



Vygotskian Praxis and assessment fairness: Developing mediation in computerised dynamic assessment

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Our aim: to address two issues in assessment that supports L2 learning

(1) **Lack of systematicity** and **basis in theory** of learning / development in the skill(s) of interest

(2) **Lack of individualisation** due to large groups and limited teacher time

→ potential issues for the quality and impact of assessment, including fairness

(e.g., Kunnan, 2018; Randall et al., 2022; Tierney, 2013)

→ possible consequences include learners not receiving instruction that optimally supports their language development

What do we do to address these issues?



We conduct research that aims to advance the **theoretical, empirical and practical basis** of L2 assessment for learning

DD-LANG research project: Dynamic-diagnostic language assessment – a conceptual and practical innovation in foreign language assessment

- funded by the **Research Council of Finland** and University of Jyväskylä Sept.1. 2022 – Aug. 31. 2026
- focuses on reading and writing in English as a foreign language in upper secondary schools in Finland (16-18 -year-olds)

How do we address these issues in DD-LANG?

(1) By integrating L2 dynamic assessment (DA) and diagnostic assessment (DiagA)

→ clearer theoretical underpinnings of

(a) assessment **constructs** (& what instruction is intended to promote)
(contribution of DiagA)

(b) **development** of learner L2 abilities (contribution of DA)

DA: Integration of mediation, interpretation of learner responsiveness to expand diagnosis to include developed abilities + emerging/partly formed abilities/understanding

How do we address these issues in DD-LANG?

(2) By increasing synergy of teacher-led classroom assessment & AI-enhanced online assessment

(that implements dynamic and diagnostic assessment)

→ online assessment provides teachers and learners with more, and more individualised, information about learner development

→ online assessment tasks provide input to classroom activities

Overall, DD-LANG aims to provide better opportunities for learner L2 development, fairness through meeting the needs of all learners, and, supporting all learners for success

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 constructs**

- e.g., discourse markers, verb tenses, articles, ...
- online tasks created automatically by using NLP / AI
- mediation created mostly by researchers
- **context:** mainly online

- Steps: (1) **Define** (reading) constructs;
(2) **Design** mediation for each construct

Sources of information for **defining** reading constructs:

- Review of **theories** and research on L2 reading
- Online **surveys** of key stakeholders: item writers ($n=22$), teachers ($n=43$), students ($n=725$)
- Teacher **interviews** ($n=8$)
- **Think-aloud** protocols with expert readers ($n=6$)

Designing mediation & One-on-one **piloting** of the mediation
($n=10$)

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 house for days. "I can't tell you how many F-150s I saw 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 say will at least at first be a limited electric market but is likely to be the future of the auto industry. "We just

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

Sample Reading Item (inferring word meanings)

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Mediation in computerised DD-LANG - level 1 mediation

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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 to answer the question.

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.

The screenshot shows a digital interface for a mediation task. At the top right is a blue button labeled "Show feedback". Below it, the text "Tesla?" is displayed. A list of five statements is presented in horizontal bars: "GM has a more established position" (blue), "GM is thought to focus on petrol engines" (blue), "GM keeps fighting fellow incumbents" (red), "GM will decide the future of the industry" (red), and "GM's reputation is more disputed" (blue). A vertical scrollbar is visible on the right side of the list.

Mediation in computerised DD-LANG - level 3 mediation

(note: this level of mediation is item specific, not general / construct specific)

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?

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

Generated sample report

	Total unassisted score (1pt/correct response)	Total mediated score (weighted, 0-4pts)	Av. Med. Required
Learner 1	2	19	1.3
Learner 2	5	25	0.4
Learner 3	2	15	1.9
Learner 4	0	10	2.6
Learner 5	0	16	1.7
Learner 6	6	25	0.4

Creating automatic exercises for narrower constructs with mediation in the Revita system

Steps:

- Learner (or teacher / researcher) selects a text and inputs it into Revita
- Learner (or teacher / researcher) selects the (narrow) construct that they want to train
- Revita uses NLP to create exercises from the text that focus on chosen construct (e.g., gap-fill tasks with or without multiple-choice options)
- Learner takes the exercises and when they make mistakes, Revita displays researcher-designed mediation messages until the exercises are completed
- Revita monitors learner progress across the chosen constructs, including amount of mediation (and changes in mediation)

Example of a narrow construct: Discourse markers

There was a feeling I got before I spoke in front of an audience and sometimes also before an event that was less public but still important, an event that could have consequences in my life – taking the LSATs, for example, I in a classroom on the campus of Harvard.

Check

therefore

unlike

which

whom

Next snippet ↓

 Report a problem

Level 1 mediation

- How does the missing word connect to what comes before and after it?

- How does the missing word connect what comes before it and after it?

You used: unlike

Rodham

☒ Highlight

There was a feel

could have consequences in my life – taking the LSATs, for example, **unlike** I did in a classroom on the campus of Harvard.

...all important, an event that

Level 2 mediation

- How does the missing word connect to what comes before and after it?
- Words like this can show different relationships between the text parts they connect. These words might offer an example of something or set up a comparison or a contrast. What kind of relationship makes sense here? Does this give you a clue about the word that might fit best?

- How does the missing word connect what comes before it and after it?
- Words like this can show different relationships between the text parts they connect. These words might offer an example of something or set up a comparison or a contrast. What kind of relationship makes sense here? Does this give you a clue about the word that might fit best?

You used: whom

There was a feel

ll important, an event that

could have consequences in my life – taking the LSATs, for example, **whom** I did in a classroom on the campus of Harvard.

Level 3 mediation

- How does the missing word connect to what comes before and after it?
- Words like this can show different relationships between the text parts they connect. These words might offer an example of something or set up a comparison or a contrast. What kind of relationship makes sense here? Does this give you a clue about the word that might fit best?
- This word signals that what follows it gives more information about the preceding part. Sometimes you also need to check if it fits grammatically.

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These words might offer an example of something or set up a comparison or a contrast.
What kind of relationship makes sense here? Does this give you a clue about the word that might fit best?

- This word signals that what follows it gives more information about the preceding part.
Sometimes you also need to check if it fits grammatically.

You used: therefore

Rodham

☒ Highlight

There was a feel

could have consequences in my life – taking the LSATs, for example, **which** I did in a classroom on the campus of Harvard.

ll important, an event that

Provisional Conclusions and Ongoing Efforts

- Differing needs & abilities require different instruction. DD-LANG, by integrating DA and DiagA, aims to provide diagnoses of learner L2 development to orient instruction. Learner responsiveness to mediation is essential for understanding how much additional support they likely require to develop.
- Supplementing teacher-implemented assessments in classroom w/ Revita system, which follows DA & DiagA principles, this AI-enhanced training creates additional diagnostic insights & also opportunities for continued support & practice to help all learners develop
- Fairness both as access to the constructs (Kormos, 2024) and as access to mediational means for development (Poehner, 2011; Vygotsky, 1993)

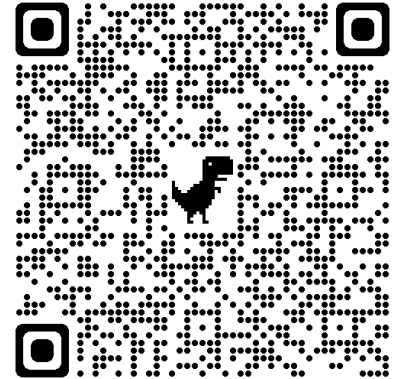


Kiitos!
Thank you!

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