Session Notes as Writing Analytics: Measuring Process- and Product-Focused Feedback Across Writing Centers

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Scopus Abstract

Writing center session notes—the reports that consultants complete after each session—constitute a vast, naturally occurring corpus of data that can be used to study writing support practices at scale. This study demonstrates that session notes function as scalable, institutional analytics artifacts, and they provide valid, ethically collected evidence for examining feedback practices without altering instruction. Building on prior work in *The Journal of Writing Analytics* (Giaimo et al., 2018), the study introduces a thematic codebook for classifying process- and product-focused feedback across session notes from more than sixty writing centers in North America and Europe. Using thematic analysis, twelve feedback themes emerged—five process-focused and seven product-focused. Product-oriented feedback appeared more frequently overall, although many sessions reflected an integration of process and product concerns. The findings illustrate how session notes function as scalable analytics artifacts for unobtrusively examining the inner workings of writing support. The study argues that this approach advances fairness, validity, and replicability in writing analytics by showing how routine instructional documentation can serve as a scalable, ethical, and methodologically rigorous foundation for data-driven research and practice. The study concludes with implications for writing center practice and future analytics work.

Structured Abstract

- **Literature Review**: Writing analytics leverages institutional texts to measure pedagogical constructs at scale. In writing support contexts, session notes—retrospective summaries created after consultations—offer a naturally occurring corpus for analyzing how writing consultants represent their work (e.g., types of feedback emphasized). Prior scholarship has

explored writing support interactions through qualitative discourse analysis but often with small samples due to the labor of recording and transcription. Building on *Journal of Writing Analytics* work that established session notes as an analyzable corpus for cross-institutional inquiry (Giaimo et al., 2018), this study treats session notes as analytics artifacts to examine the prevalence and character of process-focused versus product-focused feedback documented by consultants.

- **Research Questions**

  RQ1: How can session notes be leveraged to identify and quantify writing-process feedback provided to students at college and university writing centers?

  RQ2: What are the themes characterizing feedback focused on the student's written product and on the student's writing process?

  RQ3: What are the proportions of feedback in session notes related to the written product versus the writing process?

- **Methodology**: Two corpora of session notes were assembled. Dataset 1 comprises a random sample of 300 notes from 6,425 sessions at a large Midwestern US university (Aug 2019–Feb 2021). Dataset 2 comprises 100 randomly sampled notes authored by consultants from a cross-institutional public repository of 63 writing centers in North America and Europe (Modey et al., 2022). The study included an inductive thematic analysis (Braun & Clarke, 2006) to develop a codebook distinguishing process- and product-focused feedback. Iterative pilot coding with three annotators yielded a satisfactory inter-annotator reliability (Krippendorff's α = .78) on development rounds; study-phase reliability for Dataset 1 was α = .70. Intra-annotator agreement for Dataset 2 (20% double-coded) was 0.94 (percentage agreement).

- **Results**: Five process-focused themes emerged: recommending process-focused strategies (e.g., outlining, reading aloud, action plans), brainstorming/exploring ideas, understanding instructions and requirements, recommending additional resources, and formulating/understanding technical concepts and ideas. Seven product-focused themes also emerged and serve as contextual contrast (e.g., organizational coherence, evidence, word/sentence-level guidance, grammar/mechanics). Definitions and examples appear in the article. Across corpora, process-focused feedback comprised ≈35% of documented feedback (Dataset 1: 36%; Dataset 2: 32%) while product-focused feedback comprised ≈65% (Dataset 1: 64%; Dataset 2: 68%). Within process-focused feedback, recommending process strategies appeared in 42% of notes, brainstorming/exploring ideas in 22%, understanding instructions/requirements in 20%, recommending additional resources in 17%, and formulating/understanding technical concepts in 3%. Patterns were broadly stable across datasets, suggesting robustness to institutional variation.

- **Discussion**: Findings indicate that while writers often arrive with drafts (inviting product-oriented commentary), consultants still document substantial process scaffolding, especially strategy recommendations and early-stage support (brainstorming, unpacking prompts). The session notes frequently connect process strategies (e.g., reading aloud) to product goals (e.g., coherence, grammar), suggesting a combined pedagogy wherein strategy use is instrumentalized to improve textual outcomes. The multi-site corpus and validated

codebook position session notes as scalable instruments for monitoring feedback emphases and for evaluating alignment with stated process-oriented pedagogies.

- **Conclusions**: Session notes function as credible, scalable analytics artifacts for characterizing the balance of process- and product-focused feedback in writing consultations. Across more than sixty institutions, product-focused feedback is more prevalent, but higher-order concerns are salient, and process-oriented strategies are widely documented. The validated codebook and reliability estimates support reuse and extension in cumulative analytics research and local program assessment.

- **Directions for Further Research**: The paper suggests several possible avenues for future related work: (a) link feedback measures to outcomes (e.g., revision behaviors, text quality changes); (b) develop and validate automated classification models to tag feedback type at scale; (c) integrate session-note analytics with process-tracing data (e.g., keystroke logging, eye-tracking) to study how process-focused feedback interacts with actual writing behavior; (d) examine contextual moderators (consultation modality, course/discipline, writer profile, stage of process); and (e) extend analyses to adjacent institutional texts (instructor comments, LMS feedback threads) to compare feedback ecologies.

Keywords: higher-order skills, session notes, thematic analysis, university writing centers, writing process feedback

1.0 Introduction

Writing center session notes—the written records that consultants complete after each session—represent one of the largest untapped sources of writing analytics data in higher education. These routine, institutional documents offer a rare opportunity to study feedback practices at scale without altering instruction or collecting intrusive data. In this article, I demonstrate that session notes can function as scalable, institutional analytics artifacts: a naturally occurring corpus through which validity, reliability, and fairness in writing feedback can be examined across contexts. Using thematic analysis of two large datasets, this study identifies how writing consultants represent process- and product-focused feedback and provides a validated codebook that enables cross-institutional measurement.

In writing studies, much research has analyzed the interactions between writers and writing consultants (sometimes also called writing tutors or peer tutors) in academic support and writing center contexts, often through qualitative discourse analysis and, in some cases, quantitative methods (Bugdal et al., 2016; LaClare & Franz, 2013; Mackiewicz & Thompson, 2016). These studies have provided important insights into the pedagogical dynamics of writing support but are frequently constrained by small sample sizes, given the intensive labor of recording, transcribing, and analyzing spoken communication. As a result, large-scale questions about the kinds of feedback students receive and how writing consultants represent their work often remain underexplored.

The Journal of Writing Analytics (JWA) has been central to establishing this line of inquiry. Giaimo et al. (2018) demonstrated how corpus linguistic methods could be applied to session note repositories to investigate patterns in tutoring practices across institutions. Their work marked a pivotal methodological contribution by showing that large collections of session notes could serve as a basis for both quantitative and qualitative

analyses of writing center pedagogy. Building from that foundation, the present study extends the analytic scope by introducing a replicable thematic codebook and cross-institutional validation of session-note analysis, enhancements that position this work as a model for institutional-scale writing analytics, even beyond corpus linguistics approaches.

In addition, this study situates session notes within broader developments in writing analytics, where researchers are increasingly interested in process-oriented data and feedback mechanisms. The rise of technologies such as keystroke logging and eye-tracking has created new opportunities for generating automated, data-driven feedback on writing processes. For example, Dux Speltz et al. (2022) and Vandermeulen et al. (2020, 2023) demonstrated how insights from students' writing processes based on moment-by-moment keystroke and eye data (e.g., location of longest pauses, frequency and volume of deletions) can be extracted to formulate actionable process feedback (e.g., "revise periodically" or "write linearly"; see Dux Speltz et al., 2022, for the measures used to provide such process-focused feedback).

Understanding how process-focused feedback is currently represented in existing institutional artifacts becomes particularly important as researchers work to develop such process-focused technologies. Session notes could offer a window into how consultants conceptualize process- versus product-oriented support, which in turn highlights both the pedagogical commitments of writing centers and the potential gaps that analytics-based feedback systems might address. While session notes do not capture consultants' full perceptions or the complete dynamics of a session, they nevertheless provide a naturally occurring record of what consultants choose to represent about their work, which can offer insight into how they conceptualize feedback within the ordinary flow of writing center practice. By distinguishing between product-focused and process-focused feedback, and by quantifying their proportions across two large corpora of session notes, this study contributes new insights into the alignment between writing center pedagogy and the analytic possibilities for large-scale, data-driven understandings of writing instruction.

2.0 Background

This study examines how institutional texts—specifically, writing center session notes—can be used to investigate patterns of feedback across writing support contexts. By analyzing how consultants describe product- and process-focused feedback, this project explores how writing center discourse can be operationalized as data to better understand pedagogical practice. The study aligns with the *JWA*'s mission to advance methods that connect writing research with data-informed improvement of teaching and learning (Palmquist, 2019). As Palmquist (2019) suggests, writing analytics tools and frameworks can be used not only to analyze classroom outcomes but also to "improve writing center outcomes" and "contribute to our growing understanding of effective practices" (p. 7).

At the same time, writing center studies have been grappling with how to balance the rigor of data-driven inquiry with the relational, affective, and ethical dimensions of writing center work. Swaim and Monty (2023) observed that 21st century writing center research is moving toward replicable, aggregable, and data-supported approaches while recognizing that these methods can "strip the human experience of its nuance" (quoting Lockett, 2018, p. 139) if detached from context and identity. Their call for discourse-analytic and corpus-based methods that integrate ethics, intersectionality, and justice provides a backdrop for this project. In that spirit, the present study treats session notes as rhetorically situated artifacts: They are records that reflect writing consultants' values and practices within their authentic institutional context.

The central research problem addressed here concerns how to characterize and quantify the types of feedback documented in session notes and, by extension, how these institutional texts might inform analytics-driven understandings of writing pedagogy. In doing so, the study contributes to ongoing efforts to make writing center practices more visible within the field of writing analytics and to link data-driven insights with equitable, contextually grounded approaches to writing support. The findings aim to demonstrate that session notes can function as scalable, ethically interpretable analytics artifacts that bridge the qualitative traditions of writing center research with the quantitative infrastructures of writing analytics. By examining how feedback is represented in session notes, the study connects pedagogical theory with the analytic modeling of tutoring practices.

3.0 Literature Review

This review situates the study within the methodological evolution of writing analytics, tracing how writing center documentation has emerged as an ethical, scalable data source for understanding feedback practices. Each subsection highlights how prior research in writing processes, pedagogy, and institutional documentation of session notes informs the analytic design and validation of this study.

3.1 Writing Process Behaviors

Before delving into the details of our understanding of writing processes, it is important to make a distinction between written products and writing processes—and between writing processes and the writing process. A *written product* is any text, including a rough or final draft. In a typical writing classroom, an instructor will provide their students with feedback on written products based on text quality criteria, often presented to the students in rubric form or through comments on the text. In contrast, this paper refers to "*writing processes*" as the moment-by-moment actions that writers take while producing a text. These actions include planning, reading, pausing, typing (especially in terms of the sequence in which a writer linearly or non-linearly composes a draft), and revising behavior. This view of writing processes can be seen in contrast with the view of the *writing process* as a series of drafts (see, for example, Muncie, 2002) or early paradigms of the writing process as linear stages consisting of prewriting, writing, and rewriting (Rohman, 1965) or conception, incubation, and production (Britton et al., 1975).

In this view of the writing process, we consider the interplay between the cognitive processes involved in writing and observable behaviors. Flower and Hayes's (1981) cognitive process theory of writing and Kellogg's (2001) work on working memory shed light on the intricate workings of the mind during the writing process, and Breetvelt et al. (1994) showed that think-aloud protocols provided insights into how cognitive processes while writing related to text quality. These approaches offer valuable insights and illuminate writing as a temporal activity, but they can be challenging to implement in educational settings, where students may be self-conscious or unwilling to participate in think-aloud protocols or neurological monitoring. Session notes, therefore, offer a complementary, institutionally embedded record of writing processes at scale due to how writing center consultants can capture observable parts of the writing process (i.e., moment-by-moment actions; more on this below).

3.2 Writing Center Pedagogy

Writing centers represent one of the most widespread, yet institutionally underrecognized and often underfunded, infrastructures of writing instruction and research. Recent surveys have identified over 900 writing centers worldwide (more than 800 outside the United States and at least 111 within it), collectively serving tens of thousands of students across languages, disciplines, and educational systems (Bromley,

2023; Bromley, n.d.; Writing Centers Research Project Survey, n.d.). Essid and McTague (2019) argued that although writing centers are positioned in "the service corridor" of academia, they perform critical intellectual labor: They sustain inclusive learning environments, mentor diverse writers, and anchor institutional commitments to access and equity.

In the oft-cited "The Idea of a Writing Center," North (1984) asserted that the job of a writing center is to "produce better writers, not better writing" (p. 38). To do so, according to Winder et al. (2016), writing centers must "focus on the process of writing rather than the finished product, prioritising higher order concerns related to organisation of texts and development of arguments" (emphasis added, p. 324). This quote points to two important distinctions for writing center pedagogy: process versus product and higher-order versus lower-order concerns. Many college and university writing centers explicitly state that there should be a much greater emphasis on assisting students with the process of writing and with higher-order concerns of writing as opposed to focusing solely on perfecting a written product by eliminating all lower-order concerns; in other words, writing centers often claim to focus on "long-term writerly development" rather than "short-term 'fix-it' services" (Salem, 2016, p. 151).

In addition to the asserted prioritization of higher-order concerns by writing centers, another important aspect of writing center pedagogy is the one-on-one tutoring approach. The University of Iowa, for example, has provided individualized writing instruction for their students at the university writing center since the 1930s (Kelly, 1980). While this writing center began as a way to provide writing instruction for "remedial" students who were not meeting departmental standards, it quickly became a place where an instructor could help each student become a more confident and competent writer. Whereas a classroom teacher cannot provide frequent one-on-one conferences with every student, especially not for 30 or 60 minutes per student multiple times per week, a writing center can. This tradition of a one-on-one approach to writing instruction has become "a distinctive characteristic of writing centers throughout our history" (Scharold, 2017, p. 32). With this approach, consultants can assist students directly with parts of their writing process.

In the context of writing analytics, these pedagogical commitments can be operationalized as measurable constructs. In this study, I treat process-focused feedback as strategies and procedures that shape a writer's approach (e.g., planning, revising, task analysis) and product-focused feedback as comments directed at features observable in the written artifact (e.g., organization, evidence, grammar). This operationalization makes it possible to quantify how consultants emphasize process versus product in naturally occurring institutional texts (session notes).

3.3 Session Notes

Session notes are institutional analytics artifacts—routine, naturally occurring records created after consultations around the world—that take writing center consultants a substantial amount of time to produce after each session (Bugdal et al., 2016) and can be mined at scale to study writing support practices across institutions (Giaimo et al., 2018). Tutors at the writing center described in Bugdal et al. (2016) spend the last 15 minutes of every session composing their session notes, which consist of a session summary and a recap of the plans for revision discussed by the student and the consultant. Depending on the writing center, session notes may be saved only for the writing center staff or they may be shared with the students. Bugdal et al. (2016) quantified the labor involved in composing these notes, which underscored their consistent use and pedagogical value, while Hall (2017) and Giaimo et al. (2018) established them as analyzable corpora capable of revealing rhetorical and pedagogical patterns.

Hall (2017) and Giaimo et al. (2018) are among the few scholars who have begun to explore writing center session notes as data sources for research. Hall (2017) conducted a move analysis of session notes by inductively

developing a framework of 10 codes representing various rhetorical moves taken by consultants, such as "recommend next steps," "address higher-order concerns (HOCs)," and "address lower-order concerns (LOCs)." Hall argued that this type of framework can be used to teach consultants about the expectation of the genre. Following Giaimo et al. (2018) in *JWA,* who established session notes as a viable analytics corpus, the current study seeks to extend this line of inquiry by incorporating qualitative analysis of word contexts and functions in addition to quantitative data. This combined quantitative-qualitative approach aims to provide additional insights into how language relating to feedback functions within writing center session notes, which contributes to the growing body of corpus-based writing center research that Hall's (2017) and Giaimo et al.'s (2018) work helped establish. By combining thematic analysis with validation and reliability testing, the present study builds from this previous work and positions session notes as scalable analytics artifacts for equitable and replicable research in writing center settings.

3.4 The Present Study

The present study employs thematic analysis with an inductive approach to allow for an in-depth analysis of themes present in writing center session notes. The study addresses the following research questions:

1. RQ1: How can session notes be leveraged to identify and quantify writing-process feedback provided to students at college and university writing centers?

2. RQ2: What are the themes characterizing feedback focused on the student's written product and on the student's writing process?

3. RQ3: What are the proportions of feedback in session notes related to the written product versus the writing process?

I begin by analyzing session note data at one large Midwestern university in the United States. Then, I leverage a cross-institutional repository (63 sites) to enhance external validity and enable replicability of analytic claims (Modey et al., 2022). By addressing these research questions, the study will provide a comprehensive understanding of how writing-process feedback is reportedly delivered in practice and how session notes can be used as scalable, institutional analytics artifacts.

4.0 Methods

4.1 Corpus Construction & Data Governance

The materials analyzed in the present study were derived from two corpora of writing center session notes. The first corpus comprised session notes from 6,425 sessions at a writing center at a large Midwestern university in the United States, which took place between August 1, 2019, and February 17, 2021. This writing center served undergraduate and graduate students across the university, and consultants were undergraduate and graduate students, as well. At this writing center, session notes typically summarized work on a wide range of text types, including course-based assignments such as research papers, rhetorical analyses, and lab reports, as well as professional and academic genres such as cover letters, personal statements, theses, and dissertations. Because consultants assist writers from across disciplines and levels of study, the notes reflected an extensive variety of writing tasks and rhetorical situations. Consultants at this writing center were required to submit session notes for each appointment they completed prior to the end of that week, but they are instructed to write and submit them immediately after each appointment whenever possible. To illustrate how the notes in this sample are structured, the following is an example of a session note from this writing center:

> "[Student] had a Google Docs appointment today to work on six paragraphs for his literature review. He wanted to make sure he was writing clearly and effectively, so that is what we focused our time on. After reading through his six paragraphs, I pointed out some small things that were confusing to me, and we discussed what he meant in his wording and brainstormed different ways to word his ideas to add extra clarity. We also went over a few sentences that mean similar things but discussed which works best for his particular writing. Overall, [Student] had great ideas and typically catches his own clarity mistakes!"

All session notes were de-identified by the director of the writing center before they were collected for this study as directed by the university's institutional review board (IRB). Following this de-identification procedure, the present study was deemed exempt from IRB oversight. For this study, I focused on a random sample (using simple random sampling in a Python script) of 300 session notes from the overall collection of 6,425 notes. This sample comprised Dataset 1.

The second corpus comprised session notes shared anonymously from 63 writing centers across North America and Europe, using a survey conducted by Modey et al. (2022). This corpus is publicly available with de-identified session notes. The 63 participating writing centers represented a diverse range of institutions, including research-intensive universities, regional comprehensive institutions, liberal arts colleges, and two-year colleges. Survey responses indicated that these centers collectively serve undergraduate and graduate students as well as faculty, staff, and alumni, with some also supporting professional school populations (e.g., law and medicine). The centers employed a mix of undergraduate and graduate students, faculty, and professional staff tutors (Modey et al., 2022). Drawing only from the session notes in the corpus that were written by consultants rather than the tutees/students, I used simple random sampling to select 100 of the 1,201 session notes available to comprise Dataset 2. In both corpora, I included only narrative session notes written in open text fields, excluding data from template-based forms that use preset options, checkboxes, or other structured response formats.

4.2 Thematic Analysis

The present study undertook a thematic analysis to address the research questions. Thematic analysis is a process through which researchers can "thematize meanings" in data (Holloway & Todres, 2003, p. 347). Thematic analysis is a widely used qualitative method in a variety of research areas, including psychology (Braun & Clarke, 2006) and discourse analysis (Singer & Hunter, 1999). I undertook an analytic procedure based on Braun and Clark's (2006) recommendations for thematic analysis and adapted to the specific aims of this research. The procedure consisted of the following steps, which are explained in detail below: (1) familiarization with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, and (5) defining and naming themes.

4.2.1 Familiarization with the Data

For this step, I accessed the first corpus of session notes, and to get an initial sense of the data, I randomly selected and read through a subset of roughly 100 notes. Because I was employed as a consultant at this writing center for nine semesters, I was well versed with the general structure and expectation of session notes and had composed hundreds of them at this writing center in the past. Therefore, an important aspect of this step involved reading session notes written by other consultants and becoming more familiar with how they structured their notes and how they summarized session content.

4.2.2 Generating Initial Codes

In this step, I generated an initial code list through inductive analysis. A set of 30 session notes was first examined by three researchers (the author and two undergraduate research assistants trained in thematic analysis methods and familiar with writing center work) to create codes to describe the types of feedback documented in the session notes. Subset size—30 session notes, equivalent to 10% of the dataset for the study—was determined by the aim to achieve a balance between comprehensiveness and manageability. This subset provided sufficient breadth to facilitate the generation of initial codes. My research assistants and I analyzed the semantics of each session note to identify all conceptually distinct types of feedback mentioned in the note, such as "outline creation" or "discussed how to begin." As a result, I arrived at 80 initial codes.

4.2.3 Searching for Themes

In this step, I evaluated the initial code list to form categories of related concepts. Codes were aggregated and condensed into broader categories of product- and process-focused feedback types, creating an initial tentative coding scheme. These two initial themes were loosely developed to describe process-focused feedback as "what should the student do," often before a first draft had been completed, and product-focused feedback as feedback referring to "something physical to look at in the text." These descriptions are in line with previous research, in which product-focused or "product-oriented" feedback refers to text quality criteria, which measures something present in the physical text, while process-focused or "process-oriented" feedback refers to strategies a writer can take (e.g., Vandermeulen et al., 2023). Among the 80 initial codes compiled during the previous step, 28 codes referred to process-focused feedback (e.g., "discussed assignment requirements," "topic creation," "outline creation," "developed thesis," "discussed how to begin," "outlined paragraphs") and 52 codes referred to product-focused feedback (e.g., "tone of the piece," "needed clarity," "needed specificity," and "effective use of words").

Next, tentative categories of codes were created to organize them around potential themes or common concepts. In this step, I referred to previous research on higher- and lower-order feedback provided in writing centers to adapt existing categories (such as "organization, structure, overall coherence" and "understanding instructions or requirements"; Winder et al., 2016) to fit the current data.

4.2.4 Reviewing Themes

To review these tentative themes, my research assistants and I conducted several rounds of pilot coding in which 30 session notes at a time were examined to further inform the development of the emerging thematic framework. Additional rounds of pilot coding were conducted until a satisfactory inter-annotator reliability level could be established using Krippendorff's alpha (Hayes & Krippendorff, 2007; Krippendorff, 2007), which was selected as the measure of inter-annotator reliability for this study because it corrects for chance agreement and can accommodate any number of coders. In each round, codes were further defined in terms of their functional realizations, and additional codes and themes were added as needed. Functional realizations included segments of text in the session note that specifically exemplified the feedback theme, such as "connect the beginning and the end," "improve the clarity of words/ideas," and "including more information to support the thesis/topic sentence." Themes were removed if violations of independence (i.e., the premise that each code must not depend on or influence the others) were noted.

Further, I consulted an expert of the target discourse community—a communication consultant at the writing center—between the second and third rounds of pilot coding to discuss the developed codes and themes. Each code was evaluated by the consultant to determine whether the consultant deemed the functional realizations and descriptions of the codes to be appropriate and accurate based on her expectations and experience. The

consultant expressed that all codes were accurate and the coding protocol was appropriate and clear; she also identified and helped resolve one problematic theme (tentatively called audience awareness) by discussing how it referred to something that likely occurred in every appointment even when it was not explicitly written (i.e., the consultant said that every consultant would ask the student to consider their audience in some way during their session, but it may not always be written in a session note). Therefore, the assumption of independence was violated, so this particular theme was removed.

In total, five rounds of pilot coding were conducted in which all three researchers coded the same 30 notes per round. Each session note was coded for the presence of each theme. After the five rounds of coding, a satisfactory inter-annotator reliability level was established: Krippendorff's α = .78 (Hayes & Krippendorff, 2007; Krippendorff, 2007). Final inter-annotator reliability was established later for the full annotation of the dataset (reported below).

4.2.5 Defining and Naming Themes

In this step, I finalized a definition and narrative description of each theme to clearly limit the scope of what each theme entails (Braun & Clarke, 2006), informed by the tentative thematic framework established above and the researchers' shared understanding of each theme from the rounds of pilot coding. Articulating a definition and a narrative description for each theme involved specifying the following elements:

- (A) Scope, indicating how the theme relates to larger themes and the data set
- (B) Content, describing the main functional realizations of the theme
- (C) Examples, demonstrating how the theme appears in the dataset

4.3 Proportions of Process- and Product-focused Feedback

To address the third research question about the proportions of feedback in the session notes related to the written product versus the writing process, I analyzed Datasets 1 and 2. In Dataset 1, two trained undergraduate research assistants each coded 180 notes, and I coded 60 notes to calculate inter-annotator reliability. Once again, each session note was coded for the presence of each sub-theme, and Krippendorff's alpha was calculated on the 60 overlapping session notes to confirm reliability (Krippendorff's alpha = .70). Then, to demonstrate that the established themes could apply to other writing centers beyond the first corpus, I also coded the 100 notes in Dataset 2 from the Modey et al. (2022) corpus. Intra-annotator reliability was calculated using simple percentage agreement for 20% of the dataset, yielding agreement of 0.94. Within the framework of writing analytics validity (Lang et al., 2019), such reliability evidence contributes to claims of analytic fairness by ensuring that coded patterns reflect stable constructs rather than coder variability.

I then quantified the occurrences of each theme and sub-theme for the entire random sample of session notes. Finally, I compared the frequency of process-focused feedback and product-focused feedback in the session notes by determining how many session notes in the sample contained each sub-theme of process-focused feedback and each sub-theme of product-focused feedback.

4.4 Validation Study: Preliminary Evaluation of Session Note Credibility

There is a crucial assumption underlying the present study: that session notes accurately reflect the feedback provided to students during sessions. As a form of construct validation for the analytics measures, I compared coded session notes to annotated session transcripts, estimating precision, recall, and F1-score

(a measure that balances precision and recall into a single score, calculated as their harmonic mean) for the presence of feedback themes as a preliminary study conducted concurrently with the current study (Smith et al., 2022). Ten writing center sessions were recorded, transcribed, and analyzed in terms of the types of feedback provided during the session using the themes developed in this chapter. The first author catalogued the occurrence of these themes in the writing center sessions, accomplished via direct observation and a review of the transcriptions to confirm the absence of any omissions. Consequently, the session notes corresponding to the same ten sessions were annotated for the presence of these themes, thereby facilitating a comparison between the types of feedback documented in the session notes and those discerned in the session transcriptions. A second researcher annotated a subset of 30% of the sample, both session transcriptions and session notes, achieving inter-annotator reliability of 0.91.

Information retrieval metrics of precision and recall were used to analyze comparisons. Precision refers to the number of correct positive predictions made (Brownlee, 2020). In this case, it referred to how many themes identified in the session notes were accurate when compared to the themes found in the session transcriptions. Recall refers to the number of correct positive predictions made of all positive predictions that could have been made (Brownlee, 2020). Here, recall answers the following question: of all occurrences of themes annotated in the session transcriptions, what proportion was also documented in the session notes? Preliminary results revealed that analyzing session notes appears to be an accurate and reliable method (precision = 1.0; recall = 0.85; F1-score = 0.92) for identifying process- and product-focused feedback provided in writing center sessions. In writing analytics terms, this high F1-score provides evidence of construct validity by indicating that the coded representations of feedback in session notes closely align with the feedback observed in transcribed consultations. This validation also supports fairness, as it demonstrates that analyses of session notes do not systematically distort consultant practices, thereby offering an ethical and empirically defensible basis for institutional analytics (Lang et al., 2019). However, these findings should not be interpreted as suggesting that session notes capture all dimensions of writing center consultations. Rather, this study examines session notes as important institutional texts that can illuminate patterns in how tutors represent their work with writers, especially their feedback to writers, through post-session documentation.

5.0 Results

This section presents findings to address how and to what extent writing center consultants reported providing writing process feedback to students. First, in line with the study's first two research questions, I used session notes to identify the main themes of feedback that emerged from the thematic analysis process, distinguishing between feedback related to the student's written product and feedback focused on the writing process. I explore how feedback is characterized within session notes by sharing each of the themes in detail, including definitions, narrative descriptions, and examples for each. These emergent themes constitute a new codebook of writing center feedback types. Then, in line with the study's third research question, I determine and compare the proportions of feedback in session notes that pertain to the written product versus the writing process.

Following the thematic analysis procedure described above, several themes were identified and sorted into two primary categories: product-focused feedback and process-focused feedback. Seven sub-themes of product-focused feedback emerged, while five sub-themes of process-focused feedback emerged. Figure 1 illustrates a thematic map of all emergent themes in this study.

Figure 1

Thematic Map of All Levels of Emergent Themes
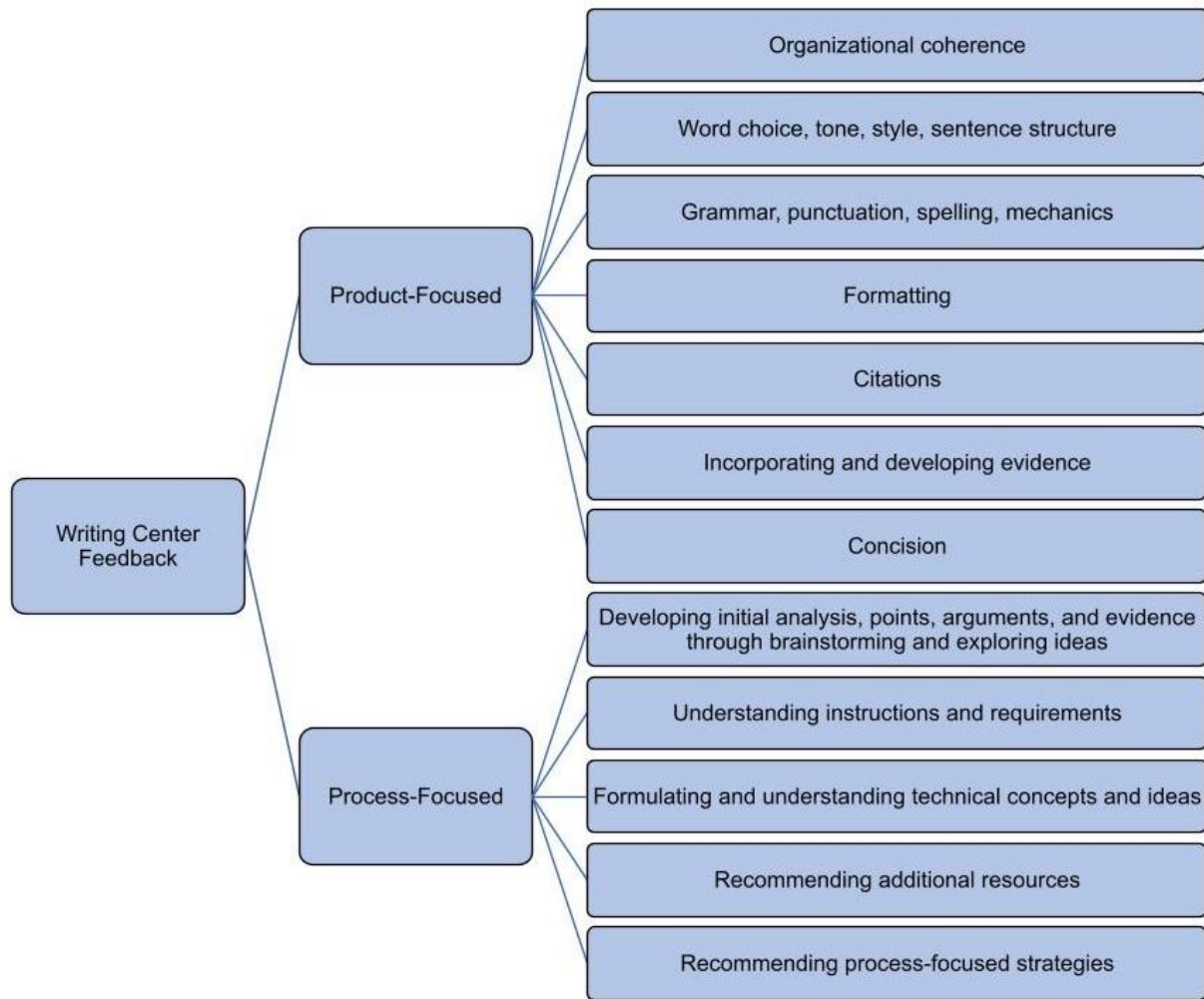
The following sections provide the themes in detail as a result of the qualitative thematic analysis procedure to constitute a comprehensive codebook of the emergent themes.

5.1 Codebook of Themes: Product-focused Feedback

This primary category—*product-focused feedback*—addresses the feedback consultants provide on the written products students bring to the center (i.e., rough or complete drafts). Product-focused feedback includes both higher-order concerns (i.e., those that are related to the organization of texts and the development of arguments) and lower-order concerns (i.e., issues at the surface level, such as grammar, spelling, and mechanics) focused explicitly on the written product. This is the type of feedback that course instructors typically provide, since they generally respond to completed or submitted drafts rather than observing students' writing processes directly. Similarly, it is the kind of feedback that students commonly expect when they bring written drafts to the writing center.

5.1.1 Organizational Coherence

A consistent theme in consultants' notes is their concern for organizational and structural aspects of a text. It is one of only two types of product-focused advice, in addition to the sub-theme incorporating/developing evidence described below, focused on describing higher-order advice given on a student's written product. Since coherence is such a broad yet important concept in writing, this theme has many possible functional realizations. Some refer to improving the introduction and conclusion to support coherence, with possible functional realizations including "improve/add introduction or conclusion paragraphs," "connect the beginning and the end," or "summarize ideas in the conclusion." Other variations of this theme discuss the overall structure or organization of the paper, including realizations such as "improve/determine the structure of the paper," "improve the organization of paragraphs," or "improve flow/fluency." Additionally, this theme includes discussions of transitions and topic sentences, important elements for creating coherence and cohesion in writing, with functional realizations such as "improve transitions," "improve connections between ideas," or "improve topic sentences." In the following examples here and below, the underlined portions of the text demonstrate the specific subtheme, as some sentences contain examples of multiple themes.

- Example: "We then read through her introduction and worked <u>to split it up into paragraphs with cohesive ideas</u>."

5.1.2 Word Choice, Tone, Style, Sentence Structure

Another theme is consultants' concern for word- and sentence-level features that are technically correct but could be improved for uniqueness, clarity, or language usage. In other words, this theme conveys wording changes for reasons other than being explicitly incorrect. Functional realizations of this theme include "improve the clarity of words/ideas," "address the tone of the piece," "improve word choice," "improve specificity," "discuss writing style/uniqueness," "sentence-level clarification/rewording," and even the relatively vague statement of "feedback on language." These features address something about the written product that should be improved in some way but without a focus on errors or mistakes.

- Example: "We also discussed adding specificity to phrases like 'have a lot to them' and 'was so much' to strengthen the writing and clarify meaning for the reader."

5.1.3 Grammar, Punctuation, Spelling, Mechanics

This identified theme is distinct from word choice, tone, style, sentence structure in that it addresses areas exhibiting violations of prescriptive English grammar, punctuation, spelling, and mechanics rules. While this theme could describe issues that occurred in a student's writing and provide direct advice for handling those issues, as a lower-order concern this theme is not necessarily prioritized during the session. For instance, a consultant may note that the student struggled with prepositions and, in turn, provide some general advice or resources for addressing this issue; yet, it may be noted that they moved on quickly from this concern to focus more on higher-order concerns. This is not always the case, however; sometimes this theme may indeed describe how lower-order concerns involving grammar, punctuation, spelling, or mechanics dominated the focus of the session.

- Example: "As we read through her work, <u>we detected a few errors with commas</u>."

5.1.4 Formatting

This theme involves the ways in which consultants described physical aspects of a text, including formatting components such as spacing, headings, layout, graphics, and more. Most often, this theme highlights formatting decisions driven by genre expectations or conventions, such as the correct formatting for a cover letter, resume, or CV. Additionally, this theme also refers to following the conventions of specific style guidelines, like APA or MLA, such as creating appropriate headings or cover pages. Note that this theme is distinct from *creating citations* (see below) in that here style guidelines dictate document style and formatting.

- Example: "We also worked on <u>formatting everything in APA style</u>."

5.1.5 Creating Citations

This theme is rather straightforward as it refers to the process of crafting in-text citations and works cited or reference page entries. Once again, there is an explicit focus on the stylistic expectations of the particular style guide required for the text type or assignment, but unlike *formatting* this theme only focuses on citations. More specifically, there was an instance in which the consultant directly mentioned the risk of plagiarism (as shown in the example below) as justification for providing this type of feedback.

- Example: "I showed her how to cite for MLA and noted she needed to go back and cite to avoid accidental plagiarism."

5.1.6 Incorporating/Developing Evidence

This is the second of the two product-focused themes centered on consultants' descriptions of a higher-order concern. This theme involves advice given for developing supporting evidence, including summarizing, paraphrasing, or directly quoting outside information. Functional realizations include "incorporating evidence/statistics," "including more information to support the thesis/topic sentence," "improve paraphrasing/quoting," and "adding specific examples."

- Example: "We worked together to . . . better explain aspects of his body paragraphs that lacked supporting evidence, depth, and/ or reason."

5.1.7 Improving Concision

This theme refers to advice focused on removing unnecessary words or information to make the student's text more concise. Functional realizations of this theme include "remove unnecessary information," "improve concision," "cut to meet the word limit," "reduce redundancy/repetitiveness," and "address wordiness."

- Example: "Some sentences were a bit repetitive, while others had a vague language that could be made clearer with more concise language. By the end of the session, we had cut a little over 100 words."

5.2 Codebook of Themes: Process-focused Feedback

This primary category centers around the types of feedback consultants are encouraged to provide to uphold North's (1984) vision of writing centers as process-focused spaces. Through this feedback, consultants emphasize the aspects of the writing process identified as areas of improvement for the

student. Although most students come to the writing center with a draft in hand, consultants still find ways to tease apart aspects of the students' processes that could be improved. Additionally, some students may wish to work through the process-focused advice together, providing consultants with an opportunity to share comprehensive advice for brainstorming, researching, reading, outlining, and more.

5.2.1 Developing Initial Analysis, Points, Arguments, and Evidence Through Brainstorming and Exploring Ideas

This theme comprises many different types of feedback given during sessions, all focused explicitly on developing arguments, getting started with the writing process, or exploring ideas. This theme has many potential functional realizations: "topic creation," "discussing how to begin," "discussing the direction of the essay," or "developing main ideas." Each of these involves the very beginning of the writing process in which the consultant and the student worked together to brainstorm ideas for the student's "big picture" of the text at hand, developing ideas for the first time. Importantly, this theme only involves feedback about ideas or topics not already in the paper. This distinction situates this theme firmly in the process-focused category as the feedback given here is clearly focused on the process of brainstorming ideas.

- Example: "We brainstormed how to incorporate her counter-argument in a way that wouldn't detract from the other arguments she was making."

5.2.2 Understanding Instructions and Requirements

This theme is similar to the previous one in that both describe something that happens early in students' writing processes, but it is focused specifically on describing how the consultant assisted the student with understanding the expectations of the particular writing assignment and/or genre at hand. This theme considers how the instructor presents expectations for the assignment; consultants often described a process of looking through the instructor's assignment description and/or rubric to assist students with this phase of their writing process. Accordingly, the primary functional realizations for this theme include "understanding assignment requirements," "answering the correct questions," "addressing the prompt," "comprehending the rubric," and "addressing instructor expectations."

- Example: "We matched the goals of the assignment directly to her paper in order to outline exactly how she had met some requirements and where she could improve on others."

5.2.3 Formulating and Understanding Technical Concepts and Ideas

This theme captures instances when consultants help students grasp specialized concepts distinct from standard essay writing conventions. The term "technical" in this context implies the intricate or specialized nature of the topic at hand. Such specialized knowledge may differ greatly between sessions, but given that consultants are not experts in every discipline, their assistance typically centers on specialized aspects of communication. For instance, under this theme, a consultant could help a student with the discipline-specific conventions of creating a PowerPoint presentation or other forms of multimodal communication. This theme also encompasses guidance on setting up accounts on platforms like LinkedIn or Grammarly, or explaining technical aspects of rhetorical analysis when the consultant feels equipped to do so. Another facet of this theme involves students requiring assistance in articulating intricate ideas in an accessible way. Here, the consultant stepped in as an external, non-specialist audience to help the student practice translating complex, discipline-centric terminology and data into more universally understandable language.

- Example: "[We] discussed the inclusion of a visual to display the data."

5.2.4 Recommending Additional Resources

This theme involves the recommendation of resources beyond the writing center, and it is realized through recommending specific online resources—such as the Purdue OWL, the writing center's website, or Grammarly—and through recommending in-person resources, such as the career services center, a specialized writing center (e.g., the Center for Communication Excellence at one institution, which specializes in graduate student writing), or the student's instructor. Further, recommending an additional appointment at the writing center is itself a recommended resource. Therefore, any variation of "recommending another appointment" is also included as a functional realization of this theme.

In August 2019, the beginning of the data collection period for Corpus 1, the writing center added a place on the session note input form for consultants to indicate resources recommended to students, which shows how this has become an important goal of the center. Even though consultants at the writing center comprising Corpus 1 must check from the list of options to indicate which resources (if any) they recommended to students, this still emerged as a theme in the session notes themselves.

- Example: "I recommended consulting the Purdue Online Writing Lab's website for assistance with APA guidelines."

5.2.5 Recommending Process-focused Strategies

This theme is focused particularly on strategy-focused instruction, meaning that consultants assist students with strategies that students can utilize in future communicative tasks. In the initial development of this theme, it included strategies such as (reverse) outlining, freewriting, reading aloud, and critical reading, all of which are strategies not restrained to the single task at hand. Additional process-focused strategies include methods for mapping out the writing journey, such as creating action plans, generating lists to collect and organize ideas, developing multiple drafts, and incorporating visual aids as organizational tools.

- Example: "I helped her visualize her current draft <u>by writing out an outline of what she currently had</u>."

5.3 Quantitative Results

After the sample of 400 session notes was annotated based on the coding scheme above, a quantitative analysis was conducted to determine the frequency of process- and product-focused feedback in the sample. Table 1 provides an overview of the occurrences of each theme. Product-focused feedback comprised about two-thirds of all coded feedback across both datasets (65%). Process-focused categories accounted for roughly one-third of all feedback, led by strategy recommendation (42%). These proportions indicate that consultants primarily described feedback directed at features of the written product, though process-oriented guidance remained a consistent part of their reported practices. The distribution suggests that while product concerns were more prominent in session documentation, process-focused strategies still formed a substantial and recurring element of writing center pedagogy.

Table 1

Percentage of Session Notes in the Dataset with Each Theme

Theme	Dataset 1 (300 notes)	Dataset 2 (100 notes)	Total
Product-focused Feedback			
Organizational coherence	48%	53%	49%
Word choice, tone, style, sentence structure	42%	27%	39%
Grammar, punctuation, spelling, mechanics	28%	33%	29%
Formatting	12%	11%	12%
Citations	12%	21%	15%
Incorporating and developing evidence	32%	40%	34%
Concision	21%	9%	18%
Product-focused Percentage of All Feedback	64%	68%	65%
Process-focused Feedback			
Developing initial analysis, points, arguments, and evidence through brainstorming and exploring ideas	21%	23%	22%
Understanding instructions and requirements	20%	20%	20%
Formulating and understanding technical concepts and ideas	4%	2%	3%
Recommending process-focused strategies	48%	23%	42%
Recommending additional resources	15%	22%	17%
Process-focused Percentage of All Feedback	36%	32%	35%

6.0 Discussion

One promising finding from the quantitative analysis is that although product-focused feedback was more commonly reported, two of the three most common types of product-focused feedback address higher-order concerns. Feedback on organizational coherence was documented in 49% of the sample, and feedback on incorporating and developing evidence was documented in 34% of the sample. Examples of these feedback types reveal that consultants reported assisting students with concepts such as developing supporting evidence, depth, and/or reason and the cohesiveness of ideas, both of which facilitate writing skills essential for success in any genre of writing. These findings may alleviate some concerns from writing center practitioners who hold that students see writing centers as providing "fix-it services" for grammatical issues (Salem, 2016, p. 151), especially since feedback on *grammar, punctuation, spelling, and mechanics* was present in only 29% of the sample.

Another interesting finding concerns instances in which a process-focused strategy was presented as a way to address a product-focused concern or evaluate the written product. For instance, reading aloud is a process-focused strategy that was often presented as a way to evaluate a draft in terms of product goals. In the following example, the consultant noted the process-focused strategy of reading aloud in one sentence and then described the product-focused concern that then dominated their conversation: "We read her paper aloud, paragraph by paragraph. We paused after each paragraph to fix grammar and syntax." While it is perhaps not surprising that consultants frequently described both process- and product-focused feedback in a session, it is fascinating to see how intertwined process strategies and product goals were. This pattern points to the potential value of combined process- and product-focused feedback in which a process strategy is presented as a method for achieving a certain product goal. Indeed, such combined process- and product-focused feedback could be implementable in writing centers or through writing-process technology (e.g., Dux Speltz et al., 2022; Vandermeulen et al., 2020, 2023), which represents a compelling avenue for future research.

The results of the quantitative analysis of product-focused feedback differ only slightly from what was found in Winder et al. (2016), where students self-reported that they received the most help with "organization, structure, overall coherence" (40.9%), followed by "analysis, points, arguments, evidence" (22.7%, similar to incorporating and developing evidence in the present study), "grammar, punctuation, spelling, mechanics" (17.6%), and then "word choice, tone, style" (8.7%). Other categories comprised the final 9.9%. Although the frequency order of these product-focused categories varies slightly between the two studies, the top four categories are almost identical. The main difference is that the students in Winder et al.'s (2016) study reported that higher-order concerns dominated the feedback provided (63.6%), whereas the present study's higher-order concerns (organizational coherence and incorporating and developing evidence) comprised only 42% of the product-focused feedback provided (and 27.7% of all feedback provided). However, this can be accounted for by the different ways in which these categories were reported in these studies. For Winder et al. (2016), students self-reported what they felt the consultant offered the most help with; in the present study, all types of feedback are described for sessions, meaning that any given session could have five or even more types of feedback summarized in the session notes. This is an advantage of the current approach as it allows a more complete picture of what happens in each session.

6.1 Analytics Contributions

Methodologically, this study demonstrates how institutional texts (session notes) can serve as scalable measurement instruments for pedagogical constructs (process vs. product feedback), in line with the previous *JWA* study by Giaimo et al. (2018). In this study, I analyzed only 300 session notes from the overall collection of 6,425 in Dataset 1, and only 100 of the 1,201 session notes available from the Modey et al. (2022) dataset. With the codebook now created and formalized in this paper, more of these institutional texts could be systematically classified across thousands of notes. This could be done either through coordinated human annotation or through machine-learning models trained on the codes introduced here (which I will discuss more below). Whereas this study provides cross-institutional prevalence estimates and a validated codebook through the emergent themes and their detailed descriptions, other centers can now adopt or extend these themes to advance cumulative analytics on writing support practices. Importantly, with this methodology, consultants are not asked to do anything beyond their normal practices, which provides a way to gain these insights without compromising consultants' usual practices or sacrificing validity. In other words, this approach could be taken at writing centers around the world without changing their operations. Furthermore, in session notes, consultants describe their feedback in a natural way that students will understand if they access the notes later, and this coding scheme provides a way to interpret and classify this natural language into meaningful themes. This approach advances fairness, validity, and

replicability in writing analytics by showing that routine instructional artifacts can produce scalable and ethically grounded data for institutional research.

This study also speaks to broader disciplinary developments at the intersection of writing center studies and writing analytics. Scholars have long noted that writing center research tends to circulate inwardly by privileging local pedagogical narratives over outward, data-driven inquiry (Driscoll & Perdue, 2012; Lerner & Oddis, 2017). By operationalizing session notes as institutional data, this study responds to those calls for methodological transparency and provides a model for engaging in evidence-based, cross-disciplinary research that aligns with contemporary frameworks of validity, reliability, and fairness (Lang et al., 2019). In this sense, session-note analytics situate writing center work within the broader ecosystem of learning analytics and demonstrate how local documentation can address institutional and disciplinary questions.

Another strength of this study is its utilization of session notes from the Writing Center Session Note Data Repository compiled by Modey et al. (2022), which comprises data from 63 institutions. This extensive dataset allows for a comprehensive analysis of product- and process-focused feedback documented in sessions across various institutions. Accordingly, this approach enhances the generalizability of the current study's findings to a broader context. The inclusion of diverse institutional data (from two-year colleges to research-intensive universities across several countries) strengthens the validity of the findings and provides a more representative picture of writing center practices, which makes the findings more likely to be applicable and valuable to writing centers across institutions.

Beyond providing a validated codebook and prevalence estimates, this work also lays the groundwork for analytics-based technological extensions. For example, the labeled dataset could support automated classification, where natural language processing and machine learning models learn to tag session notes by feedback type at scale. Those classifications could feed into dashboarding tools that visualize distributions of process- and product-focused feedback over time or across institutional contexts, which could give writing center administrators actionable insight into tutoring practices or explore contextual moderators such as consultation modality, discipline, writer profile, or stage of the writing process. That data could also be linked to process-tracing data (e.g., keystroke logging or revision histories) to examine how different feedback types correlate with observable outcomes, such as revision behaviors or changes in text quality. In this way, session notes could serve as a foundation for writing analytics infrastructures that bridge human- or machine-coded data and automated feedback systems.

6.2 Theoretical and Pedagogical Contributions

This study also has theoretical implications for writing center pedagogy and practical implications for writing center practices. First, the results of the quantitative analysis offer implications for understanding the proportion of process- and product-focused feedback provided at these writing centers. Product-focused feedback was substantially more frequent than process-focused feedback. When students come to a writing center, they often already have a draft (i.e., a written product) in hand, and consultants have not had the opportunity to watch students' writing process unfold. Therefore, it makes sense that the majority of consultants' feedback would refer to product issues. This, perhaps, offers a point of conflict for writing centers that aim to fulfill North's (1984) vision of a writing center that focuses on the writing process; however, as later scholars (Grimm, 1992) and even North himself (1994) have observed, that early view of a writing center, while "idealistic" and "well intentioned" (Grimm, 1992, p. 6), was perhaps limiting and not fully in line with what writing centers actually hope to achieve. Instead, since that initial article (North, 1984), writing center scholars have complicated that vision to emphasize continuous learning, reflection, and writer development as outcomes of tutoring (Grimm, 1992; North, 1994; Winder et al., 2016).

Ultimately, this is still a process-focused approach, but there is a more balanced take on what should be addressed in a writing center session.

Achieving that balance could require adjustments to how writing centers are used. One promising approach involves reimagining when students engage with the center: encouraging visits at early stages of idea generation, planning, and interpretation of assignments, when process-oriented feedback and reflection can be most impactful. Notably, the most process-focused feedback in this study appeared in sessions centered on early-stage activities—brainstorming, clarifying assignments, and developing ideas or strategies—when students arrived without a complete draft. Encouraging more consultations early on could help redistribute the predominance of product-focused feedback and promote writers' metacognitive awareness of their processes. Future research might compare how session notes and feedback provision differ when consultations occur at different stages of the writing process.

7.0 Conclusion

This study demonstrates that writing center session notes are scalable institutional analytics artifacts that can offer insights into writing center practices. In the present study, session notes were analyzed to gain insights into the nature of feedback provided in writing center sessions across diverse institutions. While product-focused feedback was found to be more prevalent than process-focused feedback, the emphasis on higher-order concerns such as organizational coherence and evidence incorporation is encouraging. The study's methodology of utilizing session notes from multiple institutions enhances the generalizability of findings and contributes more broadly to writing center research. At the same time, the predominance of product-focused feedback raises questions about whether and how writing centers achieve the goal of process-centered pedagogy. Writing centers could consider including specialized training for consultants in process-focused feedback, exploring process-tracing technologies, and investigating student preferences for feedback types. Additionally, the study suggests that encouraging students to visit writing centers earlier in their writing process could facilitate more process-focused assistance.

As noted in the literature review, writing centers now operate at hundreds of institutions around the world, collectively forming one of the most extensive yet underrecognized networks for writing instruction and research. With this important context in mind, I argue that analyzing session notes can serve as a window into a global and distributed network of writing expertise and pedagogy, and more writing center scholars could take advantage of this opportunity to highlight the valuable work being done in their centers.

In terms of future analytics work, the codebook and validated labels open opportunities for automated classification (e.g., training natural language processing models to tag feedback type at scale), dashboarding (e.g., monitoring mix of process/product feedback over time and by context), and linkage with process-tracing data (e.g., keystroke logging) to test how feedback correlates with subsequent revisions or other writing outcomes. These extensions would further align writing center research with writing analytics infrastructures. Beyond writing centers, the approach generalizes to other writing support ecologies (e.g., peer-review platforms, instructor feedback, LMS comment streams), where institutional texts can be analyzed as analytics artifacts to surface feedback patterns and inform program design. However, as writing center analytics scales through automation and machine learning, future work should also consider how such technologies align with process-oriented pedagogy and data ethics. That is, researchers should continue to ensure that these innovations designed to support learning do not compromise privacy or the human-centered values that define writing center practice.

More broadly, this analytics framing positions writing center studies within a growing interdisciplinary conversation about how writing data can support fair, valid, and replicable research practices. As the writing

center field continues its outward turn, leveraging institutional artifacts such as session notes can enable writing centers to contribute meaningfully to shared infrastructures of educational analytics and to the ethical study of writing at scale.

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References

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Breetvelt, I., van den Bergh, H., & Rijlaarsdam, G. (1994). Relations between writing processes and text quality: When and how? *Cognition and Instruction*, *12*(2), 103–123. https://www.jstor.org/stable/3233677

Britton, J., Burgess, T., Martin, N., McLeod, A., & Rosen, H. (1975). *The development of writing abilities*. Macmillan Education.

Bromley, P. E. (2023). Locating the international writing center community. *Journal für Schreibwissenschaft, 14*(1), 10–20. https://www.wbv.de/shop/Locating-the-International-Writing-Center-Community-JOS2301W002

Bromley, P. (n.d.). *International writing centers research project.* Retrieved November 9, 2025, from https://iwcrp.org/

Brownlee, J. (2020, August 2). *How to calculate precision, recall, and F-measure for imbalanced classification*. Machine Learning Mastery. https://machinelearningmastery.com/precision-recall-and-f-measure-for-imbalanced-classification/

Bugdal, M., Reardon, K., & Deans, T. (2016). Summing up the session: A study of student, faculty, and tutor attitudes toward tutor notes. *The Writing Center Journal*, *35*(3), 13–36. https://doi.org/10.7771/2832-9414.1840

Driscoll, D. L., & Perdue, S. W. (2012). Theory, lore, and more: An analysis of RAD research in the Writing Center Journal, 1980-2009. *The Writing Center Journal*, *32*(2), 11–39. https://www.jstor.org/stable/43442391

Dux Speltz, E., Roeser, J., & Chukharev-Hudilainen, E. (2022). Automating individualized, process-focused writing instruction: A design-based research study. *Frontiers in Communication*, *7*. https://doi.org/10.3389/fcomm.2022.933878

Essid, J., & McTague, B. (Eds.). (2019). *Writing centers at the center of change*. Routledge.

Flower, L., & Hayes, J. R. (1981). A cognitive process theory of writing. *College Composition and Communication*, *32*(4), 365–387. https://doi.org/10.2307/356600

Giaimo, G. N., Cheatle, J. J., Hastings, C. K., & Modley, C. (2018). It's all in the notes: What session notes can tell us about the work of writing centers. *Journal of Writing Analytics, 2*. https://doi.org/10.37514/JWA-J.2018.2.1.09

Grimm, N. (1992). Contesting "The idea of a writing center": The politics of writing center research. *The Writing Lab Newsletter*. https://wac.colostate.edu/docs/wln/v17/17-1.pdf

Hall, M. R. (2017). *Around the texts of writing center work: An inquiry-based approach to tutor education*. University Press of Colorado.

Holloway, I., & Todres, L. (2003). The status of method: Flexibility, consistency and coherence. *Qualitative Research, 3*(3), 345–357. https://doi.org/10.1177/1468794103033004

Kellogg, R. T. (2001). Competition for working memory among writing processes. *The American Journal of Psychology*, *114*(2), 175–191. https://doi.org/10.2307/1423513

Kelly, L. (1980). One-on-one, Iowa City style: Fifty years of individualized writing instruction. *Writing Center Journal, 1*(1). https://doi.org/10.7771/2832-9414.1040

LaClare, E., & Franz, T. (2013). Writing centers: Who are they for? What are they for? *Sisal Journal*, 5–16. https://doi.org/10.37237/040102

Lang, S., Aull, L., & Marcellino, W. (2019). A taxonomy for writing analytics. *Journal of Writing Analytics*, *3*(1), 13–37. https://doi.org/10.37514/JWA-J.2019.3.1.03

Lerner, N., & Oddis, K. (2017). The social lives of citations: How and why writing center journal authors cite sources. *Writing Center Journal*, *36*(2), 11. https://doi.org/10.7771/2832-9414.1833

Lockett, A. (2018). A touching place: Womanist approaches to the center. In H. Denny, R. Mundy, L. M. Naydan, R. Sévère, & A. Sicari (Eds), *Out in the center: Public controversies and private struggles* (pp. 28–42). Utah State University Press.

Mackiewicz, J., & Thompson, I. (2016). Adding quantitative corpus-driven analysis to qualitative discourse analysis: Determining the aboutness of writing center talk. *The Writing Center Journal*, *35*(3), 187–225. https://doi.org/10.7771/2832-9414.1845

Modey, C. A., Cheatle, J., Giaimo, G. N. (2022). *Writing center session note data repository* [Data set]. University of Michigan Library. https://doi.org/10.7302/25dd-as06

Muncie, J. (2002). Process writing and vocabulary development: Comparing lexical frequency profiles across drafts. *System, 30*(2), 225–235. https://doi.org/10.1016/S0346-251X(02)00006-4

North, S. M. (1984). The idea of a writing center. *College English*, *46*(5), 433–446. https://doi.org/10.2307/377047

North, S. M. (1994). Revisiting "The idea of a Writing Center." *The Writing Center Journal, 15*(1), 7–19.

Palmquist, M. (2019). Directions in writing analytics: Some suggestions. *The Journal of Writing Analytics*, *3*(1), 1–12. https://doi.org/10.37514/JWA-J.2019.3.1.02

Rohman, D. G. (1965). Pre-writing: The stage of discovery in the writing process. *College Composition and Communication, 16*(2), 106–112. https://doi.org/10.2307/354885

Salem, L. (2016). Decisions . . . decisions: Who chooses to use the writing center? *The Writing Center Journal*, *35*(2), 147–171. https://doi.org/10.7771/2832-9414.1806

Scharold, D. (2017). "Challenge accepted": Cooperative tutoring as an alternative to one-to-one tutoring. *Writing Center Journal*, *36*(2). https://doi.org/10.7771/2832-9414.1825

Singer, D., & Hunter, M. (1999). The experience of premature menopause: A thematic discourse analysis. *Journal of Reproductive and Infant Psychology*, *17*(1), 63–81. https://doi.org/10.1080/02646839908404585

Smith, J., Dux Speltz, E., & Chukharev, E. (2022, December 7). *A mixed-methods approach to documenting product- and process-focused feedback in writing center sessions*. figshare. https://doi.org/10.6084/m9.figshare.25705458

Swaim, S., & Monty, R. W. (2023). Review: Expanding writing center research with discourse analysis. *The Writing Center Journal*, *41*(2), 139–149. https://www.jstor.org/stable/10.2307/27262724

Vandermeulen, N., Leijten, M., & Van Waes, L. (2020). Reporting writing process feedback in the classroom: Using keystroke logging data to reflect on writing processes. *Journal of Writing Research*, *12*(1), 109–140. https://doi.org/10.17239/jowr-2020.12.01.05

Vandermeulen, N., Van Steendam, E., De Maeyer, S., & Rijlaarsdam, G. (2023). Writing process feedback based on keystroke logging and comparison with exemplars: Effects on the quality and process of synthesis texts. *Written Communication*, *40*(1), 90–144. https://doi.org/10.1177/07410883221127998

Winder, R., Kathpalia, S. S., & Koo, S. L. (2016). Writing centre tutoring sessions: Addressing students' concerns. *Educational Studies*, *42*(4), 323–339. https://doi.org/10.1080/03055698.2016.1193476

Writing Centers Research Project Survey. (n.d.). Purdue OWL. Retrieved November 9, 2025, from https://owl.purdue.edu/research/writing_centers_research_project_survey.html