

# Commentary: Humanizing AI in genetics education: a socio-emotional imperative

Learning about genetics creates well-known thinking problems—and it can be equally difficult in an emotional sense. The study of abstract ideas such as gene expression, inheritance patterns, and molecular biology can lead to uneasiness, anxiety, and disengagement—especially for beginners. Now that learning with technology is common, we have to think about whether AI can support students' learning and also their social and emotional wellness in advanced fields like genetics.

Scientific studies have shown it might play a role. ChatGPT, a large language model (LLM) from GPT, has created new ways to make learning more personalized. They have natural conversations, answer inquiries about the content and respond to feelings with empathy. According to [Firat \(2023\)](#), ChatGPT gets positive feedback from higher education stakeholders who point out that it can help engage students more actively. Similar to the above, [Zhang and Tur \(2023\)](#) point out that learning can be customized for students in K–12 education only if issues of digital inequality are solved.

What part does socio-emotional learning (SEL) play in this discussion? SEL includes four core skills—self-awareness, self-management, social awareness and responsible decision-making—all useful for learning science and genetics, but not given as much attention in education. According to [Adelana et al. \(2023\)](#), genetics was considered one of the hardest subjects for students in Nigeria, pointing out the importance of tools that help them cope emotionally. Because of this, AI may ease the strong feelings brought by difficult materials through the use of sensitive support.

Although still in early stages, using AI as a co-facilitator for emotional and social support in academic settings holds considerable promise. [Hobert \(2019\)](#) and [Lee \(2023\)](#) investigated how having access to chatbots or AI tutors helps reduce student frustration by promptly answering questions without judging them. [Zhao et al. \(2020\)](#) also point out that tools such as virtual reality and AI software can help break down complicated medical content by applying emotions and allowing interaction.

Genetics education relies heavily on these abilities. Imagine an AI-powered system capable of detecting student confusion in topics like meiosis or epigenetics and then explaining the topic in clear ways, showing interesting diagrams or giving a motivational boost. Being responsive to their feelings may help students remember things better while growing more confident and interested in the subject.

But to implement thoughtfully, design must be intentional. Although AI does not feel empathy, its programming allows it to act empathically. When ethics and emotional literacy are lacking, educators may overuse technology, which can be harmful to students. According to [Iskender \(2023\)](#), there are questions about being honest and ethical when using AI in education. Because of these problems, it is important to see AI as helping people, not as a substitute for their learning.

I argue that as an educator and researcher, we must begin to view AI differently, not just thinking about efficiency and access. Instead, we ought to try to use AI to support both focusing on learning details and dealing with feelings during science education. Integration of philosophy and science can be seen by studying the dense and difficult nature of genetics.

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Contemporary and future research needs to find out how generative AI tools can show emotions in their replies, encourage students to stick with their goals and support students in regulating their emotions together with feedback.

AI should be used in education after making sure that the tools and teacher education address social and emotional goals. We should expect AI in education to answer questions like “what is a genotype” and also provide help when students are confused and frustrated.

AI is now an accepted role in education. By making it more effective, we should guarantee that its use supports a nurturing learning environment, especially in fields like genetics, where students feel both emotionally and intellectually strained.

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## References

- Adelana, O.P., Akinsulure, A.O., Ajose, M.A. and Ishola, A.M. (2023), “Perceptions of genetics difficulty among science students in Nigeria”, *Journal of Science and Mathematics Letters*, Vol. 11 No. 1, pp. 51-58, doi: [10.37134/jsml.vol11.1.7.2023](https://doi.org/10.37134/jsml.vol11.1.7.2023).
- Firat, M. (2023), “What ChatGPT means for universities: perceptions of scholars and students”, *Journal of Applied Learning and Teaching*, Vol. 6 No. 1, doi: [10.37074/jalt.2023.6.1.22](https://doi.org/10.37074/jalt.2023.6.1.22).
- Hobert, S. (2019), “Say hello to ‘coding tutor’! Design and evaluation of a chatbot-based learning system”.
- Iskender, A. (2023), “Holy or unholy? Interview with OpenAI’s ChatGPT”, *European Journal of Tourism Research*, Vol. 34, p. 3414, doi: [10.54055/ejtr.v34i.3169](https://doi.org/10.54055/ejtr.v34i.3169).
- Lee, H. (2023), “The rise of ChatGPT: exploring its potential in medical education”, *Anatomical Sciences Education*, Vol. 17 No. 5, pp. 926-931, doi: [10.1002/ase.2270](https://doi.org/10.1002/ase.2270).
- Zhang, P. and Tur, G. (2023), “A systematic review of ChatGPT use in K–12 education”, *European Journal of Education*, Vol. 59 No. 2, e12599, doi: [10.1111/ejed.12599](https://doi.org/10.1111/ejed.12599).
- Zhao, J., Xu, X., Jiang, H. and Ding, Y. (2020), “The effectiveness of virtual reality-based technology on anatomy teaching: a meta-analysis”, *BMC Medical Education*, Vol. 20 No. 1, 127, doi: [10.1186/s12909-020-1994-z](https://doi.org/10.1186/s12909-020-1994-z).