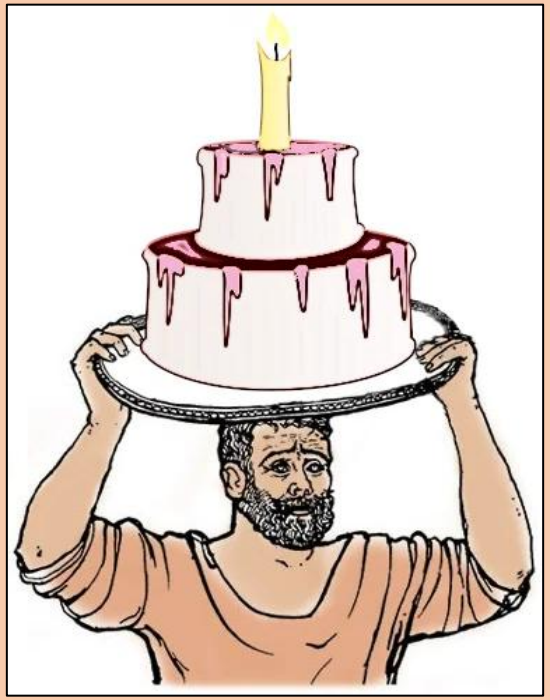
Cognitive Science & the CLC



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EEF definitions

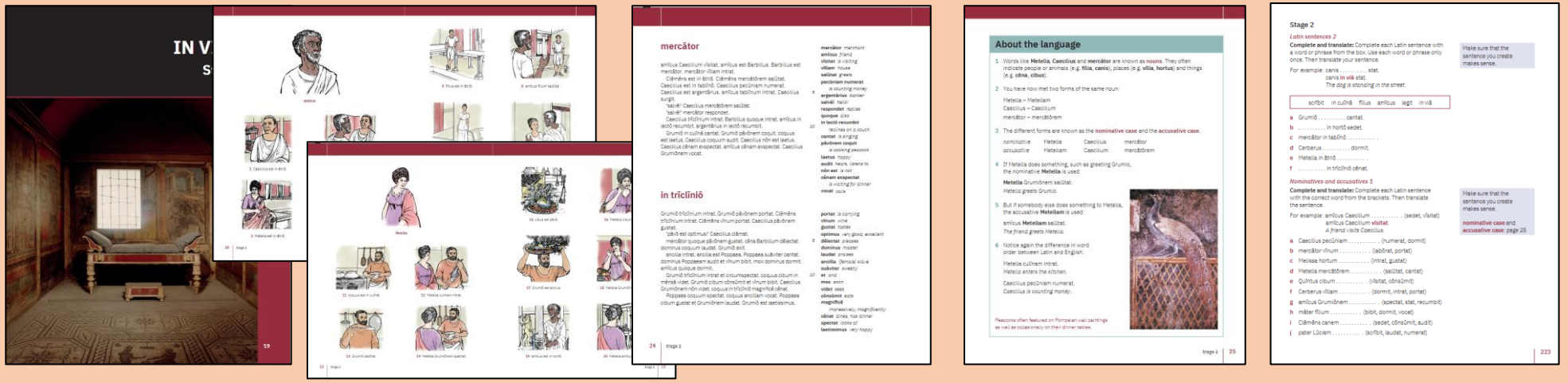
- Cognitive science is being used increasingly to inform interventions, practice, and policy in education.
- Of particular interest to education has been research into motivation and reward, working memory and long-term memory, and cognitive load.
  - **spaced learning**—distributing learning and retrieval opportunities over a longer period of time rather than concentrating them in 'massed' practice.
  - **interleaving**—switching between different types of problem or different ideas within the same lesson or study session.
  - **retrieval practice**—using a variety of strategies to recall information from memory, for example flash cards, practice tests or quizzing, or mind-mapping.
  - **strategies to manage cognitive load**—focusing students on key information without overloading them, for example, by breaking down or 'chunking' subject content or using worked examples, exemplars, or 'scaffolds'.
  - **dual coding**—using both verbal and non-verbal information (such as words and pictures) to teach concepts; dual coding forms one part of a wider theory known as the cognitive theory of multimedia learning (CTML).



Spaced learning

Distributing learning and retrieval opportunities over a longer period of time rather than concentrating them in ‘massed’ practice.

- Accumulation of vocabulary and grammar in careful sequence: Initial Stimulus → Model Sentences → Story → About the Language → Reviewing the Language.



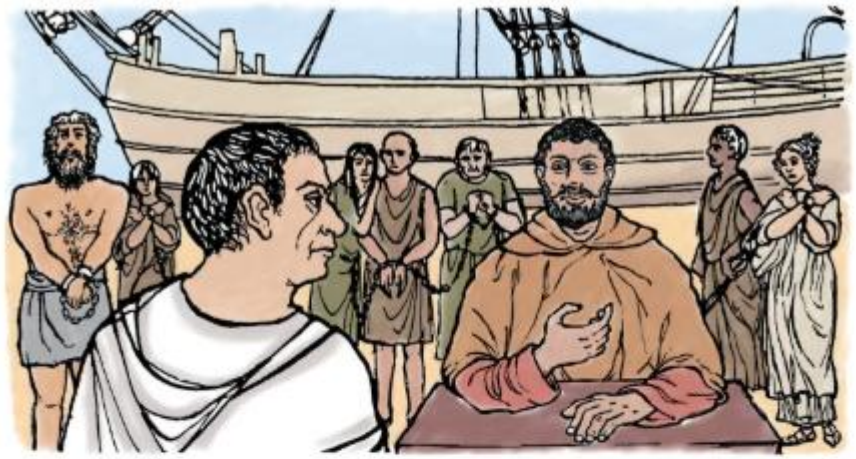


Interleaving

Switching between different types of problem or different ideas within the same lesson or study session.

- 3-part lesson idea for a story.
- Skimming, scanning, deep reading.
- Oral and written.
- Importance of priming – anticipation and or resolution of the story.





ōrnātrīx

ancilla portum circumspectat. ancilla est Melissa. Melissa prope nāvem stat. Melissa est anxia.

Caecilius ad portum venit. Caecilius portum circumspectat. argentārius Syphācem videt. Syphāx est vēnālīcius.

'salvē, Syphāx!' clāmat argentārius. Syphāx Caecilium salūtat et rīdet. Caecilius ancillam quaerit. vēnālīcius Caecilium ad nāvem dūcit.

'vīnum!' clāmat Syphāx. Melissa vīnum ad Caecilium portat. argentārius vīnum bibit et Melissam spectat.

'Melissa est docta,' inquit vēnālīcius. 'Melissa linguam Latīnam discit. Melissa cēnam optimam coquit.'

'sed Metella coquum habet,' inquit argentārius. 'Metella ōrnātrīcem cupit.'

'Melissa est ōrnātrīx optima,' inquit Syphāx. 'Melissa crīnem compōnit. Melissa stolam compōnit. Melissa ...'

'satis! satis!' clāmat Caecilius. Caecilius Melissam emit et ad vīllam revenit. Caecilius Metellam vocat. Metella ancillam intentē spectat et Caecilium laudat.

Melissa vīllam circumspectat. Melissa est anxia.

ōrnātrīx *hairdresser, stylist*

portum *harbour*
prope nāvem *near a ship*
anxia *worried*

quaerit *is looking for*

docta *skilful*
linguam Latīnam discit *is learning the Latin language*
habet *has*
cupit *wants*
crīnem compōnit *arranges hair*
stolam *dress*
satis! *enough!*
emit *buys*



Shackles with padlock.

Retrieval practice

Using a variety of strategies to recall information from memory, for example flash cards, practice tests or quizzing, or mind-mapping.

- I don't recommend anything *in class* which takes students out of 'whole language' (eg vocab out of context / quizzlets / crossword puzzles / word searches).
- Every Latin story / exercise is a form of retrieval practice.
- Cloze exercises – should be Latin not English.
- Comprehension questions – always refer back to the Latin.
- Making the most of story episodes on which which to 'hang' more diffuse semantic knowledge.



Quīntus audāx

Caecilius et Quīntus in tablīnō sedēbant. Caecilius fīlium ad vēnātiōnem invītāvit.

'aper ferōcissimus in monte Vesuviō habitat,' inquit Caecilius. 'multī cīvēs ad vēnātiōnem veniunt. servī et canēs sunt parātī. Fēlīx quoque venit, quod audāx est. aper eum nōn terret.'

Quīntus erat laetissimus. vēnābulum cēpit et ad vēnātiōnem contendit. omnēs ad montem prōcēdēbant, ubi aper habitābat. mox magnam silvam intrāvērunt. servī canēs incitāvērunt. canēs vehementer lātrābant.

subitō ingēns aper appāruit. Caecilium et cīvēs terruit. Fēlīx vēnābulum ēmīsit, sed aprum nōn percussit. lībertus, quod aper eum petēbat, dē vītā dēspērābat. omnēs valdē timēbant. Quīntus tamen ad aprum fortiter prōcessit et vēnābulum ēmīsit. ecce! aprum necāvit.

'euge!' clāmāvit Quīntus. 'ōlim Fēlīx mē servāvit. nunc ego Fēlīcem servō!'



audāx *bold*

aper ferōcissimus
very fierce boar

in monte Vesuviō
on Mount Vesuvius

cīvēs *citizens*

vēnābulum *hunting sp*

ēmīsit *threw*

percussit *struck*

prōcessit *advanced*

READ

Quīntus audāx

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intrat: intrāvit enters
verb: they (plural), perfect

Quīntus erat laetissimus. vēnābulum cēp
vēnātiōnem contendit. omnēs ad monte
ubi aper habitābat. mox magnam silvam intrāvērunt. servī canēs incitāvērunt. canēs vehementer lātrābant.

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Strategies to manage cognitive load

Focusing students on key information without overloading them, for example, by breaking down or ‘chunking’ subject content or using worked examples, exemplars, or ‘scaffolds’.

- The gloss often uses chunking.
- Chunking phrases and ‘sentence shapes’ in the stories. Think:
  - Not individual words.
  - Not ‘look for the verb’.
- See how the language works:
  - Connections between words – ‘words together’ / ‘every word has a friend’.
  - Packages of words: acc+verb; gen+noun; inf+verb; adj+noun.
  - Morphology derives from meaning: nom sing + sing verb; nom pl + pl verb; dat+verb of showing; gen+ part of / belonging to.
  - Key syntax influences morphology: IC+ut; RC+ut; IQ+question word+subj.
  - Use of punctuation: Direct speech; RCs.





The palaestra of the Stabian Bathe at Pompeii.

About the language

1 Study the following examples:

Metella **fīliae** cibum offerēbat.
*Metella was offering food **to her daughter**.*

senex **amīcō** dōnum quaerēbat.
*The old man was looking for a gift **for his friend**.*

Caecilius **mercātōrī** statuam ēmit.
*Caecilius bought a statue **for the merchant**.*

māter **puellīs** pecūniam trādidit.
*The mother handed over money **to the girls**.*

Quīntus **amīcīs** discum ostendit.
*Quintus showed the discus **to his friends**.*

iuvenēs **leōnibus** cibum dedērunt.
*The young men gave food **to the lions**.*

The Latin words in **bold** are nouns in the **dative case**.

2 You have now met three cases. Notice the different ways in which they are used:

nominative	**amīcus** dormiēbat.
	***The friend** was sleeping.*
accusative	mercātor **amīcum** excitāvit.
	*The merchant woke **the friend**.*
dative	mercātor **amīcō** signum dedit.
	*The merchant gave a sign **to the friend**.*

3 Here is a full list of the noun endings that you have met. The new datives are in **bold**.

	first declension	*second declension*	*third declension*
SINGULAR			
nominative	puella	amīcus	mercātor
accusative	puellam	amīcum	mercātōrem
dative	**puellae**	**amīcō**	**mercātōrī**
PLURAL			
nominative	puellae	amīcī	mercātōrēs
accusative	puellās	amīcōs	mercātōrēs
dative	**puellīs**	**amīcīs**	**mercātōribus**

4 Further examples:

a amīcus Caeciliō vīnum ostendit.
b agricola uxōrī ānulum ēmit.
c mercātor Metellae togam trādidit.
d senex gladiātōribus pecūniam offerēbat.
e fēmina fīliīs tunicās quaerēbat.

5 Notice the different cases of the words for 'I' and 'you':

nominative	ego	tū
accusative	mē	tē
dative	mihi	tibi

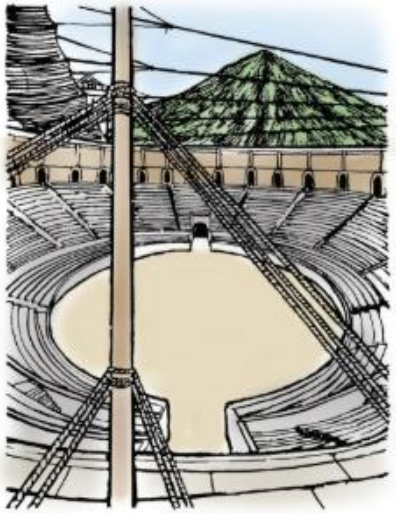
ego senem salūtō.	*I greet the old man.*
senex **mē** salūtat.	*The old man greets **me**.*
senex **mihi** statuam ostendit.	*The old man shows a statue **to me**.*
tū pictūram pingis.	***You** are painting a picture.*
āthlēta **tē** laudat.	*The athlete praises **you**.*
āthlēta **tibi** pecūniam dat.	*The athlete gives money **to you**.*

Dual coding

Using both verbal and non-verbal information (such as words and pictures) to teach concepts.

- Schema building – mental concept of language, through
  - Picture and text in the model sentences (and elsewhere)
  - Surroudning information (titles, contextual material)
  - Teacher talk / focused discussion





amphitheātrum



1 nūntiī spectāculum nūntiābant.
Pompēiānī nūntiōs audiēbant.



2 gladiātōrēs per viam prōcēdēbant.
Pompēiānī gladiātōrēs laudābant.



3 puellae iuvenēs salūtāvērunt.
iuvenēs quoque ad amphitheātrum contendēbant.



4 mercātōrēs fēminās spectābant, quod fēminae ad spectāculum contendēbant.



5 puerī per viam festīnābant.
puellae puerōs salūtāvērunt.



6 Pompēiānī tabernās nōn intrāvērunt, quod tabernae erant clausae.



7 postquam gladiātōrēs Pompēiānōs salūtāvērunt, Pompēiānī plausērunt.



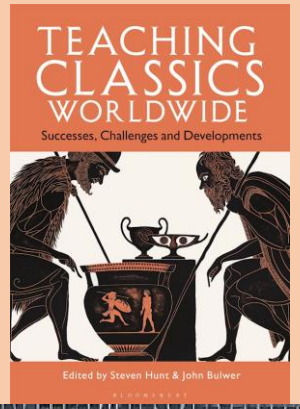
8 Pompēiānī gladiātōrēs intentē spectābant, quod gladiātōrēs in arēnā pugnābant.

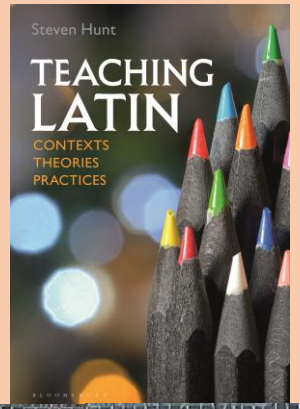


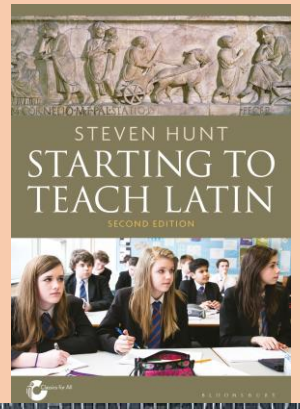
9 spectātōrēs murmillōnēs incitābant, quod murmillōnēs saepe victōrēs erant.

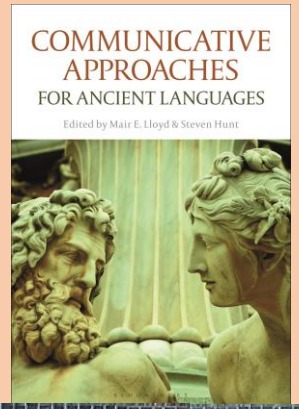
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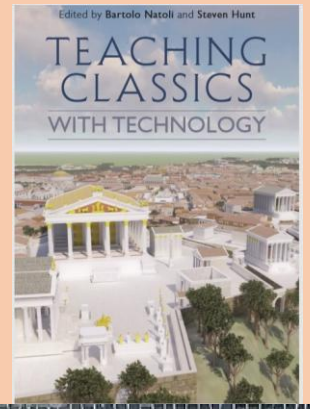
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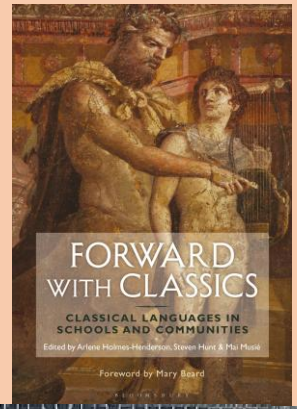












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