



Can you explain?

How Artificial Intelligence Can Develop Learners' L2 English Reading

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DD-LANG project: bringing together of dynamic and diagnostic L2 assessment

- Our current approach to developing L2 English learners' reading
- How we are / will be using AI for their reading development



DD-LANG project (2022-26)



We aim to advance the **theoretical, empirical and practical basis** of L2 assessment for learning by bringing together dynamic and diagnostic assessment approaches

Thus, we address

- (1) **lack of systematicity** and **basis in theory** of learning / development in the assessment of L2 skills
- (2) **lack of individualisation** due to large groups and limited teacher time

We focus on reading and writing in English as a foreign language in upper secondary schools in Finland (16-18 -year-olds)

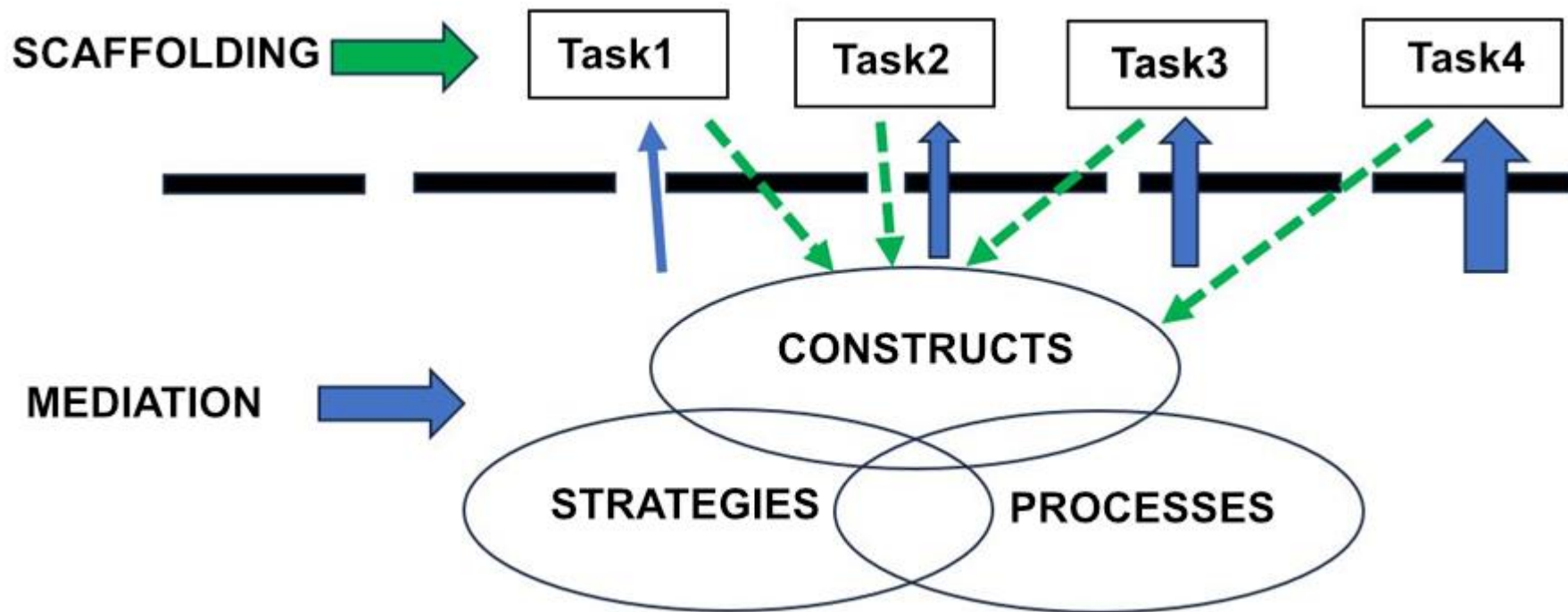


Two types of **constructs** & Two assessment **contexts**

- Broader (reading) **constructs**
 - e.g., inferring word meanings from context, understanding main idea
 - tasks & mediation for each construct created by researchers
 - **context:** online and in the classroom
- 'Narrower' (grammar, vocabulary) **constructs**
 - e.g., discourse markers, verb tenses, articles, ...
 - online tasks created automatically by using NLP / AI
 - mediation created by researchers and AI
 - **context:** mainly online



Mediation in DD-Lang





Sample Reading Item (inferring word meanings)

Electric Car

Ford's New All-Electric F-150 Lightning Is More Than It Seems

While driving around suburban Houston during Texas' power crisis in February 2021, which left millions without power for days, Ford energy services lead Ryan O'Gorman was thinking less about that disaster than the next one. Ford at the time was putting the finishing touches on an all-electric version of its best-selling F-150 pickup, with a nifty feature for just such an emergency: in a power outage, the truck would be able to function as a backup battery, powering an owner's

parked in driveways while I was driving around Texas during that week," says O'Gorman. The F-150 Lightning is the latest offering in Ford's \$22 billion electric vehicle (EV) push. It's also a huge deal for the company which is fighting both fellow incumbents (like GM) and highly-valued upstarts (like Tesla and Rivian) for what analysts

What is mentioned as a difference between GM and Tesla?

GM has a more established position

GM is thought to focus on petrol engines

GM keeps fighting fellow incumbents

GM will decide the future of the industry

GM's reputation is more disputed



Mediation in computerised DD-LANG - level 1 mediation

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valued upstarts (like Tesla and Rivian) for what an

say will at least at first be a limited electric market

likely to be the future of the auto industry. "W

absolutely think there's going to be a big shake

This was not the best option. We will now offer some help and hints...

Sometimes you do not need to know the meaning of an unknown word. However, to know what the word means, it is useful to look at the text around the word (sentence(s), paragraph). If you have a general understanding of what you have read, this will help you figure out what the unknown word might mean.



Show feedback

Sometimes you do not need to know the exact meaning of an unknown word. However, if you need to know what the word means, it is useful to look at the text around the word (sentence(s), paragraph). If you have a general understanding of what you have read, this will help you figure out what the unknown word might mean.



Mediation in computerised DD-LANG - level 2 mediation

The following may help you find the meaning of an unknown word:

- Which word comes right before / after the unknown word? Does that word help you understand the difficult word?
- Can you divide the unknown word into parts? Can you recognise the meaning of the parts? (e.g., un-help-ful)
- Recognising only part of the meaning may help, too. Is the word positive or negative?
- How are details in a sentence or in several sentences connected? For example, the word 'but' suggests that details are contrasted, and 'because' tells us that a reason is given. Look for these kinds of words in the text.

Tesla?

Show feedback

- GM has a more established position
- GM is thought to focus on petrol engines
- GM keeps fighting fellow incumbents
- GM will decide the future of the industry
- GM's reputation is more disputed



Mediation in computerised DD-LANG - level 3 mediation

To find the answer to this question, you should think how GM and Tesla are compared to Ford:

- Think what kind of company Ford is.
- Words like "fellow" tell us about GM in relation to Ford.
- "both... and..." signals that GM is a company like Ford whereas Tesla is different.

Remember that the goal is not to understand the full meaning of all the words but only as much as needed to answer the question.

Show feedback

What is mentioned as a difference between GM and Tesla?

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Data and participants

- **Upper-secondary school students:**
 - face-to-face ($n = 10$)
 - computerised ($n = 2$)
 - audio + screen recording
- **MA university students in an assessment course, many of them preparing to become language teachers ($n = 26$)**
 - written reports on their experiences with computerised dynamic diagnostic tasks
- **Upper-secondary school teachers ($n = 13 + 1$)**
 - audio-recorded interviews + workshops



Work with teachers informing the development of AI-based assistance to learners

Ope5: Yes, that's a department. [...] That does work on AI, and it's really- I didn't know that the biggest- *Älytietokone* [...]? Well, an intelligent computer is in- I think it's in Oulu or somewhere, but it's in Finland. They do a lot and they said that AI is, don't be afraid of it, it's not there yet, so it's a good tool, it can predict the next word. But it can't do anything else yet, so I thought, okay, good. They can't be teachers, it can't teach English yet, so that's good. I have my job.



Work with teachers informing the development of AI-based assistance to learners

- Ope3** It's like a in spring, I've started noticing and now everybody's doing it. [...] So everybody's tried it already one way or the other. [...] So what I'm thinking of doing is from now on, instead of asking the students write an essay at home, particularly the younger students [...] We'll write one essay in class and we'll use the *Abitti* platform to do it that will, you know, make sure nobody's gonna go online.
- Dmitri** Do you also kind of [...] what I get out of that in general, you say [...]I, it's more of an obstacle for- Or is there- are there any also opportunities there in your opinion?
- Ope3** I guess so, you know. [...] I'll have to think of, in what ways it could be used. [...] Maybe if I set task for a student to write a paragraph like that. And, "Okay, why don't you put it on ChatGPT and ask them to correct all the mistakes you made". And if they do that and if it makes any sense, you know, that might be a useful tool. Not for the teacher, but the student, you know. They could actually have immediate feedback if they write something and that would be fabulous.
- Dmitri** Excellent, yeah. [...] I'm happy that you're kind of mention that there are ways of using that, using that as a sort of a educational tool rather than something that students just cheat with.



Piloting with students informing the development of AI-based assistance to learners

- S26:** The feedback and advice from the system was useful at first, but when the same feedback started to be repeated, I was tempted to skip the feedback without reading through it. So it would be more motivating if the feedback was more varied, and addressed the specific challenge at hand.
- S11:** "correct" is a bit lacklustre feedback. Especially since it was the main feedback I received while doing the tasks. Again, you could offer question-specific feedback, such as "Correct! Because in the text ... is why ... is the correct answer.". Now, for example, if the person doing the task guesses it remains a mystery to them why their guess was correct. If the program also offered feedback on the correct answers, the learners could receive confirmation that they have interpreted the question correctly, or an example of the thinking process when doing the task.



Engaging with a Chatbot to develop broader reading comprehension: Deducing Vocabulary

To find the answer to this question, you should think how GM and Tesla are compared to Ford (and what kind of company Ford is). Words like "fellow" tell us about GM in relation to Ford. Also "both... and..." signals that GM is a company like Ford whereas Tesla is different.

×

Show feedback

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Than it seems

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Dmitri: Can you tell what the correct answer is and explain why?

Chatbot: The correct answer is **GM has a more established position.**

The text mentions that Ford is fighting both "fellow incumbents (like GM) and highly-valued upstarts (like Tesla and Rivian)." The term "incumbents" refers to companies that are already well-established in the industry, which implies that GM has a more established position compared to Tesla, which is referred to as an "upstart." This distinction highlights the difference in their market positions.



Mediation with chatbot for “linguistic” constructs: Discourse markers

3/3

Earlier Use of African-American

The term African-American may seem to be a product of recent decades, exploding into common usage in the 1990s after a push from advocates like civil rights activist Jesse Jackson, and enshrined in the Oxford English Dictionary in 2001. The O.E.D.'s entry, revised in 2012, traces the first known occurrence to 1835, in an anti-slavery newspaper. But now, a researcher has discovered a printed reference in an anti-British sermon from 1782 credited to an anonymous “African American” who traced the origins of the term back to the earliest days of independence.

But

Especially

For example

Hence

Check Answers

Next snippet ↓



Mediation with chatbot for “linguistic” constructs: Discourse markers

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Check Answers

Next snippet ↴

- Read around the gap.
What ideas can you find in the text surrounding it? What would you as the writer do to connect these ideas?
- Words like this show different relationships between ideas they connect.
These words can show, for example, **comparison** or **order of events**.
How do you think the ideas are connected here?
- Look at the following example; think which of the options expresses the same relationship:
I like dogs instead of cats.

Report a problem

Translate into ⇒ Finnish ▼

Click any unfamiliar word to see its translations.

Revita will assume you are learning these words
– they will appear as **RED** in your **Vocabulary Progress View**.

Practice your words with **Flashcards!**
Once you have learned them, words turn from

But/Especially/For example/H...

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Ask a question from the chatbot ...

Send



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Check Answers

Next snippet ↓

Can you explain what the correct answer is and why?

The correct answer is "But" because it introduces a contrast between the previously accepted earliest usage of the term "African-American" and the new discovery that pushes its origin even further back. This word effectively highlights the surprising and contradictory nature of the new evidence compared to the old understanding.

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Send



Following steps

- Further developing AI functionality in mediating students
 - AI reformulating mediation students receive
- Developing the chatbot
 - Collecting learners' experiences with the chatbot
- **Both** for reading comprehension and grammar, vocabulary and syntax, as building blocks for developing reading processes



Kiitos!

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