

Artificial intelligence in lab education – a webinar recap

On Tuesday, January 29th 2026, Present-day Practicals hosted its fifth webinar:

☀️ Artificial intelligence in lab education ☀️

As AI rapidly reshapes higher education, this session explored its practical and pedagogical implications for the laboratory. The webinar featured **Bake de Rink & Dr Julia Diederer** (Wageningen University & Research, The Netherlands) and **Dr Maurizio Costabile** (Adelaide University, Australia).

Topic of this webinar

The central question addressed was: **How can AI support student learning in the lab, from providing timely feedback to helping educators create bespoke learning tools?**

The speakers moved beyond the "hype" to demonstrate how AI can offer sound ways to enhance lab education while maintaining academic integrity.

The webinar focused on two primary applications:

1. **Automated Formative Feedback:** Using AI to support students during the isolated stages of report writing.
2. **Bespoke Tool Creation:** Turning educational "pain points" into functional apps through "Vibe coding."

AI-feedback for scientific laboratory reports

Bake de Rink and Julia Diederer presented a case study from the Laboratory of Food Chemistry at Wageningen University, where they implemented an AI feedback tool for 160 students writing their first individual scientific reports. A custom GPT tool was designed and presented during the webinar (see slides for details).

- **The educational gap:** In the "post-lab" phase, students often write reports in isolation without access to immediate teacher feedback. In many reports, the same Frequently Made Mistakes (FMM) are observed.
- **The tool:** An AI-driven system designed to provide formative feedback on for example, scientific writing rules, data presentation, and the selection of relevant background information.
- **Results & student opinion:**

- **60%** of students that used the tool felt the course should continue using the tool.
- This increased to **75%** for frequent users (5+ times).
- While **56%** praised its usefulness as a support tool, **41%** noted issues with feedback quality (vague or inaccurate remarks), and some highlighted that AI is a supplement to, not a replacement for, human expertise.

From idea to classroom: bespoke tool creation

Dr Maurizio Costabile shared his experience in "Vibe coding"—the process of using plain English to describe an educational vision that AI then transforms into a functional tool.

- **The challenge:** Educators often have great ideas for interactive apps but lack software development skills or funding.
- **The solution:** Using LLMs (like ChatGPT, Claude, or Gemini) to generate HTML5 code. Maurizio demonstrated this by addressing a common issue: **student mathematical competency in the lab**. See slides for details.
- **The outcome:** Maurizio presented a bespoke app for common Biochemistry calculations, including dilutions, built entirely through AI prompting. This "zero-coding" approach allows educators to iterate, refine, and deploy tools directly onto their Learning Management Systems (LMS).

Interaction with the international audience

The webinar included high engagement through live polls and chat discussions. The audience feedback reflected common "pain points" in lab education and a cautious but curious interest in AI tools.

Interaction & audience sentiment on AI chatbot for writing

Poll results - When asked which problems they recognized in their own courses (multiple answers allowed), the audience voted:

- **33%:** Students do not follow all instructions for report writing.
- **28%:** A desire to provide formative feedback but a lack of resources to do so.
- **21%:** Students do not get enough opportunity to ask for help during writing.
- **15%:** Teaching assistants sometimes providing incorrect feedback.

Poll results - When should an AI feedback tool be available? A clear majority (**58%**) felt the tool is most effective **right after the practical**, a few days before the deadline.

The conversation following the WUR presentation centered on the balance between automation and authentic skill development:

- **Academic integrity vs. practice:** A key concern was whether students might use AI feedback to have ChatGPT write the whole report. Responses from the audience suggested a shift in assessment: use LLMs for practice and feedback during the course, but test writing skills during controlled exams where students must demonstrate they have learned to write for themselves.
- **Ease of setup:** For educators who are not technically adept, Julia emphasized that if you can write a clear prompt and know the most frequent made mistakes in student reports, setting up a "persona" is manageable. The most time-consuming part is testing and refining the prompts.
- **Impact on grades:** The team did not see a change in final grades (as variations between years are large). The intention was that the bot effectively "filters out" Frequent Minor Mistakes (FMMs), allowing teachers to provide feedback at a much higher, more conceptual level. Improvements are needed to reach this goal.
- **Collaboration & sustainability:** Universities or courses might share "personas" or prompts between disciplines to be more efficient. Additionally, the audience raised important questions about the environmental footprint of AI, noting that while students only use the tool a few times, the climate impact of LLMs is a factor that needs more attention in future developments.

Interaction & audience sentiment on Vibe coding

A live poll revealed that Vibe coding is a brand-new concept for most, with **69%** of the audience hearing about it for the first time. Despite this, there was a high level of enthusiasm for the future: **56%** of participants expressed a desire to start experimenting with it immediately, while another **7%** specifically want to add simulations to their existing LabBuddy courses.

During the discussion, Maurizio addressed several technical and practical questions:

- **Platform compatibility:** Since the apps are generated in HTML5, they are fully responsive and work across smartphones, laptops, and Chromebooks via any standard web browser. Modern AI coding tools will also allow you to preview your app when the student is using a phone, tablet, laptop/desktop, so it can allow you to notice if any changes are required for optimal user interactions.

- **Efficiency:** While the initial "Math app" took a couple of days to refine, Maurizio noted that as AI tools improve, the iteration process has become significantly faster, allowing for rapid deployment.
- **Quality & trust:** A critical point of discussion was how to ensure the accuracy of AI-generated code. Maurizio's approach is rigorous: "Check what is generated, ask colleagues to check." He emphasized verifying equations, button functionality, and spelling before deployment, noting that providing a "safe space" for students to practice is worth the verification effort. AI tools can also be used as checks, but the Human Eye is critical before deployment.
- **University policy:** While universities are beginning to draft general rules, the use of AI currently rests largely with individual teachers. The presenters advised that students should never be forced to use AI tools if they have ethical or environmental concerns.

Key take-home messages

The session concluded with a look at how AI impacts the student journey:

- **Empowerment:** AI tools can bridge the gap between "knowing" and "doing," especially in complex tasks like data interpretation and mathematical calculations.
- **Authentic learning:** By automating routine feedback, educators can focus on higher-level scientific inquiry and critical thinking.
- **The "human" element:** The preference for human feedback remains strong; AI is most effective when it acts as a "scaffolding" tool that guides students toward better self-regulation.

Resources and further reading

- **WUR Food Chemistry Education:** Insights into interactive protocols and complex learning.
- **Ten Steps to Complex Learning:** The instructional design framework (Van Merriënboer et al.) used to ground the AI feedback tool.
- **Prompt Generator:** Can be downloaded via the Present-day Practicals website.
- **Vibe Coding Framework:** Guidelines for creating educational apps with zero code (we'll share this once it's published!)

Wrap-up – enroll for the next webinars and/or a LabBuddy session!

The webinar concluded with a **wrap-up by the organizers** and an invite to enroll for upcoming webinars in the Present-day Practicals series and a special LabBuddy session.

- The student research hub network for interdisciplinary challenge-based education Tue 17/02/26
- LabBuddy* session: Enhancing lab education Thu 19/03/26

Register here for the Present-day Practicals series => [Webinar series 25/26](#) and/or

Sign up for our special LabBuddy* session => [Enhancing lab education with LabBuddy](#)

See you soon!

On behalf of the organizers

** LabBuddy provides an e-learning solution to support students in preparing before the start of the practical work, while working in the lab or field, and to guide them during the processing of their results after the practical work. Visit our website for more information, <https://www.labbuddy.net/>.*