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Toward a Critical Framework for AI Tool Selection and Adoption in Academic Research Contexts: Reflections from the Brown University Critical AI Learning Community

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Abstract:

Given the rapid proliferation of artificial intelligence (AI) tools in academic environments, critical questions about AI and its role in economizing the research process continue to emerge. While AI tools have the potential to enhance productivity and foster greater collaborative inquiry dramatically, there remain overarching concerns about AI's impact on information ethics, privacy, and equitable access. However, determining the effectiveness and alignment of AI tools within academic research contexts is a challenge for stakeholders across the academic ecosystem, including librarians, faculty, administrators, graduate students, and undergraduates. To address this absence of uniform guidance in the face of unrelenting technological disruption, this article describes the tripartite framework developed by the Brown University Library's Critical AI Learning Community to enable systematic evaluation of AI tools across the landscape of institutional stakeholders in higher education.

As such, this piece will highlight the group's motivations, intentions, and process for creating a three-tiered evaluative methodology, which synthesizes and grounds traditional system usability frameworks, usage-driven assessments, and critical approaches developed within the fields of Science and Technology Studies (STS) into one model. In addition, this project seeks to provide insights from the experience of building our framework within a non-hierarchical and cross-disciplinary space like a learning community. Finally, the work seeks to present our typology and discuss several case

studies that demonstrate how this framework can be applied to evaluate AI tools in authentic, real-world academic settings.

Introduction: A Flexible Community Engagement Framework for an Evolving World

With the rapid proliferation of artificial intelligence (AI) tools within academic environments, critical questions continue to emerge regarding AI and its role in economizing the research process. While AI tools have the potential to enhance productivity and foster greater collaborative inquiry dramatically, there remain overarching concerns about the impact of AI-driven research related to the ethical usage of information, individual rights to privacy, equitable access to AI technologies for all researchers, as well as the potential for the reinforcement of social and structural biases, amongst a multitude of growing apprehensions. By extension, in the absence of clear professional standards and institutional policies, determining and evaluating the effectiveness and appropriateness of AI tools within specific research contexts remains a challenge for many stakeholders across the academic ecosystem, including faculty, administrators, graduate students, undergraduates, and librarians alike.

In response to some of these looming ambiguities, the leadership team of the Brown University Library (BUL) convened a committee of interested library staff to develop a community-based programming series that would function as an approachable, low-stakes learning space for university members new to, unfamiliar with, or curious about AI. Broadly speaking, the committee's mandate was twofold: to offer our community of learners the opportunity to gain experience, foster awareness, and develop new technological competencies in a generalist and non-judgmental space, while also

surfacing and articulating some of the rising skepticism and anxieties associated with AI's encroachment in academia. In this sense, it seemed logical for BUL to be positioned at the forefront of organizing and facilitating discussions related to the adoption of radically new technologies, especially given that, in the abstract, the academic library's role within the university structure traditionally relates to the acquisition and stewardship of research tools and resources.

Beginning in the summer of 2023, a planning committee was formed with four members across various library staffing units, including Niamh McGuigan, Director of the Center for Library Research and Exploration (CLEAR) at Brown University; Emily Ferrier, Coordinator of Liaison Services at Brown; Cass Wilkinson Saldaña, BUL Social Sciences Data Librarian; and Jason Cerrato, BUL STEM Instructional Librarian and Engineering Liaison. Once convened, the planning committee's charge was first to identify an actionable, community-centered framework to guide the program throughout the academic year, before then fleshing out logistical and communication structures. Furthermore, the committee sought an adaptive pedagogical framework that would empower our nascent community to define and pursue the trajectory of our sessions as we accrued exposure to AI tools over time, while simultaneously accommodating changes within the operation, application, and overall regulation of AI technologies themselves. Our approach to community-building and AI engagement necessitated flexibility as a higher-order concern, while cultivating a generative, interactive climate that would mirror this new class of tools coming into focus; as such, the committee adopted the Learning Community Model as the pedagogical structure that aligned most readily with our shared expectations.

Core Features of Learning Communities

While the concept of 'learning communities' has occupied a space in pedagogical literature dating back to at least the 1980s [1], [2], there remains debate amongst practitioners about the essential features underpinning the model. Additionally, wide applications of the learning community framework within a variety of different fields and educational contexts (within higher education and externally in corporate spaces) add another layer of complexity. That being said, the planning committee identified several core components of the learning community model that resonated with our shared values, learning outcomes, and service expectations in support of our group members.

In considering the elements of the learning community model, the National Learning Communities Association (NLCA) provides a practical point of entry. The NCLA, as a professional organization devoted to the "production and dissemination of knowledge that informs learning community theories, policies, practices, programs" [3], defines learning communities as:

> "…intentional educational approaches to improve the teaching and learning experience. These approaches often emphasize…co-curriculum [development] and prioritize community-building among faculty, staff, and a cohort of students… [Learning communities] include a "structure characterized by a cohort of students participating in an intentionally designed integrative study of an issue or theme" [3].

In pursuit of a flexible and generative structure that would invite broad community participation, the NLCA definition provided several tangible linkages that aligned with our vision for the community's work, including consistent curricular themes (i.e., AI &

ethics, academic research use-cases, impacts on university spaces, etc.), co-curricular opportunities for the community to dictate the terms of weekly themes and discussions, an emphasis on community-building amongst a continuum of stakeholders with differing backgrounds ("faculty, staff, and a cohort of students" [3]), and perhaps most importantly, intentionality: intentionally centering the library & university space, deliberately eliciting user experiences and expectations, and intentionally infusing our conversations with a critical edge.

Building on the attributes listed by the NLCA, the committee also drew inspiration from the Harvard University Center on the Developing Child, which articulates four general characteristics of learning communities that would be appropriate for our cohort: "It [learning communities] connects people. It sets goals and measures collective progress. It enables shared learning. It supports distributed leadership" [4]. We knew, at minimum, that carving out and holding a space for 'connectivity' and interaction between a diverse group of university stakeholders was a fundamental element of our charge, as was creating the feedback mechanisms to collect insights from the community. And "distributed leadership" [4], in the context of our group, would mean collaborative roles shared by members of our planning committee, in addition to participants from the greater Brown community leading sessions, as schedules and interests would dictate.

Finally, the inherently inclusive (i.e., non-hierarchical) and responsive nature of the Learning Community model aligned with our need to foster a structure that could adapt and pivot in real-time, from week to week, based on technological changes and differing levels of participant interest, investment, and background [5]. As such, the committee distilled some of these core components into a set of 'community values' that

could guide programming and interactions as the community took shape, including the following features:

- Common purpose & cause
- A shared structure & vision
- Curiosity, question-posing, & information-seeking
- Collaboration and exploration beyond disciplinary boundaries
- Non-hierarchical relationships among members
- Reciprocity & intentionality
- Inquiry-based
- Flexible & generative
- Community-centered
- Active participation
- Distributive leadership and empowerment
- Inclusion and access

In addition, our community determined that a meaningful outcome and a successful learning environment would be contingent upon cultivating an awareness of the following:

- Mindfulness regarding the terms of belonging
- Awareness and interrogation of bias & power dynamics
- Mitigation of exclusionary social attitudes or practices

The committee was also sensitive to the potential role of latent and uneven power dynamics between faculty, students, and staff, which could foreseeably impact the inclusive character of community spaces and suppress group dialogues or individual disclosures of AI usage. Whereas stakeholders brought varying degrees of experience,

understanding, and acceptance of AI to the group, as well as differing motivations for the adoption and utilization of these tools, the committee resolved to approach the integration of AI technologies within the university setting in an open-minded, affirmative, and non-punitive manner. As the committee began to clarify our charge in the early periods of planning, the most consistent refrain surfaced within our institution related to the negative consequences of generative AI within the student writing process. In a sense, we wanted to avoid the possible chilling effects on community interactions that could arise from students engaging with faculty, many of whom had exhibited high levels of skepticism regarding generative tools.

Given that the committee wanted to be sensitive to specifically understanding the student experience of deploying AI technologies within their current undergraduate educational context beyond the automation of writing tasks (while still fostering an interest in those types of activities), we understood that we would need to promote a learning environment where all users could speak authentically and with candor about their activities or affinities, free from fears of violating student academic codes of conduct or university policies. Subsequently, this set of core attributes was shared with the community in several of our early sessions, and participants were encouraged to provide feedback on a rolling basis.

Adding a Critical Dimension

Finally, the committee resolved to incorporate a decidedly critical sensibility to our community's shared exploration of AI tools, their potential applications within academic research spaces, as well as the overall societal discourses that frame and animate AI's explosive proliferation. While much of the committee's general approach to understanding the penetration and growth of AI tools in higher education was affirmative,

inquisitive, open-minded, and not punitive (i.e., how we might productively welcome such tools into the research process without compromising rigor and professional standards, as opposed to restricting them), we felt it was still imperative to maintain a critical mindset about these technologies as we became more acclimated with the landscape of tools on offer.

Given that some of the committee's underlying interests and motivations were attempting to disentangle sensitive and historically thorny issues related to user privacy and equitable access to technologies (among many other long-standing 'library-centric' concerns), we wanted to be transparent in communicating the presence of this 'critical dimension' within shared community conversations and spaces. Furthermore, burgeoning criticisms beyond higher education such as the broad impact of AI on–and displacement of–labor across industries, as well as the resource-intensive nature of AI infrastructure (i.e., unsustainability discourse), necessitated the inclusion of macro-level, critical-evaluative perspectives from the outset, as these points of friction would invariably occupy at least some degree of our community's attention over time.

As such, the committee adapted our program's title, description, and raison d'être to more directly reflect a critical position and direction throughout the programming series, ultimately settling on the descriptive title, 'Critical AI Learning Community'. Community conversations throughout our initial fall 2023 offerings confirmed a clear interest in interrogating the disruptive socio-cultural forces of AI technologies more deeply, which in turn grounded the genesis and creation of our local framework (discussed below) to assist community and university stakeholders in selecting, adopting, utilizing, and deconstructing the multidimensional impacts–both manifest and latent–of these tools.

Logistics: Calendar Structure, Guest Speakers, and 'Hands-on' Activities

While the committee recognized the need to maintain maximal flexibility to accommodate changing community needs, interests, and attitudes throughout the academic year, we agreed that some degree of defined structure would be appropriate, particularly as we sought speaking engagements from university representatives and non-Brown affiliated researchers, community advocates, technologists, software developers, etc. Moreover, the committee was intent on injecting a 'sandbox' element into the calendar for community members to informally interact, collaborate, experiment with emergent tools, and explore potential uses. Subsequently, the committee settled on an alternating schedule comprised of both thematic discussion (as determined by the community) and active, 'hands-on' engagement sessions; loosely speaking, the first and third Mondays of every month were earmarked for discussion of specified topics (ranging from AI ethics to user-experience research), while the second and fourth Monday were reserved for open, unstructured play and tool engagement.

Throughout the academic year, notable speakers included Dr. Clair Wardle and Dr. Samantha Stanley (previously affiliated with the Information Futures Lab, Brown University), Kyle Courtney (Director of Copyright and Information Policy for the Harvard University Library), Jim Foley (Digital Learning & Design), Dr. Monica Linden (Brown University Faculty in Neuroscience), amongst a host of student-led groups (including the Brown University AI Safety group). 'Hands-on' sessions included exploration of a variety of tools, including, but not limited to, Scite.AI and Perplexity (as RAG-based information retrieval tools), Elicit (within a systematic review context), ChatGPT and Claude (as more commonly known LLM 'bots'), as well as integrated AI features of commonly known tools,

such as the Web of Science and Primo discovery AI features (classed as AI 'assistants' or Co-pilots).

Cross-Sections: A Survey of Learning Community Membership & Interests (AY '23-24)

Over the Learning Community's initial year of programming (academic year 2023-2024), the planning committee actively solicited feedback and insights from the group regarding topics of interest and community 'rules of engagement', while additionally keeping ourselves apprised of the demographic composition of the community as a whole, as it took on a more defined shape and settled into regular order. In terms of community membership, stakeholders represented a broad distribution of academic research fields, including (but not limited to) Neuroscience, Computer Science, Economics, Engineering, Music, Anthropology, Portuguese and Brazilian Studies, Sociology, Hispanic Studies, East Asian Studies, History, and Public Health, in addition to advanced research units such as the Brown University Library Center for Digital Scholarship, the Annenberg Institute for Education & Inequalities Research, the Watson Institute of Public Affairs, and the Data Science Institute, as well as administrative and support units on campus, including the Sheridan Center for Teaching and Learning, and the offices of Institutional Advancement and Campus Life. Overall, a rolling collection of survey response data suggested that ~70% of community attendees held the affiliation of staff within a designated non-teaching support unit (including higher-level administrative positions such as Dean), while ~15% held a title of faculty or instructor, with the remainder split between undergraduate and graduate students, respectively.

Each session averaged ~30-35 weekly participants for the entirety of the academic year. On off weeks of defined programming, the committee convened open-ended 'hands-

on' sessions to use tools, talk about projects, and generally connect with other members of the learning community. Additionally, the Planning Committee's registration and feedback surveys also revealed sustained community interest throughout the year in the following threads:

- **Teaching and pedagogy:** how can we [faculty/ instructors] teach with AI? How can we design courses and syllabi that contend with AI usage? What do effective assignments look like given student AI use?
- **AI safety, harm, and risks**: how can AI hurt people and communities? What are the biggest safety concerns? What are the societal harms?
- **Ethical and responsible usage**: how can we [all users] engage ethically with AI and use it responsibly? How do we steer AI towards its most positive use?
- **Everyday uses:** how can I use AI in day-to-day life?
- **Interdisciplinary research:** what connections can we [as researchers] make across academic disciplines when considering AI?
- **Specific academic use cases:** what is the specific utility of AI methods and tools in scholarship and higher education?
- **Impact on learning and student perspectives:** how are students using AI in the classroom and on assignments? How can we center the student perspective?
- **Considerations of disruptive impact**: how will AI impact and disrupt my professional field and my life?
- **Unique and specialized academic use cases:** how can I learn more about my applied area of study as it relates to AI usage?

- **How AI works:** what's going on under the hood with ChatGPT? How can I increase my literacy with AI tools broadly?

Given the frequency with which community discussions would reposition AI outside of academia to consider residual impacts, it was unsurprising that five of the ten most consistent points of community interest mentioned above contained a critical component beyond simply exploring and developing novel research or pedagogical use cases. Moreover, given the emergent and inchoate nature of AI technologies at the time of this community's founding, there were no viable, pre-existing evaluative frameworks to guide our thinking that incorporated a continuum of usage assessments, basic tool function evaluations, and critically motivated concerns. Consequently, such sustained interest (and absence within professional literature across disciplines) warranted the conceptualization of a 'home-grown' framework that would allow stakeholders to deconstruct and interrogate the wide-ranging impact of AI from a variety of perspectives in a non-technical and holistic manner.

Developing a 'Home-Grown' Evaluative Framework

Building off feedback collected throughout the fall 2023 semester, the planning committee honed in on a digestible, streamlined, and multi-level evaluative methodology that would encapsulate a now crystalizing list of overlapping–yet distinct–questions. Here, the committee intended to integrate a tool-specific asset assessment (evaluating AI technologies as consumer products unto themselves), an appraisal of tool functions within emerging academic research contexts (analysis of use-cases, or the 'work' that these tools perform, in a post-structural sense), as well as incorporating considerations of potential broadly-scoping societal impacts, writ large (questions concerning labor displacement, representation and erasure, social alienation or isolation, etc.). The

resulting synthesis produced a three-tiered evaluative framework, grounded in 1) traditional system usability frameworks inspired by user experience research and the long-standing System Usability Scale [6], 2) usage-driven assessments (inspired in part by case-study pedagogy and systems thinking), and 3) critical approaches to technological diffusion derived from the fields of Sociology and Science and Technology Studies (STS).

The initial tier–deemed the usability and systems tier–was drawn from the world of systems engineering and inspired by the well-traveled System Usability Scale (SUS) developed by John Brooks [7] in the late 1980s. The SUS model, composed of relatively straightforward Likert scale questions, invites system users to evaluate elements of the 'user-experience', such as a user's ability to onboard into a system easily, a system's ease of use once novice users are onboarded, and basic system functionality [7]. At its core, the SUS model is interested in user perspectives on task efficiency and outcome attainment using technological systems (which do vary based on context), and more so, envisions new users interacting with an 'out of the box', default system, which seemed to accurately reflect many of our community members and their engagement with AI tools [7]. We also suggested that this tier be considered value-neutral insofar as our evaluation would strictly be limited to the system, its basic functions, and one's ability to perform them; the committee recommended taking the tools at face value and restraining evaluations to the tool itself. The committee also looked to our resource acquisition practices as a library to elaborate fundamental questions about tool selection and adoption for new users, insights that ranged from vetting subscription costs to exploring enterprise solutions. While slightly superficial in scope, this cursory tier represented an important first step for lay users, particularly as the community encountered an increasingly noisy market for AI products.

The second level–dubbed the 'use-case' tier–considered AI tools within the specific context of academic activities, and largely employed an affordances and constraints approach to understanding technological potentialities for goal attainment, while also recognizing the system's side impediments to task completion [8], [9], [10]. In this sense, we encouraged community members to not solely consider a tool's stated uses, but its possible uses (or 'use-cases'), and by extension, the potential consequences that flow downstream from unforeseen usages of AI. Within this context, case studies would be of vital importance, especially as research endeavors utilizing AI continually push forward new questions into unknown horizons. The added benefit here was also carving out a space for researchers to attend the community and present their work, including faculty from across the digital humanities. This evaluation was also conceived of as value-relative, meaning that the tool's relative value would be derived from the scholastic use-context within which it was applied. Additionally, thinking through the nature of consequence allowed for the inclusion of concepts such as latent and manifest functions–adapted from traditional Sociological Structural-Functionalist thought [11]–which in turn would open an inroad toward the final element of our framework. The perspectives engendered by this sphere of evaluation proved to be extremely valuable in the context of AI experimentation during bi-weekly 'hands-on' sessions, which challenged community members to embrace a "situationist" logic [12] in an attempt to either identify tool limitations or unintended outcomes.

Finally, the third tier–conceived of as a type of cultural and sociohistorical-centered evaluation–set its sights on unpacking the interplay of AI, social groups, structures, institutions, and systems while considering the marginalizing and

exclusionary effects of these technologies on individual or community identity. Finding an affinity with Actor-Network-Theory (ANT) [13], this level of critical exploration views AI through the lens of social construction, locating analysis in the role of AI in semiotic construction (i.e., meaning-making or facilitating sense-making) and the potential maintenance of hegemonic power structures (patriarchal, colonial, racial, etc.). Channeling Langdon Winner's seminal article "*Do Objects Have Politics*?" [14]–a staple of Science and Technology Studies literature–the framework asks: what sort of values are enmeshed within the operation of these technologies? And do the disruptive forces of AI tools recast social relations in a democratizing, liberatory, and truly empowering way? Or do these disruptions metastasize dominant narratives more deeply in our collective bones? This tier is unflinchingly value-critical, insofar as it does not assume that AI is a de facto net positive to societies, inherently progressive in its pull toward leveling and inclusion, or even as disruptive as many purport it to be. Instead, AI is viewed skeptically as a non-neutral agent that functions as a vehicle for the reinforcement of deeply ingrained and repressive structures.

Taken together, each level of the framework complements the next, weaving together a practice for ourselves and our stakeholders to approach existing and emerging AI tools confidently, thoughtfully, and systematically concerning our needs, growing abilities, and heightened awareness of potentially harmful social outcomes. An image of the framework appears below in Figure 1.

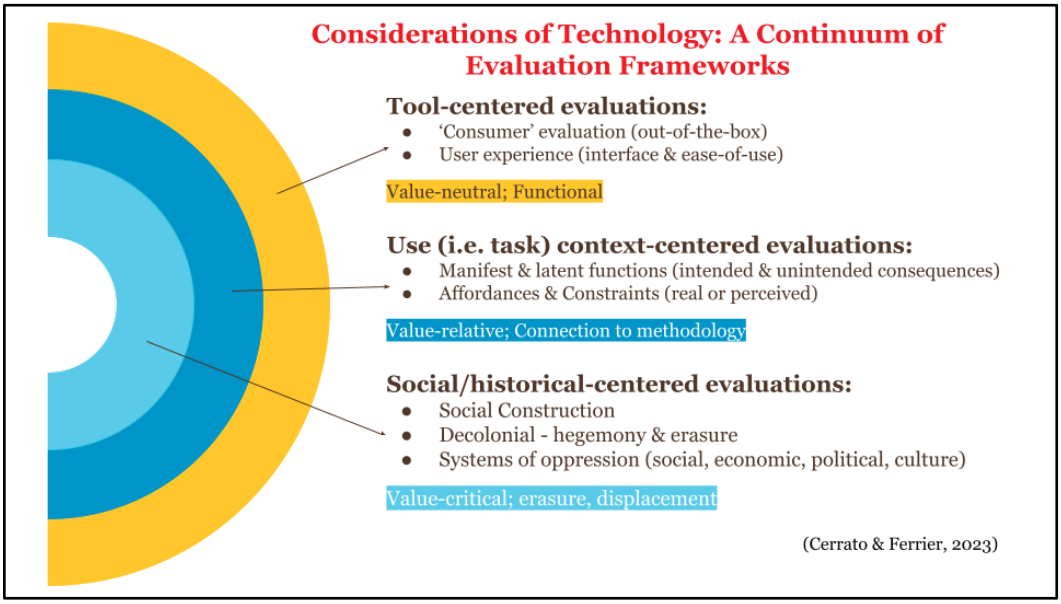

Figure 1. The AI Evaluation framework, as presented to the learning community.

Presenting the Framework to the Learning Community

The framework was presented to the learning community on 12 February 2025 (an early post-winter break session) by Jason Cerrato. The presentation was comprised of 3 parts: an introductory section with several STS case studies, followed by the presentation of the framework, and concluding with a case study application of the framework to an AI tool. The introduction, entitled 'Critical considerations of technology: A *quick* primer', brought together a few bigger themes and concepts from STS, such as the assumed role of technology as a neutral driver of change, the increasingly troubled boundaries between nature and society in an era of the Anthropocene, and how social organization and activity shapes–and is shaped by–the creation & usage of technology. Several case studies integrating some of these questions were explored, including Winner's well-traveled discussion of the role of industrial technologies in union-busting on the McCormick Factory Shop Floor in 19th-century Chicago [14]. The committee's framework was then

presented and discussed, followed by a real-time demonstration of applying the framework to evaluate Grammarly's new AI feature.

Community Case Study: Grammarly AI, Modernist Literature, and Linguistic Monoculture

In considering an AI tool to evaluate with the framework, the committee wanted to select a commonly used and tacitly accepted technology within higher education; Grammarly, a well-known writing assistive tool that has always been perceived as straddling the line between helpful and harmful for student writing, met our requirements. In particular, the committee was intrigued by the new generative features of Grammarly, which purported to offer stylistic and tonal suggestions for student writings, potentially infringing upon some of the core intended outcomes of undergraduate writing activities: the development of one's voice, critical thinking, and communication skills.

As such, our Grammarly test case was intended to examine AI through the lens of its impact on linguistic diversity and uniqueness, as well as its role in flattening or reducing a student's individualistic voice, style, and communication tendencies. Specifically, we wanted to test the limitations of the AI functions and their recommended corrections (described in the tool as 'correctness') by seeing how it would handle or treat—organizationally, structurally, and tonally—a non-linear stream-of-consciousness text corpus. To do so, we selected publicly available and non-copyrighted excerpts from experimental modernist literature, including Virginia Woolf's "The Waves" and Gertrude Stein's "Sacred Emily."

The demo began with an overview and discussion of Grammarly's interface and AI functions, which offer various settings for manipulating text based on audience, level of formality, domain (i.e., academic, business, casual, etc.), intent (which was still in the beta phase when the committee ran the demonstration), in addition to offering a standardized approach to "correct" writing via a 'quality score' (presented as a value out of 100; see slide below), as well as generated suggestions for 'improving' text [Figure 2, below]. Furthermore, the committee also sought to frame the demonstration and subsequent conversations as the inherent tension between the erasure of individual voice and the empowerment of users looking to adopt and apply appropriate grammatical rules.

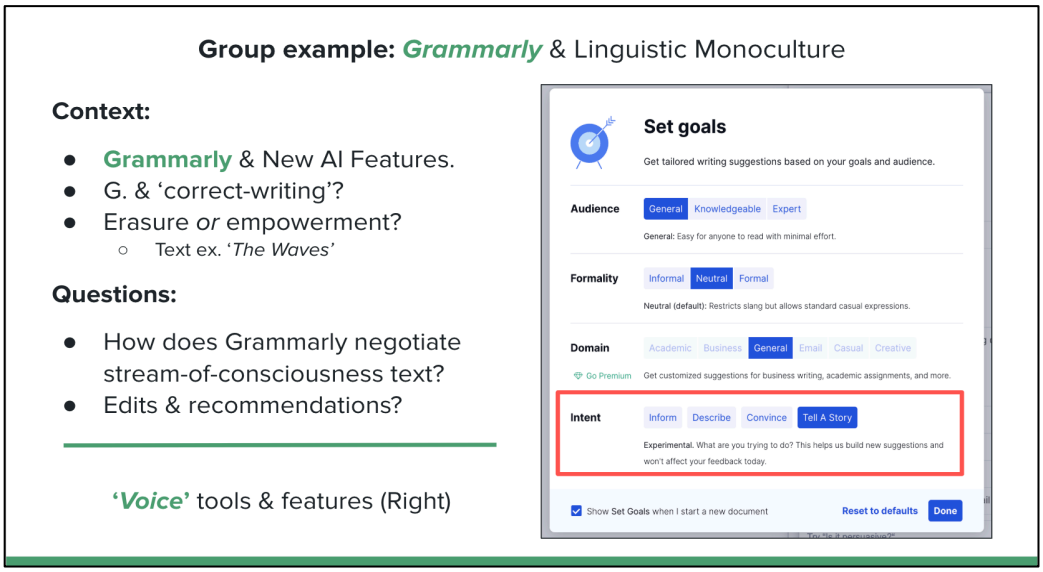

Figure 2. Initial framing of the Grammarly AI use case, as presented to the learning community.

The demonstration continued with an analysis of selected modernist texts [Figures 3-5]. Grammarly assigned low scores (65/100 for Woolf and 47/100 for Stein) and suggested numerous corrections that would fundamentally alter the authors' intentional stylistic choices (see slides below). After several rounds of testing, the experiment

demonstrated how Grammarly failed to recognize or accommodate experimental or unique writing styles but instead attempted to "improve" deliberately unconventional text and translate it into more uniform, standardized forms. This analysis, when discussed with community members, raised crucial questions about whether AI writing tools might inadvertently contribute to a type of linguistic monoculture (or over-application of grammatical rules and expectations) by flattening unique literary voices and discouraging experimental writing styles.

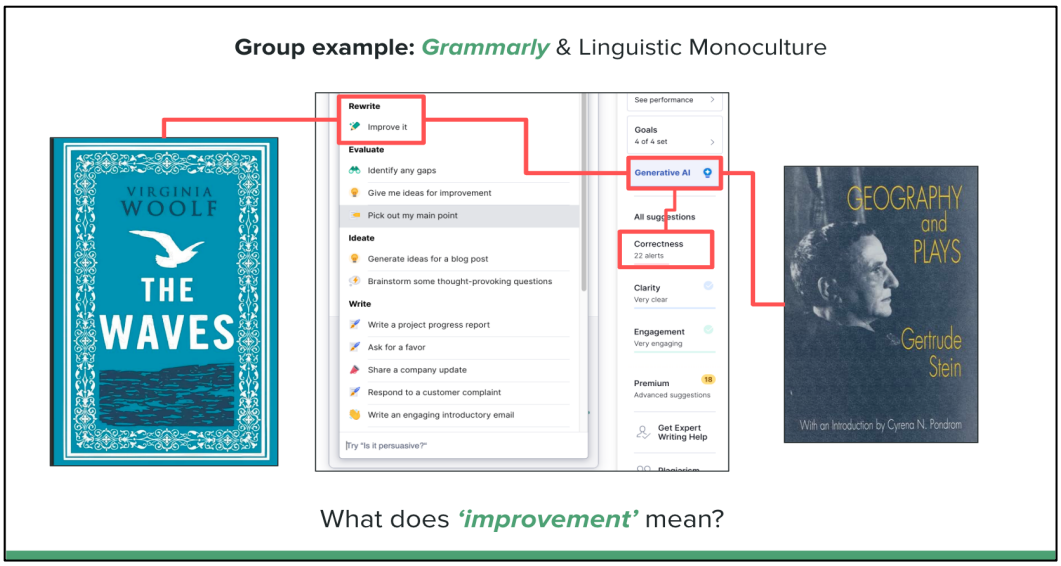

Figure 3. Grammarly AI test cases: V. Woolf and G. Stein

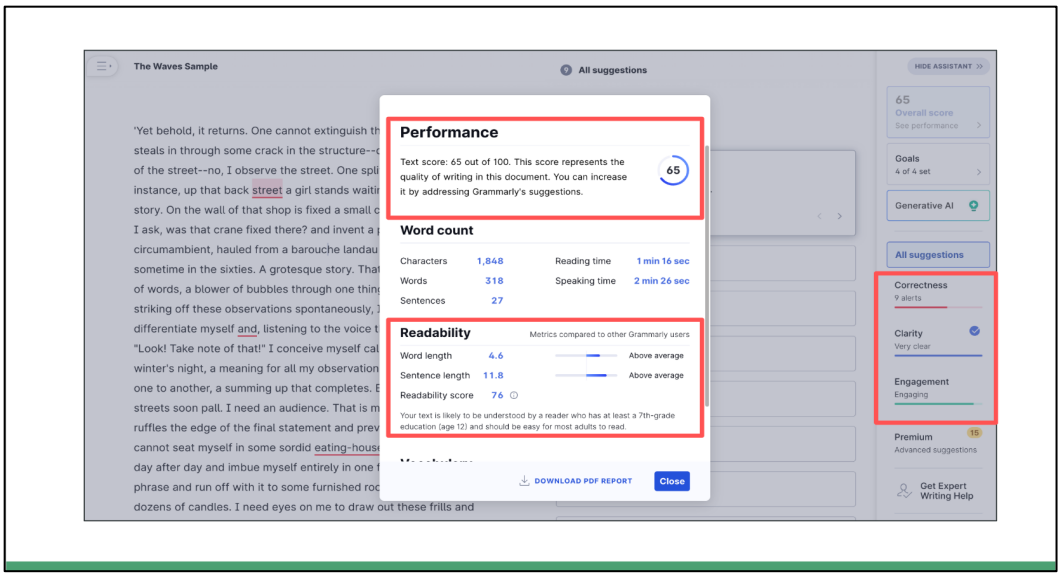

Figure 4. Grammarly AI evaluates stream-of-consciousness text.

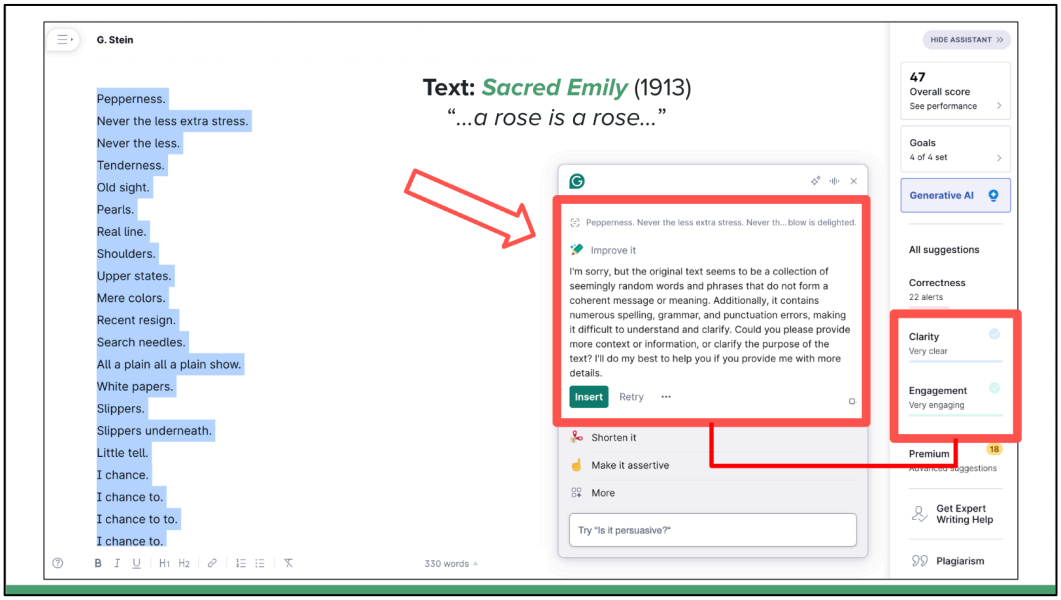

Figure 5. Grammarly AI recommended revisions for clarity and audience engagement.

Proliferation of the Framework and Looking Forward

Throughout the remainder of the programming series in the spring of 2024, the integrated framework became an oft-mentioned feature in conversations as the community encountered new AI technologies, in large part because it provided both a

practical on-ramp and a deeper set of conceptual questions that would be useful to new and seasoned users alike. In the second year of our learning community (academic year 2024-2025) new opportunities to revisit the typology continue to occur, as well as new opportunities to distribute some of the committee's work, including at the course level for students (notably in graduate Computer Science; CSCI 2952X, Research Topics in Self Supervised Learning, presented by Niamh McGuigan and Emily Ferrier) and at the faculty level (in collaboration with the Brown Sheridan Center for Teaching and Learning, presented by Jason Cerrato). Moving forward, the committee intends to redevelop elements of the framework throughout the spring to allow for more granularity and nuance, while maintaining its core features and spirit.

(A special thanks to Niamh, Emily, and Cass!)

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