Language Awareness in Teaching
A Toolkit for Content and Language Teachers

The Cambridge Teacher series

Timothy Chadwick
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We would also like to thank colleagues at University of Cambridge International Examinations and at Cambridge University Press for their valuable input.

We very much hope that you find this Toolkit to be a useful companion when considering the academic language demands and support you provide in your school classrooms.

If you would like to give your views on this Toolkit, please email international@cie.org.uk (Subject: ‘To Education Division: Language Awareness in Teaching’).

For further information about University of Cambridge International Examinations, please visit the website: www.cie.org.uk.
About the author

Timothy Chadwick has been actively involved in education in a range of countries, working in language teaching and testing in Greece, Ecuador, Slovakia, Russia and Germany. Tim became interested in Content and Language Integrated Learning (CLIL) while employed at Bahrain’s foremost medical university where students needed an integrated English language programme to support them with their medical studies. He went on to work as a high school teacher in Bulgaria, where core subjects were delivered through English. Tim then became a senior trainer on a large CLIL project in the Middle East co-operating with Science and Maths teachers. He has recently worked as a schools inspector for bilingual schools, also in the Middle East, and has been involved in teacher training in Colombia, Germany and the UK.
Foreword: Why this Toolkit?

Language is a key issue for any classroom. All of us have needed support throughout our education in understanding new jargon and concepts, whether our first language is English or not – an appreciation of language needs cannot be separated from that of content.

This Toolkit has grown out of expertise, experience and research, and seeks primarily to act as a support and catalyst to the teacher working with students who are non-native speakers of English. The lessons learned should be equally useful for a teacher whose first language is not English, and could also be adapted to any modern foreign language situation where content is taught through that language.

The idea for this Toolkit emerged from internal research at University of Cambridge International Examinations, which highlighted the need for greater language awareness in content subjects. The first piece of research built a profile of the academic language used in Cambridge IGCSE® Geography, History and Biology. The second piece of research identified some of the cognitive-academic language skills needed to achieve in Cambridge IGCSE History and recommended language awareness guidance.

We have commissioned this Toolkit to be written in a tone to make it feel like a workshop on paper. We hope that you will take the opportunity

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1Investigating the Relationship Between Performance in Language Assessment and Other, Non-Language IGCSE Subjects, Phase 1: Analysis of question papers and mark schemes & Phase 2: Analysis of candidate output (Stuart Shaw, University of Cambridge International Examinations internal research report, 2011).

2 Cambridge IGCSE® is the registered trademark of University of Cambridge International Examinations.

to reflect on the ideas contained within it, using your own background and knowledge to emerge as a more confident teacher, more able to innovate and engage with your students. Whilst this Toolkit focuses on second language awareness, the two Afterwords raise the importance of first language awareness in multicultural contexts and provide some practical suggestions. We hope you will soon discover the vital importance of language and its use in the classroom.

PAUL ELLIS
Head of Curriculum Strategy
Education Division
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Preface

Welcome to the Language Toolkit.
This Toolkit aims to help you, as content and English language teachers, support your students in developing the academic language skills they need to be successful in those content subjects that they are studying through English.

Who is the Toolkit for?
This Toolkit is primarily intended to help those of you who teach students through English and for whom English is not their first language. English may well be a second language for you, too.

It is also for those who teach English to students who study some, or all, of their content subjects through English.

What is its purpose?
The Toolkit aims to help you to become more aware of the language issues your students face when they study content subjects like Science or Maths through English. It provides you with strategies to help your students, in both the content and English language classrooms. In particular, the Toolkit seeks to support teachers in helping students to better understand and engage with complex concepts in content classes that are taught through English.

It also aims to raise awareness of how content and English teachers can work together to support students and colleagues in a more integrated way.

Many of the strategies in this Toolkit are compatible with a Content and Language Integrated Learning (CLIL) approach.¹

Finally, the Toolkit looks at language issues specific to subjects of the Cambridge IGCSE – the International General Certificate of Secondary Education taken by 16-year-old students.

How can the Toolkit be used?

The Toolkit focuses on Geography, History, Science and Maths. The sample classroom activities typically target students aged 13 to 16 years. However, the information and guidance in the Toolkit is just as useful for teachers of other subjects and age groups. This means that all sections of the Toolkit aim to include ideas of use to teachers of a wide variety of subjects.

An important component of this Toolkit is the co-operation between the content teacher and the English language teacher. The Toolkit in its entirety seeks to support English language teachers by providing a window on the content classroom. In turn, this can help English language teachers to better support students in developing the academic language they need for their content classes. Similarly, the Toolkit offers content teachers an insight into what takes place in the English language classroom.

The Toolkit is divided into three sections and an introduction:

The Introduction outlines key language issues and the reasons why language needs to be supported in the content classroom.

Section 1: Classroom is a practical and interactive guide on how to identify the language demands being placed on students during a given task in the content classroom, and on how to support students in using and learning that language.

Section 2: Co-ordination looks at practical ways for content and English language teachers to work together to build language support for students.

Section 3: Exams focuses on language issues that relate directly to Cambridge IGCSE subjects. This section identifies common word- and sentence-level problems students have in exams, and how students can be helped to make the best use of their language knowledge during exams.

The Toolkit includes a series of objectives accompanied by tasks. There are two types of task: ‘Reflective Tasks’ and ‘Practical Tasks’. The Reflective Tasks encourage you to think about your own particular students and school, while the Practical Tasks provide an opportunity to consider and practise some of the strategies suggested in the Toolkit. Ideally, you would carry out these tasks with other content and English language teachers. Refer to the Answer key on pages 54–68 for some suggested answers.
How does the content teacher support academic language in the classroom?

In this section, we will look in greater detail at exactly what is meant by supporting students with language in the content classroom.

We will begin (Objectives 2–4) by looking at the type of language needed to master content.

Subject-specific language that is essential in order to master content is often referred to as content-obligatory language and includes specialist vocabulary (Objectives 2 and 3) as well as functional language (Objective 4). This language is distinguished from content-compatible language, which is helpful but not essential for a particular subject. (For more information on this, see, for example, the work of Snow, Met and Genesee.1)

We will then (Objective 5) take examples of tasks that content teachers would ask their students to do in class and identify the language demands of those tasks and suggest specific strategies that provide support.

These tasks will be broken down into the three areas we mentioned in the introduction: vocabulary, word and sentence level functional language, and language skills.

Objective 2: Identifying CALP vocabulary

Vocabulary, therefore, can be divided into content-obligatory vocabulary and content-compatible vocabulary. Content-obligatory vocabulary is essential to a particular topic and includes specialist terms. Content-compatible vocabulary is generally useful in the content subject.

For example, if students are going to carry out a laboratory experiment in Science that produces salt crystals resembling a stalagmite, the content-obligatory vocabulary could include:

- stalagmite, crystallisation, saturated solution, sodium acetate, beaker, Bunsen burner, tripod, gauze, goggles, low/high flame

This is called content-obligatory vocabulary because students are only likely to come across these words in particular lessons or departments in their school.

The content-compatible vocabulary that is generally useful when carrying out experiments could include:

- carry out, observe, set up, add, measure, give off, react (violently) with, form

Students may come across such words in a variety of contexts.

**Identifying content-obligatory and content-compatible vocabulary**

It is useful to be able to identify both kinds of vocabulary in order to select which vocabulary students will be supported with. They may need help with both types, but a content teacher needs to be particularly aware of vocabulary that students will only experience in his or her specific subject.

**Practical task 2**

Identify content-obligatory and content-compatible vocabulary in the following topic areas. Try to do this for all the topics, whether you teach the subject or not. Use your first language if you don’t know the words in English.

**Geography**

1. List content-obligatory vocabulary on the topic 'Glaciation', e.g. tarn lake.
2. List content-compatible vocabulary that you think is generally useful for this topic.
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History
1 List content-obligatory vocabulary on the topic ‘Slavery during the American Civil War era’.
2 List content-compatible vocabulary that you think is generally useful for this topic.

Maths
1 List content-obligatory vocabulary on the topic 'Ratios and proportion', e.g. equivalent ratio.
2 List content-compatible vocabulary that you think is generally useful for this topic.

Science
1 List content-obligatory vocabulary on the topic ‘Photosynthesis’.
2 List content-compatible vocabulary that you think is generally useful for this topic.
Refer to the Answer key on pages 55–56 for some suggested answers.

Objective 3: Pre-teaching CALP vocabulary
First, the content teacher, perhaps with the help of an English language teacher, needs to identify the vocabulary that students need support with for a task. Then, the teacher will need some strategies for dealing with this vocabulary. Many teachers would build in a new stage before the task where the content vocabulary is pre-used or pre-taught.

Practical task 3
What strategies could you use to help students understand the meaning of the following items? Make notes.
1 conical flask, beaker, test tube, pipette, tripod
2 ribbon development, nucleated settlement, green belt, Central Business District, urban sprawl
3 multiply, divide, cube root, greater than, less than, decimal point, pi
4 first, then, wheat, harvest, export, store, silo, finally, insecticide, separate, chaff, next
5 robust, hasty, unnerving, heroic, solitary
Refer to the Answer key on page 56 for some suggested answers.
Strategies for dealing with CALP vocabulary

Here are some suggestions for dealing with vocabulary that can be used in both the content and English language classroom:

- At the beginning of your class, you could put a few key words from the lesson onto the whiteboard and ask students to guess the theme of the lesson. You could then ask them to very quickly brainstorm in small groups other words they would expect to come across in your lesson. This has the advantage of creating interest in your topic and of acting as a diagnostic of what they already know. When they have finished brainstorming, you can ask groups to call out words, and write those key words on which you want to focus on the whiteboard. You can then add other words that you identified when planning the lesson.

- Alternatively, you can put the words that you want to focus on directly onto the whiteboard. Then, divide your students into groups. Each group is represented by a different colour. Give the definition of one of the words. The group that calls out the correct word first has the word circled in their team colour. Once you have defined all the words, go back to the groups and this time ask them to define the words.

- You can put a simple matching exercise on a handout asking students to match words in the left-hand column to jumbled-up definitions in the right-hand column. Similarly, you could give your students words and sentences with gaps, and ask them to put the correct words into each gap.

- You could ask students to use dictionaries although you may find that this is too time consuming or that the definitions are not specific enough for your content subject.

- You can use your classroom wall displays as a resource. Your walls should have displays of useful key vocabulary, such as the names of important equipment in Science, as well as useful verbs and adjectives for your subject. Such display boards can either be bought commercially or produced by the students as project work. If your students’ work is supposed to provide language support, you need to make sure that what they have written is correct and can be used as a model.

- You may be able to use translation if everyone in your class speaks the same first language. This needs care, as students may not know content-specific words in their own language. Also, overuse of translation may lead to students ignoring the English and waiting for the first language
Creative Thinking Skills: Cognitive processes that relate to functional language

<table>
<thead>
<tr>
<th>Language for describing</th>
<th>Language for interpreting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Language of classification</strong></td>
<td><strong>5. Language of evaluation</strong></td>
</tr>
<tr>
<td><strong>Examples</strong></td>
<td><strong>Examples</strong></td>
</tr>
<tr>
<td>• classifying</td>
<td>• evaluating</td>
</tr>
<tr>
<td>• grouping</td>
<td>• assessing</td>
</tr>
<tr>
<td>• categorising</td>
<td>• judging</td>
</tr>
<tr>
<td>• attributing</td>
<td>• criticising</td>
</tr>
<tr>
<td>• defining</td>
<td>• justifying</td>
</tr>
<tr>
<td>• naming / labelling / drawing</td>
<td>• making analogies</td>
</tr>
<tr>
<td>• prioritising</td>
<td>• making decisions</td>
</tr>
<tr>
<td>• comparing</td>
<td>• recommending</td>
</tr>
<tr>
<td>• contrasting</td>
<td>• predicting and hypothesising</td>
</tr>
</tbody>
</table>

**Language for interpreting**

<table>
<thead>
<tr>
<th><strong>4. Language of analysis</strong></th>
<th><strong>5. Language of evaluation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Examples</strong></td>
<td><strong>Examples</strong></td>
</tr>
<tr>
<td>• recognising arguments, reasoning and explanations</td>
<td>• evaluating</td>
</tr>
<tr>
<td>• detecting errors in reasoning</td>
<td>• assessing</td>
</tr>
<tr>
<td>• dissecting arguments</td>
<td>• judging</td>
</tr>
<tr>
<td>• clarifying meaning</td>
<td>• criticising</td>
</tr>
<tr>
<td>• identifying purpose</td>
<td>• justifying</td>
</tr>
<tr>
<td>• identifying bias</td>
<td>• making analogies</td>
</tr>
<tr>
<td>• problem solving</td>
<td>• making decisions</td>
</tr>
<tr>
<td>• conceptualising</td>
<td>• recommending</td>
</tr>
<tr>
<td>• interpreting data</td>
<td>• predicting and hypothesising</td>
</tr>
<tr>
<td>• visualising</td>
<td></td>
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</tbody>
</table>

Adapted from Shaw, 2011 (unpublished). Builds on Bloom’s taxonomy of educational objectives, 1956; Anderson and Krathwohl’s revision of Bloom’s taxonomy, 2001; Mohan’s Knowledge Framework, 1986; Black et al. Critical Thinking Taxonomy, 2007; suggested IELTS skills taxonomies; contributions from Chadwick, 2011
3. Language of process
Examples
- describing a process
- sequencing
- using spatial temporal relationships
- describing cause and effect

6. Language of conclusion
Examples
- explaining
- suggesting
- hypothesising
- drawing conclusions
- developing
- considering
- reasoning
- presenting arguments
- presenting conclusions
- expressing personal opinions
- determining cause and effect
- evaluating

8. Language for creating
Examples
- generating
- communicating
- planning
- responding
- decision making
- making connections
- selecting relevant material
- making analogies
- forming generalisations
- constructing arguments
- producing
explanation. Nevertheless, there are occasions when translation is the quickest and easiest way to clear up any confusion.

- Vocabulary for a content lesson can also be learned in advance in the English language classroom.

**NB:** One strategy that *is not* a good idea is to point to a word on the whiteboard and ask, ‘What does this mean?’ This is actually a very difficult thing for your students to do because they need very precise vocabulary. Try it for yourself with simple words like saucepan, table, and cushion. For example: ‘A saucepan is a round cooking utensil with a long handle and a lid used for cooking food.’

**Objective 4:** Identifying the functional language of CALP

The table on pages 12–13 shows a wide range of creative thinking skills that students are expected to be able to draw on and demonstrate in their lessons.

They are exactly the kind of higher-order thinking skills that teachers require from their students in today’s classrooms. It is important when planning the different stages of lessons and the tasks that you want your students to carry out, that you are aware of precisely what the different cognitive demands in their lessons are. In order to help students develop and use these creative thinking skills in English, they need support with the functional language that goes with these processes.

**Patterns in the Creative Thinking Skills model**

The taxonomy, or model, represented in the table on pages 12–13 can be used for many different purposes. Here is an overview of how this model works for our Toolkit.

Boxes 1–6 list creative thinking skills that can be linked to the kinds of tasks students are asked to do in their lessons. In order for students to carry out these tasks, especially when working in pairs or groups, they need to be provided with the functional language that goes with these creative thinking skills.

Many of the examples in Boxes 1, 2, 4 and 5 include thinking skills and therefore language that may come in the early stage of a lesson when students are *in the process of understanding a concept*.

Boxes 3 and 6, to the right, include thinking skills and language that are used when the students feel they have *understood a concept* and are ready to demonstrate that understanding.
Boxes 7 and 8 include thinking skills that we could describe as a student’s ‘internal dialogue’, that is, skills that don’t always involve language and communication, but that reflect a student’s individual thought processes.

**Creative thinking skills box by box**

Box 1: The language of **classification** is the language students use when trying to make sense of something they are looking at and to identify patterns and relationships between items. For example, students check the pH value of various domestic items such as washing-up liquid, detergent, lemon juice, vinegar and so on, and group items together if they have common features or uses.

Box 2: The language of **description** is used to describe more fully, and give reasons for, the patterns and relationships students have found.

Box 3: The language of **process** is the language students use when making sense of, and then describing, how something works or is made, for example.

Boxes 4 and 5: The language of **analysis** and the language of **evaluation** refer to the language students use when engaging with input and drawing useful conclusions.

Box 6: The language of **conclusion** is the language students use to demonstrate that they have understood something, or formed an opinion about it.

Box 7: The language of **self-reflecting** represents a thread that runs throughout a student’s learning experience. Students use these skills to develop their awareness of the learning process.

Box 8: The language of **creating** also refers to creative thinking skills that students use throughout their learning. For example, when they classify, describe, analyse and evaluate input, they make connections and develop conceptual understanding as a lesson, and a curriculum, progress.

**Creative thinking skills and functional language**

Many of the creative thinking skills can appear in more than one box. For example, hypothesising can be placed in Boxes 5 and 6. In terms of Box 5, a student may be guessing (rightly or wrongly) what might happen in a Science experiment. Equally, referring to Box 6, a student may be presenting their conclusions of what they discovered from that experiment. Some of the functional language for hypothesising would be the first and zero conditional:

- **Box 5**: *If we mix sulphuric acid with water, we think the water will change colour.*

- **Box 6**: *We have proved that when we mix sulphuric acid with water, it gets warmer because it is an exothermic process.*
A further example of functional language relating to thinking skills can be taken from Box 6, evaluation – if students are asked to present conclusions they have drawn from doing an experiment, either in a discussion or as a piece of writing on a laboratory report, the functional language that students need to carry this out will include structures such as:

Next time we would also try to measure …
One thing we would do differently next time is …
It would have been a more effective experiment if we had …
We were unable to … because …
One part of the experiment that worked well was …
It would be better to …

Sentence stems like these can be included on classroom handouts or be written on the whiteboard while students complete the task. We will come to how we support this kind of language in more detail later.

There are many advantages to giving students language support in this way. In the case of the structures for evaluation:

a. It will help those students in class whose language is weak.
b. By implication it means it is a part of a teacher’s differentiation strategies regarding their lessons.
c. It keeps all students focused and on the topic.
d. It sets an appropriate academic tone for this kind of task, which has the advantage of making students feel like scientists and engage more with the task.
e. It discourages students from giving a superficial evaluation that ‘everything was fine’.
f. It supports the students’ understanding of the teacher’s spoken instructions when setting up the task.

Practical task 4: matching language to thinking skills

First, match the functional language below (a) to (e) below to the thinking skills listed in Column 1 of the table. Then, try to write full sentences from this and similar functions. An example from Geography is provided.

a. *We know this text is objective / subjective because* ...

b. *Firstly, secondly, then, after that, finally* … / *A is added to B, C is emitted causing D to occur* …
1 Classroom

<table>
<thead>
<tr>
<th>Thinking skill</th>
<th>What the students are doing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 classification</td>
<td>defining:</td>
</tr>
<tr>
<td>2 description</td>
<td>compare and contrast:</td>
</tr>
<tr>
<td></td>
<td><em>Limestone is a porous rock whereas granite isn’t.</em></td>
</tr>
<tr>
<td>3 process</td>
<td>sequencing / describing a process:</td>
</tr>
<tr>
<td>4 analysis</td>
<td>detecting purpose / bias (usually in a text):</td>
</tr>
<tr>
<td>5 evaluation</td>
<td>recommending:</td>
</tr>
<tr>
<td>6 conclusion</td>
<td>expressing personal opinions:</td>
</tr>
</tbody>
</table>

Refer to the Answer key on pages 56–57 for some suggested answers.

Supporting the language needed to carry out the task

As well as the content vocabulary and structures a student may need for a task, a teacher may consider giving support with the language of the task. For example, if in Maths students are playing a board game using dice, they will need language such as:

*You go first.*
*It’s your turn.*
*I don’t think that’s the right answer.*
*Roll again.*
*You miss a turn.*

Some teachers may feel that their students don’t need a focus on this type of language in the content classroom. However, it is quite easy to provide and as well as supporting language, it emphasises that students are expected to work co-operatively and in English.

Objective 5: Identifying the language demands and the support we need to give for tasks in the classroom

We will now look at some tasks that students could be given to do in their content classrooms, with four examples taken from Maths, Science, Geography and History. Both English language teachers and content teachers from any subject should look at all four subjects as there are useful principles in each example for any content subject and important implications for the English language classroom. After each example, there is an opportunity to practise.