexts as a hierarchy of levels or strata. The relation between strata is modeled in SFL as realisation. Thus patterns of meaning in texts (or discourse semantics) are realised (manifested/symbolized/expressed) by function of words in clauses (lexico-grammar), which are realised by patterns of sounds or letters (phonology or graphology)’ (Rose 2012a, b, p. 1)

**Language variation theory** The language variation theory in this book refers to Mahboob’s (2013) three-dimensional model, of which the basic assumption is that language varies based on whether we are communicating with people in or

outside of our community, in speech or in written forms, and in everyday or specialized discourses

**Language-conscious content teaching** According to Davison and Williams (2001)'s framework, language-conscious content teaching is placed towards the 'content' end of the continuum. Any approach which embeds some language objectives into a content syllabus or which is focused on the teaching of particular subject matter as an end in itself but in language-sensitive ways belongs to this model

**Languaging** Using language to mediate the formation of conceptual knowledge. It is 'not merely a means of communicating what is in one person's head to another person, but serves to *construct the very idea* that one is hoping to convey' (Swain and Lapkin 2013, p. 105)

**Lexical metaphor** Accomplished writers use lexical metaphors to achieve the purpose of engaging the audience by turning some abstract processes into concrete processes, e.g. 'Juliet is cold to her father'. The word 'cold' here is a metaphor because it is based on comparison or analogy with temperature (e.g. the weather is cold → she is cold to her father)

**Lexico-grammatical resources** Lexico-grammar is a term adopted in systemic functional linguistics (SFL), which describes the continuity between grammar and lexis (vocabulary). In this book, it often refers to phrases and sentence patterns that can be used as resources to perform academic functions and to construct texts

**Linguistic capital** According to Pierre Bourdieu's language and social reproduction theories (1973, 1991), different languages (or different varieties and styles of language) are given different valuations and have different currencies in a linguistic market, which is configured by power relations linked to the social structure in which the linguistic market has been formed and maintained. Some people by virtue of their family, community and/or school backgrounds can have more linguistic capital than others. Linguistic market is not a metaphor but has real, material impact on people and societies. Linguistic capital is a form of cultural capital

**Linguistic repertoire** The linguistic resources that a person has available for use, for example, the size and range of vocabularies, the different language structures and the different kinds of registers and genres one can understand and produce. A person's linguistic repertoire usually consists of more than one language, especially in plurilingual and globalized societies. The boundaries of languages are not discrete, and different linguistic resources are often mixed and combined fluidly in different genres, registers and styles to achieve different communicative purposes in different sociocultural contexts

**Logical connectors** Linking words (e.g. however, firstly, secondly)

**Macro-genre** A combination of genres, such as an essay that students are required to write in an integrated science examination paper, which consists of two parts, description and discussion

**Mediation** The tool and means through which humans interact with their worlds, for example, the use of cultural artefacts, tools and symbols, including language. In other words, content is ‘mediated’ or ‘construed’ (constructed) by language

**Metalanguage** The language used to describe or reflect on language. For example, the ‘Genre Egg’ in this book provides a common vocabulary (or metalanguage) that content and language teachers can share in order to work together to analyse academic texts found in content subject areas

**Metalinguistic awareness** Awareness of various aspects, functions and linguistic components of language. It involves the ability to think about and discuss language

**Mode** The channel of communication: e.g. written or spoken

**Monologic strategy of teaching** This strategy features the teacher exposing knowledge to students through monologue; e.g. in the form of teacher lecturing

**Morpheme** The smallest meaningful unit in a language which may or may not stand-alone as words. Free morphemes can stand-alone as words, while bound morphemes appear only as parts of a word, such as prefixes (un-) and suffixes (-ly)

**Multimodal mediation** Using multimodal resources as tools to understand academic content and experience (e.g. using visuals, gestures)

**Multimodalities–Entextualization Cycle (MEC)** A curriculum cycle formed by three core processes: (1) create a rich experiential context; (2) engage students in tasks that require some systematic ‘sorting out’ or re-/presentation of the experience gained from (1); and (3) engage students in *entextualizing* the experience using a combination of L1/local language/L2 (spoken/written) academic genres

**Multimodality** Using multiple modes of communication including spoken, written modes and non-verbal modes such as images, music, videos, gestures, movement and demonstration

**Needs analysis** Identifying students’ needs, the essential initial step in developing an appropriate specialized English syllabus. It is a process to answer questions about *what to teach* and *how to teach* in designing a course for specific groups of students

**New Rhetoric School** Genre scholars in the New Rhetoric School focus on the ‘situational contexts in which genres occur than on their forms, and have placed special emphases on the social purposes, or actions, that these genres fulfil within these situations’ (e.g. Bazerman 1994; Coe 1994; Devitt 1993; Freedman

and Medway 1994). Like the ESP/EAP tradition, their work mainly focuses on postsecondary/tertiary-level students. This school has originated from North American scholarship concerned with rhetoric and compositional studies mostly in L1 English courses in the university (usually known as English Composition courses)

**Nominalization** The linguistic transformation process of turning a verb/adjective into a noun, often making it more technical and abstract. For example, in everyday language, one can say ‘Be careful, the water is hot!’. However, in a science textbook, the adjective ‘hot’ becomes nominalized (i.e. turned into a noun) as ‘heat’, which is then turned into a technical term that can be systematically classified into different types: e.g. latent heat and radiant heat

**Noticing** A term in the field of second language acquisition (SLA) which refers to the awareness of the occurrence of an event (here mostly linguistic) or recognition of a general principle, rule or pattern. The noticing hypothesis (Schmidt 1995) proposes that noticing is the bridge for converting input into intake

**Output genres** The kinds of genre that students are expected to be able to produce in their assignments and assessment tasks

**Parallel tasks** Parallel tasks operate on the principle of repetition with variation. In the first task, a lot of content and language resources are provided (serving as an example); in the second task, which resembles the first task except for some variation, students can draw on both content ideas and language patterns from the first task to accomplish the second task

**Pedagogical content knowledge (PCK)** Refers to the knowledge of ways of ‘representing and formulating the subject content that make it comprehensible to others’ (Shulman 1986, p. 9)

**Pedagogical disconnect** The gap between the usual kind of pedagogies practised in content classrooms and the kind of pedagogies that is needed to enable students to produce appropriate responses (e.g. writing) in their assignments and assessments. In other words, there is a disconnect between what counts as ‘knowing’ in the classroom and what counts as ‘knowing’ in subsequent formal school written assignments/assessments

**Pedagogy** The method and practice of teaching

**Phoneme** The smallest contrastive linguistic unit which may bring about a change of meaning. For example, the words ‘tip’ and ‘dip’ differ in meaning through a contrast of a single phoneme /t/ and /d/ in English. Thus, /t/ and /d/ form a minimal pair

**Productive language skills** Namely speaking and writing, and producing texts (spoken/written texts)

**Recast** An implicit way of giving corrective feedback to students or children by repeating the students' error with a correct form instead of saying that it is wrong, which obstructs the conversation

**Receptive language skills** Namely listening and reading, and comprehending texts (spoken/written texts)

**Register theory** Language varies according to the social situation in which it is used. These varieties of language are called registers. There are three variables which work together to determine the register of a text (Halliday and Hasan 1976): field (what is the subject matter), tenor (who are involved) and mode (what is the channel). For example, we can distinguish an everyday register from an academic register by doing such an analysis, and one can further analyse the lexico-grammatical choices constrained and motivated by these variables

**Repacking** The opposite process of 'unpacking'; helping students to shift from everyday styles of speaking/writing to academic styles of speaking/writing

**Rhetorical function** Similar to speech act, it is the social function or communicative purpose (sometimes conventionalized into a text structure of a genre) that a cluster of sentences or utterances convey or perform. In academic writing, the common ones include 'defining', 'classifying', 'exemplifying' and 'comparing and contrasting'

**Rhetorical readers** The rhetorical readers (Hirvela 2004) tend to focus on the communicative purpose and how the communicative purpose is linked to different features of the writing style—*why* the author writes in this way

**Schematic structure** Recognizable patterned sequence of stages in a genre; it refers to the structuring of a text through stages. In this book, 'schematic structure', 'generic structure' and 'textual structure' are used as interchangeable terms with similar meanings

**Semantic curve** A curve (in a graph) that captures the semantic gravity and semantic density in relation to the temporal progression of the lesson and the pedagogical functions of 'unpacking' and 'repacking' (Maton 2013)

**Semantic density** In Maton (2013)'s legitimation code theory, it refers to the degree of condensation of meaning within sociocultural practices (symbols, terms, concepts, phrases, expressions, gestures, clothing, etc.). Semantic density may be relatively stronger (+) or weaker (−) along a continuum of strengths. The stronger the semantic density (SD+), the more meaning is condensed within practices; the weaker the semantic density (SD−), the less meaning is condensed

**Semantic gravity** In Maton (2013)'s legitimation code theory, it refers to the degree to which meaning relates to its context, whether that is social or symbolic. Semantic gravity may be relatively stronger (+) or weaker (−) along a continuum of strengths. The stronger the semantic gravity (SG+), the more

closely the meaning is related to its context; the weaker the gravity (SG-), the less dependent meaning is on its context

**Semantic relations** Relations between thematic items, which are the building blocks of meaning (Lemke 1990)

**Semiotic resources** Meaning-making resources such as language, visuals, diagrams and graphic organizers

**Sheltered instruction** Refers to similar needs ESL classes which are given content area instruction by a content specialist with special attention given to supporting these students

**Sociocultural theory of language and literacy development** The general socio-cultural theory is developed from the theories of the Soviet psychologist Vygotsky (1962, 1978), which considers cognitive developmental processes and learning processes as products of our society and culture. From this perspective, literacy development is seen as a complex social practice, the process of students being apprenticed into the discourses and social practices of literate communities

**Sociolinguistics** One branch in linguistics that studies the relationship between language and society, the roles of language in society, why people speak and write differently in different social contexts and how language is used to construct social meanings

**Speech act** A linguistic term referring to the utterances which have performative functions. Common interpersonal speech acts include ‘request’, ‘response’ and ‘promise’

**Stages and phases** (similar to ‘moves’ and ‘steps’ in John Swales’ genre analysis framework) the smallest discourse unit that carries certain rhetorical (communicative) purpose as the text unfolds to achieve its primary communicative purpose. The *stages* are quite predictable across different instances of the genre, while the *phases* under each stage can be quite variable. For example, a descriptive report usually has two stages: Introduction ^ Description (the symbol ^ is used to denote ‘followed by’), and under the stage ‘Introduction’, there may be phases such as ‘defining’ and ‘classifying’ (Rose and Martin 2012)

**Structuralist linguistic theory** Structural linguistics originated from the work of Swiss linguist Ferdinand de Saussure. It emphasizes seeing language as a system of interconnected units with meaning coming from the contrast of these units. It is concerned with the analysis of linguistic elements at different levels, such as the phonemes (the smallest units of phonology), morphemes (the smallest units of morphology), and phrases and clauses (the units of grammar)

**Summative assessment** Also known as assessment *of* learning (e.g. tests and examinations) with the aim to evaluate students’ attainment of knowledge and skills; usually involves individual work

**Surface features** Refer to lexico-grammatical choices and lexico-grammatical realizations

**Sydney School genre-based approach (and genre analysis)** One of the three key traditions of genre analysis (see Hyon 1996 for a review of these three traditions). Genre researchers in the Sydney School (e.g. Martin and Rose 2008, 2012) have worked on analysing school genres and have made great contribution to the teaching of academic literacies in school settings. As for genre analysis of academic texts in university settings, it is the English for Academic Purposes (EAP) and English for Specific Purposes (ESP) studies that are dominant in the literature

**Syllabification (syllabication)** A strategy to help students to ‘chop up’ multisyllabic words (e.g. ‘numerator’, ‘denominator’ in mathematical texts) into different syllables in order to aid their learning of these key words

**Syllabus** An outline or summary of contents and topics systematically selected and sequenced to be introduced in a course

**Systemic functional linguistics (SFL)** An approach to linguistics developed by Halliday (1978) that considers language as a social semiotic (meaning-making) system. For Halliday, a central theoretical principle is that any act of communication involves choices. Language is a system of systems, and the choices available in any language variety are mapped using the representation tool of the ‘system networks’ (sets of options available in a language variety). It is also ‘functional’ because it considers language to have evolved under the pressure of the particular functions that the language system has to serve. Functions are therefore taken to have left their mark on the structure and organization of language at all levels

**Taxonomy of school genres** The school genres identified by the Sydney School researchers (Martin and Rose 2008, 2012) are divided into three main types depending on their global communicative purpose: informing, engaging and persuading. For details and subcategories of this taxonomy, please refer to David Rose’s series of booklets entitled *Reading to Learn* (<http://www.readingtolearn.com.au/>) which presents the Sydney School genre-based pedagogy in teacher-friendly language with practical examples drawn from genre analysis of the Australian school curricular texts

**Teaching/learning cycle** In the teaching/learning cycle (TLC) designed by Joan Rothery and her colleagues (Rothery 1994), an instance of a genre is ‘deconstructed’ (or analysed) by the teacher and students through reading it together and guiding students to recognize its stages and key relevant language features. After deconstructing the model text, teacher and students then jointly construct a new text, using similar organization and key language features, but writing about a field that they have built up together

**Technicality and abstraction** Technicality ‘refers to the use of terms or expressions ... with a specialised field-specific meaning’ (Halliday and Martin 1993, p. 144). Abstraction is a process that takes away the specificities of the ‘here and now’ of what is happening and turns it into a general, impersonal, atemporal, static, abstract concept. For example, the following two sentences represent two distinctly different degrees of abstraction and technicality through ‘repacking’: ‘Look—it must be raining! People have their umbrellas open.’ and ‘The truest confirmation of the pluviosity of the weather is the extendedness of the umbrellas.’

**Tenor** The relationship between the speaker and listener or between the writer and reader

**Thematic patterns** Patterns which show how word meanings are connected in a particular field (Lemke 1990). The language of each specialized field of human activity has its own unique semantic patterns or patterns of meaning

**Thematic progression and logical flow** How arguments are built through the logical flow of the text. We can analyse the thematic progression of a text by doing theme–rheme analysis

**Theme–rheme analysis** The theme is the stable part in a sentence, the anchor or the point of departure and it is typically construed as a noun or a nominal group (usually the subject of the sentence, together with any minor clause or phrase. It is also the given (or shared) information. The rheme is the new information or the focus (usually the main clause) in a sentence or utterance. Nominalization often takes place to summarize the rheme (the main clause) of the previous sentence or sentences into the new theme (a nominal group) of the next sentence. This process repeats itself to move the argument forward step by step

**Top-down approach to language learning** This approach focuses on what the text is about, emphasizing literacy learning in holistic meaningful contexts and de-emphasizing explicit teaching of bottom-up patterns and skills. This includes ‘whole language’ and shared big book reading in the early years. In L2 learning, the top-down approach is often manifested as the communicative language teaching (CLT) approach

**Trans-semiotizing** A notion developed by Lin (2015b), expanding the concept of ‘linguaging’ to ‘semiotizing’ in order to cover the use of multimodalities or multiple semiotics (meaning-making systems including languages, visuals, gestures and diagrams) to do the conceptualizing work of learning

**Translinguaging** Linguaging across different languages, for example, the process of using the resources of L1 to mediate the understanding of new concepts in L2

**Triadic discourse format** The most commonly found interaction pattern in all kinds of classrooms. It consists of three parts: initiation, response, and feedback (IRF). In some studies, the last part is termed evaluation and thus IRE. Through a reiterative use of these IRF speech exchanges, the teacher monitors the

understanding of students and works some of the students' partial answers into official acceptable answers

**Unpacking** To help students simplify academic language into everyday language

**Whole-school approach** A holistic, inclusive and integrated approach which is required to respond to the learning needs of all students and in a wider community. It often calls for full participation from all school sectors, including learners, teachers and administrators to work together in building a sustainable school curriculum and also school life

**Writerly readers** It is the highest level of reading to write (Hirvela 2004). The writerly reader syncs with the writer and continually trying to be the writer—reading from the perspective of the writer to become a good writer

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