



JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

AI as a pedagogical tool in language learning, teaching, and assessment

AI IN LANGUAGE EDUCATION AND ASSESSMENT: PEDAGOGICAL PRAXIS,
RESEARCH TRENDS, AND METHODOLOGICAL CHALLENGES



Dynamic Diagnostic Language Assessment

Conceptual and Practical Innovation in Foreign
Language Education and Assessment

DD-LANG (Dynamic Diagnostic Language Assessment) Project



Research to advance the **theoretical, empirical and practical basis** of foreign language (L2) assessment supporting learning

- 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) during preparation for national Matriculation Exam (ME)

2 major goals:

- 1) Elaborating assessment framework to support teaching & learning by integrating **dynamic** and **diagnostic L2 assessment**
- 2) **Combining online dynamic-diagnostic assessment and classroom assessment, teaching, and learning**



•KUOPIO

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•TAMPERE

•LAHTI

•KOUVOLA

•TURKU

•ESPOO

•VANTAA

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The team



Matthew Poehner (Penn State)
Eunice Jang (U.Toronto)
Remi van Compernelle (Carnegie M.)
Richard Donato (U. Pittsburgh)
Jacob Rieker (Penn State)

Luke Harding & Tineke
Brunfaut (Lancaster U.)
Tziona Levi (Tel Aviv U.)
Yaru Meng (Jiaotong U.)
Marta Antón (Indiana U.)
Lu Yu (U. of Melbourne)

**Ari Huhta, Dmitri Leontjev, Vera Vesala,
Kristina Koskela**
Pirjo Pollari, Asko Tolvanen (**U. Jyväskylä**)
Roman Yangarber, Raili Hildén (U. Helsinki)
Anu Halvari (National Agency for Education)

Bringing together of dynamic & diagnostic L2 assessment



Focus on developing reading in English

1) with mediation and

2) **with AI-based chatbot** (additional instruction AFTER learner works through mediation, completes item; learning opportunity)



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Democratizing the Teaching and Learning of Finnish

AI-powered Integration for Immigrants

Phase I: 2025 - 2029

Phase II 2029 - 2031



Goals and objectives in brief



DALAI-Fin develops an AI-powered ecosystem for adult migrants who already have basic Finnish/Swedish skills and need stronger L2 proficiency for employment, workplace participation, and societal integration.

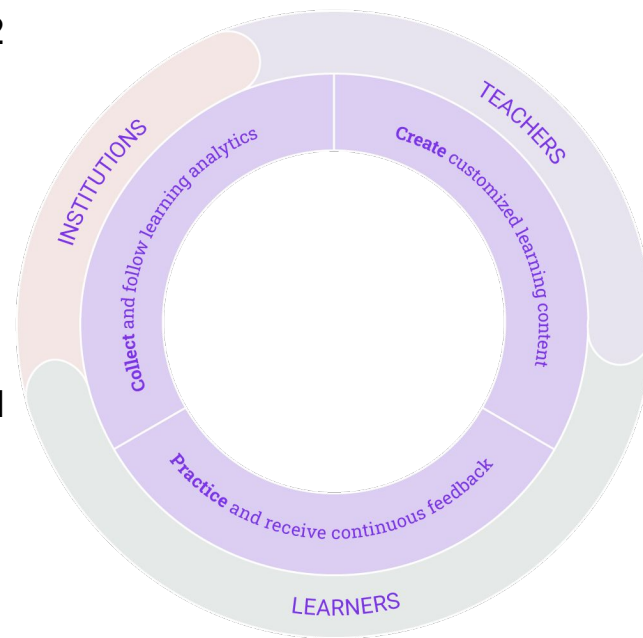
The ecosystem is co-developed with stakeholders to improve adult language teaching and learning.

Phase I, 2025–2029

Integrate existing Finnish-language teaching components developed by consortium partners into an ecosystem, with iterative assessment and user-experience development for teachers and learners.

Phase II, 2029–2031

Scale deployment to larger and more diverse learner groups and expand the ecosystem to Finland Swedish.



National and International collaborators in WP2



Develop an AI-based system to dynamically generate pedagogically-motivated exercises, which are the basis for feedback and assessment that support L2 learning



- 1) Using AI as a complex dynamic mediational tool to enhance teaching
- 2) Using AI as a complex dynamic mediational tool for own development
- 3) AI as a **complex dynamic mediational tool**

**AI as a (as a complex dynamic
mediational) pedagogical tool:
Theoretical starting points**



Tensions & challenges (based on DD-Lang and DALAI-Fin)

- Reliability (precision) <-> validity (development orientation)
 - language development is a mediated process, learners use mediational means in their own unique ways; hence their developmental paths are uniquely different
- Efficiency <-> usefulness for development
 - If we focus on efficiency, what do we as language learners, teachers, and researchers do with the time we get?
 - What if our focus is NOT on efficiency but on using AI capabilities and affordances for changing our teaching and learning process
- ~~Replacing thinking~~ >> enhancing thinking

Dynamic Assessment (DA): Diagnosis through intervention



DA rooted in Vygotsky's (2012) **Sociocultural psychology**: new cognitive abilities, including language, appear first on *inter-mental plane* (dialogic interaction) & later on *intra-mental plane* (internal, use of language as inner speech)

- Full diagnosis of abilities includes emergent abilities
- **Mediation** [intervening in thinking processes] through interaction (hints, leading questions, feedback, model, example)
- Process may lead to 'ripening' of abilities, promotion of development (Vygotsky, 2011)

Purpose: not for learners to 'do better' on test, but to diagnose development; quality of mediation learner requires + responsiveness to it

Research as *praxis*



- “Theory without an experiment is a voluntary play of mind; an experiment without a theory is a knife without a handle” (Veresov, 2014)
- **Theory is used to change practice and is validated in it:** theory guides how teachers may develop their classroom practices, which allows for theory-building

**AI as a tool for learner
development: Changing
learners' understanding of
engagement with GenAI in a
collaborative course designed
with OPE5**



DD-lang course



- Elective course that was **designed and implemented collaboratively**
 - Weekly lessons starting from Oct 2025 until mid-Jan 2026
 - 6 second-year upper secondary school students
- OPE5 wanted to focus on **students working together**
- Our goal was to help the teacher to teach off their students by mediating both the teacher understanding and the students in the classroom, forming the **concept of mediated development**
- **Reading-writing connection, peer work** asking for and giving feedback with the intention to develop
- Classroom activities, including
 - DD-Lang reading exercises as the basis
 - **AI as a tool for learning**
 - Process writing with a focus on peer responding



Choose the best fitting answer to the question.

Volunteering in Hospitals

Royal Voluntary Service has been there for the National Health Service since the beginning - and we're looking for determined people to keep this tradition going. When you offer your sympathy, commitment and skills as a hospital volunteer, you're helping to improve a patient's experience, support their recovery and ensure that they can return home safely, reducing the chance of them returning as patients. You can also offer help to staff and visitors by volunteering in one of our Royal Voluntary Service Hospital Shops or Cafés. If you haven't tackled anything quite like this before, don't worry. We have an experienced team of people who specialise in voluntary work in hospitals and can help you make the most of your time with us. They'll be ready to guide you through the whole process with plenty of support, showing you how to volunteer at a hospital and answering all of your questions.

What is mentioned as an example of volunteer work?

Creating a positive atmosphere in the hospital

Helping hospital staff in daily caring routines

Providing patients with basic medical help

Selling refreshments at the hospital canteen

Visiting patients at home after the hospital stay

Isnt this answer wrong because the text doesn't specify what kind of work is done for the shops of cafes?



Selected option / learner's query	Mediation / Chatbot's response
Creating a positive atmosphere in the hospital	Look at the key parts of the question and the options. Think about what the question is asking. Then try to find this information in the text, thinking about how you search for it.
Helping hospital staff in daily caring routines	Once you think you found the place with the details you need, look around this part and think about the meanings of words and phrases you see. Try to connect them to the question and the options. Remember that the details in the text are often said in a different way than in the question.
Selling refreshments at the hospital canteen	Correct!
Isn't this answer wrong because the text doesn't specify what kind of work is done for the shops or cafes?	The text mentions that volunteers can "offer help to staff and visitors by volunteering in one of our Royal Voluntary Service Hospital Shops or Cafés." While it doesn't explicitly state what kind of work is done in the shops or cafes, it's reasonable to infer that selling refreshments could be one of the tasks, as this is a common activity in such settings. Therefore, the answer "Selling refreshments at the hospital canteen" is not wrong. It's important to remember that in reading comprehension exercises, sometimes you need to make reasonable inferences based on the information provided.

Learner mediated/unassisted performance reports



Username	Set	item_count	attempt_count	correct_on_first_attempt	correct	mediation_score	avg_mediation_wo_correct
S1	Specific details, easier	4	4	4	4	4	0
	Specific details, difficult	5	5	5	5	4	0
	Deducing vocabulary easier	1	1	1	1	4	0
S2	Specific details, easier	5	13	1	5	2.4	2
	Specific details, difficult	5	9	3	4	3.2	2
	Deducing vocabulary easier	5	7	3	5	3.6	1
	Deducing vocabulary difficult	5	15	0	5	2	2
S3	Specific details, easier	5	16	0	3	1.8	2.2
	Specific details, difficult	5	7	3	5	3.6	1
	Deducing vocabulary easier	2	3	1	2	3.5	1

Learner: why is the answer the last one

Bot: The answer is the last one because it best matches the content of the text you read. The text states that Jeff Winter's style in his book is similar to his style as a referee. This corresponds to the last answer option, "The author displays the same style as he did when working as a referee." The feedback you received also supports this interpretation.

Learner: Can you tell the message of the correct answer easier?

Bot: Sure, the correct answer means that Bill Barich, in his book, was able to really capture the 1 spirit or heart of horse racing. He didn't just write about the races, but he was able to convey what makes horse racing special and unique.

Implementing a lesson together



Planned lesson (around the chatbot activity where we shift the students' understanding of the discussion with the chatbot)

- 1) **Guiding principles:**
 - a) AI as a tool for learning: what you ask and how
 - b) Intentionality: learning Vs task completion
 - c) Teaching off your students
- 2) Students completing new set of DD-Lang tasks focused on main idea of a paragraph
- 3) Teacher and researcher jointly observe and mediated students as needed:
 - a) not modelling but asking guiding questions
- 4) Final discussion

Implementing a course together with OPE5: Learners' use of AI as tool for learning



Before the intervention

Learner: why is the answer the last one

Bot: The answer is the last one because it best matches the content of the text you read. The text states that Jeff Winter's style in his book is similar to his style as a referee. This corresponds to the last answer option, "The author displays the same style as he did when working as a referee." The feedback you received also supports this interpretation.

...

Learner: what does "novel security features" mean

Bot: "Novel security features" means "new security features." In this context, it refers to unique or innovative features in electric cars that improve their safety or functionality.

After the intervention

Learner: why is that the best option

Bot: "The cost of travel" is the best title because it reflects the main idea of the text...

Learner: how can I practice this

Bot: You can practice reading comprehension in many different ways. Here are a few tips:...

Practice summarizing the main idea of a text in one or two sentences. This will help you focus on the essential points in the text....

Learner: what strategy will help me understand what the text is about most easily. Even if there are many correct answers, how can I understand what the main point really is.

Bot: To understand the main point of the text, you can use the following strategies: ...Ask yourself questions: **What is the author trying to say? What is the purpose of the text? What are the most important points in the text?**

Implementing a lesson together



OPE5's reflection on implementation

How did it go? How did the students engage in the activity, what feelings/emotions you observed? How did it feel?

It was easier for the students to work with the chatbot this time and **they managed to ask question** that enabled them to **learn more about the text** and to help them **understand the connection between reading and writing**. One of the students even managed to rewrite the whole text in her own words and make the main idea 'visible' during the process, so **the goal of the lesson was achieved this time**.

**AI feedback as mediation:
instructional intervention
designed together with OPE3**



Designing the classroom intervention

1. A joint planning meeting with OPE3 in their school
 - **Informed by concepts** such as **mediation**
 - AI as a **pedagogical tool vs efficiency tool**
 - A draft document for the intervention created by OPE3 →
2. Detailed lesson plan sent by OPE3, which we commented on

- AI is good at giving feedback but that's not the whole story. Mediation is also a part of the story. What is mediation? The answer: it's not only about reading the corrections AI has made to your essay. It's also about what you can do about learning to come to a desired outcome in a different way.

Classroom intervention: The lesson plan



1. A discussion of the **intentionality of using AI in order to learn, not to replace thinking**
2. Students asking **feedback for their first draft from DuckAI**
 - The detailed prompt provided by the teacher
 - Focus on other aspects besides accuracy, asked not to make any corrections, e.g., *If you had been the author of the novel, is there anything you would have done differently*
 - Students were allowed to work with their peers and discuss the feedback they got
3. Students **submitting the second draft** that they made with the help of AI
 - **Including the feedback** they got from DuckAI
4. Students **asking DuckAI to give explicit corrective feedback** with explanations
5. Students **reflecting on the usefulness of AI feedback and the whole experience**

First paragraph (pre- & post-AI feedback)



Before	After
<p>Bird Box was published in 2014. It's written by Josh Malerman. It's a horror novel. Its leading characters include Malorie, Tom and two kids who are just called girl and boy.</p>	<p>Bird Box was published in 2014. It's a horror novel written by Josh Malerman.</p> <p>Its leading characters include Malorie, Tom and two kids who go just by girl and boy. The main themes in the book deal with fear and survival and what is their impact on relationships with other people close to you. It also deals with how isolation affects people and proves that humans are social creatures and need other people to stay sane.</p>

Example of DuckAI feedback and learner reflection



- **Clarify Book Themes:** Discuss the main themes more explicitly, such as fear, survival, and the impact of isolation. This can give readers a deeper understanding of what the book explores beyond the plot.
- **Purpose of the Book:** Reflect on what you think the author's purpose might have been in writing the book. Was it meant to entertain, provoke thought, or convey a particular message?

Reflection:

- **The points listed by DuckAI felt equally challenging.** [I] went through them one by one, focusing on understanding what the core of the challenge was and thinking how to overcome it.

Post-classroom intervention discussion with OPE3



Dmitri: **AI doesn't have the intellect** ... even though it has intelligence in the AI, **but meaning is made by the people** ... it selects the next token, that's what it does.

OPE3: Actually, this guy sitting right behind you, he was like, he did it already, what do I need to do, **so I had to explain to him ... why not try and improve your text** already, so he did actually... get the hang of it. He started working on it a bit more. So that might be a little problematic as well, you know, AI being ... **a fast tool for everybody to use ... that's why we're using it because we get things done fast.** And you asked what the students, what they used AI for homework, so doing fast.

Dmitri: But I think **what we offered them** today, thanks to you, was like, in a way, **the opposite of fast.**

**A Sociocultural Theory stance
on AI, based on DD-Lang and
DALAI-Fin**



AI as a mediational means



In VSCT, AI is best conceptualised as a (complex dynamic) **tool** that mediates human activity understood as **individuals working with mediational means**. The human participant in human-AI interaction brings their history, motives, judgement, and own developmental potential. The AI brings examples, constraints, memories, etc. These, realised in GenAI's output, may then re-enter human activity and mediate human thinking process (and acting).

This dialectical human-AI relation is **asymmetrical. Human, through activity**, organises and evaluates the goal and its fulfillment, **creating meaning** of this activity.

AI-human interaction is dialectical when:

- 1) **the human participant's activity shapes the mediational environment**
- 2) this (gradually) transforms mediational means which AI can bring to the interaction
- 3) this in turn, may reorganise the person's relation and orientation to later interaction.

HUMAN ATTACHES THE MEANING TO THE ACTIVITY, AI-GENERATED TEXTS, AND MEDIATIONAL MEANS

AI as pedagogical tool: AI generating a lesson plan



Phase 4: Pair work as ZPD activity

Now the developmental heart of your idea: pair work after AI.

Goal

The pair dialogue transforms AI feedback into socially mediated revision.

Why pair work matters

AI can raise possibilities.

The partner can help the writer appropriate, test, resist, clarify, and revoice those possibilities.

This is where external mediation becomes collaborative meaning-making.

Developmental logic

This pair work is developmental when:

- students must explain their intentions
- the partner must interpret the text
- revision goals emerge through dialogue
- students negotiate meaning
- the final decision stays with the writer

This pair work becomes performative when:

- the partner merely checks correctness
- the pair only hunts for errors
- AI feedback is accepted automatically
- the writer has no reason to articulate their own orientation

So the pair must work on **meaning, evaluation, interpretation, and communicative effect**, not only language form.

Shout-out to Vera Vesala:

Doctoral researcher at JYU, in EDUCA
doctoral pilot / DD-Lang Project, specialising in
vygotskian praxis in teacher professional
development, focusing on Language teachers'
conceptions of teaching, learning, and
assessment





Kiitos!

Thank you!

dmitri.leontjev@jyu.fi

