Leveraging AI for Data-Informed Resume Writing: A Pedagogical Approach

Timothy Ponce
Texas State University

Abstract AI-enabled applicant tracking systems (ATS) increasingly mediate how resumes are evaluated, requiring technical and professional writing (TPW) programs to prepare students for both human and algorithmic readers. This article presents a framework for teaching data-informed resume-writing that integrates web scraping and large language model (LLM)-supported analysis. In a case study in an undergraduate technical writing course, the author examines how students used that framework to analyze job descriptions and employ AI tools ethically during revision. Findings suggest the framework strengthens students' AI literacies and supports more strategic, audience-centered resume design that accounts for both human and AI users of resumes.

Keywords resume, AI, applicant tracking system, pedagogy

In today's job market, resumes often must pass through increasingly sophisticated AI-driven systems before they reach human reviewers. While Pew research data shows that people tend to feel uneasy about AI's role in hiring and employee evaluation (Raine et al., 2023), the reality is that AI-enabled Applicant Tracking Systems (ATS) are used by many employers to sort, rank, and filter candidates. Exact numbers regarding how many companies use AI in the hiring process vary, with some sources claiming that up to 99% of companies use AI in some capacity (Schellmann, 2024). Regardless of the exact number, the presence of AI in the hiring process continues to grow as we move further into the AI age. As technical communication faculty, we must prepare students not only for the human audience of their resumes, as we have done so well for decades, but also for the algorithmic systems that now act as gatekeepers.

The resume is already a central and widely taught component of technical and professional writing (TPW) courses. In a national survey of 154 instructors across a wide range of US institutions, Sarah Read and Michael Michaud (2018) found that over two-thirds of those surveyed include professional development genres like resumes and cover letters in their curriculum, and nearly all courses rely on genre-based frameworks as a key

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learning outcome. Other scholars have studied the pedagogy of the genre, including interrogations of how professionalism is constructed and taught in resume assignments (Racelis, 2024; Randazzo, 2024), as well as examinations of how nontraditional students' prior work experience can reshape instructional approaches to professional documents (Quick, 2012). Despite the prevalence of this genre in our curriculum, current pedagogy often overlooks the growing role of AI in the job search process. For instance, Kathryn Lookadoo and Sarah Moore's 2024 study highlights a significant inconsistency in how AI-driven ATS are addressed in textbooks, with many overlooking or ignoring the ATS altogether (Lookadoo & Moore, 2024). This inconsistency seems to support the conclusions of the students from Chalice Randazzo's 2016 study on resume pedagogy, in which students perceived professors as unreliable sources of information about job documents.

This paper aims to address this gap by proposing a pedagogical framework, which could be used as one large assignment or divided into smaller assignments, for teaching data-informed resume writing using large language models (LLMs). The proposed framework utilizes a web scraping methodology, which not only helps students craft more targeted and effective resumes but also equips them with essential AI literacies that are applicable across various professional contexts. The paper concludes with a short case study implementation of the framework in a course titled ENGL 3303: Introduction to Technical Writing, which illustrates how the approach supported students' ability to make more intentional, data-driven rhetorical decisions in their resume drafts.

Literature Review

As AI is increasingly used to mediate how candidates are evaluated, writing a resume has become more than a matter of presentation; it is now a site of algorithmic negotiation. To prepare students for this new terrain, educators must first understand the tensions and transformations reshaping the hiring process.

AI in the Hiring Process

The use of AI in hiring processes has elicited a wide range of reactions, from resistance to acceptance, complicating efforts to prepare students effectively for this evolving landscape. Christine Malin and others (2023) found that HR professionals hesitated to adopt AI due to ethical concerns and competing "manual" versus "automatic" beliefs about AI's capabilities, though both groups cited high costs and unclear benefits as barriers. Conversely, Damian Canagasuriam and Eden-Raye Lukacik (2024) documented the growing normalization of AI-assisted asynchronous interviews, noting that applicants

who used ChatGPT performed better but were still viewed as "cheating," highlighting ongoing tensions around fairness and authenticity in AI-mediated hiring.

Ishita Chakraborty and others (2024) offered yet another view, showing that AI-human hybrid models in video interview analysis improved hiring outcomes by enhancing workforce quality up to 67%. These hybrid hiring models integrated posture modeling, conversational analysis, and LLMs, demonstrating that the use of AI, when paired with human judgment, can boost efficiency and broaden access to talent. The success of hybrid approaches suggests why companies are increasingly relying on AI in the hiring process, and why educators must adapt quickly to help students develop critical AI literacies for this landscape.

Pedagogy for Critical AI Literacy

Pedagogical literature across disciplines increasingly urges educators to emphasize critical AI literacies to prepare students for emerging workplace and civic contexts. From a Scholarship of Teaching and Learning (SoTL) perspective, Siu-Cheung Kong and others (2024) argued that learners must develop the ability to collaborate with AI, evaluate outputs critically, and adapt in changing environments. Drawing on rhetoric, composition theory, and technical writing, Stuart Selber (2024) complicated these views by showing how earlier calls to "forget technology, remember literacy" (Selfe, 1988, p. 69) risk framing literacy as neutral and one-directional. Instead, Selber positioned AI literacy as dialogic, an opportunity to reassess norms and reimagine programmatic practices. Although grounded in different disciplinary traditions, both perspectives emphasize that AI instruction must move beyond functional tool use and instead cultivate critical AI literacies.

Scholars looking at more nuanced integrations of AI into TPW curricula have begun identifying the programmatic and pedagogical foundations needed to prepare students for an AI-mediated workplace. Jason Tham and others (2022) argued that AI integration is not an optional enhancement but a programmatic imperative requiring new literacies grounded in data-driven practice and an expanded understanding of human and nonhuman agency. Their work emphasizes that emerging systems distribute agency across humans, interfaces, and automated processes, highlighting the need for students to interpret, design, and ethically navigate these hybrid environments. Selber (2024) extended this argument by noting that the use of AI rarely reduces labor and instead shifts work to other stages of the writing process, making human judgment and rhetorical awareness even more essential. He further contended that students must now know more (not less)

about technical communication to use AI effectively, particularly in genres where usability, accuracy, and safety are paramount.

The integration of AI critical literacies into the TPW classroom, however, can be fraught with complexity. Peter Cardon and others (2023) noted that while instructors recognize AI's potential to improve efficiency in professional writing and communication, they also express concerns about diminished critical thinking, weakened authenticity, and threats to academic integrity. These concerns underscore the need for instructional strategies that help students engage with AI ethically and thoughtfully. In resume pedagogy specifically, where AI tools can directly shape how students construct professional identities, Timothy Ponce (2024) found that prompt construction plays a central role in AI-generated resume quality. High-confidence prompts produced more tailored and compelling resumes, whereas low-confidence prompts yielded generic results, reinforcing the importance of teaching students to prompt strategically and collaborate with AI intentionally.

Given the complexities of AI integration into hiring practices and the pedagogical challenges it creates, there is a clear need for approaches that both prepare students to navigate these realities and help them leverage AI's potential in a job market filled with AI-enabled ATS. Resume pedagogy offers a particularly powerful site for this work, as it combines a widely taught professional genre with the very technologies reshaping how candidates are evaluated.

Teaching Data-Informed Resume Writing

Building on the understanding of AI's impact on hiring practices, this section introduces a pedagogical framework designed to teach students how to create data-informed resumes by leveraging generative AI, specifically LLMs. A data-informed resume is one that goes beyond generic descriptions of skills and experiences, using insights derived from relevant data to ensure alignment with current job market trends, employer expectations, and industry-specific requirements. This framework emphasizes the concept of text as data, treating resume content and job descriptions as datasets that can be analyzed and refined through AI tools.

This pedagogical approach to teaching data-informed resumes can be broken down into four parts:

1. Understand text as structured data
2. Apply web scraping techniques to gather relevant data
3. Analyze the data using LLMs
4. Create or update resumes based on findings

Text as Data

In the context of AI-driven hiring practices, understanding how text functions as data is crucial for effectively teaching students to create data-informed resumes. When introducing the concept of data, students are provided with the following working definition:

> Data is any collection of information that can be systematically recorded, organized, and analyzed to extract meaning and insights. This can include numbers, words, images, or any other kind of information that can be interpreted.

Therefore, text, much like the numerical information students often recognize as data, can be treated as structured data that can be systematically analyzed to extract insights. "Text as data" refers to breaking down language into meaningful components (e.g., words, phrases, sentence structures) that reveal trends across documents. This perspective helps students view job postings as datasets that can be mined to guide resume decisions.

Understanding text as data also supports students' comprehension of how LLMs function. LLMs process text by tokenizing it into smaller units (Rajaraman et al., 2024) and learning patterns across billions of such tokens. By recognizing that LLMs analyze text as structured data, students can more effectively use these tools to identify linguistic patterns across job postings and refine resume language accordingly. This approach helps align resumes with employer expectations and improves their suitability for AI-enabled screening systems.

Web Scraping to Gather Job Data

Next, this section introduces students to the process of gathering job-posting data through web scraping, which is critical for understanding the skills, qualifications, and experiences employers seek in their respective fields. The discussion outlines how students can gather relevant data, as well as how to clean and code it for easy accessibility by the LLM, an essential step that is often overlooked by students and novice users. Ethical considerations associated with web scraping are also briefly addressed.

Scraping the Data

To help students align their resumes with industry requirements, the process begins by guiding them in gathering job postings that reflect their career interests. The following steps outline how educators can facilitate this process, ensuring that students effectively identify, collect, and organize these postings for subsequent cleaning and coding.

1. **Identify career interests**: Have the student begin by identifying job postings that match their general career interests. Have them think about broader roles that align with a field, such as "Marketing Coordinator," "Software Developer," or "HR Specialist."
2. **Navigate to a career website**: Have them go to a popular career website, such as Indeed, LinkedIn, or Glassdoor.
3. **Search for relevant job postings**: Use the search function to enter job titles aligned with the career focus. Apply filters to focus on broader categories (e.g., entry-level, industry) without narrowing by specific locations. For this kind of task, we are more focused on the text data rather than location restrictions.
4. **Select relevant job postings**: Once they find relevant job postings, have them read through them carefully, focusing on sections that list skills, qualifications, and responsibilities.
5. **Copy job posting content**: If the post is determined to be relevant, highlight and copy the entire job posting, making sure to include details on required skills, qualifications, and responsibilities.
6. **Save to a document**: Paste the copied content into a Word document, Google Doc, or plain text editor (such as Notepad or TextEdit). Keep multiple job postings in one organized document for easy comparison and analysis.
7. **Gather multiple postings**: Aim to collect several postings—ideally between 30–50 job postings—from different companies and sectors to capture a diverse set of hard and soft skills commonly sought after in the student's desired roles.

Cleaning and Coding the Data

Once job postings are gathered, the next step involves cleaning and structuring the data to prepare it for LLM analysis. This involves the following:

1. **Cleaning the data**: When copying job postings from career websites into a text file, formatting issues like extra line breaks, bold text, or unexpected fonts may be pulled in as well. Students will need to remove this extraneous formatting to ensure consistency. In Word or Google Docs, students can use the "Clear Formatting" feature to simplify the text and remove any hidden elements that could potentially interfere with analysis.
2. **Adding structure with tags**: After cleaning, students will organize their data using simple XML-style tags. For instance, they will insert open and close tags around each job posting (e.g., <job#> and </job#>). This helps the AI tool identify and analyze each job listing as a separate unit. Tagging provides clarity, making it easier for AI tools to process multiple postings without lost meaning, ultimately leading to more precise outputs.

The steps of cleaning and coding the data are vital for getting the most relevant analysis out of an LLM, especially when dealing with textual data like job descriptions. Tags create

clear boundaries between postings, allowing the AI to accurately assess each individual job listing for its skills, requirements, qualifications, and other relevant attributes. Without structure, the AI might mix up content from different postings, leading to inaccurate or misleading analysis. Likewise, data that contains excess formatting can also throw off the ability of an LLM to provide an accurate analysis. Cleaning and structuring the data in this way ensures that students can derive meaningful insights from the job postings, which in turn allows them to make informed decisions when updating their resumes.

Ethical Considerations of Web Scraping

Web scraping, while a valuable tool for gathering publicly available data, comes with ethical challenges that educators must address with their students. It is important to consider issues of privacy, legal compliance, and the impact on website functionality. Even though data might be accessible, this does not always mean it is ethically permissible to scrape and use it without caution.

One useful framework for approaching these challenges is "algorithmic thinking in the public interest" (Luscombe et al., 2022, p. 1023). This concept encourages ethical decision-making by balancing the need for data collection with public responsibility, transparency, and respect for privacy. Students should be guided to respect website terms of service, avoid collecting personal identifiers, and understand the broader implications of their data collection activities. Emphasizing these ethical considerations helps ensure that the use of web scraping remains responsible and aligned with ethical best practices.

Analyze the Data Using LLMs

Next, this section explains how to guide students in using LLMs to analyze the job data they have gathered. This process helps students extract key skills, qualifications, and attributes that employers seek in their industry, enabling them to create resumes that align closely with market expectations while also developing AI literacies applicable in a range of professional contexts.

Step 1: Setting Clear Objectives for Analysis

Before starting with any AI analysis, encourage students to reflect on what they want to learn from the data they have gathered. Here are some guiding questions they can use:

1. What are the most commonly required skills in these job postings?
2. Are there specific qualifications or certifications that frequently recur?

3. What key language or phrases do employers use to describe roles in this industry?
4. Are there particular tools or technical skills that are emphasized across multiple postings?

These reflective questions help students direct their AI analysis toward extracting the most valuable information for updating their resumes. Importantly, note how this process begins with their own analysis of the data before ever engaging the LLM, encouraging them not to assume that the AI-generated output is the only correct answer. By comparing their initial analysis to the AI's results, they may uncover differences that warrant further investigation.

Step 2: Inputting Data into an AI Tool

Once the students have clear objectives, they can begin analyzing the job posts. They should start a new session with an AI tool like ChatGPT or any available LLM and paste their cleaned, tagged job postings into the chat. Provide a prompt to help focus the AI's analysis, such as the following:

> I have collected job postings for roles I am interested in. Please analyze this text to identify the most commonly required skills, qualifications, and attributes across these postings. Additionally, highlight any key patterns in the language employers use to describe these roles. [paste job posts]

This prompt guides the AI toward extracting the insights needed to refine the resume effectively.

Step 3: Asking Follow-Up Questions to Deepen Analysis

Encourage students to ask at least three follow-up questions to gather deeper insights into the data they have collected. Examples of follow-up questions include:

1. What are the most frequently mentioned skills or qualifications in these job postings?
2. How does the language and tone vary between higher-level and entry-level positions?
3. Which certifications, technical tools, or software are mentioned most often?

These questions will help students drill down into the details, enabling them to create a well-targeted resume that directly addresses what employers are seeking. Additionally, this process prepares them to consider the professional development they may need both immediately and in the future if they continue along their intended career path.

Step 4: Saving and Organizing the AI's Outputs

Once the LLM has provided responses, students should be sure to copy, save, and organize the content. It may be helpful to categorize the outputs into sections like "Key Skills," "Qualifications," and "Commonly Used Language." This organization will allow them to effectively refer to these insights as they begin updating their resumes.

Step 5: Interpreting and Applying the Data

Now that the students have gathered results from the AI, it is important to take time to interpret these results. The goal is to translate the findings into actionable content for their resumes. Students should ask themselves:

1. Which trends and skills are most relevant to the job roles I am aiming for?
2. Which qualifications do I possess that align well with what is being sought by employers?
3. Are there any skills or qualifications that are frequently mentioned but missing from my experience?

This kind of reflective exercise asks students to think critically about AI outputs, ensuring their resumes not only reflect the findings in the data but do so in a thoughtful and critical way. This kind of reflective exercise helps students foster AI critical literacy by developing a practice of questioning and evaluating AI-generated content to maintain control over how it impacts their final output.

Create or Update Resumes Based on Findings

With a solid understanding of the key skills and qualifications required in their field, students can now harness the power of AI to craft a resume that effectively highlights these attributes. Whether they have an existing resume that needs improvement or are starting from scratch, AI can be used to refine and optimize the content to align with current job market expectations.

While AI tools can generate resumes from scratch, the two approaches offered below assume that students are beginning with an existing resume draft, allowing AI to provide targeted feedback or assist with rewriting key sections. Modifying an existing draft is emphasized because there is significant value in initially creating a resume independently. This process encourages students to think about their skills holistically without the influence of an LLM's interpretation of their professional experience. The two approaches below focus on partnering with AI in the writing process, utilizing a "human in the loop"

model in which the user reflects upon and interacts with AI output at each stage of the multi-part exchange (Anders, 2024).

Approach 1: AI as a Review and Feedback Tool

In this first approach, the AI appears as a coach for students, offering suggestions to enhance their existing resume drafts in light of their gathered data. Here's how to help students use AI in this capacity:

1. **Input the resume draft:** Students should begin by copying and pasting their current resume draft into an AI tool like ChatGPT. They can provide context to the AI by mentioning the specific skills and qualifications they have identified through their job posting analysis. **Example prompt:** *"Here is my current resume draft. Based on my analysis of job postings, employers are looking for skills like project management, content creation, and technical writing. Can you review my resume and suggest how I can highlight these skills more effectively?"*
2. **Request specific suggestions:** Once the AI has reviewed their resume, students should reflect upon the initial review and ask for targeted suggestions to strengthen particular sections based upon the initial review. Encourage them to be specific about which parts need work, such as their "Professional Experience" or "Skills" sections. **Example prompt:** *"Can you suggest ways to improve my Professional Experience section to better highlight my project management and content creation skills?"*
3. **Review and revise the feedback:** Students must critically assess the AI's feedback from both initial review and the specific follow-up questions to decide which suggestions make sense in the context of their unique experiences. This is important because AI-generated suggestions need to be curated to ensure they accurately reflect the student's professional background and goals.

Approach 2: AI as a Rewriting Tool

In the second approach, students can deploy a more AI-centered, data-driven tactic by using AI to rewrite sections of their resume in ways that better align with the job market trends they identified.

1. **Provide context for rewriting:** Students should start by giving the AI clear instructions for what they want rewritten, specifying the skills or experiences they need highlighted based on their data analysis. **Example prompt:** *"I collected 30 job postings for jobs that interested me. Here is what I found when analyzing those postings. [insert relevant findings] Could you help rewrite the Professional Experience section of my resume to emphasize the most common hard and soft skills I found in the data? Here is my current Professional Experience section. [insert resume section]"*

2. **Review AI's suggestions for accuracy**: The AI will then generate revised content based on the prompt provided. It may modify bullet points, enhance descriptions, or suggest alternative phrasing. Remind students that they need to verify the AI's suggestions to avoid inaccuracies or exaggerations. **Example AI response:** *"Coordinated cross-functional projects to ensure adherence to deadlines, improving the team's on-time delivery rate by 20%. Developed user manuals and technical documents, simplifying complex processes for end users."*
3. **Final refinement:** The AI's content should serve as a foundation, but students must personalize it. They need to make final adjustments to ensure the resume accurately reflects their experience and maintains a professional tone that aligns with their career goals and personal brand.

Important Considerations for Both Approaches

While LLMs can help align resume content with job descriptions, students must be mindful of key considerations when using artificial intelligence for this type of work. The following list, though not exhaustive, provides a useful starting point to encourage students to think critically about the use of AI and its role in resume writing.

1. **Always review AI-generated content:** Encourage students to carefully review every piece of AI-generated text. AI can sometimes misunderstand context or introduce inaccuracies. A thorough review ensures that the final resume accurately reflects the student's skills and experience.
2. **Tailor AI's suggestions to the individual:** The AI's recommendations are often general and may not capture the unique elements of a student's background. Remind students to make adjustments to ensure the final resume represents their individuality and lived experience.
3. **Balancing AI assistance with the personal touch:** While AI can enhance a resume's clarity, structure, and emphasis on key skills, it is important for the resume to retain the personal element that sets the candidate apart. Students should use AI to polish and refine their resume, but ultimately ensure it reflects their own voice. The former will help them get past the AI, while the latter will appeal to the human reader on the other side of the ATS.

By keeping in mind these considerations, students can more successfully leverage generative LMM tools to create resumes that are well-tailored to the expectations of employers, helping them stand out in an AI-driven hiring environment.

Case Study Pilot

Although this assignment has been taught for three semesters, the experimental data for this pilot case study was collected in once section of ENGL 3303: Introduction to Technical Writing at Texas State University in fall 2025. The data collection was approved by the

institution's IRB (IRB #10435). Due to limited student response to the consent process, the experimental data pool only contains responses from three (n=3) participants. To supplement this low number of participants, the author offers his own reflection of teaching the assignment for the past three semesters.

Experimental Methodology

Participants were recruited from a pool of 25 enrolled students, all over the age of 18 and taking the course in an asynchronous online format. After students completed and received grades on the resume assignment and its associated reflection, the researcher sent a recruitment email inviting them to voluntarily participate by allowing the researcher to qualitatively analyze their submitted reflections. No compensation was offered for participation. During the consent window, three (n=3) students agreed to have their data used as part of this study.

Before analysis, the researcher removed all identifying information from each reflection. This included names, email addresses, or any personally identifying references students may have included. The subsequent thematic analysis was guided directly by the two student learning outcomes associated with the resume assignment:

- **Analyze job descriptions for data-driven targeting:** Students will be able to analyze job descriptions to identify key skills, qualifications, and language patterns that inform the development of tailored resumes for semi-technical audiences.
- **Use AI tools ethically in the resume-writing process:** Students will be able to responsibly integrate AI tools into their resume-writing process to support drafting and revision while maintaining ethical human oversight and ensuring accuracy, clarity, and specificity.

Using these outcomes as an interpretive frame, the researcher coded the de-identified reflections to determine how students in the experimental pool described their ability to gather and analyze job posting data, how they interpreted responses generated by LLMs, and how they negotiated the relationship between AI-supported analysis and their own rhetorical decision-making during resume revision.

Results

Using specific elements of the framework to guide their logic, students in the experimental pool clearly articulated critical reflections that show how the assignment supported the two resume-focused student learning outcomes (SLOs).

SLO 1: Analyze Job Descriptions for Data-Driven Targeting

Across the three reflections, students consistently described a shift from seeing the resume as a chronological list of experiences to viewing it as a strategic, data-informed document. Many explicitly framed the resume as "a form of technical communication" that must communicate complex information clearly to both human recruiters and AI systems, and students reported using job descriptions as datasets.

A common pattern involved identifying recurring competencies across the large, scraped data set and then reorganizing or rewriting their resumes to foreground those skills. All students noted moving technical skills sections closer to the top of the document, revising bullet points to emphasize measurable outcomes, and highlighting specific tools named in postings. One student majoring in construction science management, for instance, described resume writing as "problem-solving, figuring out how to present data [...] in a way that matches what employers want." Students contrasted this approach with previous practices in which they "would've just written down everything [they have] done without much strategy" and now recognized the resume as a targeted argument that pulls on data to direct rhetorical choices rather than a neutral record.

Some students also demonstrated emerging awareness of audience segmentation within semi-technical audiences. They recognized that hiring managers and ATS each privilege different kinds of rhetorical signals, and they attempted to design resumes that remained readable for humans while being legible to automated systems. For instance, one student explained that they wanted the document "to make sense for both people and computer systems without sounding like [they were] trying too hard." Overall, the reflections suggest that students were not only able to identify patterns in job descriptions at scale through the large number of jobs scraped but also to use those patterns to make more intentional rhetorical decisions about how to represent their skills and experiences.

SLO 2: Use AI Tools Ethically in the Resume-Writing Process

All students reported using AI tools at some point in their reflection, and almost all specifically framed these tools as assistants rather than replacements. Students used AI to rephrase bullet points, improve grammar and clarity, suggest stronger action verbs, standardize formatting, and condense or reorganize text. Several also discussed their approach to AI analysis of the scraped dataset, asking the AI to summarize multiple job postings, extract common skills, or generate checklists of qualifications that could then inform their drafting or revision of the resume.

At the same time, ethical concerns were a recurring theme in the reflections. Students repeatedly emphasized that their resumes needed to remain accurate and authentic. They described rereading every AI-generated suggestion, editing wording to sound more like their own voice, and rejecting any content that exaggerated or misrepresented their experience. One student summarized this stance by noting that AI "should be used as a tool instead of abusing it and making it do the work." Another emphasized that, although AI helped with grammar and layout, "the ideas and words stayed my own." These reflections highlight a conscious effort to keep human judgment at the center of the writing process.

Interestingly, while students most often talked about this ethical stance on AI in context of the resume assignment, they also extended their discussion beyond the immediate assignment. Students connected ethical AI use in resume writing to broader professional responsibilities, especially in high-stakes domains. For example, stated that overreliance on AI could "lead to laziness and having no thought process on [their] own," a risk they wanted to avoid in future professional writing. Collectively, the reflections indicate that students not only used AI tools to support drafting and revision but also developed a clear sense of what responsible AI integration looks like in professional communication contexts, balancing efficiency with honesty, personal accountability, and control over final decisions.

Reflection

In addition to the student reflections analyzed in this pilot, teaching this assignment across three semesters has provided important instructional insights into how students engage with data-informed resume writing and AI-supported revision. Because the assignment is embedded within a resume assignment that carries immediate professional relevance, students often approach the work with a level of seriousness and investment that differs from other course assignments. This heightened engagement creates opportunities for deeper conversations about how AI functions in professional contexts, what its limitations are, and how students can maintain rhetorical agency while using AI-assisted tools.

Teaching this assignment has also created space to address longstanding topics within technical and professional communication about voice, authorship, and standardization. Technical communication has often been mischaracterized as purely formulaic, yet students' interactions with AI make visible the importance of preserving individual voice even within highly structured professional genres. As students revise their resumes using insights derived from scraped job postings and LLM-supported analysis, they must

continually evaluate which revisions strengthen clarity and alignment with employer expectations while still accurately representing their experiences and identity.

Finally, this assignment has provided a meaningful way to help students understand how AI-mediated systems participate in evaluating their professional materials. Many students express relief in learning how Applicant Tracking Systems function and how resume language can influence automated screening. From an instructional perspective, this transparency helps demystify hiring technologies and reinforces the importance of teaching students how to navigate AI-mediated professional environments. These observations, while distinct from the formal thematic analysis presented above, provide additional context for understanding how this framework functions in practice and why students appear to engage with it productively.

Looking Forward

While HR professionals remain cautious about fully adopting AI-based hiring strategies (Malin et al., 2023), research suggests that hybrid human–AI models are becoming more common and can strengthen decision-making in the hiring process (Chakraborty et al., 2024). Given this shift toward more AI use in the hiring process, the programmatic imperative to engage AI identified by Tham et al. (2022) seems even more pressing than ever. TPW educators must prepare students to write resumes optimized for both human readers and AI-enabled systems.

The pedagogical framework presented here offers one approach for meeting these demands. By positioning text as data and emphasizing ethical human oversight, the framework helped students craft resumes that are both audience-centered and ATS-aware. Based upon the student reflections examined in this case study, the framework seems to have helped students gain the ability to both analyze job descriptions for data-driven targeting and to use AI tools ethically while maintaining ownership of their content.

As AI continues to influence hiring, TPW programs will need adaptable, evidence-based strategies that prepare students to navigate these tools confidently while preserving the human judgment central to professional communication. While this framework is one part of that expanding puzzle, more work is needed to understand how AI can be used effectively in technical writing, especially because, as Selber notes, “AI both solves and creates problems” (2024, n.p.).

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Author Information

Dr. Timothy Ponce's research in professional, technical, and business writing has appeared in *Business and Professional Communication Quarterly*, *Programmatic Perspectives*, *IEEE Pro Comm*, and *AMC SIGDOC*. His research explores the impact of emerging technologies on professional writing and communication, as well as implications for teaching. He serves as the associate editor *of Technical Communication Quarterly* and serves on the editorial board for *Scatterplot: A Journal of Data Science* and *Techne Forge*.