

LLteacher: An AI-Based Tool for Enhancing Students' Learning in Statistics

eCOTS 2026

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Supported by the ASA SSDSE Member Initiative Grant

What is LLteacher?

- Open-source web app (Python/Django) that embeds a guided LLM into homework
- Compatible with OpenAI-GPT, Gemini and Claude
- The code is open-source and available on GitHub
- Instructors log into the app:
 - define the LLM's behavior and context about the class (Level 1 prompt),
 - provide the homework problem with a reference solution (Level 2 prompt)
- Students log in, open the assignment and engage in a conversation with the LLM:
 - The LLM guides students through homework, asking questions and giving hints, rather than direct answers
- All student–LLM interactions are visible to the instructor for grading and feedback

Three Pedagogical Modes

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- **Discovery**

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- LLM guides students toward insights not yet covered in lecture

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 - LLM prompts students to recall definitions or methods before applying them
- **Discovery**
 - Students derive new knowledge through structured dialogue
 - LLM guides students toward insights not yet covered in lectures
- **Critical Thinking**
 - Students engage with open-ended problems requiring analysis and judgment
 - LLM challenges students with incorrect information to justify reasoning and consider alternatives

Deployments and Useful Resources

Deployments

The in-class deployment is supported by the ASA SSDSE Member Initiative Grant

- Autumn 2025: STAT 302 (~60 students)
- Winter 2026: STAT 391 (~50 students) & STAT 423 (~40 students)
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Useful Resources

- Furfaro, E., & Mosciatti, S. (2025). LLteacher: A Tool for the Integration of Generative AI into Statistics Assignments. *arXiv preprint arXiv:2512.23053*.
- Github repository: <https://github.com/RedBeardLab/2llteacher>
- LLteacher: <https://llteacher.com/>