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GENERATIVE DEBATE AS A PRACTICE OF INQUIRY IN THE AGE OF ARTIFICIAL INTELLIGENCE

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Abstract: *The rapid diffusion of artificial intelligence is transforming educational environments and raising new questions about the ways knowledge is accessed, interpreted, and discussed. While educational debates have often focused on technological innovation and AI literacy (Holmes et al., 2019; UNESCO, 2023), the growing availability of systems capable of generating explanations, summaries, and arguments invites a broader reflection on the educational role of inquiry and argumentation. In contexts where answers can be produced instantaneously, the challenge is no longer limited to accessing information but increasingly concerns the ability to critically interrogate the responses generated within AI-mediated environments. The paper introduces the concept of Generative Debate as a theoretical framework for rethinking the educational function of debate in the age of artificial intelligence. Drawing on studies in argumentation theory (Toulmin, 1958; Kuhn, 1991, 2005) and recent research on artificial intelligence in education (Lo, 2023; Cotton et al., 2024), the article argues that debate should be understood not merely as a means of developing communication or persuasive skills, but as a practice of inquiry through which learners critically examine interpretations, evidence, and knowledge claims.*
The article suggests that the educational value of argumentation lies increasingly in its capacity to transform the abundance of AI-generated responses into opportunities for investigation, deliberation, and reflective engagement with complex issues. From this perspective, Generative Debate is proposed as a pedagogical response to the challenges of contemporary AI-mediated educational environments, reaffirming the centrality of inquiry within processes of teaching and learning.

Keywords: *debate; argumentative inquiry; artificial intelligence; epistemic agency.*

1. Introduction

The rapid expansion of generative artificial intelligence is profoundly reshaping contemporary educational environments, raising new questions about the ways in which knowledge is produced, interpreted, and legitimized. Although digital technologies have long influenced teaching and learning processes, the emergence of systems capable of autonomously generating texts, arguments, and interpretations introduces a qualitatively different challenge, as these tools no longer merely facilitate access to information but actively participate in its production and dissemination (Holmes et al., 2019; UNESCO, 2023; Lo, 2023). This transformation brings renewed attention to issues concerning the relationship between information and knowledge, the critical understanding of content, and individuals' capacity to formulate informed judgments within increasingly complex informational contexts. Educational institutions are therefore confronted with challenges that extend far beyond the integration of new technological tools into existing pedagogical practices. As research on epistemic cognition has demonstrated, knowledge cannot be understood as a static body of information to be acquired; rather, it constitutes a dynamic

process involving the evaluation of evidence, the justification of claims, and the development of criteria through which reliable knowledge can be distinguished from less trustworthy forms of information (Hofer & Pintrich, 2002; Chinn, Rinehart, & Buckland, 2014; Greene et al., 2016). The growing diffusion of algorithmically generated content makes these issues even more significant, since the educational challenge no longer lies solely in learning how to use artificial intelligence, but increasingly in developing the capacity to critically evaluate the information it produces and to distinguish between formal plausibility and epistemic reliability. Within this framework, argumentative practices acquire particular educational relevance because, as argumentation research has consistently shown, knowledge construction cannot be separated from the processes through which claims are discussed, justified, and subjected to critical scrutiny in relation to alternative perspectives (Toulmin, 1958; Kuhn, 1991, 2005). In this regard, Debate has progressively emerged not merely as a methodology aimed at enhancing communication skills, but as a pedagogical device capable of engaging students in processes of reflection and deliberation that require the analysis of evidence, the discussion of controversial issues, and the construction of reasoned judgments, thereby contributing both to the development of key lifelong learning competencies and to the promotion of democratic participation and active citizenship (Rapanta et al., 2013; Cinganotto, Mosa, & Panzavolta, 2021; Russo, 2022; Russo & Refrigeri, 2023). However, whereas these educational benefits have traditionally been associated with the capacity of debate to foster critical thinking and informed participation in public life, the increasing prevalence of informational ecosystems characterized by digital platforms, algorithmic systems, and generative artificial intelligence now calls for a further reconsideration of the educational functions historically attributed to argumentative practices. The challenge no longer concerns only the ability to support or refute a position; rather, it increasingly involves understanding the processes through which information is produced, interpreted, and legitimized within cognitive environments of growing complexity. Recent reflections on the relationship between argumentation and artificial intelligence have therefore emphasized the need to rethink the pedagogical significance of Debate in light of the transformations brought about by contemporary digital environments and the emergence of generative systems (De Conti, 2025).

Against this backdrop, the present contribution examines the evolution of debate from its historical roots in the tradition of disputatio to its reconfiguration within contemporary educational environments mediated by digital technologies. Particular attention is devoted to the theoretical proposal of Generative Debate, developed in this paper as an interpretative framework for understanding the transformations that generative artificial intelligence is introducing into processes of knowledge construction, evaluation, and discussion. Rather than referring to the simple integration of technological tools into debating activities or to the introduction of a new methodological format, Generative Debate is conceived here as a pedagogical and epistemological framework through which the role of argumentation can be reconsidered in contexts increasingly characterized by the presence of generative systems.

Drawing upon scholarship in argumentation studies, epistemic cognition, and artificial intelligence in education, this contribution explores how such a perspective may contribute to maintaining students' active involvement in processes of knowledge construction and evaluation, while fostering the development of epistemic agency (Wu et al., 2025), evaluative judgement (Bearman et al., 2024), and critical forms of AI literacy (Annapureddy et al., 2024).

2. From Disputatio to Generative Debate

The educational value attributed to argumentative engagement is rooted in a long cultural and pedagogical tradition that predates the emergence of contemporary educational

systems. Long before debate became established as a structured instructional methodology, dialogue and argumentation served as privileged instruments for the pursuit of truth and the construction of knowledge. Throughout history, the possibility of confronting alternative interpretations, challenging established beliefs, and subjecting claims to critical scrutiny has represented one of the primary means through which human communities have produced, refined, and transmitted knowledge.

Among the most significant antecedents of contemporary argumentative practices is the medieval tradition of disputatio, which, far from being a mere rhetorical exercise, constituted a regulated space of intellectual inquiry in which the confrontation of opposing theses was directed toward the critical examination of contested issues and the progressive construction of knowledge (Leff, 1978; Weijers, 2013). Although situated within a historical and cultural context profoundly different from the present one, disputatio embodied a principle that remains highly relevant today: knowledge does not emerge through the passive acceptance of information but through dialogue, doubt, and the critical examination of evidence.

This conception of argumentation has traversed the history of modern educational thought, assuming different forms and meanings while progressively acquiring renewed significance within contemporary theories of learning. Over time, debate has ceased to be understood exclusively as a means of improving communication or persuasive abilities and has increasingly come to be recognized as a practice closely linked to knowledge construction. To argue is to engage with competing interpretations, justify claims, evaluate evidence, and examine the robustness of one's own assumptions. Consequently, the educational significance of debate lies not merely in the ability to defend a position but in its potential to foster forms of reasoning through which individuals can interpret, problematize, and critically reconstruct reality (Toulmin, 1958; Kuhn, 1991, 2005; Rapanta et al., 2013).

This perspective acquires even greater relevance within educational environments characterized by the growing mediation of digital technologies, where argumentation extends beyond the expression and defense of a viewpoint and increasingly involves the capacity to navigate complex informational ecosystems in which information, interpretations, and meanings are continuously produced, reconfigured, and negotiated (Holmes et al., 2019).

Within such environments, the emergence of generative artificial intelligence represents a further stage in this evolution, as students and educators now interact daily with systems capable of producing texts, arguments, and interpretations that are linguistically plausible and often difficult to distinguish from those generated by human beings. As a result, educational priorities can no longer be confined to the effective use of technological tools; they must also encompass the development of critical capacities enabling individuals to understand how information is generated, selected, and progressively legitimized within contemporary knowledge environments (UNESCO, 2023).

It is within this context that recent reflections on Debate 4.0 acquire particular significance. Through this concept, De Conti (2025) describes the transformation of argumentative practices within educational settings increasingly shaped by technological mediation. Yet, if generative artificial intelligence is profoundly reshaping the ways in which knowledge is accessed, produced, and validated, it also becomes necessary to examine how such transformations redefine the very meaning of debate itself. Building upon the reflections of De Conti and Giangrande (2017) on the pedagogical value of Debate, as well as studies highlighting its role in the critical construction of knowledge (Russo, 2021), this paper introduces the concept of Generative Debate. This notion refers to an emerging evolution of argumentative practices within contemporary cognitive ecosystems, where generative artificial intelligence actively participates in the production and circulation of information. Under these conditions, structured debate can no longer be understood solely as a space for

constructing and defending arguments; rather, it becomes an educational practice oriented toward the critical evaluation of knowledge, the examination of the processes through which knowledge is legitimized, and the development of increasingly sophisticated forms of epistemic responsibility.

2.1. The educational evolution of argumentative practices

The growing attention devoted to argumentative practices within educational research is closely linked to the increasing recognition that learning cannot be reduced to the mere acquisition of information but must instead be understood as a process through which individuals construct meaning, examine underlying assumptions, and critically evaluate the validity of knowledge claims. Within this perspective, argumentation acquires educational significance because it makes visible the justificatory processes that underpin knowledge construction, demonstrating that the value of a claim depends not simply on its formulation but on the quality of the evidence and reasoning through which it is supported. Knowledge is therefore understood not as a body of information to be transmitted and reproduced, but as the outcome of processes of inquiry, justification, and critical examination that require learners to engage actively with competing interpretations and alternative explanations (Toulmin, 1958).

Building on this understanding, educational research has progressively highlighted how engagement with different perspectives constitutes a particularly powerful condition for the development of reflective thinking, as it requires individuals to examine competing interpretations, evaluate alternative explanations, and reconsider their own assumptions in light of new evidence. Learning consequently assumes a dynamic and dialogic character, within which knowledge is not simply received from external sources but continuously reconstructed through processes of critical examination and revision. From this standpoint, argumentation functions not merely as a communicative activity but as a cognitive practice that enables learners to develop increasingly sophisticated forms of reasoning and understanding (Kuhn, 1991, 2005).

The educational significance of argumentation becomes even more evident when considering that reasoning does not develop exclusively at the individual level but emerges through participation in social contexts characterized by interaction, discussion, and deliberation. Engagement with alternative viewpoints enables individuals to subject their own beliefs to critical scrutiny, recognize the limitations of their interpretations, and construct shared meanings through dialogue, transforming disagreement from a potential obstacle into a valuable educational resource capable of fostering deeper forms of understanding and intellectual growth (Mercier & Sperber, 2011).

The educational evolution of argumentative practices therefore reveals that the value of debate extends well beyond the ability to defend a position effectively. Its significance lies in its capacity to engage students in processes of inquiry and deliberation through which knowledge is continuously examined, discussed, and reconstructed. It is precisely this progressive expansion of the educational functions attributed to argumentation that provides the theoretical foundation for understanding the transformations currently affecting debate within contemporary educational environments and for interpreting the emergence of new perspectives, such as Generative Debate, which will be explored in the following sections.

2.2. Generative Debate and the transformation of knowledge construction processes

The transformations currently affecting contemporary educational environments cannot be understood merely as the consequence of increased access to information or the introduction of new digital tools. Rather, the widespread diffusion of networked technologies has profoundly altered the conditions under which knowledge is constructed, discussed, and

shared, giving rise to contexts in which the production and circulation of content are increasingly shaped by digital platforms, algorithmic infrastructures, and automated systems (Holmes et al., 2019).

It is within this broader context that De Conti's (2025) concept of Debate 4.0 acquires particular relevance. Through this notion, debate is reinterpreted in light of the growing technological mediation that characterizes contemporary informational ecosystems. From this perspective, argumentative engagement no longer develops exclusively through direct interactions among individuals but takes shape within environments where digital technologies actively influence the selection of information, the visibility of content, and the ways in which issues are represented, framed, and discussed.

The emergence of generative artificial intelligence, however, introduces a further discontinuity that appears to require an additional step in pedagogical reflection. While digital technologies progressively transformed the contexts in which arguments were constructed and circulated, generative systems intervene directly in the production of content itself, making available explanations, interpretations, and argumentative frameworks that can subsequently be adopted, revised, challenged, or expanded by users. For the first time, educational environments are confronted with tools that do not merely facilitate access to information but actively participate in the construction of discourse and the formulation of arguments, thereby reshaping the relationship between knowledge production, interpretation, and deliberation (Lo, 2023; Tlili et al., 2023; Cotton et al., 2024).

It is precisely in response to this transformation that the notion of Generative Debate is proposed in this paper. Rather than referring to a new debate format is conceived as a theoretical framework through which the role of argumentation can be reconsidered within contemporary educational environments. The central issue no longer concerns solely how individuals engage in discussion with one another, but also how they interact with content, interpretations, and arguments generated by artificial systems, thereby redefining the conditions under which knowledge construction processes take place. This shift constitutes the conceptual bridge between the reflections associated with Debate 4.0 and the theoretical proposal of Generative Debate, whose pedagogical implications will be explored in the following sections.

2.3. Generative Debate in Higher Education

Higher education currently represents one of the contexts in which Generative Debate may most fully express its pedagogical potential. Universities are increasingly expected not only to foster the acquisition of advanced disciplinary knowledge but also to cultivate students' capacity for independent judgement, critical thinking, and the evaluation of information and arguments within environments increasingly shaped by the diffusion of generative artificial intelligence. In a context where AI systems are capable of producing plausible explanations, syntheses, and interpretations with unprecedented speed, the distinctive competence of university students can no longer be identified solely with the ability to retrieve information, but rather with their capacity to analyse it critically, confront it with reliable evidence, and develop well-reasoned judgements (Bearman et al., 2024; UNESCO, 2023; Wu et al., 2025).

From this perspective, Generative Debate can be understood as an educational approach capable of transforming debate into a genuine process of inquiry, within which students are encouraged to interrogate available knowledge critically, engage with alternative interpretations, and reflect upon the processes through which knowledge is constructed, validated, and legitimised. The primary objective is not simply to defend a position, but to cultivate epistemic competencies that enable learners to distinguish between plausible information and adequately justified knowledge claims, thereby promoting forms of active

participation and critical responsibility in relation to content generated by artificial intelligence (Chinn et al., 2014; Greene et al., 2016).
At the same time, Generative Debate offers a second perspective of particular relevance to higher education, namely its contribution to academic teaching and professional development.

The integration of artificial intelligence into teaching and learning processes requires university instructors to reconsider their pedagogical practices, assuming roles increasingly oriented toward facilitating learning, designing inquiry-based educational experiences, and fostering meaningful argumentative engagement among students. Within this framework, Generative Debate may also be interpreted as a valuable instrument for faculty development, as it encourages the adoption of active and reflective pedagogies while promoting a conception of teaching centred on the collaborative construction of knowledge rather than on the transmission of content alone (Holmes et al., 2019; OECD, 2025).

The value of Generative Debate therefore lies in its capacity to address two fundamental challenges facing contemporary higher education simultaneously. On the one hand, it supports students in developing the critical and epistemic competencies required to navigate cognitive environments increasingly mediated by artificial intelligence; on the other hand, it encourages the evolution of academic teaching practices in ways that are consistent with ongoing transformations in higher education, contributing to the diffusion of pedagogical approaches that are more participatory, reflective, and oriented toward active learning.

3. New educational challanges in the era of Generative Debate

The emergence of generative artificial intelligence appears to have introduced an unprecedented condition within contemporary educational processes, transforming not only the tools available for learning but also some of the assumptions that have traditionally shaped the relationship between knowledge and education. For a long time, one of the central educational challenges was associated with the ability to access reliable information and identify appropriate sources through which problems could be investigated and interpretations developed. Contemporary learning environments, however, are increasingly characterized by a markedly different situation in which explanations, summaries, arguments, and a wide range of content can be generated and made immediately available through increasingly sophisticated artificial systems.

Within this context, the growing availability of responses does not diminish the importance of judgment; rather, it redefines its educational significance. As emphasized by UNESCO (2023), the diffusion of generative artificial intelligence requires educational systems to preserve human agency within learning processes while fostering the critical capacities necessary for individuals to interpret, evaluate, and contextualize the outputs produced by artificial systems, thereby avoiding forms of cognitive dependency or the uncritical acceptance of automatically generated information. Similarly, recent scholarship on artificial intelligence in education suggests that the most pressing pedagogical challenges no longer concern the mere use of technological tools but increasingly involve the criteria through which information is assessed, discussed, and recognized as trustworthy within contemporary knowledge environments (Holmes et al., 2019; UNESCO, 2023).

Against this backdrop, the following sections focus on two issues that appear particularly significant for understanding the educational implications of generative artificial intelligence. The first concerns the growing tension between plausibility and reliability in processes of knowledge evaluation, while the second addresses the reconfiguration of argumentative practices in contexts where the production of content and interpretations can no longer be regarded as an exclusively human activity.

3.1. *Plausibility, reliability and judgement*

The diffusion of generative artificial intelligence brings renewed attention to a longstanding issue that has always accompanied processes of knowledge construction: the difficulty of distinguishing between what appears convincing and what is genuinely well-founded. For a considerable period of time, access to information was regarded as one of the principal educational challenges. Today, by contrast, students and educators operate within environments where explanations, interpretations, and arguments are available in virtually unlimited quantities. Under such conditions, the central issue no longer concerns merely the possibility of obtaining answers, but rather the capacity to critically evaluate their quality, credibility, and epistemic status.

Generative artificial intelligence intensifies this challenge because it produces content characterized by high levels of linguistic coherence, rhetorical fluency, and contextual relevance, features that can easily be associated with impressions of authority and trustworthiness. As recent scholarship has shown, however, the plausibility of a response does not necessarily guarantee its reliability, since formally convincing outputs may incorporate inaccuracies, omissions, oversimplifications, or interpretations that lack adequate empirical grounding (Lo, 2023; Tlili et al., 2023; Cotton et al., 2024). The educational significance of this transformation therefore lies not only in the characteristics of generative systems themselves, but also in the ways individuals assign credibility to the information with which they engage.

From this perspective, the emergence of generative artificial intelligence highlights a question that has long occupied research on epistemic cognition: judgments about knowledge depend not solely on the availability of information, but also on the conceptions individuals develop regarding the nature of knowledge and the criteria through which knowledge claims can be justified (Hofer & Pintrich, 2002; Greene et al., 2016). Evaluating a claim necessarily involves examining the evidence that supports it, the quality of the sources from which it derives, and the procedures through which it has been constructed. Learning, therefore, cannot be reduced to the acquisition of information; rather, it entails the gradual development of forms of judgement capable of distinguishing between plausible assertions, reasoned opinions, and adequately justified knowledge claims.

Particularly relevant in this regard is the AIR model, according to which the evaluation of knowledge emerges from the interaction among epistemic aims, epistemic ideals, and reliable processes of justification (Chinn, Rinehart, & Buckland, 2014). Within environments increasingly populated by artificially generated content, this perspective draws attention to the importance of looking beyond the outcomes of knowledge processes and examining the procedures through which those outcomes are produced and validated. What becomes educationally significant is not merely whether a response is correct, but whether individuals are able to understand its origins, reconstruct the reasoning that supports it, and critically examine the assumptions upon which it rests.

Viewed in this light, the challenge posed by generative artificial intelligence cannot be understood as an exclusively technological issue. Rather, it concerns the formation of individuals capable of exercising autonomous judgement in contexts where the availability of information increasingly exceeds the capacity for its immediate evaluation. As UNESCO (2023) argues, the goal of education is not simply to facilitate access to emerging technologies, but to promote forms of critical participation that enable individuals to maintain an active role in the interpretation and evaluation of the knowledge with which they interact. It is precisely this centrality of judgement that makes it necessary to examine not only the quality of the information available, but also the transformations that artificial intelligence introduces into the processes through which arguments are constructed, discussed, and mobilized within educational environments.

3.2. The redistribution of argumentative labour

The impact of generative artificial intelligence on argumentative practices cannot be adequately understood by focusing exclusively on the quality of the content produced by artificial systems. A more profound issue concerns the redistribution of those activities that have traditionally accompanied the construction of arguments and that, for a long time, have represented significant opportunities for learning. Searching for information, selecting evidence, identifying possible objections, formulating counterarguments, and organizing lines of reasoning have historically constituted essential components of argumentative work through which students progressively developed the ability to analyse complex issues and construct well-founded positions. Today, many of these activities can be performed, at least partially, by generative systems capable of producing sophisticated arguments, comparative syntheses, and alternative perspectives within a matter of seconds.

Such a transformation does not necessarily imply a reduction in the educational value of argumentation; rather, it invites a reconsideration of the ways in which that value is constituted. If argumentative work can no longer be equated solely with the production of content, it becomes necessary to examine which activities continue to require the direct involvement of learners and what forms of learning may emerge from interaction with systems capable of contributing to the construction of the positions under discussion. The central pedagogical question, therefore, does not concern whether students should or should not use artificial intelligence, but rather which dimensions of argumentative activity cannot be fully delegated without compromising the formative potential of the learning experience itself.

From this perspective, attention progressively shifts from the production of arguments to their critical interpretation. When theses, supporting evidence, and potential counterarguments can be generated automatically, the learner's task increasingly consists in evaluating their relevance, identifying their limitations, comparing them with alternative interpretations, and determining which elements should be considered meaningful in addressing a particular issue. Argumentative activity does not disappear under these conditions; instead, it is relocated to a different level, one in which processes of selection, comparison, interpretation, and judgement acquire growing significance.

This transformation resonates with insights from argumentation research, which has long emphasized that the educational value of argumentative engagement lies not exclusively in the final outcome of reasoning but also in the processes of revision, negotiation, and reconsideration through which positions are developed and refined (Kuhn, 2005; Rapanta et al., 2013). In this sense, generative artificial intelligence does not eliminate the need for argumentation; rather, it makes even more visible the importance of those activities that cannot be entirely performed by artificial systems: determining what deserves to be discussed, assigning meaning to available evidence, evaluating the significance of competing interpretations, and ultimately assuming responsibility for the conclusions that are reached.

Argumentation therefore appears increasingly less as a process devoted exclusively to the construction of responses and increasingly more as an activity concerned with navigating critically among a plurality of responses that are already available. Within environments characterized by the abundance of artificially generated content, the educational challenge no longer stems from a lack of arguments but from the capacity to interrogate existing ones, examine their assumptions, and evaluate their implications. It is precisely within this reconfiguration of argumentative labour that the theoretical space emerges for the proposal of Generative Debate, conceived as a possible educational response to the transformations that generative artificial intelligence is introducing into processes of knowledge construction, discussion, and evaluation.

4. Generative Debate and the reconfiguration of educational inquiry

The reflections developed throughout the previous sections suggest that generative artificial intelligence is not merely transforming the tools available to students and educators, but is progressively reshaping the relationship between learning, knowledge, and inquiry itself. If access to information has long represented one of the principal conditions structuring educational processes, the growing availability of systems capable of generating explanations, syntheses, and arguments requires a reconsideration of which activities continue to constitute the educational core of learning experiences.

Within this context, the central educational challenge no longer lies in obtaining answers, but in making sense of the answers that are available, critically examining their assumptions, and identifying the questions that remain unresolved despite the apparent completeness of the information produced by generative systems. The diffusion of artificial intelligence makes increasingly visible a tension that has always accompanied educational processes: while answers become progressively more accessible, immediate, and abundant, the formulation of meaningful questions remains a distinctly human activity, closely connected to curiosity, problem framing, and the capacity to recognize what is worthy of investigation (UNESCO, 2023; Bearman et al., 2024).

It is precisely within this transformation that the proposal of Generative Debate is situated. Rather than identifying a methodology aimed at producing increasingly effective arguments, Generative Debate is interpreted here as an educational practice designed to preserve the space of inquiry within contexts where explanations and interpretations can be generated with unprecedented speed. Attention therefore shifts from the search for correct answers to the critical exploration of problems, from the construction of conclusions to the examination of the questions that make those conclusions possible in the first place.

From this perspective, the pedagogical significance of Generative Debate lies in its capacity to restore centrality to processes of inquiry, exploration, and investigation that risk becoming marginalized in environments characterized by the growing automation of content production. Debate is therefore conceived not as a mechanism for competing over predefined positions, but as a space in which students can critically interrogate available interpretations, explore alternative perspectives, and generate new avenues of inquiry from responses that may initially appear complete or definitive.

4.1. Beyond retorical performance

The diffusion of Debate within educational contexts has contributed significantly to the recognition of argumentation as a powerful means of fostering critical thinking, communication skills, and democratic participation (Cinganotto, Mosa, & Panzavolta, 2021; Russo, 2022; Russo & Refrigeri, 2023). At the same time, the adoption of structured and competitive formats has encouraged increasing attention to the quality of argumentative performance, which is often evaluated in terms of the ability to defend a position coherently, employ evidence effectively, and persuade an audience or adjudicating panel. Although these dimensions undoubtedly constitute important aspects of debating practice, an excessive emphasis on performance risks narrowing the educational significance of argumentation to the effectiveness of its final product.

This limitation becomes particularly apparent when debate is understood primarily as a competition between opposing positions. Under such conditions, success tends to be associated with the capacity to defend a claim persuasively, while the processes through which students explore the complexity of a problem, engage with uncertainty, or revise their interpretations in response to alternative perspectives become less visible. Yet the educational value of argumentation does not reside solely in the production of persuasive conclusions; rather, it emerges through the possibility of subjecting ideas, assumptions, and interpretations

to ongoing processes of revision and critical scrutiny, within which disagreement functions as an opportunity for learning rather than merely as an obstacle to be overcome (Kuhn, 2005; Mercier & Sperber, 2011).

The emergence of generative artificial intelligence makes this tension even more evident. In contexts where the construction of rhetorically effective discourse can be supported by systems capable of generating sophisticated arguments, plausible counterarguments, and persuasive syntheses (Lo, 2023; Cotton et al., 2024), the quality of a performance can no longer be regarded, in itself, as a sufficient indicator of the depth of the cognitive processes that have made it possible. This does not diminish the value of argumentation; instead, it invites a reconsideration of the criteria through which educational significance is attributed to debate and of the purposes that argumentative practices are expected to serve in contemporary learning environments.

From this perspective, it becomes necessary to move beyond an exclusively performative conception of Debate, according to which argumentative engagement is valued primarily for the ability to defend a position or prevail over an opponent. The educational challenge is not to cultivate students who can merely produce increasingly effective arguments, but to create conditions in which they can engage critically with complex problems, competing perspectives, and situations characterized by uncertainty. Before serving as a means of identifying answers, debate must recover its function as a space for exploring and understanding problems, thereby laying the foundations for a different conception of the relationship between argumentation and learning.

4.2. Generative Debate as a practice of inquiry

What most clearly distinguishes Generative Debate from more traditional interpretations of debate concerns the role attributed to inquiry within learning processes. Whereas classical models of argumentation have frequently associated debating with the construction and defence of a position, Generative Debate places the progressive exploration of problems at the centre of the educational experience, treating inquiry not as a preliminary stage that precedes discussion but as its primary purpose. Argumentation is therefore valued not because it enables participants to reach conclusions efficiently or determine which interpretation should prevail, but because it provides a means of expanding understanding, illuminating overlooked dimensions of complex phenomena, and opening new directions for investigation.

This reinterpretation of inquiry acquires particular significance within educational environments increasingly shaped by generative artificial intelligence. The growing availability of automatically generated explanations, syntheses, and argumentative frameworks reduces the educational significance traditionally attached to the mere retrieval of information and redirects attention toward a different challenge: identifying problems worthy of investigation. Inquiry consequently shifts from the search for answers to the formulation of questions, requiring students to engage not only with what is already known, but also with what remains contested, incomplete, uncertain, or open to multiple interpretations.

Under these conditions, debate assumes a fundamentally heuristic function. The positions advanced by participants are no longer understood as conclusions to be defended at all costs, but as provisional interpretative tools through which hypotheses can be tested, evidence can be examined, and alternative readings of the same phenomenon can be explored. The objective is not to eliminate the uncertainty that inevitably accompanies processes of knowledge construction, but to mobilise that uncertainty as a resource for deepening analysis and expanding the range of possible interpretations. Research on argumentation has long demonstrated that engagement with competing perspectives promotes

forms of conceptual revision and understanding that are difficult to achieve through transmissive models of learning, precisely because it requires individuals to confront alternative explanations, re-examine assumptions, and negotiate meaning through critical dialogue (Toulmin, 1958; Kuhn, 2005; Rapanta et al., 2013).

From this perspective, the originality of Generative Debate lies in its capacity to transform the abundance of artificially generated content into an opportunity to extend inquiry rather than to conclude it. Interpretations produced by artificial intelligence do not constitute the endpoint of the educational process; instead, they become intellectual resources to be questioned, discussed, challenged, and situated within broader interpretative frameworks. What acquires educational value is therefore not the availability of a plausible response, but the capacity to use that response as a starting point for further exploration, generating new questions, alternative hypotheses, and deeper forms of understanding.

The adjective generative thus refers not only to the presence of artificial intelligence within educational environments, but also to the capacity of debate itself to generate new lines of inquiry, new conceptual connections, and new possibilities for understanding. In this sense, Generative Debate can be interpreted as a form of inquiry-oriented argumentation that seeks not the closure of problems but their continuous reformulation, reaffirming the educational significance of inquiry as a central dimension of learning in the age of generative artificial intelligence.

5. Conclusions and future perspectives

The reflections developed throughout this paper originated from the observation that generative artificial intelligence does not simply introduce new tools into educational environments, but contributes to a broader transformation of the conditions under which knowledge is constructed, interpreted, and circulated. Within this evolving landscape, the most significant pedagogical challenges appear to extend beyond the acquisition of technical competencies or the effective use of generative systems, calling instead for renewed attention to the role that students and educators are expected to assume in contexts where information, explanations, and arguments are increasingly abundant and immediately accessible.

Against this backdrop, the paper has proposed the concept of generative debate as a theoretical lens through which the educational significance of argumentation can be reconsidered in the age of generative artificial intelligence. the intention has not been to introduce a new debate format or to define an alternative set of instructional procedures, but rather to develop a conceptual framework capable of illuminating some of the transformations affecting the relationship between learning, knowledge, and argumentative activity. From this perspective, debate is understood not primarily as a means of defending positions or producing persuasive arguments, but as a context in which competing interpretations can be critically examined, negotiated, and continuously reworked through the interaction of participants, evidence, and alternative perspectives (Toulmin, 1958; Kuhn, 2005; Mercier & Sperber, 2011; Rapanta et al., 2013).

The analysis further suggests that the growing presence of artificially generated content does not diminish the educational relevance of debate; rather, it makes more visible the need for spaces in which the meaning of information can be questioned, contextualized, and subjected to critical scrutiny. As the production of content becomes increasingly supported by artificial systems, the educational value of learning experiences appears to reside less in the availability of answers and more in the capacity to interpret those answers, examine their implications, and confront them with alternative perspectives, thereby preventing immediate explanations from prematurely closing processes of understanding. In this sense, Generative Debate is proposed as a practice aimed at preserving the dialogic,

exploratory, and fundamentally provisional character of knowledge, reaffirming the role of argumentation as an experience of inquiry, revision, and shared meaning-making.

At the same time, the considerations developed in this paper open several promising avenues for future research. From an empirical perspective, it appears particularly important to investigate how the theoretical principles outlined here may be translated into educational practices across different levels of education and disciplinary contexts, examining how students and educators engage with generative systems during argumentative activities and exploring the forms of interaction that emerge when human contributions and artificially generated content become intertwined within processes of discussion and deliberation. Further developments may also concern the design of pedagogical approaches and assessment frameworks aligned with a conception of debate that values not only the quality of argumentative performances but also the capacity to investigate complex issues critically and engage productively with a plurality of interpretations.

Rather than representing the linear evolution of an established educational methodology, the transition from disputatio to Generative Debate can be understood as an attempt to rethink the role of argumentation in response to broader transformations in the cultural and epistemic conditions that characterize contemporary societies. While the tools through which knowledge is produced and disseminated continue to evolve at an unprecedented pace, the need remains to cultivate individuals capable of engaging with complexity, recognizing the provisional nature of interpretations, and participating thoughtfully in the ongoing processes through which knowledge is debated, revised, and reconstructed. It is within this broader perspective that Generative Debate finds its theoretical justification and its potential contribution to contemporary pedagogical discourse.

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