International Journal *of* Designs for Learning
2025 | Volume 16, Issue 2 | Pages 289-305

DESIGNING FOR AI LITERACY: A MODULAR, GENAI-INTEGRATED COURSE FOR INTERDISCIPLINARY GRADUATE STUDENTS IN EDUCATION

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As educators, we are witnessing and experiencing the rapid proliferation and development of generative artificial intelligence (GenAI) tools, which are raising urgent questions about authorship, ethics, and instruction in higher education (cf. Eaton, 2023). Amid uncertainty and reactive policy responses, we designed a graduate seminar titled *"Generative AI—Emerging Implications for Teaching, Learning, Language, and Research: ChatGPT,"* offered in Spring 2024 at the University of Rochester. We aimed to immerse students in GenAI environments and offer opportunities to explore both the "what" and the "how" of generative AI, including tools such as ChatGPT and their implications for teaching, learning, language, and research across K–12 and higher education contexts. Following extensive discussions with department leadership, faculty members, and prospective graduate students, we developed this course between February 2023 and January 2024 and implemented it with students during the Spring 2024 semester.

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A publication of the Association for Educational Communications & Technology (AECT), published by Indiana University Libraries Journals.

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https://doi.org/10.14434/ijdl.v16i2.42081

INTRODUCTION

As educators, we are witnessing and experiencing the rapid proliferation and development of generative artificial intelligence (GenAI) tools, which are raising urgent questions about authorship, ethics, and instruction in higher education (cf. Eaton, 2023). Amid uncertainty and reactive policy responses, we designed a graduate seminar titled "Generative AI—Emerging Implications for Teaching, Learning, Language, and Research: ChatGPT," offered in Spring 2024 at the University of Rochester. Through this course, we aimed to engage graduate students in critically and actively exploring these evolving questions. We began the course development in Spring 2023 in collaboration with higher education leadership, graduate students, and faculty. We continued through multiple rounds of revision, informed by graduate students who would take the course, insights from faculty classroom experiences, and the rapidly evolving and emerging field of GenAI. Throughout the process, we carefully considered the broader impact of GenAI on teaching, learning, and language research.

WHY WE THINK WHAT WE DESIGNED IS COMPELLING

Course Design Goals and Rationale

In this design case, we document and critically examine the pedagogical choices, technological integrations, and institutional considerations that shaped the creation of the course, Generative AI—Emerging Implications for Teaching, Learning, Language, and Research: ChatGPT. While institutional reactions to GenAI focus on plagiarism and policy, they often overlook the need for pedagogical guidance. In both K–12 and higher education teacher preparation programs, it is crucial to consider the instructional and developmental guidance necessary for effectively incorporating GenAI into teaching practice. We designed this course to help future educators integrate GenAI into practical domains such as teaching and learning, assessment, and evaluation.

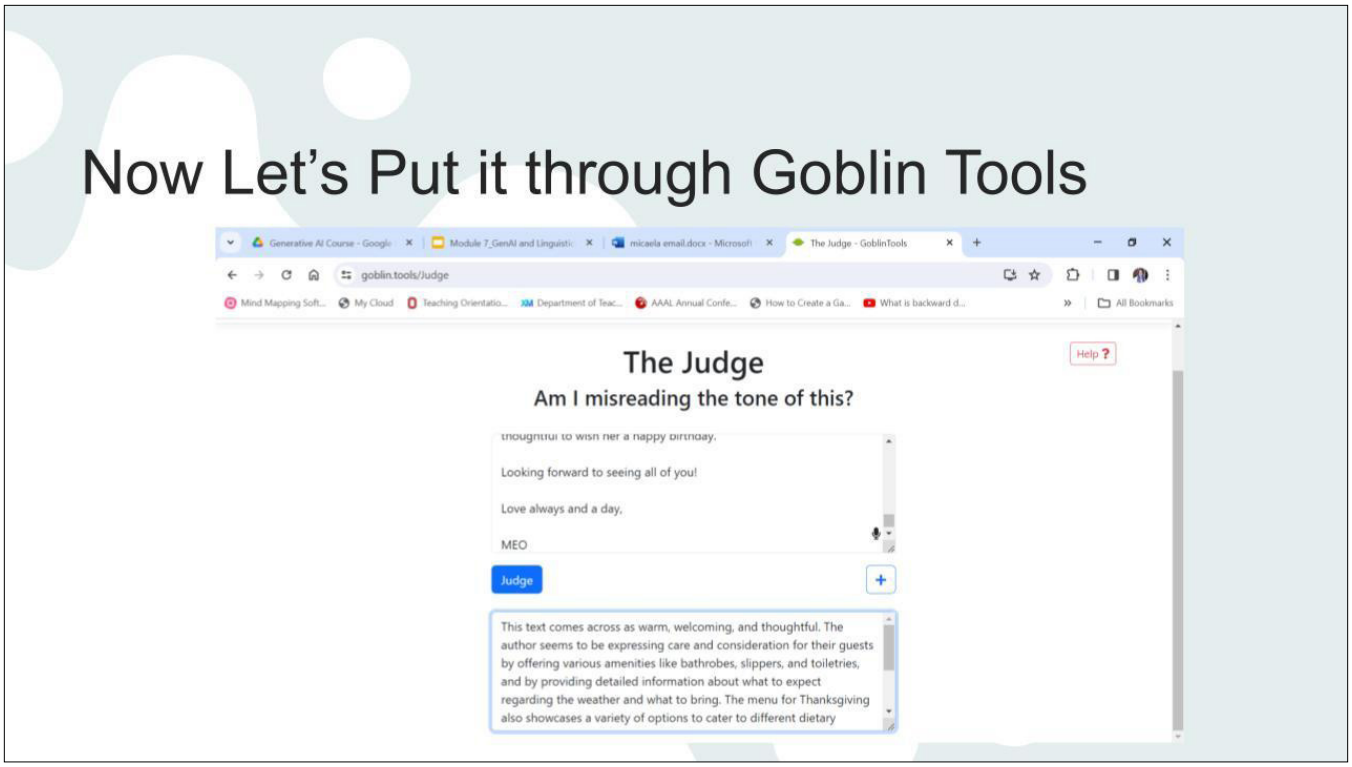

FIGURE 1. GenAI and Linguistics Module Slide.

We considered how this integration should align with the evolving needs of society and the changing educational landscape, ensuring that students not only gain technical proficiency but also develop critical and ethical perspectives on AI use, as well as the skills essential for navigating the present and future of education.

We intentionally designed this course to equip graduate students with the knowledge, critical thinking skills, and hands-on experience needed to navigate and experiment with the dynamic and evolving landscape of generative artificial intelligence (GenAI). We aimed to immerse students in GenAI environments and offer opportunities to explore both the "what" and the "how" of generative AI, including tools such as ChatGPT and their implications for teaching, learning, language, and research across K–12 and higher education contexts. Following extensive discussions with department leadership, faculty members, and prospective graduate students, we developed this course between February 2023 and January 2024 and implemented it with students during the Spring 2024 semester.

Structure, Implementation, and Pedagogical Progression

Given the centrality of GenAI in the course description and aims, we used GenAI throughout the course. Specifically, in the early development stages, Nicole asked ChatGPT, "What topics should be included in a course on Generative AI for international graduate students?" She revised this list as a brainstorming document when presenting the topics and course sequence to education faculty and graduate students in the spring of 2023. She used the feedback to continually revise the course and topics before implementing it with graduate students in the spring of 2024. During the course, Nicole and the graduate students, including Jialin, used GenAI (e.g., Claude, ChatGPT, Padlet, stable diffusion, Goblin Tools, and others) to reflect on the content, readings, and implications of each topic.

We used different tools to apply the content for the week (full syllabus is included as Appendix A). For example, in the module on GenAI and Linguistics, Nicole, the faculty adviser, formally introduced the framework for Systemic Functional Linguistics (Halliday, 1994; Halliday & Matthiessen, 2004; Martin, 2009) as a frame to examine what ideas are expressed (the field), to whom (tenor), and using what medium (mode). She first guided the graduate students through an analysis of an email she received from her sister planning the meal for a holiday dinner. After they discussed the formal tenor of the email, they used Goblin Tools, The Judge, to examine the tone of the email. The class then compared the analysis via SFL and a GenAI tool to determine if the tool was viable, how SFL could augment interpretation by the tool, and implications for pedagogy and research. A screenshot of the slide used in this conversation is below as Figure 1. During each module, we explored content and theory both with and without GenAI and then compared the experiences. We used a constant comparative approach (Glaser & Strauss, 1967) to reflect on "what" and "how" different GenAI

tools impacted teaching, learning, and researching, and this approach helped us to refine the questions that we posed to different tools and contextualize them to the teaching and learning context and audience in which they would be used.

Given that our audience for this course consisted of graduate students in the field of education, including both in-service teachers and doctoral students specializing in areas such as Teaching and Curriculum and TESOL, we aimed to design a learning experience responsive to a wide range of academic and professional backgrounds. Additionally, the students were at different stages of their academic journeys, such as first- and second-year Ph.D. students and second-year

COURSE OBJECTIVES	OUTCOMES
Develop an understanding of generative AI.	**Generative AI journal** (Students will utilize at least 3 of the following AI platforms and write about their experiences—what questions they asked, what the ease of use was, how the platform could be used): • GPT-3 Playground • ChatGPT • NovaAI • Deep Dream Generator • QuillBot • Sketch RNN / DALL·E 2 • Sudo Write • Character AI • Scribble Diffusion • Stable Diffusion • Jasper Chat • Google Bard • DALL·E 2 • Lumen5 • SunoAI • OpenAI Codex • Polycoder • Gemini • Synthesia • HeyGen • Google Labs Any new GenAI tool that emerges this semester or intrigues you
Deconstruct the current debate around ChatGPT.	**GenAI video** (Synthesia, HeyGen) analyzing the ChatGPT debate (What is ChatGPT? What are its perceived impacts? How is higher education responding?)
Discuss implications of generative AI, including ChatGPT, for pedagogy and research.	**Presentation & discussion of related literature** (pairs select 2–3 articles since 2020 on a focused topic within the broader category of generative AI). Students present the literature to the class and lead the discussion. These readings become required class readings.
Critique a specific generative AI platform in terms of pedagogy	**Write and submit an app review** to Calico Journal, CALL, TESOL Journal, AAALGrads, or any journal that accepts technology tool reviews.
Apply pedagogical understanding or research design to ChatGPT	**Research proposal** to investigate GenAI's impact on teaching, learning, writing, or language, OR the **development of an innovative unit** utilizing GenAI.
Present innovations in research or pedagogy	**Virtual presentation of the research proposal or innovative unit.**

TABLE 1. Course Objectives and Student Outcomes.

master's students, and they represented diverse international contexts like China, the United States, Brazil, and Bangladesh. These international perspectives often bring distinct perspectives and express themselves in varied ways, enriching the learning environment with novel insights (Van Bragt et al., 2007). However, we also navigated several challenges during the design and implementation process, particularly in addressing linguistic and cultural differences that emerged in students' writing and speaking tasks. These differences raised important pedagogical questions about how to best deliver content and foster meaningful participation (Agostinelli, 2021). To respond to these challenges, we drew on multiple teaching and language theories, such as translanguaging design (García et al., 2017) and multimodality theory (Kress, 2000, 2009), to inform the course plan, learning activities, objectives, and interaction style of the course, framing all participants as vital contributors to the collective understanding of GenAI and its uses in teaching, learning, and research.

We also considered the evolving role of educators, who go beyond serving merely as content experts. Instructors also act as moral and intellectual guides whose influence shapes students' academic and professional development within the scholarly community (Welikala & Watkins, 2008). In alignment with this perspective, we structured the course into ten modules that progressed from foundational to intermediate and advanced levels of understanding. To promote inclusivity and engagement, we incorporated multiple pedagogical frameworks, including Universal Design for Learning (UDL) and multimodal approaches, ensuring that students could interact with the material through diverse platforms and learning modalities. Through this structure, we aimed to foster both conceptual depth and practical application, enabling students to develop a holistic understanding of generative AI in education. We aimed to develop students' understanding of generative AI tools and enable them to apply this knowledge in pedagogical and future research careers. In addition, students were encouraged to critically engage with the benefits, ethical implications, and potential challenges of using AI in educational contexts.

Each week, students engaged in approximately 6–9 hours of coursework, including reading, writing, reflective journaling, experimentation with AI tools, and multimedia engagement. Given that the course was taught in 2024, we selected the instructional materials based on their empirical rigor, relevance to real-world educational cases, and citation-rich content to support further inquiry. Students were also provided with space for self-directed learning and reflection to deepen their understanding of GenAI's role in education, and were offered the opportunity to add readings and activities during their week as the discussion leader.

The expected outcomes of the course (see Table 1) included enabling students to effectively use at least three generative AI tools. In addition, students are expected to demonstrate their practical understanding through reflective practices. Reflective thinking is critical for identifying, analyzing, and solving the complex challenges that arise in educational contexts. As Dewey (1938) defines it, reflection involves "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends" (p. 9). This reflective process is essential in teacher preparation (Spalding & Wilson, 2022).

Additionally, we designed this course to support students as early-stage scholars in the field of education and assist them in cultivating foundational academic skills, including scholarly communication and engagement with research publications. To this end, we incorporated structured opportunities for students to explore the scholarly landscape of GenAI through guided literature presentations. Specifically, students worked in pairs to select 2–3 peer-reviewed articles published since 2020, each focusing on a specific subtopic within the broader domain of generative AI, to present these articles to the class and lead critical discussions. These selected readings also served as the additional required texts for that week, helping foster a collaborative learning environment and encouraging students to develop skills in academic synthesis, critique, and discussion facilitation. In addition, the course supported students' entry into academic conference participation and publications. One of the assignments of the course required students to compose a GenAI tech tool review in which they utilized a GenAI tool of their choice and evaluated its potential, uses, biases, and recommendations. Students then submitted their review to educational tech journals or journals within their field of study. Students also presented their tech tools at a colloquium in the middle of the semester for a broader audience. In this way, students were apprenticed into academic writing, publishing, and presenting within the field of GenAI.

COURSE STRUCTURE AND STUDENTS' EXPERIENCE

We organized this course into ten sequential modules that scaffold graduate students' understanding of generative artificial intelligence (GenAI) and its multifaceted implications in education, language, and research. The course began with Module 1, "What is GenAI? What Does it Mean for Me?", which introduced foundational concepts and situated GenAI within current debates surrounding tools such as ChatGPT. This set the stage for Module 2, which focused on "GenAI and Language Learning," exploring the use of AI in second language acquisition and multilingual educational contexts. Module 3, "GenAI and Writing," examined the role of GenAI in supporting and complicating student writing processes, including concerns around creativity, authorship, and plagiarism.

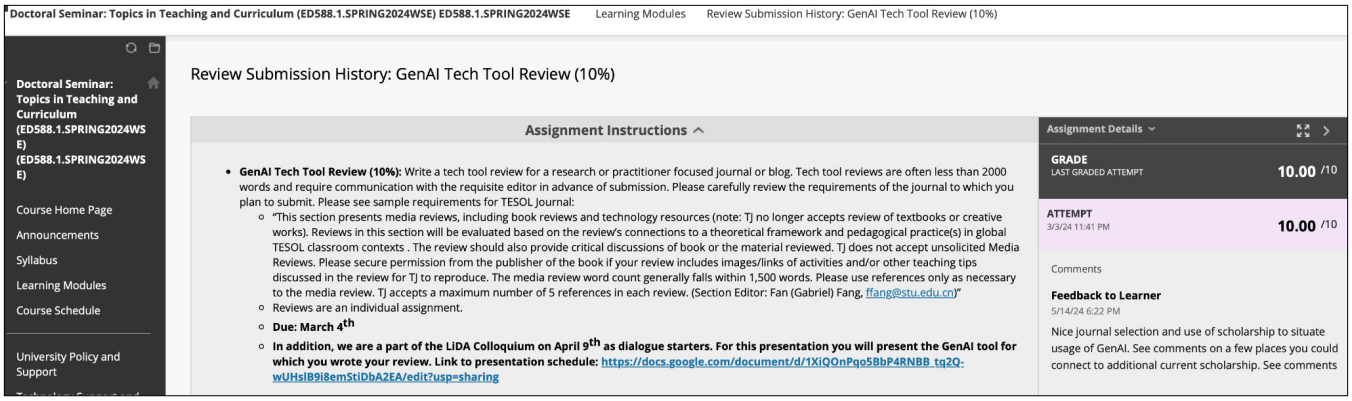

FIGURE 2. Course Assignments—Tech Tool Review.

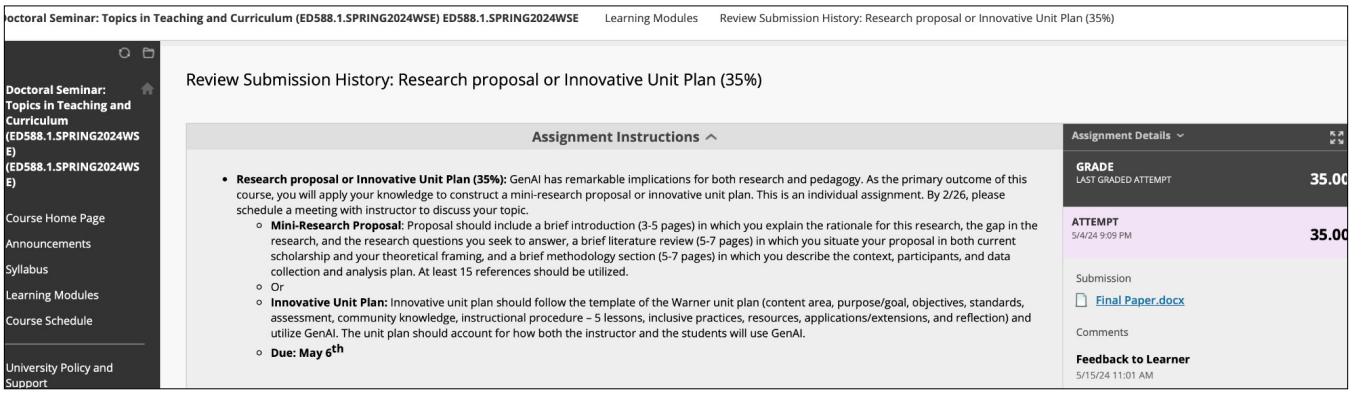

FIGURE 3. Course Assignments—Unit Plan.

As the course progressed, students engaged with Module 4, "GenAI and Ethics," where they examined ethical considerations such as transparency, bias, and data privacy. Module 5, "GenAI and Language Models," took a more technical turn by unpacking how large language models (LLMs) function and the implications of their design for educational applications. In Module 6, "GenAI and Learning," students explored how AI reshapes pedagogical practices, offering opportunities for personalized learning and assessment. Module 7, "GenAI and Linguistics," brought attention to the linguistic patterns embedded in AI systems and how these interact with human communication, especially in cross-cultural contexts.

The final modules of the course broadened the inquiry into critical and future-oriented themes. Module 8, "GenAI and Motivation," explored how generative AI tools can shape student motivation, support learner autonomy, and influence engagement in both online and face-to-face classroom environments. Module 9, "GenAI and Cultural/Linguistic Bias," addressed pressing issues of equity and social justice, prompting students to critically examine how GenAI may reinforce or challenge dominant cultural narratives and linguistic hierarchies. Module 10, "GenAI and What's Next?", served as a culminating reflection point, encouraging students to anticipate the evolving landscape of AI in education and consider their roles as future scholars and practitioners in AI-mediated learning contexts.

To support these explorations, we incorporated a range of thoughtfully designed assignments that align with each module. As illustrated in Figure 2: Course Assignment – Tech Tool Review and Figure 3: Course Assignment – Unit Plan, there are targeted tasks in each module, such as reflections, tool reviews, and unit planning, to facilitate early scholarly development and practical skill building. Additionally, the course collaborated with the University study center to extend learning beyond the classroom. Through this partnership, students had opportunities to present their work to broader audiences, including faculty and educators from local K–12 school districts, fostering critical dialogue and professional growth through community engagement.

In recognition of the evolving nature of AI and the need for students to engage with current developments, the course also integrated a curated selection of external resources to support extended learning. Beyond the assigned readings, we encouraged students to explore recent reports, scholarly articles, and global case studies that reflect the dynamic landscape of generative AI in education. To enhance accessibility and breadth of content, the course provided links to reputable teaching and learning platforms, including

AI-focused educational resources from institutions such as MIT and Stanford University. These supplementary materials offered students up-to-date perspectives, technical knowledge, and practical applications, enriching their understanding of GenAI beyond the classroom context. We have included the full course schedule with the modules and readings in Appendix A.

DESCRIBING THE DESIGN

Design Team and Influences

A team of education faculty and doctoral researchers with expertise in curriculum design, educational technology, applied linguistics, and equity-focused pedagogy designed this course. Each team member played a distinct role in shaping the course: Nicole, the faculty designer, led the overall structure and objectives; doctoral researchers and students, including Jialin, contributed to the integration of GenAI tools, multilingual practices, and assessment design, and provided feedback that informed subsequent revisions. Together, we drew from both theoretical and practitioner-oriented perspectives, informed by scholarship on multiliteracies (Kalantzis & Cope, 2025), translanguaging pedagogy (García, 2008; Li, 2011), and Universal Design for Learning (CAST, 2024). We treated these frameworks not as abstract ideals but as design anchors that guided specific pedagogical decisions about assignments, facilitation, and assessment.

Design Process

We began the design process one year before the course launched in spring 2024 and utilized a series of iterative and dialogic cycles. Particularly relevant to the course design and enactment were the principles of pedagogical humility (Freire, 1968; Giroux, 2010; Waks, 2018), which state that "dialogue cannot exist without humility" (Freire, 1968, p. 78) and that both teachers and students teach and learn together through dialogue. For the design team, this conceptualization of learning and teaching was paramount to the design process. Nicole drafted initial learning objectives in collaboration with ChatGPT. After revising the objectives and course topics, she drafted the assignment list and descriptions in consultation with doctoral researchers and based on student and faculty feedback. Early design meetings focused on how to scaffold AI literacy while honoring students' linguistic and cultural diversity. For example, the team decided to include flexible assignment formats, such as multimodal reflections, AI-assisted lesson plans, and multilingual project options to operationalize the principles of UDL and translanguaging in practice. During the design process, we also used GenAI tools to prototype and refine course materials. We tested platforms such as ChatGPT, Claude, and Curipod to explore how they could support students' writing, lesson planning, and critical reflection. To anticipate the kinds of responses students might encounter, we experimented with prompts such as "*Explain this concept as if you were teaching science to 5th-grade ESL students in a high school classroom*" and "*Generate examples of ethical dilemmas in AI-assisted assessment.*" Through this experimentation, we identified both the pedagogical affordances and the limitations of these tools. At times, the tools produced inaccurate information or culturally biased content, which prompted us to design classroom activities that directly addressed these issues through critical evaluation, discussion, and revision exercises.

Institutional values around digital equity and innovation also influenced key decisions. During the spring 2023 design

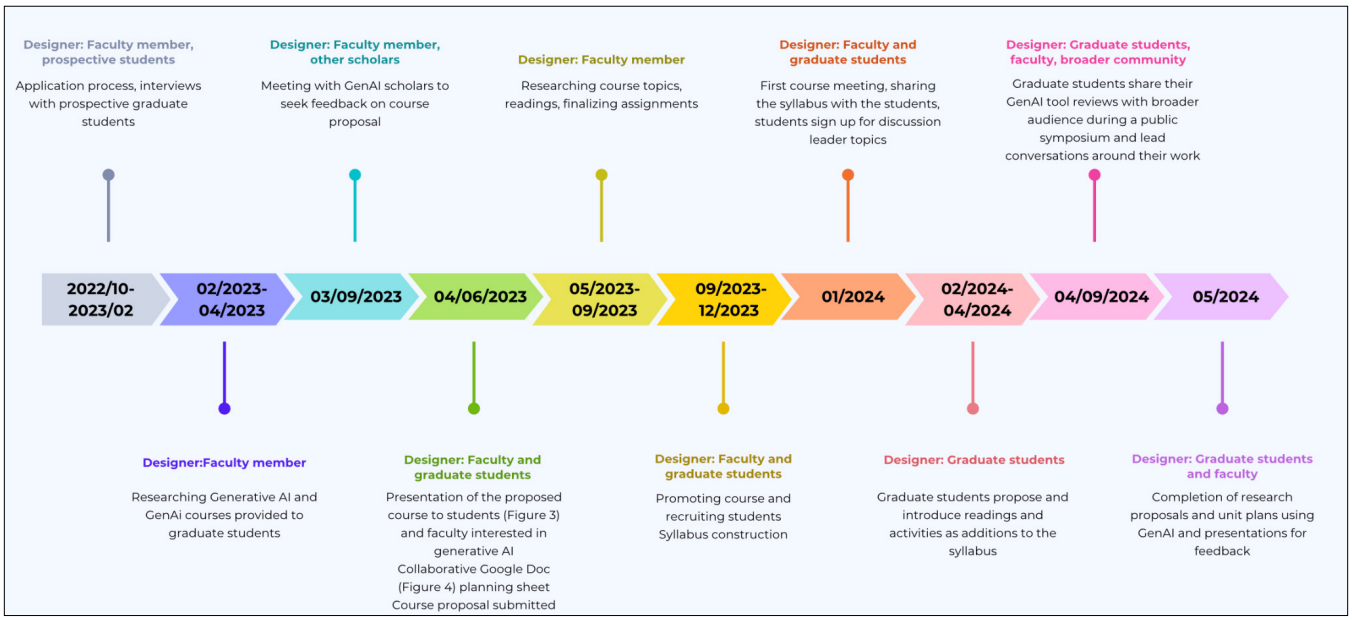

FIGURE 4. Course Development Timeline.

FIGURE 5. Proposed Generative AI Course Presentation (April 6, 2023).

phase, Nicole noticed growing interest among prospective language teachers in using GenAI for teaching and research. One prospective student detailed their five-year goal of having a website, YouTube channel, or app-based learning program using generative AI tools to teach language in underrepresented locations in their home country. This feedback prompted the team to include a module on AI for equity and access, which became a pivotal component of the course.

Our design team continually refined each decision through structured feedback loops with faculty, doctoral students, and instructional designers. For instance, during an April 2023 presentation to the broader school of education community (see Figure 5), we introduced the draft syllabus, reading list, and assignments. Specifically, we invited faculty, doctoral students, and staff to contribute ideas by scanning a QR code that linked to a shared Google document. Participants provided feedback on topics, readings, and GenAI tools, and several suggestions were directly implemented. The most significant takeaway from this co-design process was our collective embrace of pedagogical humility (Freire, 1968; Giroux, 2010; Waks, 2018), which framed both faculty and students as co-learners and co-designers. Figure 4 summarizes the year-long process of course development that progressed.

Graduate students appreciated being given agency in selecting GenAI tools and readings relevant to their disciplinary and cultural contexts. This collaborative decision-making process (see Figure 6) strengthened the course's inclusivity and ensured that design choices reflected both theoretical commitments and lived student experiences. While these decisions enriched the course, they also required compromise. Balancing academic rigor with accessibility demanded continual negotiation, particularly when institutional requirements (such as English-only submissions) conflicted with our multilingual design goals.

However, not all of our design ideas worked as intended. Several GenAI tools, including Curipod and Canva Magic Write, updated or changed their features during the semester, causing disruptions to planned assignments. For instance, Curipod, which we initially selected for multimodal storytelling, introduced a paywall mid-semester, forcing us to adapt by shifting to open-access alternatives such as Padlet and Google Slides while revising assignment instructions. In other cases, prompts we expected to generate discussions instead produced overly simplified or repetitive outputs, particularly in ChatGPT and Claude, which reminded us of the need to guide students in prompt design and model interpretation. These challenges became valuable learning moments for both instructors and students, reinforcing flexibility, transparency, and co-learning as essential elements of teaching with rapidly evolving technologies.

Finally, the design process was neither linear nor purely theoretical. Each milestone, from early drafts to community feedback, reflected ongoing negotiation between institutional constraints, evolving GenAI technologies, and the

Generative AI - Emerging Implications for Teaching, Learning, Language, and Research:
ChatGPT - Suggestions

What is interesting about the course?

- I liked how the students could shape the syllabus
- Using ChatGPT to learn Computer programing include AI knowledge in K-12 to solve the problem of insufficient CS teachers in K-12
-
-
- Critique a specific generative AI platform in terms of pedagogy
- Which learn/teaching theories would be covered?
- Research oriented.
- Get to see, try, touch the product AI created. I also really liked the focusing effect of an app critique - requires students to have a place to critique from - leads me to a wondering/topic I'd like see included (or pie in the sky) developed
- It's contemporary
- Potential for major impact on K-12 and HE makes it of interest
- Collaborative approach to designing the course - makes sense because the field is moving so rapidly
- Students are highly involved, both in the course and in the development of the syllabus
- The topic is very current and interesting project of reviewing generative AI applications..

What topics would you like to see included?

- Potential issues to use ChatGPT
- Related to the critique assignment - what frameworks will be used (I know ones focused on pedagogy) - but are there preliminary frameworks that have already provided ways to make sense of AI/language models - room to develop, but big lift and different kind of thinking
- Ethics, copyright issues
- Projects that are student generated and developed - and if everyone in the class came up with a different project, we would all learn from those AND these would give insights into applications in practice
- Are you going to cover the algorithm part?
- The main focus is the generative AI (NLP parts of AI), will you also introduce students the general concepts of AI and AI ethics
- Leverage the generative AI application in K-12

FIGURE 6. Collaborative Planning Document (April 9, 2023).

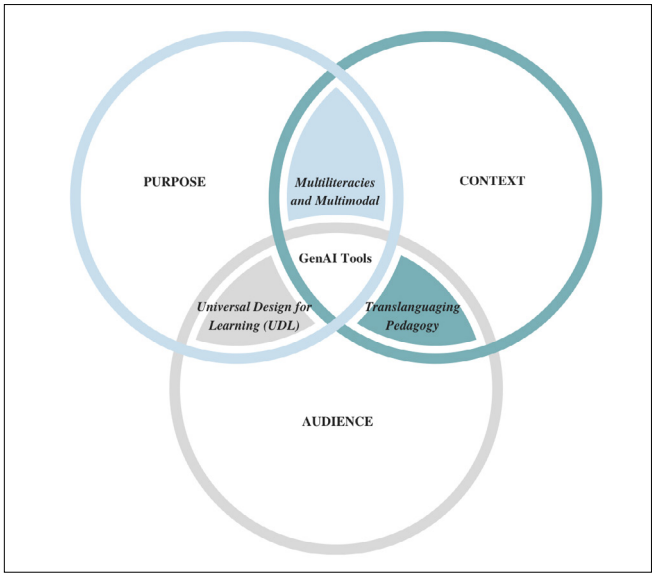

FIGURE 7. Centered Around Purpose, Context, and Audience.

team's commitment to ethical, inclusive pedagogy. This process not only shaped the course structure but also served as a living example of how educators can design responsively in an era of rapid technological and cultural change.

Describing the Design and Teaching through Theoretical Frameworks

We built the instructional model for this course around three key dimensions: purpose, context, and audience, adapted from systemic functional linguistics (Halliday & Matthiessen, 2013), as shown in Figure 7. Through this model, we aimed to help graduate students actively use generative AI (GenAI) tools, apply them in academic work, and critically integrate them into their future teaching and professional practice.

We believe educators should critically engage with technological tools rather than accepting them as inherently beneficial. Instead, we must approach GenAI with critical awareness, positioning these tools as mediators of meaning rather than determinants of value. This pedagogical stance emphasizes the development of students' critical thinking about the affordances, limitations, and ethical implications of AI in education.

Our design framework highlights the importance of clarifying instructional purpose, situating learning within a relevant sociocultural context, and identifying the intended audience, whether learners, peers, or broader communities. From there, we incorporated complementary theoretical models that speak to diverse learner needs and epistemologies: multiliteracies and multimodal design, universal design for learning (UDL), and translanguaging pedagogy. Each model contributed to a more inclusive, flexible, and culturally sustaining approach to GenAI integration and pedagogy more broadly.

At the center of the diagram, GenAI tools occupy the intersection of these pedagogies, not as a separate innovation, but as a deeply embedded component of the teaching and learning process. This layered model reflects an ecosystem in which we guide students to apply, question, and transform GenAI through pedagogical lenses that foreground equity, representation, and agency.

As shown in Figure 8, when integrating GenAI into educational settings, we encouraged students to consider critical

questions related to the field, tenor, and mode of communication (Halliday & Matthiessen, 2013). These questions prompt learners to think beyond tool usage by examining the relationship between themselves and their audience (tenor), the content or subject matter they are addressing (field), and the format or delivery method of their message (mode). For instance, students need to reflect on whether they are writing in a formal or informal register, whether their relationship with the audience is expert-to-novice or peer-based, and whether their text will be spoken-like or written-like. Such considerations foster a more intentional and context-aware use of GenAI, supporting both effective communication and ethical engagement in digital learning environments. They are also integral to generating effective prompts for GenAI tools to support the desired instructional objectives or outcomes.

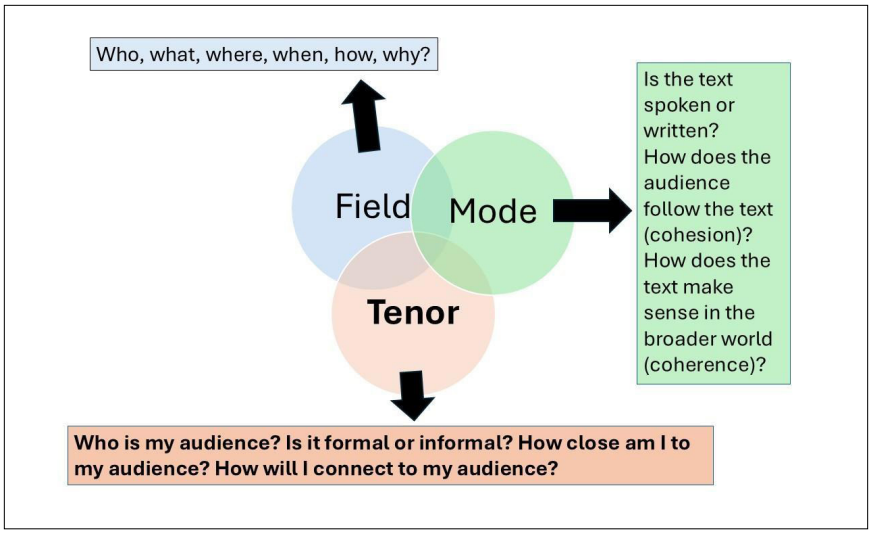

FIGURE 8. Questions to consider when integrating GenAI into the field.

STUDENTS' UNCERTAINTY, CONFUSION, AND EXPECTATIONS

Students entering the course brought varied levels of familiarity with GenAI tools, and many expressed initial uncertainty about how AI intersects with academic writing, authorship, and integrity. For some international students, this uncertainty was compounded by linguistic and cultural differences and concerns over navigating U.S. academic norms regarding AI usage. Others were eager to explore AI tools but unsure how to apply them responsibly in teaching and research contexts.

Expectations also varied: some students hoped to gain technical fluency and practical skills, while others sought critical frameworks to evaluate AI's social and ethical dimensions. These uncertainties and expectations informed the course design and our aims to provide clear conceptual foundations, scaffolded exploration, and structured reflection. We intentionally fostered a learning environment that cultivated a sense of safety and experimentation, allowing students to surface questions, engage in critical dialogue, and co-construct understanding in a rapidly evolving technological landscape. We also approached teaching and learning with a sense of pedagogical humility that offered everyone a chance to both teach and learn.

Various Modalities of Expressing Design

In our course design, we drew from several teaching and learning theories that informed specific design decisions aimed at creating an inclusive, flexible, and critically engaged learning environment. We worked at the intersection of Multiliteracies and multimodal design, Universal Design for Learning (UDL), Multimodal Learning Analytics, and Translanguaging Pedagogy to develop both the conceptual foundation and a practical guide for structuring activities, materials, and assessments. Rather than referencing these theories abstractly, we used them to orient the design process and guide pedagogical choices that aligned with our goals for equity, accessibility, and ethical AI engagement.

Multiliteracies and Multimodal Design

We adopted the multiliteracies framework (Kress, 2000, 2009; Kalantzis & Cope, 2025) because we believe it aligns with our pedagogical goal of expanding students' expressive capacities beyond text-based communication. As educators working across linguistically and culturally diverse contexts, we believed this theory emphasized multimodal meaning-making and the recognition of learners' varied semiotic resources, and allowed students to communicate through visual, spatial, auditory, and linguistic modes rather than relying solely on traditional written formats. For example, students created GenAI-generated dialogues, interactive storyboards, and AI-assisted lesson plans that blended text, image, and sound to explore GenAI's pedagogical and ethical dimensions.

However, the implementation of multiliteracies pedagogy is not without challenges. As Scherer, Siddiq, and Tondeur's (2019) study shows, educators need to navigate increasingly complex decisions when selecting pedagogical strategies that support meaningful literacy engagement in technology-enhanced learning environments. While some educators

readily embrace digital tools and multimodal resources, others remain committed to traditional print-based approaches. This tension between advancing digital literacies and retaining conventional models continues to complicate instructional transitions (Santori & Smith, 2018; Zhang et al., 2019; Liang & Lim, 2020; Ang & Tan, 2020). In addition, we found that engaging with multimodal GenAI tools revealed additional linguistic and cultural biases that are present in the language models used (Jenks, 2025).

To address these pedagogical tensions and better support students' development, we strategically integrated both internal and external resources. Internally, institutional partnerships, such as those with the university's study center, enabled students to apply GenAI tools in authentic academic and professional contexts, enhancing their scholarly inquiry and career readiness. Externally, the course incorporated contemporary journal publications, global policy discussions, and open-access digital learning platforms (e.g., MIT and Stanford resources) to expose students to emerging trends and critical debates surrounding GenAI across K–12 and higher education. We also approached the use of GenAI tools to support teaching, learning, and researching from a critical perspective and questioned the authenticity, reliability, and cultural representations of GenAI outputs. Specifically, we used MIT's RAISE initiative (responsible AI for Social Empowerment and Education) playground to explore ways to teach with GenAI in different learning contexts. This blended resource strategy supported students in navigating the theoretical, practical, and ethical dimensions of AI-mediated learning.

Universal Design for Learning (UDL)

We also selected the UDL principles (CAST, 2024; Hartmann, 2015) as our guideline to ensure all students from different backgrounds and cultures could have access to, engage with, and understand course activities and concepts. We believe that the Universal Design for Learning (UDL) framework can support equitable and inclusive learning experiences. Recognizing learner variability as an asset, we designed assignments that incorporated multiple modes of engagement, expression, and representation. Guided by UDL, we encouraged students to submit reflections in diverse formats, such as video essays, infographics, or blog posts, so they could draw on their individual strengths while engaging critically with GenAI ethics and pedagogy.

Importantly, within the UDL framework, we noticed an emphasis on multiple means of engagement through student choice and interests. Therefore, we encouraged students to choose GenAI platforms relevant to their disciplines, for example, Curipod for educators and ChatGPT for general research tasks, to make learning both personalized and contextually meaningful. By emphasizing agency and accessibility, we reinforced our design commitment to centering students and their perspectives.

Translanguaging Pedagogy

This class cohort was linguistically and culturally diverse, with students from Bangladesh, Brazil, China, and the United States. To best leverage the personal histories and languages of the students, we enacted translanguaging pedagogy (García et al., 2017) as both a design philosophy and a pedagogical strategy. With this theoretical stance, we encouraged multilingual submissions, promoted translanguaging in discussions, and integrated comparative tasks across languages. We also embraced both the multilingual and multimodal framing of translanguaging (Li, 2018) to showcase the ways in which image, video, and language work together to convey information to students.

We used Cummins' (2019) understanding of students' linguistic repertoires as assets and designed collaborative activities where students examined GenAI outputs in multiple languages to identify cultural and linguistic biases. We grounded these design decisions in Li's (2011) concept of translanguaging spaces, which guided and inspired us to frame classrooms as spaces where meaning could emerge through co-constructed multilingual, multimodal, and multisemiotic resources. This collaborative approach transformed the classroom into an inclusive learning community that validated students' identities while deepening their critical awareness of AI's English-centric limitations.

Multimodal Learning Analytics

We incorporated research on multimodal learning analytics (MMLA) (Blikstein, 2013), as it aligns with our view of learning as an embodied and performative process rather than a static outcome. We sought to develop open-ended, creation-based inquiry learning activities that meaningfully represented students' cognitive and creative processes. Blikstein's work motivated us to design flexible, production-oriented assignments that encouraged students to demonstrate understanding through active creation and iterative exploration instead of predetermined responses.

To put this into practice, we asked students to document their interactions with GenAI through multimodal artifacts such as screen recordings, reflective journals, and discussion transcripts. These artifacts helped us trace and understand how students learned through experimentation, dialogue, and iteration, mirroring the dynamic nature of AI-supported learning. In the future, we plan to incorporate MMLA-informed analytic tools to more systematically capture and analyze engagement across modalities, deepening our understanding of how learners think, create, and reflect through multimodal processes.

OBSERVABLE OUTCOMES

Learner's Experiences

Student reflections across the course indicated significant growth in both technical literacy and critical consciousness around AI. Students approached the tools with varying degrees of curiosity and skepticism, but over time, their reflections deepened into more examinations of GenAI's role in educational design. This progress was evident in students' journals, video projects, and tool reviews, where questions about equity, identity, linguistic diversity, and authorship featured prominently.

Several student projects were accepted for presentations at academic conferences, including the NYS TESOL Conference 2024, AECT 2024, AERA 2025, and the University's Colloquium (see Figure 9). Multiple students also submitted their technology reviews to peer-reviewed journals and practitioner platforms.

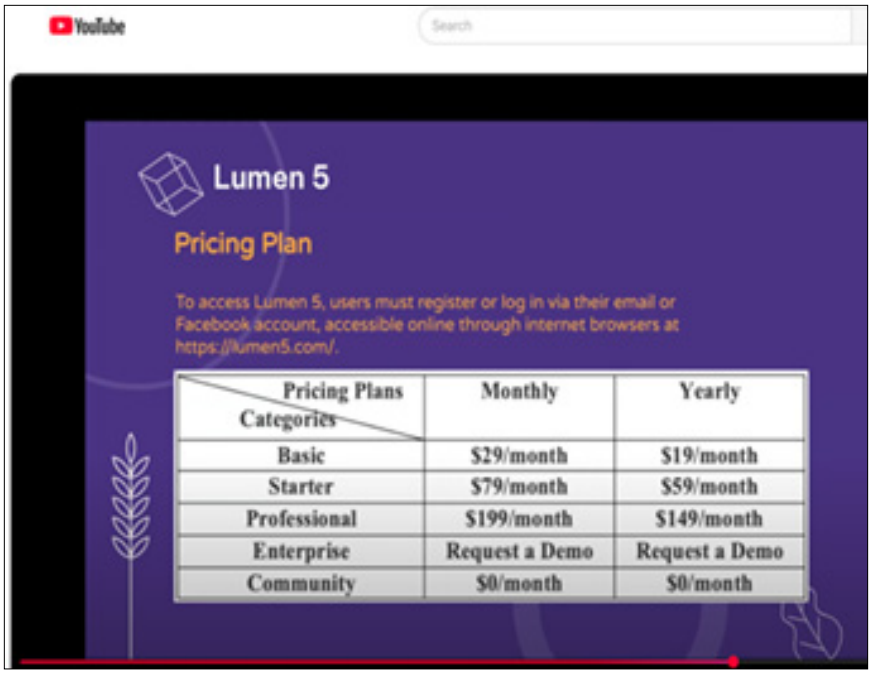

FIGURE 9. Digital Literacy Colloquium Series: Spring 24 Students Presentation of GenAI Tools.

In designing this course, we also developed a pedagogical model for integrating GenAI into teacher education that foregrounds critical reflection, multimodal design, and cultural responsiveness. We believe these experiences could offer new insight into how educators can engage students not just in using AI, but in analyzing it for data sources, design assumptions, and implications for linguistic and cultural equity.

What We Learned From and With Our Students

Throughout the course, we learned a great deal from students' engagement, reflections, and critical perspectives. Rather than formally evaluating outcomes, we focused on observing how students interacted with GenAI tools, how they made sense of their learning, and how their insights informed ongoing design revisions. For example, one international student noted that her home country has multiple dialects and writing conventions, which GenAI tools often failed to recognize or represent accurately. She raised this issue in class, initiating a discussion on language bias and the potential for racial or cultural misrepresentation in AI-generated content. By comparing outputs from ten different GenAI tools, the student highlighted ethical concerns that resonated with her peers and sparked deeper classroom reflection on the implications of AI in diverse linguistic and cultural contexts.

Student reflections, creative projects, and peer discussions also show how learners interpreted and applied course principles in diverse ways. Weekly journals, tool reviews, and multimodal assignments became opportunities for students to test ideas, critique technologies, and explore their pedagogical implications. Through these activities, we observed growth in students' confidence and curiosity as they learned to navigate GenAI critically and ethically.

One of the most meaningful outcomes was seeing students extend their work beyond the classroom. Several projects evolved into conference proposals and presentations at venues such as AERA, AECT, and NYS TESOL, while others were developed into articles for practitioner journals. These moments demonstrated how the course fostered not just skill development but also academic voice and professional agency.

Another important component was co-constructed learning shared through class discussions, collaborative planning, and mid-semester reflections. Students expressed appreciation for the flexibility of the course design, the co-learning environment, and the multilingual space that valued their varied experiences. Their comments reminded us of the importance of designing with, rather than for, learners, shaping an approach that continues to shape how we think about teaching with emerging technologies.

In short, what we learned from our students was not only how they engaged with GenAI but also how they taught us to see its possibilities and challenges through multiple linguistic, cultural, and disciplinary lenses. These insights

became the foundation for ongoing refinement of both the course design and our own pedagogical practice.

FUTURE DESIGN ITERATIONS FOR IMPROVEMENT

How Could the Design Be Improved?

Despite its strengths, the course design faced notable limitations. One challenge we encountered was the rapid evolution of GenAI technologies, which made it difficult to maintain an up-to-date curriculum throughout the semester. Certain tools introduced early in the course became obsolete or updated substantially, requiring on-the-fly adjustments by both instructors and students. As new updates and tools appeared throughout the semester, we continuously revised lesson plans and assignments to stay current. For example, during the course design and the early weeks of instruction, we planned for students to explore ChatGPT and ChatGPT 3. However, when ChatGPT-4 was released in March 2024, its expanded capabilities and features required both instructors and students to quickly adapt. We devoted additional time to learning the new model, comparing its outputs with earlier versions, and discussing how such rapid technological evolution impacts teaching, learning, and ethical use in educational settings. Some other platforms that students initially explored also became outdated, reinforcing the need for flexibility and real-time adjustment throughout the course. Another example was the transition from Scribble Diffusion to Stable Diffusion in January 2024; we used these tools to create GenAI images summarizing the content for each Module. However, Scribble Diffusion became unavailable, and Stable Diffusion rapidly evolved and eventually became a pay-walled service. We then transitioned to Dall-E, Co-Pilot, Padlet, and Canva for image creation.

To address the rapid evolution of GenAI tools, we incorporated introductory and discussion components into the course. These sessions encouraged students to recognize the fast-paced development of AI technologies and reflect on their implications for education and research. However, one challenge we encountered was that it was impossible to keep up with every new GenAI tool or update. For this reason, we intentionally limited the number of GenAI tools introduced at the beginning of the course, allowing students to focus on deeper exploration, comparison, and critical evaluation rather than surface-level experimentation with too many platforms. In future iterations of the course, learning activities should be designed to accommodate updates, failures, or emerging technologies throughout the course.

Another limitation concerned the varying levels of technological access and familiarity among students. While the course aimed to promote equity through multimodal and multilingual assignments, not all students had equal prior exposure to AI tools or confidence in experimenting with new platforms. This occasionally resulted in uneven engagement, with some students defaulting to more traditional or familiar modalities. Recognizing this, we plan to include additional mid-semester learning activities in future iterations of the course, such as optional scaffolding and tool demonstrations. We believe these enhancements will not only support more equitable student participation but also reflect educators' ethical responsibility to design inclusive and adaptable learning environments.

Moreover, although we intentionally used translanguaging pedagogy to promote linguistic and multimodal inclusion, we faced institutional barriers that directly shaped our design decisions and ethical reflections. Expectations such as English-language submissions or unfamiliarity with multilingual assessment sometimes conflicted with the course's ideals. These challenges pushed us to rethink how inclusivity can be sustained within institutional constraints, highlighting the ethical responsibility of educators to advocate for flexible, justice-oriented approaches in higher education.

REFLECTION

Throughout the process, we continuously negotiated between our pedagogical ideals and the practical realities of teaching about and with generative AI in higher education. This required balancing what to keep and what to adapt, while actively listening to students' perspectives and considering their diverse backgrounds. Rather than striving to create a perfect or exemplary model, our goal was not only to teach students how to use AI but also to encourage them to interrogate its sociotechnical dimensions, from bias in language models to questions of authorship and representation. We also want to cultivate students' critical thinking abilities and help them engage with AI in their academic work and professional practices more thoughtfully and ethically through this course design.

We also discovered the importance of designing for and with learner diversity. By integrating theories like translanguaging and universal design for learning (UDL), we created spaces where students could bring their linguistic, cultural, and disciplinary identities into the classroom. This approach helped us better understand how inclusion works in practice and revealed how institutional expectations, such as English-only submissions, can unintentionally limit equitable participation. These moments challenged us to think more deeply about our ethical responsibilities as educators and designers.

The design process also supported our understanding of how GenAI tools can serve as a bridge between theory and practice. Through scaffolded assignments, students explored AI not just as a topic but as a pedagogical tool, producing artifacts that were academically rigorous and publicly impactful. We hope this course sets a precedent for using design-based research in real-time to inform ethical

and equitable uses of emerging technologies related to GenAI. Specifically, we encourage educators to think beyond policy compliance and toward intentional, inclusive design. By embedding AI within larger conversations about literacy, identity, and justice, we sought to prepare future educators to be not only competent tool users but thoughtful contributors to the evolving educational landscape.

Finally, we followed the principles of systemic functional linguistics that call on all communicators to consider the purpose, context, and audience of the information both constructed and analyzed. With this framing, both the instructor and the students critically considered the prompts utilized and the texts generated for the purpose and context in which they will be used. We then harnessed this new critical metalinguistic and cultural awareness connected to GenAI to consider the authenticity and potential bias in the generation of a variety of texts.

Reflecting on this experience, we view course design as an ongoing dialogue rather than a completed syllabus. Our work on this course reaffirmed the importance of collaboration, reflexivity, and ethical intentionality in navigating the intersections of pedagogy, technology, and justice.

REFERENCES

Agostinelli, A. V. (2021). Teaching international students in Western universities: A literature review. *Journal of Comparative & International Higher Education, 13*(4), 118–134. https://doi.org/10.32674/jcihe.v13i4.1846

Ang, L. H., & Tan, K. H. (2020). A review of theories and practices of multiliteracies in the classroom: Issues and trends. *International Journal of Learning, Teaching and Educational Research, 19*(11), 41–52. https://doi.org/10.26803/ijlter.19.11.3

Blikstein, P. (2013). Multimodal learning analytics. In *Proceedings of the 3rd International Conference on Learning Analytics and Knowledge* (pp. 102–106). ACM. https://doi.org/10.1145/2460296.2460316

CAST (2024). *Universal Design for Learning guidelines version 3.0*. https://udlguidelines.cast.org

Cummins, J. (2019). The emergence of translanguaging pedagogy: A dialogue between theory and practice. *Journal of Multilingual Education Research, 9*(1), Article 13. https://fordham.bepress.com/jmer/vol9/iss1/13

Dewey, J. (1938). *Experience and education*. New York: Macmillan.

Eaton, S.E. (2023). Postplagiarism: Transdisciplinary ethics and integrity in the age of artificial intelligence

and neurotechnology. *International Journal of Educational Integrity,19*, Article 23. https://doi.org/10.1007/s40979-023-00144-1

Freire, P. (1972). *Pedagogy of the Oppressed (M. B. Ramos, Trans.)*. Penguin Books. (Original work published 1968).

García, O. (2008). *Bilingual education in the 21st century: A global perspective*. Wiley-Blackwell.

García, O., Johnson, S. I., Seltzer, K., & Valdés, G. (2017). *The translanguaging classroom: Leveraging student bilingualism for learning*. Caslon.

Giroux, H. A. (2010). Rethinking education as the practice of freedom: Paulo Freire and the promise of critical pedagogy. *Policy futures in education*, *8*(6), 715–721. https://doi.org/10.2304/pfie.2010.8.6.715

Glaser, B. G. & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Aldine.

Halliday, M. A. K. (1994). *An introduction to functional grammar (2nd ed.)*. Edward Arnold.

Halliday, M. A. K., & Matthiessen, C. M. I. M. (2004). *Halliday's introduction to functional grammar* (3rd ed.). Routledge.

Halliday, M. A. K., & Matthiessen, C. M. (2013). *Halliday's introduction to functional grammar* (4th ed.). Routledge.

Hartmann, E. (2015). Universal Design for Learning (UDL) and learners with severe support needs. I*nternational Journal of Whole Schooling, 11*(1), 54–67.

Jenks, C. J. (2025). Communicating the cultural other: trust and bias in generative AI and large language models. *Applied Linguistics Review*, *16*(2), 787–795.

Kalantzis, M., & Cope, B. (2025). Multiliteracies since social media and artificial intelligence. *Harvard Educational Review, 95*(1), 135-151.

Kress, G. (2000). Multimodality: Challenges to thinking about language. *TESOL Quarterly, 34*, 337–340

Kress, G. (2009). *Multimodality: A social semiotic approach to contemporary communication*. Routledge.

Li, W. (2011). Moment analysis and translanguaging space: Discursive construction of identities by multilingual Chinese youth in Britain. *Journal of Pragmatics*, *43*(5), 1222–1235. https://doi.org/10.1016/j.pragma.2010.07.035

Li, W. (2018). Translanguaging as a practical theory of language. *Applied linguistics*, *39*(1), 9-30.

Liang, W. L. J., & Lim, F. V. (2020). A pedagogical framework for digital multimodal composing in the English Language classroom. *Innovation in Language Learning and Teaching*, 1–15. https://doi.org/10.1080/17501229.2020.1800709

Martin, J. R. (2009). Genre and language learning: A social semiotic perspective. *Linguistics and Education, 20,* 10–21.

Santori, D., & Smith, C. A. (2018). Teaching and learning with iPads to support dialogic construction of multiliteracies, *Middle School Journal*, *49*(1), 24–31.https://doi.org/10.1080/00940771.2018.1398944

Scherer, R., Siddiq, F., Howard, S. K., & Tondeur, J. (2023). The more experienced, the better prepared? New evidence on the relation between teachers' experience and their readiness for online teaching and learning. *Computers in Human Behavior*, *139*, 107530. https://doi.org/10.1016/j.chb.2022.107530

Spalding, E., & Wilson, A. (2022). Demystifying reflection: A study of pedagogical strategies that encourage reflective journal writing. *Teachers College Record*, *104*(7), 1393–1421. https://doi.org/10.1177/016146810210400704

Van Bragt, C. A. C., Bakx, A. W. E. A., Van der Sanden, J. M. M., & Croon, M. A. (2007). Students' approaches to learning when entering higher education: Differences between students with senior general secondary and senior secondary educational backgrounds. *Learning and Individual Differences, 17*(1), 83–96. https://doi.org/10.1016/j.lindif.2007.02.003

Waks, L. J. (2018). Humility in teaching. *Educational Theory*, *68*(4–5), 427–442.

Welikala, T., & Watkins, C. (2008). *Improving intercultural learning experiences in higher education: Responding to cultural scripts for learning*. Higher Education Academy.

Zhang, Z., Nagle, J., McKishnie, B., Lin, Z., & Li, W. (2019). Scientific strengths and reported effectiveness: A systematic review of multiliteracies studies. *Pedagogies: An International Journal, 14*(1), 33–61. https://doi.org/10.1080/1554480X.2018.1537188

APPENDIX A

Course Schedule

WEEK	TOPIC	READINGS & ASSIGNMENTS
1	Introductions, syllabus, group sign-ups What is ChatGPT The current debate Will ChatGPT Kill the Student Essay_ - The Atlantic.pdf The College Essay Is Still Very Much Alive.pdf Campus Reform _'The college essay is dead'_ Academics react to ChatGPT.pdf	All in class
2	GenAI and Language Learning	https://learnoutlive.com/5-neat-tricks-for-using-ai-in-language-learning/ ChatGPT for Language Teaching and Learning (Kohnke et al., 2023) Using Call Annie as a Generative Artificial Intelligence Speaking Partner for Language Learners (Wan et al., 2024) Read the articles and try out suggestions. In your journal, what language did you try? What prompts did you use? How feasible and effective for language learning?
3	GenAI and Writing Instruction	Anson, C., & Straume, I. (2022). Amazement and trepidation: Implications of AI-based natural language production for the teaching of writing Gero, K. I. (2022, December 2). AI reveals the most human parts of writing. Wired. Retrieved March 1, 2023, from https://www.wired.com/story/artificial-intelligence-writing-art/ Godwin-Jones, R. (2022). Partnering with AI: Intelligent writing assistance and instructed language learning. Language Learning & Technology, 26(2), 5–24. http://doi.org/10125/73474 **Questions:** What are the benefits of an AI partner when writing? How does AI change the writing process?
4	GenAI and ethics	Koedinger, K. R. (2021). Ethics of AI in education: Towards a community-wide Framework. International Journal of Artificial Intelligence in Education, 1-23. Zohny, H., McMillan, J., & King, M. (2023). Ethics of generative AI. Journal of Medical Ethics, 49(2), 79–80. Michel-Villarreal, R., Vilalta-Perdomo, E., Salinas-Navarro, D. E., Thierry-Aguilera, R., & Gerardou, F. S. (2023). Challenges and opportunities of generative AI for higher education, as explained by ChatGPT Questions: What are the ethical implications of GenAI? Implications for authorship? Copyright? **Due:** GenAI Video of the ChatGPT Debate

WEEK	TOPIC	READINGS & ASSIGNMENTS
5	GenAI and language models Discussion Leader(s):	Tan et al. (2023). Leveraging generative artificial intelligence based on large language models for collaborative learning. Chung, J. J. Y., Kim, W., Yoo, K. M., Lee, H., Adar, E., & Chang, M. (2022, April). TaleBrush: Sketching stories with generative pretrained language models. In Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems (pp. 1–19). Barreto, F., Moharkar, L., Shirodkar, M., Sarode, V., Gonsalves, S., & Johns, A. (2023, February). Generative artificial intelligence: Opportunities and challenges of large language models. In International Conference on Intelligent Computing and Networking (pp. 545–553). Singapore: Springer Nature Singapore. **Questions:** What are large language models? How does GenAI leverage them? What are the implications of using language models based on how people use language? What is brought into the models?
6	Learning & GenAI Discussion Leader(s):	Koh, E., & Doroudi, S. (2023). Learning, teaching, and assessment with generative artificial intelligence: towards a plateau of productivity. Learning: Research and Practice, 9(2), 109-116. Baidoo-Anu, D., & Ansah, L. O. (2023). Education in the era of generative artificial intelligence (AI): Understanding the potential benefits of ChatGPT in promoting teaching and learning. Journal of AI, 7(1), 52–62. Carvalho, L., Martinez-Maldonado, R., Tsai, Y. S., Markauskaite, L., & de Laat, M. (2022). How can we design for learning in an AI world? Computers and Education: Artificial Intelligence, 3. https://doi.org/10.1016/j.caeai.2022.100053 **Questions:** What are the implications for learning? How could learning research be impacted by genAI? What could be suggestions to share with teachers? **Due:** Schedule a meeting to discuss the topic of your research proposal or innovative unit
7	GenAI Tool Showcase	No readings In class, you will lead a mini discussion on your GenAI tool, and we will all try different tools. **Due:** GenAI Tool review due
8	GenAI and Linguistics Discussion Leader(s):	Panesar, K. (2020). Natural language processing in artificial intelligence: A functional linguistic perspective Istihari, I., Sofiah, V., & Abidin, Y. (2023). An Analysis of Cohesion and Coherence in Analytical Exposition Texts Generated by an AI Chatbot Auto-generative System. PROCEEDING AISELT, 8(1). Curry, N., Baker, P., & Brookes, G. (2023). Generative AI for corpus approaches to discourse studies: a critical evaluation of ChatGPT. Applied Corpus Linguistics, 100082. **Questions:** Implications for research? Which linguistic frameworks could be generative to this research? Implications for pedagogy?
9	Schedule a meeting with the instructor to discuss progress towards the unit plan or innovative unit: please send a 1-2 page summary prior to the meeting.	One-on-one meetings

WEEK	TOPIC	READINGS & ASSIGNMENTS
10	GenAI and motivation for learning Discussion Leader(s):	Cao, L., & Dede, C. (2023). Navigating a world of generative AI: Suggestions for educators. The Next Level Lab at Harvard Graduate School of Education. President and Fellows of Harvard College: Cambridge. Hmoud, M., Swaity, H., Hamad, N., Karram, O., & Daher, W. (2024). Higher Education Students' Task Motivation in the Generative Artificial Intelligence Context: The Case of ChatGPT. Information, 15(1), 33. Yilmaz, R., & Yilmaz, F. G. K. (2023). The effect of generative artificial intelligence (AI)-based tool use on students' computational thinking skills, programming self-efficacy, and motivation. Computers and Education: Artificial Intelligence, 100147. **Questions:** Does genAI increase or decrease motivation? Other factors? Implications for research? For pedagogy?
11	GenAI and Cultural Considerations Discussion Leader(s):	Spennemann, D. H. (2023). ChatGPT and the generation of digitally born "knowledge": How does a generative AI language model interpret cultural heritage values?. Knowledge, 3(3), 480–512. Epstein, et al. (2023). Art and the science of generative AI: A deeper dive Mannuru et al. (2023). Artificial intelligence in developing countries: The impact of generative artificial intelligence (AI) technologies for development. **Questions:** Does GenAI privilege some knowledge over others? How? Are Western cultures more accurately and realistically represented? From which cultural bases does GenAI gather its knowledge? **Due:** Tech Tool Review
12	Colloquium: April 9th: 3:30-4:40 Present the GenAI tool from your review	Present Tech Tools
13	Other Implications for GenAI Discussion Leaders:	AI may hold a key to the preservation of the Amazon rainforest (microsoft.com) Bensaid, E., Martino, M., Hoover, B., & Strobelt, H. (2021). Fairytailor: A multi-modal generative framework for storytelling. **Questions:** What's next?
14	Peer Conferencing on proposals and unit plans	No readings **Due:** GenAI Journal
15	Presentations	**Due:** Virtual Presentation
16	No class meeting	**Due:** Research Proposal or Innovative Unit