

Special Seminar

**Academic Language:
What Is It & What To Do About It**

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Hosted jointly by the Centre for Language, Discourse & Communication, King's College London and NALDIC





BRIEF HISTORY of THEORIES of LANGUAGE LEARNING

- commonly thought that young learners are efficient and effective L2 learners –due to early neural plasticity
- as a result, EAL students do not need explicit instruction to learn English in school – they will “pick it up” as a by-product of immersion in L2 environment
- e.g., L2 immersion programs – but, there are gaps in their competence

- However, research now indicates that it often takes EAL students 5-7 years to achieve proficiency in English at the same level as that of L1-speakers (e.g., *National Academies of Science, Engineering & Medicine--NASEM*)
- now thought that although L2-learners can easily acquire ability to use L2 for everyday social purposes that these kinds of language skills differ from language skills involved in schooling and these take longer to learn

INSIGHTS ABOUT LANGUAGE LEARNING IN SCHOOL

1. students need explicit instruction in language
2. language skills that are taught should be linked to academic objectives
⇒ *language for academic purposes*
3. EALs must make faster progress than L1 speakers because L1 speakers are also acquiring new language skills – moving target
4. direct instruction should be continuous across grades (NASEM report: ELs make most progress in early grades and less in higher grades and many never achieve native-like levels without direct instruction)
5. both content and language teachers are responsible to teach language... all the time

CAVEAT

LANGUAGE MAY BE IMPORTANT

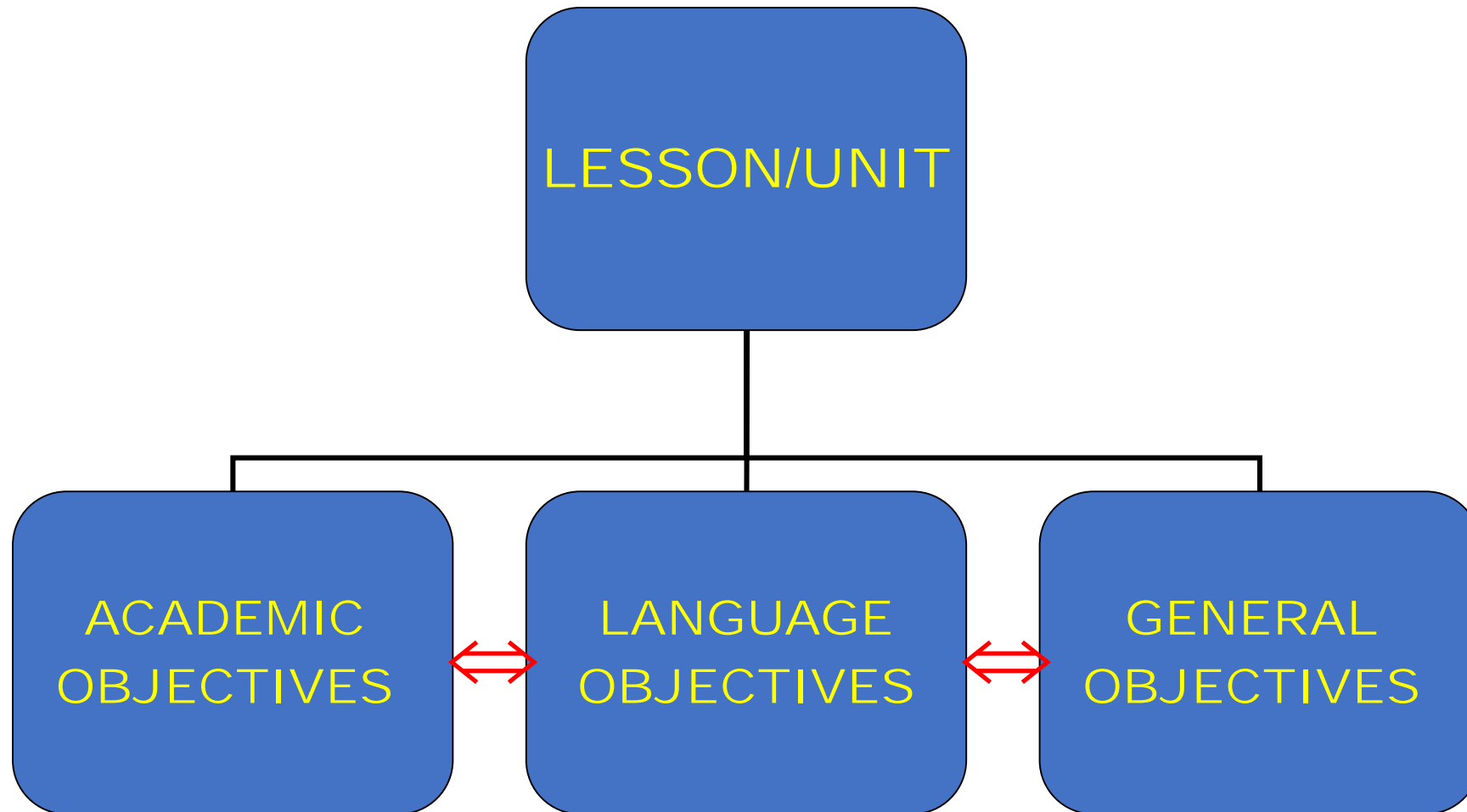
but

IT IS PROBABLY NOT THE ONLY OR EVEN THE MOST IMPORTANT
CHALLENGE FACED BY EAL STUDENTS IN SCHOOL

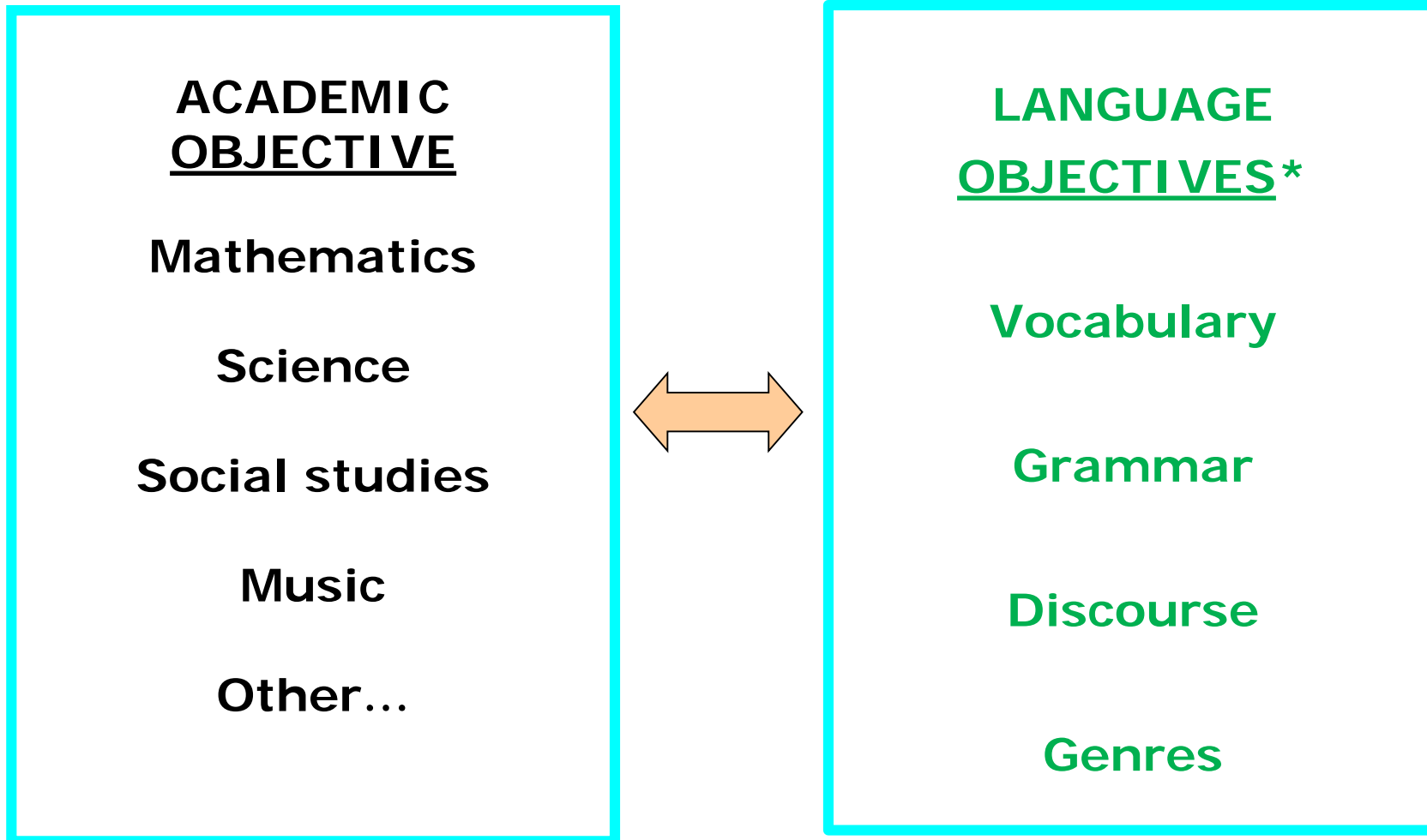


SCHOOLS NEED TO UNDERSTAND THESE OTHER CHALLENGES and
DEVISE PROGRAMS THAT RESPOND TO THEM

AN INTEGRATED LANGUAGE-CONTENT CURRICULUM



**TEACH ACADEMIC LANGUAGE EXPLICITLY
in RELATIONSHIP to
CONTENT and GENERAL LEARNING OBJECTIVES**



* Not just the Language Arts curriculum

LANGUAGE FOR ACADEMIC PURPOSES

In groups, identify what you think language for academic purposes is and how it is the same and/or different from language for social purposes

GROUP DISCUSSION

Defining Academic Language

- Chamot & O'Malley (1994): “the language used by teachers and students for the purposes of acquiring new knowledge and skills...imparting new information, describing abstract ideas and developing students’ conceptual understanding.”

⇒ includes oral and written language:

- genre (science versus history/narrative)
- communicative functions
- sentence grammar (connectives)
- vocabulary/terminology
- tone

How to identify academic language

- No agreed-upon method; no thesaurus but ..
- Websites by topic/domain: some suggestions at the end
- Personal analysis

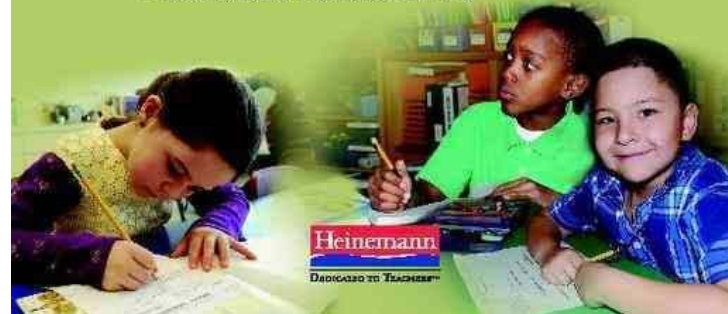
Else Hamayan / Fred Genesee / Nancy Cloud

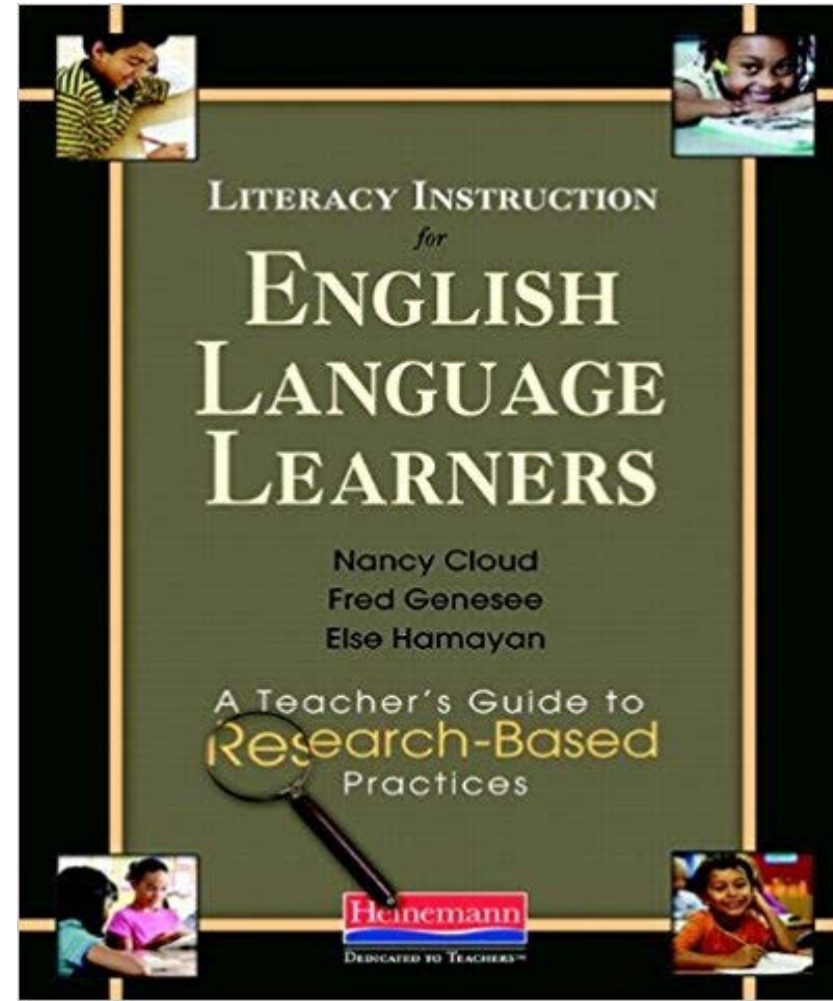
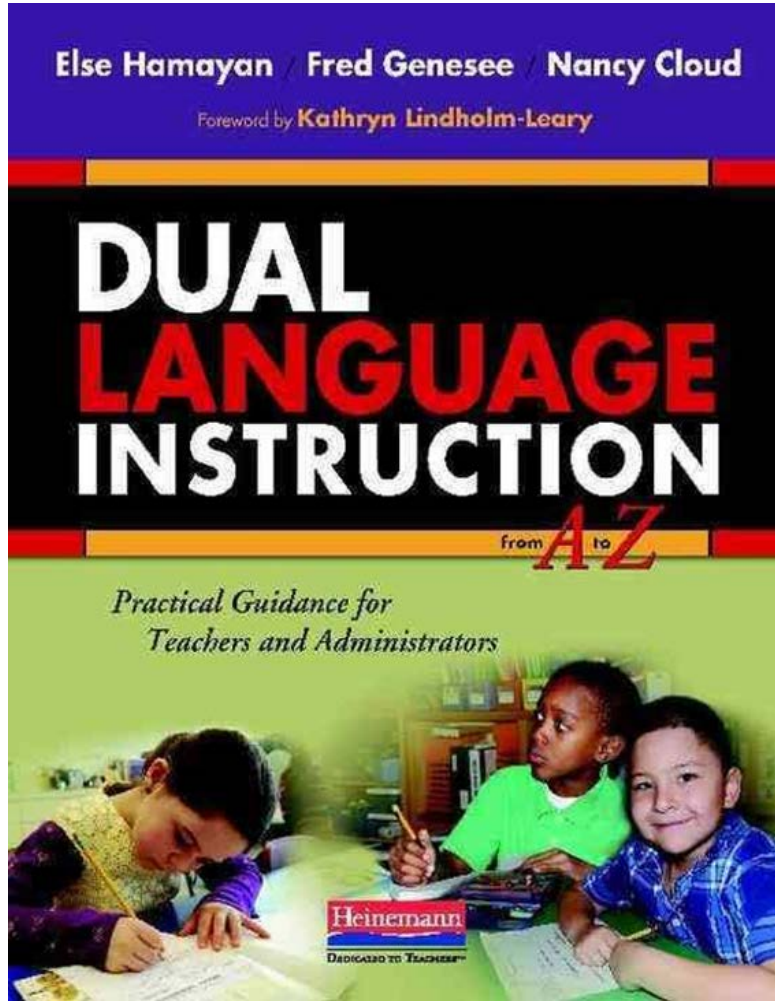
Foreword by Kathryn Lindholm-Leary

DUAL LANGUAGE INSTRUCTION

from *AZ*

*Practical Guidance for
Teachers and Administrators*





IDENTIFYING LANGUAGE OBJECTIVES: CONTENT-OBLIGATORY LANGUAGE

- language **REQUIRED** for comprehension and expression of language linked to specific concepts, facts, or skills
- includes vocabulary, basic grammar, functions...
- **functions:** communicative goals or intentions for using language: to describe, to question, to disagree, to explain, to hypothesize
- the **grammar** needed to express those intentions/functions

CONTENT-OBLIGATORY LANGUAGE: GRADE 1 SCIENCE EXAMPLE

- **Vocabulary:** “float”, “sink”, “heavy”, “light”
- **Grammar (basic):**
 - present copula (is), present of sink and float
 - declarative sentence patterns: apples float, the apple is floating, the apple would sink..
- **Functions:**
 - (a) To hypothesize:
 - (b) To ask questions about density
 - (c) To compare objects
- **Grammar linked to functions:**
 - (a) “If the grape is heavier than the apple, it would sink.”
 - (b) “Which is heavier – X or Y?” or “Is the grape heavier than the apple?”
 - (c) “ The book is heavier than the apple.”

CONTENT-COMPATIBLE LANGUAGE

Content-compatible language includes vocabulary, grammar, and functions that are easily integrated with the content objectives of a lesson, but are not required for mastery of the content.

- expands opportunities to push students' language skills to include social or every day language skills that might not occur normally in school
- content-compatible skills early in the year can become content-obligatory later in the year
- include objectives from English language curriculum
- include everyday social language that students need

Academic Language of Science

TEXT/TALK FEATURES

- complex sentence structures made up of multiple embedded clauses
- highly specific vocabulary that conveys scientific concepts and understandings
- if/then sentences
- use of the conditional tense (what could/might happen)
- active explanations and descriptions of phenomena
- use of metaphors—"a comet is like a . . ."; "think of a comet as a . . ."
- high level of visual support—diagrams, photographs, illustrations

MAJOR TEXT STRUCTURES/FEATURES OF TALK

definition; description/enumeration; cause/effect; chronological/sequential; comparison/contrast; problem/solution

SUBJECT MATTER-SPECIFIC VOCABULARY

e.g., *omnivore, vertebrae, lava, mineral, stamen, thorax, molecule, electron, carbohydrate, amphibian*

WORDS USED IN NEW WAYS

e.g., *cell, space, cycle, crust, matter, front (weather), property*

COGNATES (SPANISH/ENGLISH)

e.g., *adaptación/adaptation; anfibio/amphibian; bacterias/bacteria; camuflaje/camouflage; dióxido de carbono/carbon dioxide*

PHRASES/LEXICAL BUNDLES (WORDS THAT OFTEN CO-OCCUR; COMMON SEQUENCES OF WORDS)

e.g., *food chain, water cycle, cloud formation; the nature of ___; in the form of ___; the way in which ___; as a result of ___; the size/shape of the ___; as shown in Figure ___*

COMMON TRANSITION WORDS; LOGICAL CONNECTORS

unless; although; finally; because; also; consequently; therefore

COMMON COMMUNICATIVE FUNCTIONS

name; classify/categorize; ask and answer questions; report; describe; explain; predict; hypothesize; defend

HELPFUL READING/WRITING SKILLS AND STRATEGIES

visualize what is read; find information; use of text features (bold, italics); distinguish between main idea and supporting details; draw inferences; use root words and affixes to discover word meaning (hydro, proto, -ose); write summaries; record observations; use graphic organizers to record information; use diagrams to process text

Topic: Renewable Energy

Big Ideas:

(These can be identified by the teacher prior to beginning the unit; however, final big ideas will be an amalgamation of your initial ideas and big ideas that emerge from students' questions during the focused learning phase.)

- We will learn that some sources of energy are renewable while others are not.
- We will learn which sources are renewable and how they function.
- We will learn why renewable sources of energy are becoming more important instead of or in addition to non-renewable sources.

Time Frame: 2-3 weeks (this time frame was determined rather arbitrarily for this example; it will depend on how much this unit is extended into other subject areas and who teaches what part of the lesson.)

Content Objectives:

- To describe the difference between renewable and non-renewable sources of energy.
- To list 5 types of renewable energy: hydropower, wind power, solar energy, geothermal energy and bio energy.
- To explain in general terms how any 2 of these types of energy function.
- To give three reasons why we need to use renewable energy.

Content-Obligatory Language Objectives:

- To write or say the names of the 5 types of renewable energy using words such as provide, system, result, use.
- To use appropriately the phrase X does Y by Z-ing (e.g. wind produces energy by turning a propeller) or, X does Y in order to Z (e.g. solar panels convert the sun's power in order to produce electricity)
- To use appropriately the phrase X does Y, therefore...(e.g. coal contaminates the air, therefore we should use it for producing energy as little as possible) or because X we can Y (e.g. because renewable energy sources never run out we can use them a long time) ...

Content-Compatible Language Objectives:

- To demonstrate what light bulb, wind, and waste mean.
- To define, give examples or show what energy is.
- To define, give examples or show what renewable means.
- To use the future tense appropriately.

Academic Language of Social Studies

| |
|--|
| TEXT/TALK FEATURES |
| <ul style="list-style-type: none">• complex sentences with independent and dependent clauses; descriptions of related events; causes and effects• verb plus infinitive (refused to obey, offered to write)• time references; temporal phrases• third-person pronouns that refer to actors previously named in the passage (he, she, they)• causative words |
| MAJOR TEXT STRUCTURES/FEATURES OF TALK |
| compare and contrast; generalization-example; enumerative; cause and effect; sequential/chronological; problem-solution |
| SUBJECT MATTER-SPECIFIC VOCABULARY |
| e.g., <i>continent, landform, goods, services, raw material, consumption, patriotism, rebel, boycott, taxes, delegates</i> |
| WORDS USED IN NEW WAYS |
| e.g., <i>party; capital; assembly; press (as noun); lobby</i> |
| COGNATES (SPANISH/ENGLISH) |
| e.g., <i>historia/history; extinto/extinct; patriotismo/patriotism; partida/party; estado/state; dinastía/dynasty; nación/nation; same word, both languages: colonial; capital; local; global</i> |
| PHRASES/LEXICAL BUNDLES |
| e.g., <i>at the same time; had the right to; became known as; one of the most; had the right to; as a result of; the fact that the</i> |
| COMMON TRANSITION WORDS; LOGICAL CONNECTORS |
| <i>from that time forward; after the war had begun; furthermore, he thought that; by the nineteenth century; as a result; finally; so; never before</i> |
| COMMON COMMUNICATIVE FUNCTIONS |
| explain; describe; define; justify; give examples; sequence; compare; answer questions; clarify/restate |
| HELPFUL READING/WRITING SKILLS AND STRATEGIES |
| use the resources in textbooks (index, table of contents, glossary, etc.); find the main idea and supporting details; present an oral report; write a cause-and-effect essay; use note-taking strategies; use graphic organizers to record information; conduct research; prepare reports; summarize; paraphrase; use timelines, graphs, maps, and charts |

Chart 4.2 Academic Language of Social Studies

Academic Language of Mathematics

| |
|---|
| TEXT/TALK FEATURES |
| <ul style="list-style-type: none">• conceptually packed• high density of unique words with specific meanings• great deal of technical language with precise meanings• requires multiple readings• requires a reading rate adjustment because text must be read more slowly than natural language texts• uses numerous symbols• many charts and graphs |
| MAJOR TEXT STRUCTURES AND FEATURES OF TALK |
| cause and effect; comparisons; logical or chronological sequence |
| SUBJECT MATTER-SPECIFIC VOCABULARY |
| e.g., <i>divisor, denominator, integer, quotient, coefficient, equation, protractor, place value, proper/improper fraction</i> |
| WORDS USED IN NEW WAYS |
| e.g., <i>table, column, variable, carry, irrational/rational, mean, factor, term, expression, odd, set</i> |
| MULTIPLE WAYS OF SAYING THE SAME THING (SYNONYMS) |
| e.g., <i>add, plus, combine, and, sum, increased by, total; subtract from, decreased by, less, minus, differ, less than, have left</i> |
| COGNATES (SPANISH/ENGLISH) |
| e.g., <i>base/base; centimeter/centimetro; column/columna; concept/concepto; number/número; ordinal/ordinal; group/grupo; identify/identificar; sequence/secuencia; angle/ángulo; circle/círculo; difference/diferencia; divide/dividir; line/línea; multiply/multiplicar</i> |
| PHRASES WITH SPECIFIC MEANINGS; LEXICAL BUNDLES |
| e.g., <i>least common multiple, standard deviation, square root, a quarter of, divided by vs. divided into, as much as, common factor, the size of the, greater than or equal to, not more than</i> |
| TRANSITION WORDS; LOGICAL CONNECTORS |
| <i>if . . . then, if and only if, because, that is, for example, such that, but, consequently, either</i> |
| COMMON COMMUNICATIVE FUNCTIONS |
| following directions in a sequence, show, tell, ask and answer factual questions, predict, explain, justify, hypothesize, conjecture |
| HELPFUL READING/WRITING SKILLS AND STRATEGIES |
| adjust reading rate, reread difficult text, confirmation checks/summarize as you go, take notes while reading, use graphs, number lines, and charts to complement the understanding of text |

Chart 4.3 Academic Language of Mathematics

The impact of early developmental experiences on later neural outcomes is a compelling question. It is a particularly relevant issue in the domain of language learning given the wide variety of linguistic experiences children encounter in an increasingly global world. It has long been suggested that the most rapid pace of learning takes place during the first years of life and that during this time of heightened neuroplasticity the brain is optimally predisposed to collect and store basic information about the world (for example, simple visual elements and basic units of sound). Hearing a language during this time tunes infants' brains to the sounds of that language, and neural representations of these sounds are established¹⁻³. These representations, in turn, are thought to act as a foundation for the acquisition of progressively more complex and hierarchically organized information about that language, such as increasingly complex vocabulary and grammar⁴. Importantly, this implies an ongoing relationship between early-established neural representations and more complex, higher level abilities that are acquired years or even decades later. The adaptive value of this relationship is clear when environmental contexts remain the same or similar because it allows the developing organism to build more complex language abilities on this early neural foundation. However, we have little empirical evidence if, in fact, and how these early experiences impact later neural processing. In a recent publication⁵, we showed evidence for the maintenance of neural templates for the processing of Chinese sounds in a group of international adoptees whose exposure to their birth language (Chinese) was totally discontinued when they were 12.8 months of age, on average. From that point on they were exposed to and spoke only French and had no conscious recollection of their birth language when tested more than a decade later. However, when these participants listened to a linguistic element present only in Chinese, and not their current language (French), their pattern of brain activation precisely matched that observed in native Chinese speakers who had spoken Chinese continuously since birth and had acquired French as a second language at

approximately the same age as the adoptees. Importantly, the pattern of activation demonstrated by the adoptees differed significantly from the monolingual French speakers who had never been exposed to Chinese, despite the fact that all participants heard identical acoustic stimuli. The fact that the neuro-cognitive responses of the adopted participants closely matched those of the native Chinese speakers provides evidence that the neural representations supporting the processing of that language had been acquired during the first months of life and were not overwritten or lost overtime but maintained in the brain. In the present study, we sought to examine if these early-acquired language representations influence the neuro-cognitive processing of a second language.

More specifically, in the present study, we investigated neuro-cognitive processing during engagement in a phonological working memory (PWM) task in French in these same three groups. PWM is a component of executive functioning responsible for storing and manipulating incoming speech sounds in memory⁶. PWM processes use language-specific speech sounds as one mechanism for facilitating the acquisition and processing of vocabulary and grammar in that language⁷. Of particular relevance to the present study, PWM processes may rely on language-learning experiences that occur during the earliest stages of language acquisition when infants' brains become fine-tuned to the specific phonetic units of their native language⁸⁻¹⁰. However, although there is some behavioural evidence suggesting that PWM is sensitive to experiences that occur during these earliest stages^{11,12}, this has not been demonstrated at the neural level.

- Working in groups analyze the text on early experience and brain development and identify:
 - text organization (genre)
 - communicative functions
 - sentences patterns or unusual grammar
 - phrases
 - vocabulary

DISCUSSION OF BRAIN TEXT

- Working in groups analyze the text on Kings & Queens (*Before Afred*):
 - text organization (genre)
 - communicative functions
 - sentences patterns or unusual grammar
 - phrases
 - vocabulary



The Kingdoms of Saxon Britain

Offa's Dyke

In the 8th century, Offa, the Saxon king of Mercia (who called himself 'King of the English'), drove the Celts into Wales. He built an earthen wall 240 kilometres (150 miles) long, with a ditch to keep them there.

Britain Before Alfred

In the centuries before the arrival of the Romans, Britain was not ruled as one nation, but was divided among many separate tribes, which were often at war with one another. The Celtic tribes of Britain chose their kings (or chieftains) by election, from among men in the royal family. If a king did not act fairly and look after his people, he was **deposed** and replaced by a new king.

The Romans ruled Britain between 43 and 410. Celtic rule was restored after the Romans left, but by then many Celts were Christian. Towards the end of the Roman period, invaders from Germany and Denmark (Saxons, Angles and Jutes) attacked the east coast of Britain.



The Saxons (as all these invaders became known) settled in Britain, and occupied southern England. They drove the Celts back to the far north (Scotland) and west (Wales and Cornwall). Then, the Saxons divided England into kingdoms. At different times, powerful kings of particular kingdoms ruled the whole country.

From the 790s onwards, Viking raiders came from Scandinavia in longships: killing, **plundering** and taking slaves. In around 860 the Vikings formed an army to conquer Britain, and took possession of large areas

of England. By 870 only the Saxon kingdom of **Wessex** remained unconquered. Wessex, under a great Saxon leader, Alfred, held out against the Viking invaders.

DISCUSSION OF KINGS & QUEENTS TEXT

Working in groups, discuss ways in which academic language (complex sentences and vocabulary) can be taught and reinforced in class.

**DISCUSSION of TECHNIQUES for
SUPPORTING ACQUISITION of
ACADEMIC LANGUAGE**

HOW TO...

- **SENTENCE COMBINING** activity in pairs:

<http://www.ernweb.com/educational-research-articles/sentence-combining-intervention-is-underused-strategy-for-improving-student-writing/>

- **SENTENCE FRAMES, SIGNAL WORDS, & STARTERS POSTED ON CLASSROOM WALLS:**

http://www.multibriefs.com/briefs/exclusive/using_sentence_frames.html#.VqNuWSmTTts

- **Sentence frames** to express specific functions:

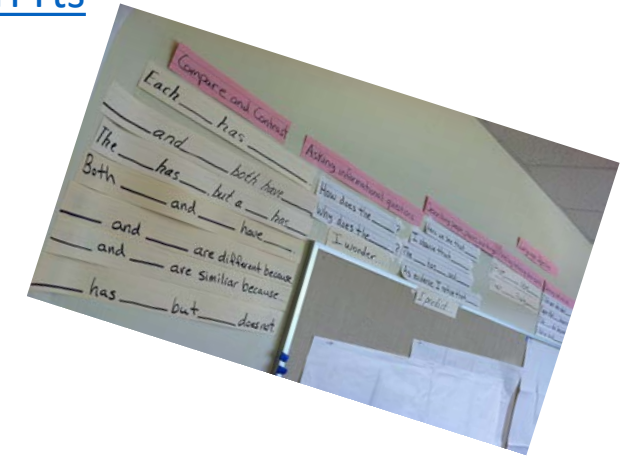
- TO CONTRAST: “whales have lungs but fish have gills.”
- TO ASK QUESTIONS: “How does...?” “Why does..” “Where does...”

- **Signal words** to signal purpose of text or discourse:

- a) “If.. Then” cause-effect
- b) Words that indicate to describe or elaborate: “in other words” “such as..” “for example”

- **Sentence starters** (like frames) to indicate sequencing, causality:

- a) “Then...”
- b) “Immediately after...”
- c) “As a result...”
- d) “Therefore,...



SENTENCE STARTERS

A frame or template that can be used to start a sentence:

a) **When describing a sequence of events** (history, science)

- The first thing that happened...
- After....
- Immediately after/following that..
- Finally,....

b) **To contrast or compare:**

- In contrast,..
- However,..
- On the one hand... on the other hand...
- Despite that...

c) **To explain:**

- “In order to..”
- “Therefore, they...”
- “ As a result,”

SENTENCE FRAMES

- To promote use of key vocabulary in more complex grammatical ways:

a) compare and contrast:

- “_____ have but _____ have _____.”
- “whereas/while _____ have, _____ have _____.”

b) To report observations in science reports:

- “They/it was found that....”
- “Their results showed that....”
- “ Researchers have reported that....”

SIGNAL WORDS

- Phrases or words that signal the intention of the speaker/writer:
 - **Cause-effect**: if-then, so, as a results, consequently
 - **Description & elaboration**: in other words, includes, belongs, classified as..
 - **Opposing point of view**: however, but, in contrast, despite, notwithstanding
 - **Transitions**: then, next, after, previously, following, subsequently

Scaffolding language & student output (from Mehisto & Hamayan)

- first brainstorm, as a class, language needed to discuss a topic and group language in meaningful categories
- have students use newly introduced words and phrases several times in different contexts for different purposes (Why? Repetition supports retention.)
- provide speaking frames such as a debate framework or a framework for presenting a report
- giving students several seconds of wait time before picking someone to answer a question
- eliminate hand raising and pick students at random to make sure that everyone pays attention
- provide students with a copy of key academic language to support learning
- give students the opportunity to articulate their thinking and to use the resources they have before answering:
 - ⇒ brainstorm in pairs first for 2-3 minutes
 - ⇒ write some thoughts down before answering
 - ⇒ discuss with your neighbor first
- bounce answers around the room to build on understanding and have students develop stronger retention of new academic language:
 - ⇒ *"What would be an even more scientific way of saying that?"*
 - ⇒ *What can we call this other than a 'thing for sunshine?'"*

- ask students why saying “solar panels” is better than “thing for sunshine?” (Why? This can help students recognize the need for academic language and reinforce retention of that language.)
- type in five words or phrases that are central to your teaching of a topic, print them out and turn them upside down and have the students copy them.
- establish a system of 'learning/talking partners' (new partners each week who spend 30 seconds to 2 minutes discussing an answer to a question before answering before the whole class) to ensure use of new academic language
- view a video on the topic of the lesson and have students jot down all the academic language they notice being used.
- for students with lower proficiency in the language of instruction, provide pictures that go with new academic vocabulary.
- provide students in advance with the academic language (words, phrases) that they need to do a task (e.g. ask questions, give a report, conduct an experiment)
- draw out the background knowledge that students have regarding a topic that you are about to

Additional resources

- http://www.ernweb.com/educational-research-articles/study_provides_framework_for_scaffolding_students_early_information_writing/
- http://www.multibriefs.com/briefs/exclusive/using_sentence_frames.html#.VqNuWSmTTts
- [Coordinating conjunction word list:
http://grammar.ccc.commnet.edu/grammar/conjunctions.htm](http://grammar.ccc.commnet.edu/grammar/conjunctions.htm)
- <http://teachingvocabtoells.weebly.com/ave.html>
- <http://www.academicwords.info/>
- <http://www.wordandphrase.info/academic/>
- <http://www.academicvocabulary.info/samples/families.pdf>
- Word Frequency Cloud: <http://tagcrowd.com/>