

Article

Not peer-reviewed version

Learning to Debate for Improving School Level Education with Large Language Models

[Aniket Deroy](#) *

Posted Date: 6 February 2026

doi: 10.20944/preprints202602.0562.v1

Keywords: large language models; debate; students; logic



Preprints.org is a free multidisciplinary platform providing preprint service that is dedicated to making early versions of research outputs permanently available and citable. Preprints posted at Preprints.org appear in Web of Science, Crossref, Google Scholar, Scilit, Europe PMC.

Copyright: This open access article is published under a [Creative Commons CC BY 4.0 license](#), which permit the free download, distribution, and reuse, provided that the author and preprint are cited in any reuse.

Disclaimer/Publisher's Note: The statements, opinions, and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions, or products referred to in the content.

Article

Learning to Debate For Improving School Level Education with Large Language Models

Aniket Deroy

Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India; roydanik18@gmail.com

Abstract

For decades, competitive debate has been hailed as the "ultimate mental gym," sharpening critical thinking, research skills, and public speaking. However, it has often remained an elitist activity, confined to schools with the budget for specialized coaches and extensive travel. The emergence of Large Language Models (LLMs) like Gemini and GPT-4 represents a seismic shift, offering a way to democratize high-level dialectical training. While some fear that AI might encourage "intellectual laziness," I argue that, if implemented correctly, LLMs can serve as the ultimate "Digital Socrates"—an infinitely patient, remarkably well-read sparring partner for the next generation of thinkers.

Keywords: large language models; debate; students; logic

Introduction

For centuries, the art of debate has stood as a cornerstone of rhetorical education, tracing its lineage from the Socratic circles of Ancient Greece to the high-stakes auditoriums of modern competitive circuits. It is a discipline designed to foster "intellectual humility"—the realization that every complex issue possesses multiple valid perspectives. However, the traditional model of debate education faces a persistent challenge: it is resource-intensive, requiring specialized coaching and a high level of background knowledge that often excludes students in underfunded or remote districts [1].

Enter the Large Language Model (LLM), with the advent of sophisticated generative AI, we find ourselves at a crossroads where the "sparring partner" is no longer just a teammate or a coach, but a digital intelligence capable of synthesizing vast amounts of information in seconds. While critics argue that AI integration might lead to the erosion of original thought or an over-reliance on "algorithmic logic," this view misses the transformative potential of the technology.

Rather than serving as a replacement for human intellect, LLMs offer a powerful tool for democratizing dialectical training. By acting as a real-time research assistant and an infinitely patient opposing counsel, AI can lower the barrier to entry for novice debaters and provide seasoned students with a level of rigor previously unavailable outside of elite private institutions. This paper argues that integrating LLMs into school-level debate is not merely an "upgrade" to the curriculum, but a necessary evolution in teaching students how to think, argue, and find truth in an increasingly automated world [2].

Breaking the "Blank Page" Barrier

The most significant bottleneck in traditional debate education is the scarcity of high-quality practice partners. In a typical classroom setting, a single instructor cannot provide individualized, real-time feedback to thirty students simultaneously, and peer-to-peer practice is often limited by the varying skill levels of the participants. Large Language Models effectively solve this scalability problem by acting as an "infinite sparring partner." Because an LLM can be prompted to adopt specific personas—ranging from a hostile cross-examiner to a formal judge—it provides a low-stakes environment where students can test the resilience of their logic [3].

When a student feeds a draft of their argument into an LLM, they aren't just looking for grammatical corrections; they are engaging in a dynamic dialectic. The AI can be instructed to "point out the three most significant logical leaps in this case" or "respond as a skeptic who prioritizes economic stability over environmental protection." This immediate feedback loop is transformative. It forces the student to defend their position against a sophisticated counter-perspective, mimicking the pressure of a live round without the social anxiety that often paralyzes younger learners. By the time the student reaches a real podium, they have already survived multiple iterations of their argument, having refined their evidence and closed the gaps in their reasoning through a digital trial-by-fire [4].

Furthermore, this interaction fosters a deeper level of cognitive flexibility. To succeed in debate, one must be able to anticipate the opponent's moves several steps in advance. LLMs excel at this "what-if" scenario planning. A student can ask the model to generate a rebuttal to their own strongest point, which challenges them to develop "rebuttals to the rebuttal." This layered thinking—the hallmark of advanced critical thought—becomes accessible to novices much earlier in their development. Instead of waiting for a weekly practice round to discover that their argument is flawed, students can iterate in real-time, turning the AI into a private coach that never tires and is never unavailable. This constant engagement ensures that the student's intellectual growth is limited only by their own curiosity, not by the logistical constraints of the classroom [5].

The Infinite Sparring Partner

Building on the concept of the AI as a relentless adversary, the "infinite sparring partner" model fundamentally changes the cadence of student preparation from a weekly event to a daily habit. In a traditional setting, a student might spend days crafting a single constructive speech, only to have it dismantled in minutes during a practice round, leaving them with a week of "dead time" before they can test their revisions [6]. LLMs collapse this cycle. A student can present a contention to the model and immediately request a "Point of Information" or a "cross-examination," forcing them to think on their feet. This creates a high-frequency training environment where the student is constantly forced to pivot, clarify, and defend. Because the AI can be instructed to maintain a specific level of difficulty—starting as a friendly collaborator and gradually evolving into a rigorous, "top-tier" opponent—the learning curve is perfectly tailored to the individual's current ability [7].

Beyond mere rebuttal, the LLM serves as a unique tool for developing "clash" proficiency, which is the ability to directly engage with an opponent's specific claims rather than just reading prepared scripts. Students often struggle with the transition from "monologue" to "dialogue," but by engaging in a back-and-forth text exchange with an AI, they learn the art of the targeted counter-argument. They can ask the AI to "narrow the debate" to a single point of contention, such as the cost-benefit analysis of a policy, and spend thirty minutes arguing just that one point. This granular focus allows for a "deliberate practice" approach, where specific micro-skills—like identifying a "slippery slope" fallacy or a "non-sequitur"—are isolated and mastered. Consequently, the AI doesn't just provide an opponent; it provides a laboratory where the mechanics of persuasion are dissected and reconstructed in real-time.

Furthermore, this digital partnership helps bridge the gap between research and performance. In the heat of a debate, students often forget the evidence they have painstakingly gathered. By "debating" the AI during the research phase, the student is forced to retrieve and apply their evidence repeatedly. This process of active retrieval strengthens their memory and fluency, ensuring that when they finally face a human opponent, their arguments are not just words on a page, but deeply internalized convictions. The AI, in this sense, acts as a bridge to confidence, allowing students to iron out their stammers and logical inconsistencies in a private, judgment-free space before they ever step into the public arena [8].

Leveling the Competitive Playing Field

The most profound impact of LLMs in school-level debate is the democratization of specialized coaching. Historically, "pre-round prep" and "case-checking" were advantages held exclusively by schools that could afford professional coaches or those with large, experienced senior squads. By utilizing LLMs, a student in a rural or underfunded district can access high-level strategic analysis that was previously gatekept by socio-economic barriers. These models can simulate the feedback of a "Gold Medal" coach, helping students refine their "impact weighing"—the process of explaining why one argument is more important than another—and ensuring that the quality of a student’s ideas is the primary driver of their success, rather than the size of their school’s budget [3].

Cultivating Information Literacy and Fact-Checking

In an era of deepfakes and algorithmic bias, the debate round has become a critical laboratory for media literacy. Integrating LLMs into the preparation process forces students to move beyond passive consumption and into active verification. Because LLMs are prone to "hallucinations" or confident errors, students must be taught to treat AI-generated evidence as a lead rather than a final truth. This creates a pedagogical "double-win": students use the AI to find creative angles, but are then required to cross-reference those claims with primary academic databases to ensure their "evidence cards" are valid. This practice builds a healthy skepticism and a rigorous research habit, training students to become sophisticated "fact-checkers" in their everyday lives [8].

Conclusion

The integration of Large Language Models into school-level debate marks the beginning of a new era in rhetorical education—one where the power of sophisticated persuasion is no longer a luxury reserved for the few. By acting as both a bridge over the "blank page" and a relentless sparring partner, these models provide a scaffolding that allows students to reach higher levels of critical thought at an accelerated pace. The primary goal of this technology is not to automate the thinking process, but to provide a mirror in which students can see the cracks in their own logic, the biases in their own perspectives, and the untapped potential of their own voices.

Ultimately, the value of a debater is measured not by their access to information, but by their ability to synthesize that information into a coherent, ethical, and persuasive narrative. While LLMs can generate facts and structures, they cannot replicate the human conviction, empathy, and moral weight required to truly change a mind. By embracing these digital tools, we are not abandoning the traditions of the Socratic method; rather, we are scaling them for a global audience. We are training a generation of thinkers who are not just "well-informed," but are "AI-augmented"—capable of navigating an era of misinformation with the sharpest possible analytical tools.

The transition from monologue to dialogue is the hallmark of a mature society. If we can teach students to use AI to sharpen their arguments rather than replace them, we will produce citizens who are better equipped to engage in the civil discourse our world so desperately requires. The digital Socrates is here, but its success will be measured by the brilliance of the human students it leaves behind.

References

1. Knebel, E.; Greiner, A.C. Health professions education: A bridge to quality **2003**.
2. Liu, Y.; et al. Research on the Development Path of Higher Education Institutions in Underdeveloped Areas Under the Perspective of the "Collaborative Quality Improvement Plan for Teacher Education". *International Journal of Educational Teaching and Research* **2024**, 1.
3. Middendorf, J.; Shopkow, L. *Overcoming student learning bottlenecks: Decode the critical thinking of your discipline*; Taylor & Francis, 2023.
4. Rotar, O. Partnership models in online learning design and the barriers for successful collaboration. *Research & Practice in Technology Enhanced Learning* **2024**, 19.

5. Huston, C.L.; Phillips, B.; Jeffries, P.; Todero, C.; Rich, J.; Knecht, P.; Sommer, S.; Lewis, M. The academic-practice gap: Strategies for an enduring problem. In Proceedings of the Nursing forum. Wiley Online Library, 2018, Vol. 53, pp. 27–34.
6. Watson, J.A.; Calvert, S.L.; Brinkley, V.M. The Computer/Information Technologies Revolution: Controversial Attitudes and Software Bottlenecks—A Mostly Promising Progress Report. *Educational Technology* **1987**, 27, 7–12.
7. Assante, D.; Caforio, A.; Flamini, M.; Romano, E. Smart Education in the context of Industry 4.0. In Proceedings of the 2019 IEEE Global Engineering Education Conference (EDUCON). IEEE, 2019, pp. 1140–1145.
8. Cheng, Y.C.; Walker, A. When reform hits reality: The bottleneck effect in Hong Kong primary schools. *School Leadership and Management* **2008**, 28, 505–521.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.