

Metaphorical Vocabulary Use in English as a Medium of Instruction Courses

Phil Bennett

University of Niigata Prefecture

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English as a Medium of Instruction (EMI)

- English as object of instruction > medium of instruction
- Component of governmental internationalization efforts
- Number of universities in Japan offering EMI more than doubled from 2000-2015.
- >40% of institutions offer EMI, although great variety in how it is implemented

(Brown, Bennett & Stoeckel, 2019; MEXT, 2017)

Lexical demands of EMI

- Learner needs
 - Exposure 100,000~250,000 words per course (Bennett, 2017)
 - Lexical needs
 - 95-98% coverage of words needed for comprehension (Hu & Nation, 2000; Laufer & Ravenhorst-Kalovski, 2010; Schmitt, Jiang & Grabe, 2011).
 - 6,000-10,000 word families required to reach 98%.
 - Misunderstanding in academic lectures due to metaphor use (Littlemore, 2001; Low, Littlemore & Koester, 2008)

Lexical demands of EMI

- High-frequency & academic vocabulary (Browne, Culligan & Philips, 2013; Coxhead, 2000)
- Variation in lexical demands between disciplines (frequency, collocation, polysemy) (Durrant, 2014; Hyland & Tse, 2007).
- Therefore, need to raise awareness of extended word meanings.
- Fixation on known meanings rather than extended meanings (Bensoussan & Laufer, 1984; Laufer, 1989)
- Extended meanings one of the hardest aspects to acquire (Dóczy & Kormos, 2016)

Metaphorical vocabulary

Metaphor: “a figure of speech in which a word or phrase is applied to an object or action to which it is not literally applicable” (Oxford Dictionaries.com)

Source domains

- concrete entities
- basic
- more human-oriented



Target domains

- abstract concepts
- not directly perceived by senses

Metaphorical vocabulary

“A patchwork quilt of trade agreements.” (BAWE corpus)

Source domain: quilts Target domain: trade agreements

several pieces of cloth → several elements?

multicoloured → lack of unity?

warmth

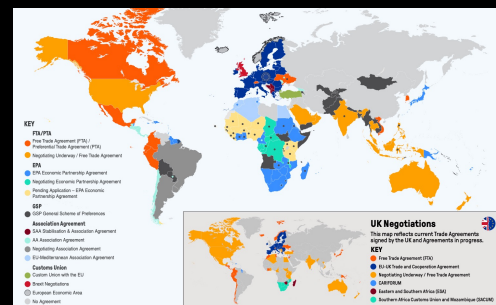
covering for bed

???

???

Active metaphor

- processed by comparison
- different interpretations possible



Metaphorical vocabulary

“Power is the mechanism by which the international system is run.” (BAWE corpus)

Source domain: machinery Target domain: political systems

connected components → various political entities

functioning together → interaction

provide control → provide control

lead to outcome → lead to outcome

physical elements

???

Dead metaphor

- processed by categorization
- L1 & advanced users aware of meaning

Conceptual metaphors

Conceptual metaphor theory (Lakoff & Johnson, 1980)

- Recurrent language features are evidence of how humans conceptualize the world.
- Abstract states are understood by comparison with concrete entities

Linguistic metaphor

... a healthy / ailing economy...
...economic growth...
...finance is the life blood of the economy...
...a deep economic sickness in the country...
...a matter of economic life or death...

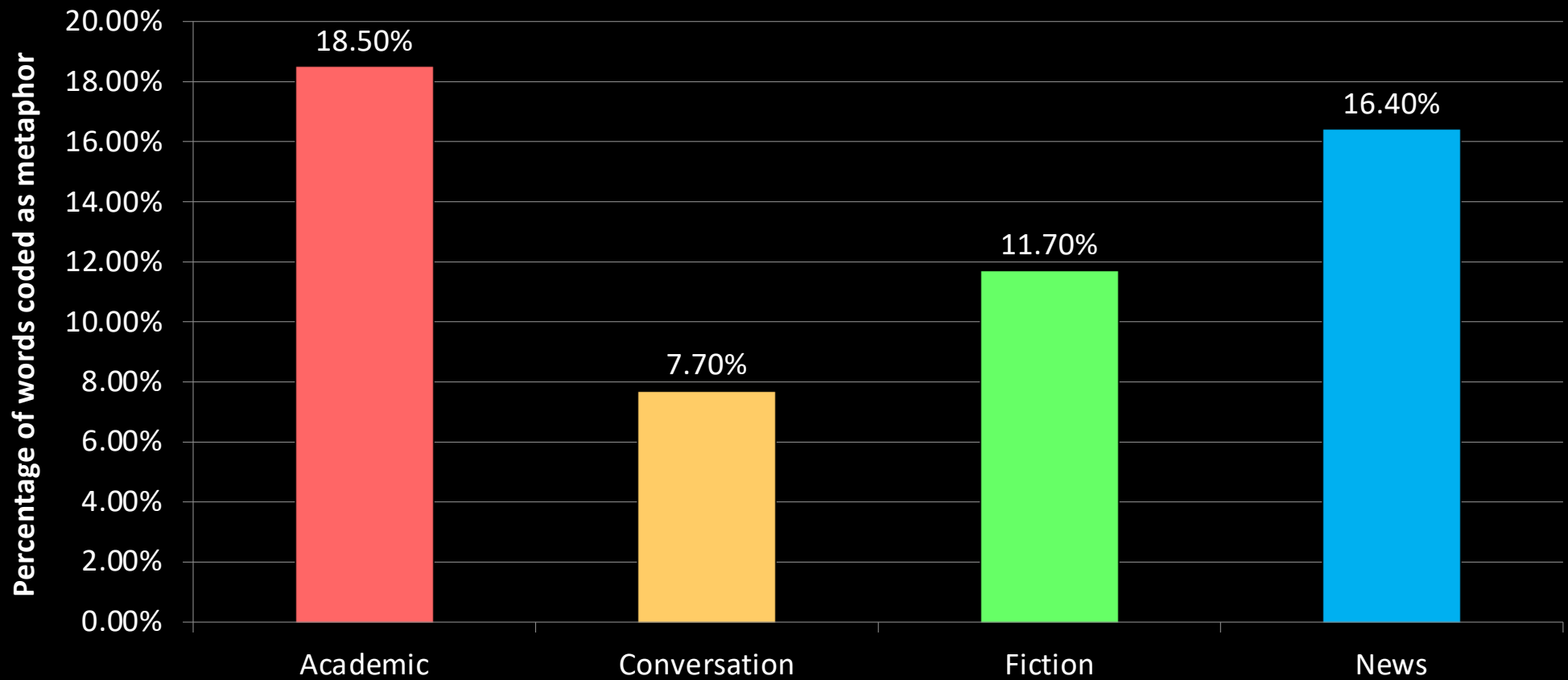
(COCA)

Conceptual metaphor

ECONOMIES ARE LIVING THINGS



Metaphor across genres



Steen et al. (2010)

Research aims

- Learners in EMI courses face considerable lexical demands.
- Need deep, as well as broad, vocabulary knowledge
 - Prominent metaphorical vocabulary
- Construct corpus of EMI materials (spoken & written)
- Reference corpus of materials from L1 English backgrounds
- Identify metaphor use...
 - ...at a discipline-specific level
 - ... (possibly) at a multi-disciplinary level
- Develop teaching materials for use in EMI programs

Methodology: EMI corpus construction

Brown, Bennett & Stoeckel (2019)

- corpus of undergraduate-level EMI materials
- 500,000 tokens
- written input
- 3 disciplines
- 2 institutions

Updated corpus

- 2,000,000 tokens
- written & spoken input
- 15 disciplines
- 5 institutions

Methodology: EMI corpus construction

Sub-set of EMI corpus

Discipline	Tokens
Applied Linguistics	470,736
Philosophy	171,872
Political Science	375,158
Literature	193,503

Methodology: Reference corpus

Compiled from:

British Academic Written English Corpus (BAWE)

British Academic Spoken English Corpus (BASE)

Michigan Corpus of Upper-Level Student Papers (MICUSP)

Michigan Corpus of Academic Spoken English (MICASE)

student writing
professor/student talk

Discipline	Tokens
Applied Linguistics	509,488
Philosophy	510,420
Political Science	682,079
Literature	574,782

Methodology: Identifying metaphor

Metaphor Identification Procedure Vrije Universiteit (MIPVU) (Steen et al., 2010)

1. Consider meaning of each lexical unit in context (Macmillan dictionary).
2. Determine whether a more basic sense exists (human, concrete) .
3. Determine whether basic sense is sufficiently distinct (separate numbered entry in Macmillan dictionary).
4. Determine whether contextual sense can be understood by comparison with basic sense. If so, mark it as a metaphor-related word.

Methodology: Identifying metaphor

“...content and language integrated learning, an approach to language teaching which is growing in popularity...” (EMI corpus)

2 SINGULAR **the fact of coming closer in time or in distance**

We watched the carriage's slow and steady approach.

approach of: *With the approach of war, many children were evacuated.*

story.

macmillandictionary.com

Source domain: movement

- movement 
- towards destination 

Target domain: education

- dealing with issue
- towards goal of successful language acquisition

Methodology: Data analysis

1. 50,000-word samples of text taken from EMI corpus from each of 4 disciplines
2. Coded for metaphor using MIPVU process
3. Second rater codes 20% of this sample to establish reliability.

	Discipline	Text no punctuation	Metaphor- related word
1			
2	Applied Linguistics	This	1
3	Applied Linguistics	suggests	1
4	Applied Linguistics	that	
5	Applied Linguistics	a	
6	Applied Linguistics	vocabulary	
7	Applied Linguistics	learning	
8	Applied Linguistics	program	
9	Applied Linguistics	will	
10	Applied Linguistics	require	
11	Applied Linguistics	both	
12	Applied Linguistics	an	
13	Applied Linguistics	explicit	
14	Applied Linguistics	teaching	
15	Applied Linguistics	component	1
16	Applied Linguistics	and	
17	Applied Linguistics	a	
18	Applied Linguistics	component	1
19	Applied Linguistics	which	
20	Applied Linguistics	maximizes	
21	Applied Linguistics	repeated	
22	Applied Linguistics	exposures	1
23	Applied Linguistics	to	1
24	Applied Linguistics	lexical	
25	Applied Linguistics	items	1
26	Applied Linguistics	such as	
27	Applied Linguistics	extensive	1
28			

Methodology: Data analysis

- Identify the most frequent metaphorical words in each discipline.
- Identify possible metaphorical themes to investigate.
- Connecting sample codings with whole corpus
- All corpus data tagged with semantic tags (Wmatrix) (Rayson, 2008)

	APPLING	LIT	PHIL	POLSCI
1	found	way	way	threat
2	form	feel	thing	way
3	switch	call	form	power
4	level	long	call	system
5	way	great	follow	control
6	see	come	see	high
7	show	look	give	see
8	high	see	go	support
9	focus	thing	look	growth
10	goal	keep	take	level
11	item	form	strong	take
12	approach	sense	get	low
13	take	give	point	view
14	target	find	show	nature
15	stage	out of	share	base on
16	grade	turn	here	strong
17	give	back	feature	freedom
18	input	part	great	grow
19	call	go	satisfy	call
20	exposure	run	come	show

Semantic Category System: Categories

A
general & abstract terms

F
food & farming

K
entertainment, sports &
games

O
substances, materials,
objects & equipment

T
time

Z
names & grammar

B
the body & the individual

G
government & public

L
life & living things

P
education

W
world & environment

C
arts & crafts

H
architecture, housing & the
home

M
movement, location, travel
& transport

Q
language &
communication

X
psychological actions,
states & processes

E
emotion

I
money & commerce,
industry

N
numbers & measurement

S
social actions, states &
processes

Y
science & technology

Methodology: Data analysis

- Semantic tags used to search for metaphors related to same concept in whole corpus.

approach_M1

advance_M1

avoid_M1

bypass_M1

climb_M1

converge_M1

follow_M1

move_M1

pace_M1

proceed_M1

pursue_M1

Hit	KWIC	File
138	can easily read the first one, for instance, as advancing _M1 a FALSE dichotomy .SENT_ There seems to be	REF_BAWE_WF
139	man 's end - telos - is not realisable, but forever advancing _M1 before him, the exercise of phronesis is an	REF_BAWE_WF
139	Z8 another way, even if you come right up against _M1[i39.3.3 it, how will you know that what	PHIL5-SPK-EN
140	the object itself is infinite .SENT_ This comes up against _M1[i640.3.3 the simple objection that we are not	PHIL5-SPK-EN
140	5 unconscious calculation going on when i when i walk along _M1[i165.2.2 and maintain my balance i 'm not	REF_BAWE_WF
139	2.2[i355.2.2 Bell 's position, another scientific realist might come along _M1[i356.2.2 and say Aha !SENT_ So, sometimes there	REF_BAWE_WF
140	painted and so many people as they 've walked along _M1[i674.2.2 have seen the fly and have gone	REF_BAWE_WF
141	have required help even before this extra situation came along _M1[i605.2.2 .SENT_ But if that 's the case,	REF_BAWE_WF
141	2 and lights go off, and a woman jumps up and _M1[i293.4.3 down, whooping and yelling, hooray !SENT_ Your	REF_BAWE_WF
142	_ It is correct that the just war theorists should approach _M1 the issue of violent intervention with extreme caution	REF_BAWE_WF
143	contained in passage (1_CD) and (2_CD), though hard to approach _M1, turn out to yield rich veins of information	REF_BAWE_WF
144	is no longer a " philosophic God " that people can approach _M1 with their understanding .SENT_ Neither is he " an	REF_BAWE_WF
144	address later .SENT_ However, Kant himself argues that we approach _M1 art independently from its creator 's purpose in	REF_BAWE_WF
145	artin 2005_CD : 446_CD) .SENT_ Now, both Walzer and Rawls approach _M1 the issue with some caution, and expectedly so	PHIL2-WRT-U
145	l community .SENT_ Although war can, and sometimes does, approach _M1 a state of 'total war'.NN in which	PHIL2-WRT-U
145	we find out that we were mistaken ?SENT_ We approach _M1 the tower and as we get closer we	PHIL2-WRT-U
146	for a long time without speaking .SENT_ As they approached _M1 Clover Close, Joanna said, " I do n't	REF_MICUSP_\
146	SENT_ Where Bentham had merely outlined the theory, Austin approached _M1 the subject in a much more analytical manner,	REF_MICUSP_\
147	only a brief outline of the issues to be approached _M1 to attempt to rectify the shortcomings in Sartre '	PHIL2-WRT-U
147	, we 'll be discussing one of the main, err, approaches _M1 to global justice which is known as egalitarianism _	PHIL2-WRT-U
148	T_ THAGARD 'S PSEUDOSCIENCE DEFINITION Paul Thagard approaches _M1 the problem of demarcation from the other side	REF_MICUSP_\
148	straight rule states that as the number of evidences approaches _M1 infinity, the probability of the event occurring will	REF_MICUSP_\
149	argument .SENT_ I would recommend this book to anyone approaching _M1 the Design argument with a blank slate as	REF_BAWE_WF
149	880.2.1 card for Hilde, but although the actual day was approaching _M1, she did not receive a single birthday card	REF_BAWE_WF
150	shall also be discussed .SENT_ Hume and Descartes are approaching _M1 scepticism from two different directions .SENT_ A fundamental	PHIL3-WRT-U
150	, but after a few minutes Sophie heard the dog approaching _M1 .SENT_ " Hermes ! " she called, and the next moment	PHIL3-WRT-U
151	the feelings which it expresses .SENT_ This way of approaching _M1 music, in his opinion, is not as fulfilling	REF_BASE_SP
151	scratched at with his paw .SENT_ Sophie heard footsteps approaching _M1 from inside .SENT_ The door opened, and there	REF_BASE_SP
152	ENT_ Many philosophers have adopted varied strategies for approaching _M1 this problem, and Scanlon himself proposes an argument _	PHIL2-WRT-U
152	themselves '.POS) but also a very crude way of approaching _M1 idealism .SENT_ I would contest that it is	PHIL2-WRT-U
153	a siren and infer that an emergency vehicle is approaching _M1 .SENT_ Sometimes in everyday life, we arrive at	PHIL2-WRT-U
153	i 'm could actually even just like to wander around _M1[i828.2.2 all the time i 'm going to	PHIL2-WRT-U
154		PHIL2-WRT-U

Methodology: Data analysis

1. Keyword analysis to identify important concepts in each discipline
 - Keywords: Words appearing more often than expected by chance alone
 - Each discipline corpus compared with corpus of all other disciplines
 - Log-likelihood statistic
2. Each discipline, 10 keyword nouns taken as important concepts.
 - Applied linguistics: language, word, speaker, speech, grammar, verb, learning, vocabulary, teaching, teacher
 - Philosophy: argument, reason, mind, belief, knowledge, experience, existence, truth, moral, god
 - Political science: government, policy, politics, institution, party, economy, market, trade, election, democracy
3. Metaphorical collocates of important concept words identified

Results

% Metaphor-related words

Discipline	% Open-class words coded as metaphors
Applied Linguistics	16.69%
Philosophy	13.34%
Political Science	16.21%
Literature	13.94%

Open-class words:
nouns,
verbs,
adjectives, &
adverbs

Results

Applied linguistics

LANGUAGE IS A CONSTRUCTION/PRODUCT

(assemble, build, broken, foundation, framework, reconstruct, scaffolding, structure)

LANGUAGE TEACHING & LEARNING IS DIRECTED MOVEMENT

(approach, direct, follow, lead, map, movement, path, progress, target)

LANGUAGE IS A PHYSICAL OBJECT

(absorb, borrow, cluster, compound, contact, grasp, impact, possess, retrieve, string)

LANGUAGE USE IS OPERATING A MACHINE

(breakdown, control, device, fine tune, input, switching)

Results

Philosophy

ACCEPTANCE & UNDERSTANDING IS POSSESSION

(accept, adopt, dispose, grip, hold, inherit, offer, possess, provide, retain, withhold)

DEBATE IS AGGRESSIVE BEHAVIOUR

(argue, attack, challenge, clash, defence, deploy, fight, grapple, hostile, struggle)

SEEN IS KNOWN, UNSEEN IS UNKNOWN

(bury, conceal, display, exhibit, find, obscure, reflect, reveal, see, uncover, veiled, witness)

IDEAS ARE CONSTRUCTED OBJECTS

(architect, blueprint, bridge, construct, fabricate, framework, pillar, reconstruct)

Results

Political science

POLITICAL INTERACTION IS PHYSICAL FORCE

(bind, boost, burden, containment, destabilize, drive, erode, force, impact, restrain, shape)

POLITICAL ENTITIES ARE CONSTRUCTIONS

(architect, construct, engineer, fortify, foundation, machinery, support)

POLITICS IS AGGRESSIVE/DESTRUCTIVE ACTION

(abuse, aggressive, barrage, campaign, endanger, landslide, sabotage, smash, undermine)

POLITICS IS PERFORMANCE

(actor, drama, dramatic, masquerade, perform, player, prompt, role, stage)

Results

Discipline	Conceptual metaphors	Estimated % of all open-class metaphors	Metaphors met every ... words
Applied linguistics	12	24.41%	40.36
Literature	/	/	/
Philosophy	11	10.29%	125.30
Political science	9	19.64%	51.68

Limitations

- Data analysis still under way
- Second rater codings may change outcomes
- Limited corpus size

Future work

- Continue to identify metaphors in each discipline.
 - Common verbs as key words
- Examine metaphor use in other disciplines
 - Hard science
 - Business
- Develop teaching materials either for metaphor in general or for specific disciplines.

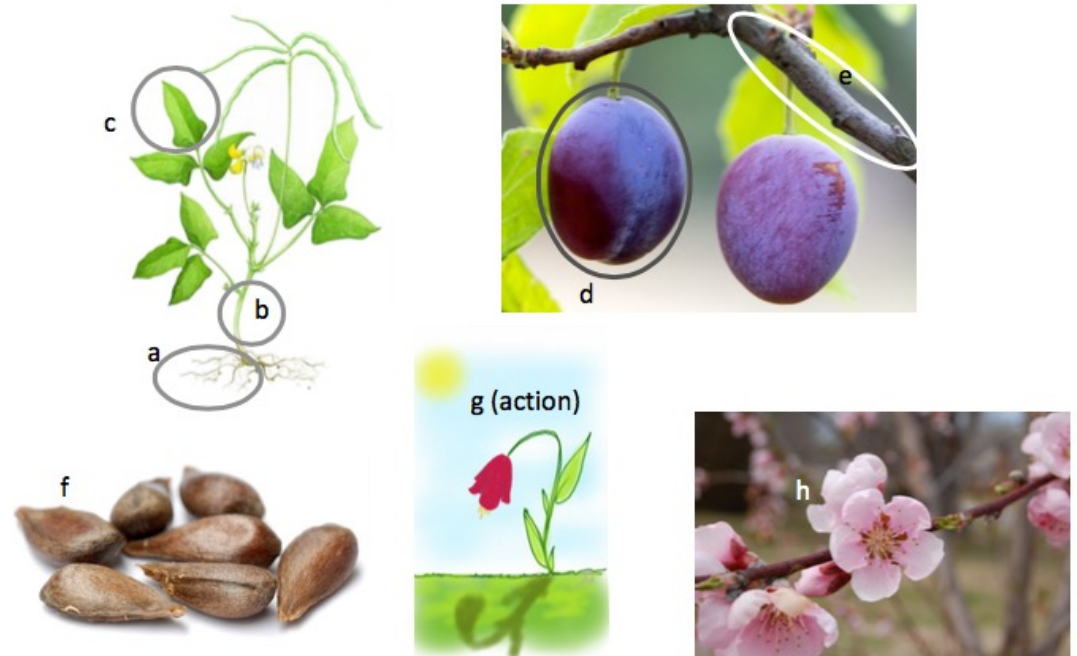
Future work

Possible approaches to teaching

- Identifying core meanings
- Guessing meaning from context
- Constructing relationship diagrams

Sources of Metaphor: Plants

- A. Vocabulary related to plants is often used metaphorically in English. Look at the pictures below and identify the labeled parts (for g, you should identify what the plant is doing). Add the words to the table below.



Future work

Possible approaches to teaching

- Identifying core meanings
- Guessing meaning from context
- Constructing relationship diagrams

Letter	Name	Core features
a	root	connection to earth, important for development, hidden
b	stem	main part of plant's body, leaves produced from
c	leaf	
d	fruit	the product of the plant
e	branch	grows in a new direction away from main body
f	seed	source of a new plant
g	wilt	
h	blossom	

Future work

Possible approaches to teaching

- Identifying core meanings
- Guessing meaning from context
- Constructing relationship diagrams



Future work

Possible approaches to teaching

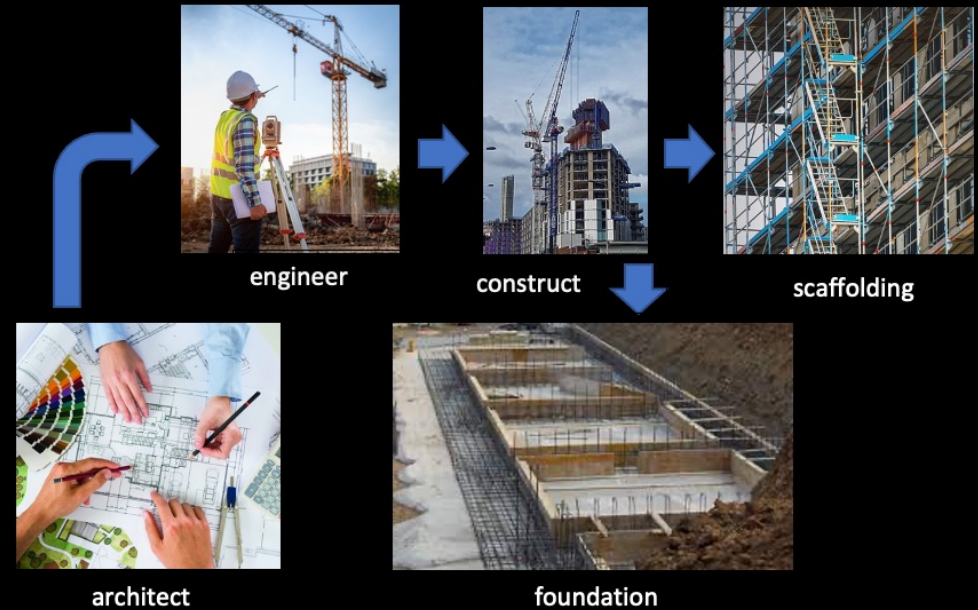
- Identifying core meanings
- Guessing meaning from context
- Constructing relationship diagrams

1. We tried to tune the piano.
2. Learners have to fine-tune their language use.
3. My car wouldn't start, so I called the breakdown service.
4. Lack of vocabulary can lead to breakdowns in communication.
5. She was switching the lights on and off.
6. Language users will code-switch in different situations.

Future work

Possible approaches to teaching

- Identifying core meanings
- Guessing meaning from context
- Constructing relationship diagrams



Thank you!

If you are willing to share EMI course materials (texts or audio recordings), please get in touch!



Call for participants

References

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