

Degrees of Reasoning: Student Uptake of a Language-Focused Approach to Scaffolding Patterns of Logical Reasoning in the Case Analysis Genre

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Abstract

This study reports on student writing outcomes from a two-year interdisciplinary collaboration between applied linguists (the authors) and an organizational behavior (OB) professor. We used an ethnographic language-focused approach to make explicit the linguistic features of the case analysis genre at an American university in the Middle East. We analyzed 33 student case analyses to examine how effectively students applied two heuristics from our scaffolding materials: the *semantic wave* heuristic for writing analytical paragraphs that move from abstract to concrete and back to abstract knowledge; and the *I know, I see, I conclude* heuristic for making explicit the logical connections between disciplinary knowledge and case information to produce conclusions. Students integrated the focal linguistic features with varying degrees of effectiveness. Most students met genre expectations by making abstract claims about the case at the beginning and at the end of their analysis paragraphs, integrating OB knowledge with information about the case, thus creating effective waves between disciplinary and case knowledge. However, our analysis reveals differences in the quality of students' logical reasoning between high-, mid-, and low-rated texts. We discuss how these differences can inform linguistically responsive disciplinary writing instruction.

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RESPONDING TO STUDENT CHALLENGES WITH ANALYTICAL ARGUMENTATIVE WRITING

Undergraduate students have to produce a variety of genres across disciplines with differing expectations (Meltzer, 2014; Nesi & Gardner, 2012). Despite the diversity of genres, what is prominent across the disciplines is the need for students to engage in analysis and argumentation (Hirvela, 2017; Lucas, Villegas, & Freedson-Gonzalez, 2008; Schleppegrell, 2006; Wong-Fillmore & Snow, 2000). However, many students, especially L2 writers of academic English, often struggle with analysis and argumentation, and disciplinary faculty may not be equipped to help students meet writing expectations (Coffin & Donohue, 2014; Hirvela, 2013, 2017; Miller & Pessoa, 2016). These classroom challenges point to the need for linguistically responsive instruction.

Scholars who advocate for a linguistically responsive approach have shown that disciplinary teachers from elementary school to university may lack an understanding of the importance of language to construe meaning. According to Lucas et al. (2008), “Language is the medium through which students gain access to the curriculum and through which they display—and are assessed for—what they have learned. Therefore, language cannot be separated from what is taught and learned in school” (p. 362). Despite its importance for disciplinary learning, “language is a neglected area of focus in many classrooms” (Schleppegrell, 2006, p. 47). Furthermore, teachers often don’t know enough about language (Wong-Fillmore & Snow, 2000) to make linguistic expectations clear for L2 learners, especially those who are fluent in conversational language but have limited exposure to academic language (Harper & deJong, 2004).

Understanding effective language use in a discipline requires knowledge of the discipline’s register, discourse styles, text structures, writing genres (Short, 2006), and language forms to meet genre expectations (Schleppegrell, 2004, 2006). Although teachers cannot be expected to become language experts when their primary responsibility is teaching disciplinary content, they can learn to identify and articulate important language characteristics of their discipline and make these explicit to their students.

One way to help disciplinary teachers become more mindful of language is through interdisciplinary collaborations with language experts. Since 2015, we (English faculty with training in linguistics) have been developing a language-focused and research-informed toolkit to scaffold analytical argumentative writing through collaborations with disciplinary faculty at an English-medium university where

most students are L2 English writers (Mitchell & Pessoa, 2019; Pessoa, Gomez-Laich, Liginlal, & Mitchell, 2019; Pessoa, Gomez-Laich, & Mitchell, 2020). This study focuses on our work scaffolding the case analysis genre in an organizational behavior (OB) course.

The case analysis genre usually follows a problem-solution structure: it includes an analysis of a case using disciplinary concepts to identify problems or opportunities in the case, followed by recommendations for enhancing the organization's practices (Gardner, 2012). Some researchers describe the case analysis as a purely pedagogical genre (e.g., Forman & Rymer, 1999) for students to display knowledge and earn grades. Other scholars describe it as a mock-professional genre that simulates real-life business writing (Mauffette-Leenders, Erskine, & Leenders, 1997). Still others suggest that, due to its complexity and diverse classroom use, the case analysis should be considered a genre family comprising genres that sit "along a pedagogical to professional continuum" with distinct social purposes that range "from more discursive 'essay-like' assignments to more highly structured professional report assignments" (Gardner, 2012, p. 32).

Meeting the disciplinary genre expectations of the case analysis poses several challenges for students. Our research (Miller & Pessoa, 2016; Mitchell, Pessoa, & Gomez-Laich, 2021) shows that students often struggle with the analytical expectations of a case analysis, as many engage primarily in *knowledge display* by mainly demonstrating their understanding of the case or disciplinary knowledge rather than engaging in the higher-level skill of *knowledge transformation* (Scardamalia & Bereiter, 1987) by using disciplinary knowledge as a lens to identify and analyze problems in the case.

To help students move to knowledge transformation, we use an ethnographic language-focused approach that draws on design-based research (Anderson & Shattuck, 2012), an iterative approach that joins researchers and practitioners to unpack genre expectations, design teaching materials, and analyze student outcomes to refine materials that address contextualized student needs. We ground this approach in Systemic Functional Linguistics (SFL) (Halliday, 1985) and Legitimation Code Theory (LCT) (Maton, 2014): we design scaffolding materials and analyze student writing with a combination of SFL and LCT tools.

In SFL, language is viewed as a context-dependent, meaning-making resource, and genre is defined as "a staged, goal-oriented, purposeful activity in which speakers engage as members of our culture" (Martin, 1984, p. 25). SFL genre-based pedagogy, which makes explicit the purpose and valued linguistic resources of particular genres, has been shown to be beneficial for students' disciplinary writing (e.g., Dreyfus,

Humphrey, Mahboob, & Martin, 2016; Humphrey & Macnaught, 2016; Mitchell & Pessoa, 2017). LCT provides conceptual tools to see different aspects of knowledge as it is made manifest in language. For example, the LCT concept of semantic gravity, which we use in our study, allows us to see how student writers of case analyses construct ideas that are more or less tied to the context of the case being analyzed. Increasingly, SFL and LCT have been used together to inform pedagogical practices (e.g., Doran, 2018; Macnaught, Maton, Martin, & Matruglio, 2013), allowing researchers to unpack the linguistic features of genres in a given discipline and how knowledge is legitimated in that discipline.

From an SFL perspective, analysis is the reorganization of information in some original way for the purposes of the text, often by applying a disciplinary framework to an exemplar (Humphrey & Economou, 2015). A disciplinary framework is a discipline's agreed-upon classificatory and compositional schemes, or, in other words, its analytical lenses. In an analysis, the writer uses the disciplinary framework to present and organize information. In an argument, the writer makes evaluative claims that are supported by analysis. In an OB case analysis, students use an OB disciplinary framework to examine the case and organize their presentation of claims about it.

This paper focuses on how effectively students applied two heuristics we used in writing workshops to scaffold the analysis section of the case analysis: the LCT-based *semantic wave* (Maton, 2014; Maton & Howard, 2018) and the SFL-based *I know, I see, I conclude* heuristic adapted from Hao's (2020) work on biology lab reports. The *semantic wave* aims to help students write effective analytical paragraphs that move from abstract to concrete and back to abstract knowledge. The *I know, I see, I conclude* heuristic aims to help students make logical connections between disciplinary knowledge and case information to produce conclusions that lead to recommendations. Our findings show that the two heuristics helped students engage in analysis, but our data reveal differences in the quality of students' expression of logical reasoning.

This paper contributes to linguistically responsive writing pedagogy by adapting Hao's (2020) theoretical framework to case analysis writing for undergraduate students. The tools we describe can help students move from knowledge display to knowledge transformation and more effectively meet case analysis genre expectations. While our focus is on one genre, these tools can help make the language of analysis explicit in other genres in many academic writing contexts, as students are often expected to "use language to argue, to compare and contrast ideas, to draw inferences and conclusions, and to persuade audiences" (Lucas et al., 2008, p. 365). These linguistically responsive tools aim to

help disciplinary teachers and students look *at* language rather than *through* it (deJong & Harper, 2005).

THE UNIVERSITY AND CLASSROOM CONTEXT

This research is part of a larger study of disciplinary literacy development conducted in an English-medium American university branch campus in the Middle East, where most students are L2 English writers. Students come mostly from Qatar, the greater Middle East, Pakistan, and India, and have been educated in various educational settings, including Arabic-medium public schools, English-medium private schools, and local “national” schools (e.g., the Indian educational system).

This paper focuses on our interdisciplinary collaboration in an OB course taken by second- through fourth-year students. The course examines factors that influence workplace behavior on an individual, group, and company level, and introduces insights and frameworks from the behavioral and social sciences to help students think and act strategically in the workplace. The course aims to help students apply course knowledge to identify and analyze OB problems, and recommend solutions; and analyze OB qualitative data and information sources to make evidence-based arguments.

These learning objectives are assessed through the completion of a written case analysis assignment referred to as a *case proposal*. In this semester-long assignment, students analyze and evaluate a company through an OB lens (i.e., course concepts like *leadership* or *motivation*) by interpreting qualitative case data and evidence-based literature. Based on their analysis, they provide recommendations for improving the company’s organizational behavior. To write their case proposal, students select a case from a list of video case files and identify OB concepts that emerge from their review of the case. Then, students collect further information about the case and related OB concepts to inform their analysis (see Pessoa, Mitchell, & Jacobson, 2021).

We provided writing workshops to scaffold the case proposal’s three main parts: the Situation Analysis, the Problem and Opportunity Analysis, and the Recommendations section. This paper focuses on our analysis of the students’ Problem and Opportunity Analysis section (henceforth “Analysis section”). In this section, students identified the main problems of the case using an OB lens and analyzed the company’s current situation and potential consequences of not addressing the problems. Students supported their analysis with evidence from the case and evidence-based literature about relevant OB concepts. We

designed our scaffolding materials to help students achieve these analytical purposes.

AN ETHNOGRAPHIC LANGUAGE-FOCUSED APPROACH

In line with best practices in linguistically responsive teaching (Dreyfus et al., 2016; Gibbons, 2002; Lucas et al., 2008; Moore, Schleppegrell, & Sullivan Palincsar, 2018; Short, 2006), our approach to scaffolding disciplinary writing is ethnographic and language-focused: our design-based research approach includes close collaboration with the professor to understand the writing task and its potential challenges for students, interactions with students in workshops and individual conferences, and observation of classroom practices; our scaffolding materials and analysis of student writing are grounded in theories of language (SFL) and knowledge building (LCT).

Our process involved multiple steps. We interviewed the OB professor about the assignment, her expectations, and examples of student writing we had reviewed. Based on this contextualized understanding of her assignment and our research-based knowledge of the case analysis genre, we co-wrote revisions to the assignment guidelines and designed scaffolding materials to make explicit the language features of the assignment's main parts. We wrote a mentor text that exemplified the genre's valued features and deconstructed it with students in the writing workshops. We also used student writing to contrast more and less effective ways of meeting genre expectations. These scaffolding materials are not meant to be remedial assistance that simplify the task and minimize the challenge to the students (Lucas et al., 2008). Rather, our scaffolding materials aim to “amplify and enrich the linguistic and extralinguistic context” of the task (Walqui, 2008, p. 107) in order to help students meet genre expectations.

We equipped students with specific tools to analyze and articulate their analysis of the case. Drawing on LCT and SFL, we provided students with two heuristics: the LCT-based *semantic wave* heuristic, and the SFL-based *I know, I see, I conclude* heuristic. The semantic wave heuristic provides a way of making explicit the internal structure of knowledge in effective analytical paragraphs. The semantic wave heuristic is based on the LCT concept of semantic gravity, which describes the degree that meaning depends on or relates to the context (i.e., the case) (Maton, 2014). Semantic gravity may be relatively stronger or weaker along a continuum of strengths. The stronger the semantic gravity, the more the meaning is context-dependent; the weaker the semantic gravity, the more the meaning is generalized and abstract. The “recurrent weakening and strengthening of semantic

gravity by moving between concrete examples and abstract ideas” (Maton, 2014, p. 119) is called a semantic wave.

In a case analysis, the knowledge presented in an analytical paragraph can range from very abstract—and therefore not as context-dependent—to more concrete—and thus more context-dependent. To organize knowledge in valued ways, students are expected to start with a claim about the case using relevant OB concepts (which are often abstract nouns), then provide concrete evidence from the case to support the claim, and then finish the paragraph by revisiting the claim in light of the analysis. The semantic wave heuristic shows students how their writing can oscillate between abstractness (e.g., OB concepts such as *leadership* or *motivation*) and concreteness (e.g., *employees were crying at work after the merger*). With this wave heuristic, we aimed to help students avoid paragraphs focusing on only abstract OB knowledge, without providing concrete case information, or just case information, without connecting to abstract OB knowledge.

To enhance comprehension with the use of extra-linguistic support (Echevarria, Vogt, & Short, 2000; Gibbons, 2002), we used the visualization in Figure 1 to show students how academic writing often moves in waves of meaning, indicating how logical relations express the reasoning that connects these meanings, as discussed below.

To make explicit the logical relations that underlie the semantic waves, we used the heuristic, *I know, I see, I conclude*, which we adapted from Hao’s (2020) SFL-based work on patterns of reasoning in

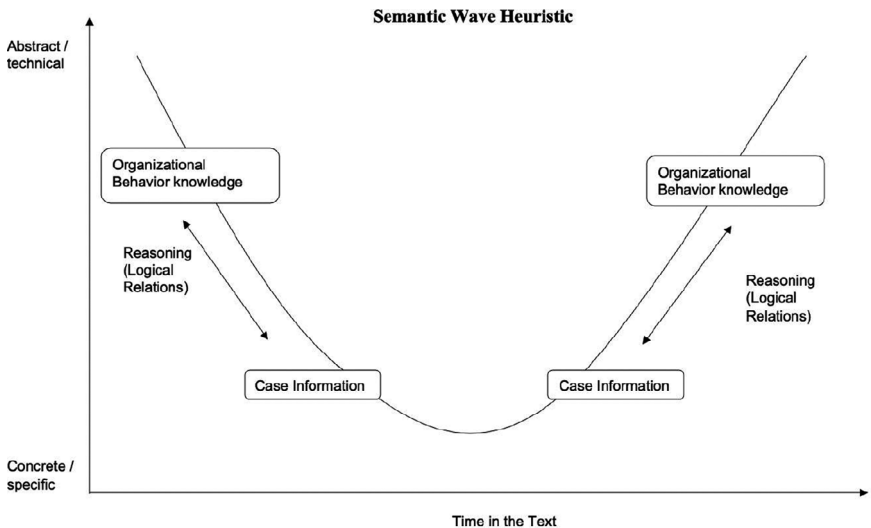
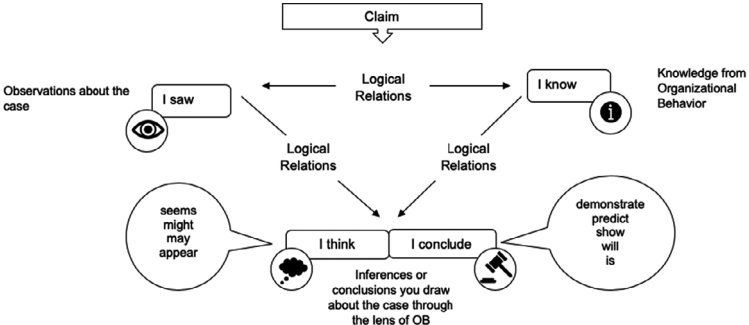


FIGURE 1. Visualization of the *semantic wave* heuristic

students' biology lab reports. We simplified Hao's work considerably to meet our students' pedagogical needs. As our focus was the activity of analysis, we developed our scaffolding materials only from Hao's model's activity sequence of Reasoning to show students how to build inquiry in an OB case analysis.

We aimed to help students implement patterns of reasoning to integrate what they "know" about the discipline (i.e., explicit explanations of OB concepts from textbooks and class materials) with what they "see" in the case (i.e., descriptions of factual information from the case videos or texts about the company), eventually leading to *conclude* moves that represent an understanding of the case *through the lens of* the disciplinary knowledge. We represented the *know, see, conclude* heuristic with the visualization in Figure 2.

Conclude moves are particularly important in case proposal writing. Serving both a practical and pedagogical purpose, they allow students to produce new knowledge about the case that leads to recommendations. Practically, *conclude* moves allow students to act as consultants by marshalling disciplinary knowledge to offer specialized interpretations of business activity, thereby giving the hypothetical client a better understanding of the company. Pedagogically, these moves allow students to demonstrate their ability to apply theory to practice by linking particular observations to theoretical constructs. This semantic pattern is evident in other genres, like the biology reports Hao (2020) analyzed that led to the *know, see, conclude* heuristic. In Hao (2020), we see examples such as: "The readings were minimally variable between each other, so *we know/conclude the pipette was fairly precise*" (p. 126; emphasis ours). In the italicized *conclude* construction, the *pipette* is an observable, analogous to the case information our business students observe, like the hiring of a new CEO. The evaluation of *fairly precise* denotes a



Connecting what you saw to what you know in order to show what you think or conclude is how you generate new knowledge within a discipline. One of the goals of a Case Proposal is to practice making new knowledge from what you know from OB and what you saw in the case. This might require using: 1) many different logical relations in 2) many different language forms.

FIGURE 2. Visualization of the *I know, I see, I conclude* heuristic

theoretical measurement construct of precision, analogous to other theoretical constructs in business like leadership.

Thus, there are semantic similarities in *conclude* moves across genres, but also differences. Unlike the biology report example, the student case proposals do not aim to produce generalizable knowledge but rather situated knowledge to help their client make business decisions. While the semantic constructions of *conclude* moves may be similar across genres, the case proposal *conclude* moves we observe tend to lean more toward to case, as the genre goal aims more toward addressing the case rather than producing generalizable knowledge for the discipline.

In our workshops, we emphasized the importance of language resources used in Reasoning to effectively connect *know*, *see*, and *conclude* moves, what Hao refers to as internal connexion. Internal connexion (formerly internal conjunction, c.f. Martin, 1992) is the use of logical connections to organize text through logical relations, including those that organize arguments, such as *in conclusion* and *moreover* (Martin, 1992); and those that establish relationships between linguistic entities like claims and reasons in arguments (e.g., *because*, *as*, *thus*, and *therefore*) by embodying cause and effect. In our scaffolding materials, we included a list of specific types of logical relationships coupled with language resources to articulate them (see Figure 3)¹. This list provided explicit ways to connect claims and support, giving students tools for moving between *know*, *see*, and *conclude* moves. By labeling each relationship with an icon, we established a shorthand for annotating sample texts.

In addition to the two heuristics, we provided an annotated visualization of a paragraph of our mentor text. The visualization shows a paragraph that starts with a claim that combines disciplinary knowledge and information from the case (i.e., a *conclude* move formulated by analysis prior to drafting); then moves to an explanation of the OB concept that informs the analysis of the case (i.e., a *know* move); then oscillates between *know*, *see*, and *conclude* moves—all in an effort to build an argument supported by an analysis of the case. Figure 4 shows how we segmented this paragraph into boxes to indicate whether the information represents OB knowledge, case information, or interpretations of the case through the lens of OB.

In the visualization, we used the icons representing the different types of logical relationships to mark the connections between the *know*, *see*, and *conclude* moves. We overlaid an image of a wave to

¹ Cause, Means, Condition, and Purpose in Figure 3 refer to *external connexion*, or logical relationships between material events and entities external to the text (Martin, 1992). For pedagogical purposes, the distinction between internal and external connexion was not included in instruction.

Logical Relations

Connect your Claim to your Reason / Evidence and relate ideas within your Reasoning.

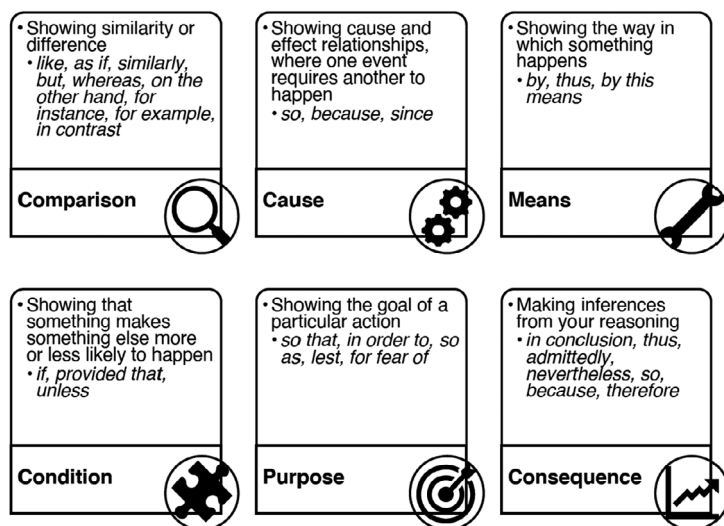


FIGURE 3. A taxonomy of logical relationships and corresponding language to articulate them (adapted from Hao, 2020; Martin & Rose, 2003; Martin, 1992)

emphasize the importance of oscillating between the different types of information, a visual technique that was particularly useful when contrasting this mentor text with visualizations of less effective paragraphs. For example, Figure 5 shows a visualization of a student text that focuses solely on representing OB knowledge, a meaning “flatline” (Maton, 2014, p. 121), rather than creating a wave of meaning that moves between OB knowledge and case information.

ANALYSIS

The first three authors analyzed the Analysis section of 33 case proposals (average 845 words) to examine students’ uptake of the scaffolding materials.

We first selected the three highest- and lowest-graded case proposals to review together. We quickly realized that some students were not consistent throughout the whole Analysis section. Because some paragraphs were more effective than others within the section, we decided to rate each paragraph for each student, rather than evaluating the entire section holistically. Next, we carefully reviewed each paragraph















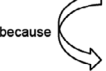




Position	Case Information	Organizational Behavior Knowledge
Claim (Preview)	The <u>leadership style</u> of the new management at MU seems to be a primary point of friction.	
I know 		<u>Leadership style</u> , using Hersey-Blanchard's Situational Leadership Model (1988), depends on primarily three factors: <u>follower readiness</u> , <u>relationship behavior</u> , and task behavior.
 so  I saw 	At MU, the leadership had developed a culture that made the faculty and staff "able and willing" to do their jobs and fulfill the University's mission,	
 so   if  I conclude 	demonstrating that they had high <u>follower readiness</u> (Konopaske et al., 2018, p. 416).	
I know 		In such a situation, Hersey-Blanchard's model predicts an appropriate <u>leadership style</u> would have <u>low task behavior</u> , either leaving much of the direction of the faculty and staff to themselves or sharing in governance of the institution.
 but  I think 	In contrast , the new <u>leadership</u> at MU <u>seems</u> to have adopted a Telling Leadership style, with <u>high task behavior</u> and <u>low relationship behavior</u> .	
 because  I saw 	This style has been shown in the institution of monthly performance reviews and the proliferation of new and detailed policies and procedures at every level of the organization.	
 so  I conclude 	The mismatch between the <u>high readiness</u> of the employees and the <u>high task behavior</u> of the leadership has created a tension between management and labor while also doing damage to the culture of high achievement that had already been established.	

FIGURE 4. Visualization of a paragraph from a mentor text illustrating the two heuristics and types of logical reasoning

of these 6 case proposals and made extensive notes. Based on this initial review, we designed a preliminary rubric and used it to analyze our mentor text to determine whether the features of students' high-graded texts were consistent with what we had taught in our workshop. We then refined the rubric by consolidating redundant or wordy categories.

Figure 6 shows the rubric we used to analyze the whole data set. The rubric has six categories that reference the *semantic wave* and the *know*, *see*, and *conclude* moves that are important for meeting the
























	Position	Case Information	Organizational Behavior Knowledge
	I know 		Motivation, according to Victor H. Vroom (as cited in Aworemi, Abdul-Azeez, & Durowojo, 2011), is prioritizing a choice among other "alternative forms of voluntary activities" (p.78 Martinus, H. & Ramadanty, S., 2016), and the individual has complete autonomy over it.
 so 	I conclude 		People's motivation is highly dependent on their perception on the value of effort and the belief that the effort will help the individual achieve the goal.
 so 	I know 		Therefore, having a group of different individuals makes the organization exposed to people that maintain different levels of motivation.
 so 	I know 		Having employees with different levels of motivations makes it harder for the organization to construct motivation strategies.
and 	I know 		Moreover, people are motivated by different factors.
 so 	I know 		The motivation factors can be intrinsic factors, extrinsic factor, or a mixture of both.
 so 	I know 		Having people with very different mentalities and backgrounds entails that each individual will have different motives.
 so 	I conclude 		Thus, making it harder for the organization to motivate employees.
 so 	I conclude		Overall, continuing to emphasizing differences and having an over diverse culture, will make the process of motivating employees more challenging and difficult.

FIGURE 5. Visualization of sample student text with a "meaning flatline"

expectations for the Analysis section. In categories 5 and 6, we were concerned with the internal connexions that make logical relations between *know*, *see*, and *conclude* moves effective. We examined how

Rubric Category	Description of Rubric Category
1	I conclude: Starts and finishes paragraph with a claim about the case that uses (an) OB concept(s).
2	I know: Defines/explains OB concept
3	I see: Provides relevant details about the case
4	I conclude (in the middle): Makes claims about the case using relevant OB concept(s)
5	The moves come in an appropriate order to accommodate the reader's understanding.
6	The logical relations between moves are explicit, varied, and appropriate.

Rating scale:

0. Lacks control or awareness of this expectation/resource

1. Limited control or awareness

2. shows awareness or control with some inconsistencies

3. strong control

FIGURE 6. Rubric used to analyze students' case proposals

students made logical relations explicit between the three moves with resources like *because, as, since, thus, therefore, however, and for example*. We also examined where students expressed valued causal relationships “in the clause” within *conclude* moves through verbal phrases such as *lead to, contribute to, and impact*.

We identified the moves in each paragraph as functional units (usually represented in a sentence or consecutive sentences). We rated each paragraph for each rubric category on a scale from 0 to 3, as indicated in Figure 6. Together we rated the three high- and low-graded case proposals to calibrate our scoring before coding the remaining data set.

We divided the remaining data set in four random sets of seven case proposals. We independently rated the Analysis section of each case proposal in the first set, annotating their effective and less effective features. Before moving on to the next set, we met to discuss our ratings. We continued to calibrate as we discussed our reasons for each rating and reexamined paragraphs until all disagreements were resolved. We created shared notes of recurrent patterns in the students' use of *conclude, know, and see* moves. We followed this same process for the remaining three sets.

We averaged the ratings of each paragraph. Then, we averaged each student's ratings for the whole section and used this score to divide the data set: high (2 and above), mid (1.5 – 2), and low (0.5 –1.5). Independently, we reviewed our notes of the recurrent patterns we observed in our analysis and returned to the highest-rated paragraphs

to identify representative patterns of the group. We discussed our analysis and formalized a list of the high group's representative patterns. We repeated this same process for the low- and mid-rated groups.

For the low-rated group, we identified patterns of commonalities in the paragraphs that scored a 1 or below, which we deemed as the average-performing paragraph for the low group. We were also interested in the representative patterns of the more effective paragraphs in the low-rated group. This allowed us to identify the features of the best paragraph(s) produced by the low-rated group. For the mid group, we focused on the strengths and weaknesses of the paragraphs and what made them different from the high group. In the next section, we present the results from each group: each student's total average for the section and a qualitative analysis of paragraphs that represent recurrent language patterns.

FINDINGS

We present the total average of each of the 33 Analysis sections and illustrate the common patterns of reasoning in the high-, mid-, and low-rated groups. The high-rated texts creatively adapted the *know, see, conclude* heuristic and made varied use of logical relations to connect their reasoning positions. The mid-rated texts were often similar to the high-rated texts, but exhibited minor challenges in logical ordering and delivery of information that reduced their overall effectiveness. Even in the low-rated group, most texts had at least one paragraph that exhibited some control of most of the valued features. Thus, although there were clear differences between the groups, our findings show that the workshop materials provided the students with an important resource for reasoning and building knowledge.

High-Rated Analysis Sections

The total average for all paragraphs of high-rated texts was 2 or higher (Table 1).

Our qualitative analysis of the high-rated texts shows that students implemented the *know, see, conclude* heuristic in varied ways, many of which we did not explicitly teach in the workshops or illustrate with our mentor text. We, therefore, decided to distinguish different types of *know, see, conclude* moves based on their rhetorical function. Table 2 summarizes the features of high-rated analysis paragraphs. To connect the *know, see, and conclude* moves, these paragraphs typically relied on relations of condition, comparison, and consequence.

TABLE 1
Total Average for All Paragraphs of High-Rated Texts

Student	Average score for all paragraphs in the Problem and Opportunity Analysis section
S1	2.41
S2	2.55
S3	2.41
S4	2.79
S5	2.41
S6	2.10
S7	2.66
S8	2.44
S9	2.63
S10	2.61
S11	2.77
Average for high-graded group	2.52

The strongest analysis paragraphs incorporated several of the different types of *know* and *conclude* moves we identified (Table 2), consistently focusing on applying the same OB concept(s) to the case. These paragraphs started with an opening *conclude* move, a previewing claim that used a causal connection to put two OB concepts in relation with each other and expressed a negative evaluation of company practices evident in the case. These paragraphs then introduced early *know* moves to ground the claim in disciplinary knowledge: they provided a specific, relevant definition or explanation of an OB concept, commented on how it can be important for a company’s success, and/or cited a research study that paralleled or informed the case. The convention of providing a principle via a *know* move before an example via a *see* move, which we might call a Principle-Example or *Know-See* pattern, seemed to work effectively for this genre. First, it mimics the overall paragraph structure that starts with a more abstract claim (opening *conclude* move) and follows with more specific reasons—rather than reasons leading to a claim. Second, this pattern might aid readers by making the reasoning structure more predictable—and prediction is key for effective reading comprehension (Duke & Pearson, 2009)—by establishing relevance of the later example (*see*).

The strongest paragraphs used multiple types of *conclude* moves in the middle of the paragraph (henceforth “middle *conclude* moves”), which often exhibited a “mini-wave” pattern, moving from more abstract to more concrete to more abstract meanings. Beginning in the middle of the paragraph, the mini-waves often started with a Specifying middle *conclude* move: a slightly more specific version of the opening *conclude* claim that drew on some already-introduced OB knowledge to comment broadly on the case. Then, waving down to

slightly more concrete knowledge, they included one or more evidence-focused middle *conclude* moves that used OB knowledge to comment on concrete details of the case or make inferences about it. While most students opted to embed *see* moves within *conclude* moves, some introduced “pure” *see* moves (with a phrase like “for example”), waving down further still. These often had stronger evidence because they provided multiple sentences of concrete details from the case,

TABLE 2
Summary of Reasoning Positions and Functional Moves in High-Rated Paragraphs

Reasoning Position	Functional Move	Description of most effective approach(es)	Example
Conclude: Opening	Claim to start the paragraph (preview)	Uses a causal logical connection to put two OB terms in relationship with a negative evaluation	<i>The conflicting leadership styles of WFM and Amazon are causing job dissatisfaction among WFM employees.</i>
Conclude: Middle	Smaller-scale conclusions that support the opening conclude	<ol style="list-style-type: none"> 1. Specifying move: Abstract claim that gets more specific about the starting conclude move, bringing in OB knowledge that has been introduced 2. Concrete evidence-focused move: Uses OB knowledge to comment on specific details of the case (“embedded” <i>see</i> move) 3. Inferring evidence-focused move: Uses OB knowledge to make inferences about the case in support of the claim 4. Predicting move: Implications of the evidence-based conclusion; immediate effect on the company 	<ol style="list-style-type: none"> 1. <i>Since Zappos is highly team-oriented, it becomes more difficult assess and reward the performance of individuals.</i> 2. <i>It becomes difficult to design a reward system which works for everyone on an individual basis because Zappos employees are allowed to do the work in their “own individual way” (Hiring and Individual Differences at Zappos, p. 3, 00:52:47:28).</i> 3. <i>When using team-based rewards, there is risk of demotivating employees who perceive others to be free-loaders but still get the same rewards.</i> 4. <i>Zappos may face many obstacles for both individual and team-based extrinsic reward systems because of how complex and intertwined the employee roles are.</i>
Conclude: Closing	Claim to end the paragraph (summary +)	Considers wider implications of failing to address the problem; uses causal reasoning to extend beyond summary	<i>Role conflict at Zappos could lead to a series of different negative outcomes, such as lower job satisfaction, higher job-related tension, and stress which ultimately leads to a negative effect on employee performance (Konopaske et al., 2018, p. 218).</i>

Table -0002 (*Continued*)

Reasoning Position	Functional Move	Description of most effective approach(es)	Example
Know: Definition + Significance	Explains OB concepts and why they matter for a company	Cites OB textbook or related sources	<i>Organizational culture can be viewed from many different angles, however, the most relevant is that it is “what the employees perceive and how this perception creates a pattern of beliefs, values, and expectations” (Konopaske et al., 2018, p. 35). Organizational culture is therefore, a foundational element in the professional environment and impacts all areas in an organization.</i>
Know: Relevant OB study	Introduces OB research findings that apply to the case	Directly applies the findings of the study to the case	<i>Martorana, Owens, Peterson, and Smith (2003) found that “CEO personality affects TMT [Top Management Team] group dynamics and that TMT group dynamics are related to organizational performance” (p. 802).</i>
See	Provides evidence for a conclusion	Cites case sources directly; introduces case information with “for example”; gives specific details about the company	<i>Employees at Zappos have an average of 7.1 roles across 4.1 circles (Bernstein et al, 2016). Moreover, Zappos abolished positions and job titles after their switch to holacracy.</i>

more than could be provided in a single clause². Finally, waving upward to slightly more abstract ideas, the strongest paragraphs often used a Predicting middle *conclude* move to consider the immediate effects of their evidence-based conclusion on the company.

In some of these texts, students also integrated a *know* move late in the paragraph to reinforce or expand the understanding of the middle *conclude* moves. In many texts, students used consequential relations to connect the late *know* or middle *conclude* moves to the closing *conclude* move. The most effective closing *conclude* moves went beyond summarizing the opening *conclude* claim by considering wider implications of the problem should the company fail to address it.

² Two assignment limitations contributed to these analysis sections having less direct evidence than might be expected. First, students provided extensive case information in the Situation Analysis, so they often included shorthand references to it, even when more details might have been useful. Second, they were not provided extensive case materials. Although explicitly instructed to find supplementary case information, some students were more likely to support claims with modalized “see” moves about what might happen via Inferring Evidence-based moves.

The features of high-rated texts are illustrated in the example paragraphs in Figures 7 and 8.

The visualizations in Figures 7 and 8 (and in the subsequent figures showing mid- and low-rated paragraphs) use the scheme presented in Figure 4, highlighting the reasoning positions as functional moves, the logical relations between them, and the causal relations within *conclude* moves.

The paragraph in Figure 7 moves from an opening *conclude* move, to varied *know* moves, to several middle *conclude* moves, to a closing *conclude*. Thus, it broadly moves from abstract knowledge, to concrete knowledge, back to abstract knowledge. Three features are noteworthy: its use of multiple types of *know* moves; its varied use of logical relations to connect different middle *conclude* moves; and its consistent application of the OB knowledge introduced in the opening *conclude* move.

The four sentences after the opening *conclude* move provide three functionally different *know* moves: the first gives a relevant definition

Position	Case Information	Organizational Behavior Knowledge
Opening conclude move	Moreover, another area potentially <i>damaged</i> by Ford's leadership decision-making is organizational culture.	
I know		Organizational culture can be viewed from many different angles, however, the most relevant is that it is "what the employees perceive and how this perception creates a pattern of beliefs, values, and expectations" (Konopaske et al., 2018, p. 35).
I know		Organizational culture is therefore, a foundational element in the professional environment and impacts all areas in an organization.
I know		Mariofana, Owens, Peterson, and Smith (2003) found that "CEO personality affects TMT [Top Management Team] group dynamics and that TMT group dynamics are related to organizational performance" (p. 802).
I know		This means that the CEO's personality traits inevitably trickle down to individual employees and hence, affect the organizational culture.
I conclude	This <i>raises</i> a potential issue for Ford <i>because</i> when the CEO announced his resignation, it was <i>because</i> he realized that "this job is bigger than they can do" (p. 4, 01:39:36:17).	
I conclude	<i>Although</i> it is a positive trait for someone to understand their limitations, this <i>may be misinterpreted</i> by the top management team and the employees.	
I conclude	<i>For example</i> , employees may think that <i>since</i> the CEO in a way gave up, they too should give up on difficult tasks.	
I conclude	<i>In particular</i> , employees <i>may adopt</i> a fixed mindset as opposed to a growth mindset.	
I conclude	In other words, they will convince themselves that they cannot perform a difficult task and doubt their capabilities instead of trying to develop which in turn will <i>cultivate</i> a discouraging organizational culture.	

FIGURE 7. High-rated paragraph #1








Position	Case Information	Organizational Behavior Knowledge
Opening conclude move	Furthermore, the adoption of the new leadership style <i>poses as a serious threat towards</i> motivation in the workforce.	
and	I know	As employee empowerment decreases, employee satisfaction will plummet, depleting motivation.
 so	I conclude	The high levels of empowerment before the acquisition <i>provided</i> a source of intrinsic motivation, which is defined as achieving “outcomes from the application of individual ability and talent” (Konopaske et. al., 2018, p.135).
 so	I see	WFM employees were able to make their own choices in regards to selecting suppliers, judging product quality, and displaying products (HBS Working Knowledge, 2018).
 however	I conclude	After the acquisition, <i>however</i> , intrinsic motivation was largely <i>replaced by</i> extrinsic motivation, which is motivation that is driven by external reward (Tranquillo & Stecker, 2016).
 so	I see	New policies were enforced to make operations cheaper and more efficient. A system called “order-to-shelf,” which sets strict logistical policies that essentially take away employees’ autonomy, was introduced. Additionally, evaluation tests that are described as “onerous, and stress-inducing” by employees were initiated; failing these tests could result in being fired. (Peterson, 2018).
 so	I conclude	This <i>increases</i> the extrinsic motivation in the company, employees are completing tasks to avoid external consequences.
 if	I know	Tranquillo and Stecker claim that long-term motivation, that is likely caused by intrinsic motivation, may be undermined by the introduction of extrinsic motivation (2016). This threatens to decrease job satisfaction, which decreases job performance (Konopaske et. al, 2018, p.137).
 so	I conclude	<i>Consequently</i> , Amazon’s different leadership style hinders motivation levels at WFM, <i>hence, diminishing</i> employees’ job performance

FIGURE 8. High-rated paragraph #2

of organizational culture; the second explains its significance; and third and fourth introduce research-based findings from OB that directly relate to the case by explicating the relationship between leadership and organizational culture. The student uses an implicit consequential relation to connect these *know* moves with the series of middle *conclude* moves that follow. The first of these, a combination of Specifying and Concrete evidence-focused move, uses a causal relationship (“raises a potential issue”) to make a specific claim: The cited OB knowledge (summarized in this sentence by only one word: “This”) has direct bearing on concrete evidence from the case, evidence the student includes as an embedded *see* move by citing the case video regarding a decision by Ford’s CEO. The second *conclude*

move, an Inferring evidence-focused move, uses conditional reasoning (“Although...this may”) to introduce the possible effects of the CEO’s decision, namely that it may be misinterpreted by employees, as a reason for the claim about the “potential issue.” The student follows this with two more Inferring evidence-focused *conclude* moves, connected by relations of comparison and consequence, that expand on that same line of reasoning. These provide more detailed inferences that use causal relations within the clause (“since”; “may adopt”) to consider possible effects of this misinterpretation. In the closing *conclude* move, the student reemphasizes the opening *conclude* claim, using a causal relation to articulate how the interpreted evidence negatively affects organizational culture.

High-rated paragraph #2 has strong features different from #1, with more intricate reasoning patterns. The student expertly oscillates between the three reasoning positions, purposefully connecting them with varied logical relations.

After the opening *conclude* move and a general *know* move, the student alternates between two sets of Specifying middle *conclude* (claim) supported by pure *see* moves that provide detailed evidence. In the first of these sets, the student asserts a more specific version of the opening claim, using a causal relation (“provided”) to express that Whole Foods employees had intrinsic motivation due to their empowerment before the acquisition by Amazon. After the *see* move, the student uses a relation of comparison (“however”) to move to the second set: a claim about the shift from intrinsic to extrinsic motivation after the acquisition supported by *see* moves in the next two sentences. Next, the student uses a consequential relation to connect this evidence to a Concrete evidence-focused middle *conclude* move, one that further interprets the evidence that was just presented: avoiding consequences (and not just seeking a reward) is another form of extrinsic motivation. Finally, the student introduces two late *know* moves, citing two OB sources to validate the negative evaluations of the shift to extrinsic motivation. The student explicitly connects, via consequential relation, this OB knowledge to the closing *conclude* move that considers wider implications of this shift.

The two high-rated examples illustrate how students adapted the *know*, *see*, *conclude* heuristic to their own purposes and made varied use of logical relations to connect their reasoning positions. Rather than treating the heuristic as a rigid formula, they incorporated functionally different types of each move, and ordered them in different ways as they oscillated between OB knowledge and case information. We believe these students were able to take ownership of the materials because of their prior learning (cf. Pessoa, Mitchell, & Miller, 2018).

Mid-Rated Analysis Sections

The total average for all paragraphs of the mid-rated texts was 1.5-2 (see Table 3).

Our qualitative analysis of the mid-rated texts reveals that students produced paragraphs that were mostly strong, sharing many characteristics of high-rated texts, but could be significantly improved with relatively minor revisions. The common challenges found in mid-rated paragraphs are summarized in Table 4.

The mid-rated paragraphs typically included *know*, *see*, and *conclude* moves, but their delivery and the logical connections between or within them were less effective than the high-rated paragraphs. In some cases, these students seemed to be challenged by how to package information into a concise, abstract articulation of the paragraph's point, leaving the reader to follow them through too many steps of their logical reasoning before understanding the overall point. In other cases, the OB knowledge represented in the *know* moves or the evidence in the *see* moves was not as specific, relevant, or effectively ordered as in the high-rated paragraphs: the *know* moves were not purposeful, providing only a general definition of an OB concept that was insufficient for detailed, focused analysis; the *see* moves lacked details, even when the conclusions they were used to support seemed sensible; or the relevant OB knowledge came after the *see* moves, violating the *know-see* principle. These features are illustrated in Figures 9 and 10.

The mid-rated paragraph #1 in Figure 9 has elements that provide a foundation for a strong analysis, but their order and delivery could be improved. It starts with a viable opening *conclude* move, similar to the high-rated paragraphs, that joins two OB concepts through a causal logical relation: Whole Foods' team-oriented structure might affect

TABLE 3
Total Average for All Paragraphs of Mid-Rated Texts

Student	Average score for all paragraphs in the Problem and Opportunity Analysis section
S12	1.99
S13	1.77
S14	1.99
S15	1.91
S16	1.99
S17	1.88
S18	1.53
S18	1.94
S20	1.54
Average for mid-graded group	1.83

TABLE 4
Summary of Major Challenges Exhibited in Mid-Scoring Paragraphs

Typical paragraphs from mid-rated analysis sections shared many characteristics of high-rated paragraphs but exhibited one or two of these challenges:

Conclude: Opening	Does not focus the paragraph on accurately packaged abstract information
Conclude: Middle Conclude: Closing	Adequately supported but with some repetitive reasoning; may lack analytical rigor due to vague OB knowledge or case information Simple restatement of opening <i>conclude</i>
Know See	Not purposeful; broad or tangential definition related to OB concept Insufficient details from the case

employee motivation and productivity. It provides several sentences of *see* moves that cite specific case information. It includes two *know* moves with citations, one in the second sentence and one in the penultimate sentence. And its closing *conclude* move returns to productivity, one of the terms introduced in the opening *conclude* move.

However, the student’s choices of how to integrate OB knowledge in the *know* and *conclude* moves could have been more effective, as the paragraph follows the *know-see* principle formally but not functionally. The first *know* move provides an unnecessary definition; even if OB has a specialized definition for *team*, the student does not provide or draw on any specialized understanding of it to analyze the case. The second *know* move has the OB knowledge that is necessary to properly undergird the analysis of case information, but its placement is too late for this to happen effectively: readers need to understand that a team must be small to be effective before they can understand the *see* moves that are presented. Significantly, because the *see* moves are presented before any meaningful OB knowledge has been introduced, it is impossible for the student to include middle *conclude* moves. The paragraph’s final sentence is more akin to a Predicting middle *conclude* than a closing *conclude*, as it does not return to the key concept of organizational structure or consider wider implications. This is not surprising: without middle *conclude* moves, there has not been sufficient reasoning to lead to a broader conclusion. Thus, even though this paragraph moves from more abstract, to more concrete, and back to more abstract knowledge, such a pattern alone is not sufficient. Finally, the dominant use of logical relations of addition between the moves reflects less sophisticated control of these resources than in the high-rated group.

Similar to mid-rated paragraph #1, this paragraph has sufficient case information to support a claim and draws on relevant OB concepts. However, the opening *conclude* move does not focus the paragraph on











	Position	Case Information	Organizational Behavior Knowledge
	Opening conclude move	The team-oriented organizational structure followed by the leadership style at Whole Foods Market seems to be a key point of friction, <i>having a potential impact</i> on the motivation and productivity of its employees.	
and 	I know		A team is defined as "Group of individuals with complementary skills that share a common purpose, responsibility, and accountability for achieving performance goals." (Konopaske, Ivancevich & Matteson, 2018, p. 247).
and 	I see	At Whole Foods Market, the organizational structure is highly team oriented, and each team within the company is made up of a large number of employees.	
and 	I see	Each store location of Whole Foods Market is made up of eight to ten teams, assembled from high managerial and administrative departments to departments like meat, prepared foods, produce and checkout.	
and 	I see	David Burkus states, "Whole Foods Market currently has more than 400 stores in three countries and employs nearly 60,000 people" (Burkus, 2016).	
 so 	I see	This indicates that each team would consist of at least 20 employees.	
 but 	I know		This statistic contradicts the accountability factor of the Katzenbach and Smith model (1993) which clearly states that in order for teams to be more productive and motivated, the teams must consist of a small number of employees.
 so 	I conclude	This is where the potential issue comes into view as it <i>might lead to</i> a less productive team as well as conflicts in terms of communication within the team members.	

FIGURE 9. Mid-rated paragraph #1

accurately packaged abstract information; there are some confusing internal logical connections that make the logical reasoning difficult to parse; the OB knowledge could have been more precisely integrated.

The paragraph begins with a very broad opening *conclude* move that only claims that the new leadership style is a point of conflict. Unlike opening *conclude* moves in high-rated analysis paragraphs, this one does not articulate a specific effect (e.g., "jeopardizing employee morale"). The student then moves directly to a *know* move that is not completely purposeful: it informs the reader about three leadership styles, only one of which is relevant to this paragraph. More significantly, the student does not include any OB knowledge that underscores the importance of employee trust and leadership. After this partially ineffective *know* move, the student includes three middle *conclude* moves that do not accomplish much; the first two essentially define






	Position	Case Information	Organizational Behavior Knowledge
and	Opening conclude move	The new leadership style of Allan Mulally is a primary point of conflict.	
	I know		Using the full-range leadership theory conducted by Avolio (1991), the leadership styles are divided into three theories: transformational, transactional and laissez-faire.
and	I conclude	At Ford Motor Company, Allan Mulally aims to have the "One Ford Plan", and that was his main strategy for collaborating with all employees, which follows a transformational leadership.	
 so	I conclude	<i>This means</i> that the employees are encouraged to work in teams and follow the changes such as the new vision that the CEO addressed, in order to inspire employees.	
 so	I conclude	This leadership style is likely to <i>change</i> the employees working behavior, <i>since</i> new rules are generated, and Alan Mulally is <i>changing</i> the organization to what he thinks is best for Ford and the employees.	
 however	I see	However, according to the case video, it shows that Allan Mulally had no experience in the auto industry (p. 4, 01:39:28:09).	
 so	I conclude	<i>This suggests</i> that employees might not trust the new leader and it would be hard for them to follow him.	
and	I see	In addition, some employees are not willing to change since they are unfamiliar with the new strategy.	
 so	I conclude	<i>Therefore</i> , a new leadership style at Ford can <i>negatively impact</i> the relationship of employees and their leader Allan Mulally, and <i>because</i> employees may be reluctant to change the way they work, a new leadership style could affect their morale and cause problems at Ford.	

FIGURE 10. Mid-rated paragraph #2

transformative leadership by illustrating what it means in the context of Ford, and the third, a Predicting move, considers likely changes in employee behavior. It is finally in the *see* move and the following Infering evidence-focused middle *conclude* moves that the reader learns that the CEO lacks auto industry experience which might harm employee trust. Thus, the reader has to reach nearly the end of the paragraph before learning the case information that is key to understanding the reasoning in the entire paragraph, and the specific effect the new leadership style could have.

The two examples of mid-rated analysis paragraphs reveal how small choices in logical ordering and information delivery can significantly affect reader experience. The visualizations, in combination with close analysis, also reveal how it is insufficient to have the expected moves in the expected order with an expected semantic wave. If the opening *conclude* move is not precise, or if relevant OB knowledge is not introduced early, the logical reasoning between moves will suffer.

Furthermore, it is noteworthy that, compared with the high-rated paragraphs, these students have little variety in the logical relations that link the different reasoning positions, as they rely mostly on logical addition and consequence. While it is possible that these two logical relations are sufficient to analyze, purposeful use of more varied logical relations likely reflects a “coupling” (Martin, 2010) of ideational and interpersonal meanings that is important for argument.

Low-Rated Analysis Sections

The total average for all paragraphs of the low-rated texts was 1.5 or below (see Table 5).

Our qualitative analysis of the low-rated analysis sections reveals shared features based on score: Paragraphs scoring below a 1 reflected numerous challenges, exhibiting little-to-no awareness or control of the resources embodied in our rubric; paragraphs scoring a 1 or above typically had several effective elements, but were missing one or two important parts. For example, they neglected to include *know* or *see* moves; they ordered the moves unconventionally; they started or ended paragraphs with *know* or *see* moves instead of *conclude* moves; or the opening and closing *conclude* moves focused on different OB concepts. The common challenges faced by students in paragraphs rated 1 and above are summarized in Table 6.

Of the 13 students whose total average placed them in the low-rated group, 10 produced at least one paragraph rated 1 or above. Of these

TABLE 5
Total Average for All Paragraphs of Low-Rated Texts

Student	Average score for all paragraphs in the Problem and Opportunity Analysis section
S21	1.16
S22	0.95
S23	0.94
S24	0.83
S25	0.59
S26	1
S27	1.06
S28	1.41
S29	1.21
S30	0.88
S31	1.33
S32	0.87
S33	0.27
Average for low-graded group	0.96

TABLE 6

Summary of Features of Paragraphs in Low-Rated Analysis Sections with Scores of 1 or Above

Typical paragraphs from low-rated analysis sections exhibited one or two of these challenges:	
Conclude: Opening	May be missing; may not make a specific claim beyond “X was a point of friction”
Conclude: Middle	May be missing; may introduce (too many) new OB terms; may lack analytical rigor due to vague OB knowledge or case information
Conclude: Closing	May be missing; may make a new conclusion not aligned with opening <i>conclude</i>
Know	May be missing; may introduce new concepts unrelated to opening <i>conclude</i> or appear too late to ground the analysis
See	May be missing; may not include enough details from the case

10 students, 8 produced a paragraph that was rated 1.33 or above and received a 2 or above in rubric category 1, suggesting that they met expectations for semantic waves at least once. Thus, a majority of the low-rated group were able to produce a paragraph that showed some uptake of the workshop materials. While they were inconsistent across the section, their ability to produce such paragraphs suggests that the workshop materials provided them an important resource. Typical features of the paragraphs rated 1 or above are illustrated in Figure 11.









	Position	Case Information	Organizational Behavior Knowledge
 so 	I see	Furthermore, despite the time period that has passed by since the creation of Facebook, and taking into consideration the way it was created and the event that took place in 2004, Facebook can possibly lose the trust of its employees.	
and 	I conclude	<i>This is because due to</i> Mark Zuckerberg’s decision making that had caused problems.	
and 	I conclude	Facebook’s employees may not trust him and this will <i>therefore increase</i> the lack of psychological safety that these employees may have towards the organization.	
 so 	I know		Pearsall and Ellis (2011) restate the claim of a previous Scholar, “In teams lacking safety, members tend to withhold unique information and points of view and do not seek help, admit errors, or bring up concerns” (Pearsall & Ellis, 2011, p. 403).
 so 	I conclude	This suggests that <i>if</i> the employees of Facebook did not have trust towards Mark Zuckerberg and the organization, they <i>will lack</i> the sense of psychological safety which is required to improve the overall work performance and productivity of the organization.	
	I conclude	As a knock-on effect of lack of psychological safety, the organizational culture of Facebook <i>will therefore be harmed</i> and <i>will lack</i> the incentive and motivation to drive its employees through the achievement of Facebook’s overall goals.	

FIGURE 11. Low-rated paragraph #1

The paragraph in Figure 11 is similar to mid-rated paragraph #2 in that the most important challenge it exhibits is in packaging information for the reader to focus the paragraph. However, here the student shows even less control of this and other valued resources.

The paragraph starts by introducing concrete information about the case with no clear grounding in OB knowledge. The reader must get to the second sentence to understand that the focus might be about decision-making. It is in the third sentence when the reader finally learns that the OB concepts affected by decision-making are trust and psychological safety. Although trust was mentioned in the first sentence, none of the immediate context signaled it to be an OB term at that point. Thus, these three opening sentences could have packaged information more effectively, minimizing the burden for the reader to decipher what should have been the opening *conclude* move: Facebook's leadership's decision-making since its inception has negatively impacted employees' trust and psychological safety.

The *know* move that follows the opening sequence is relevant and could provide a strong grounding for analysis because it includes specific symptoms of a lack of psychological safety (e.g., not bringing up concerns). However, the student does not use this OB knowledge to analyze the case in detail. The student follows it with a middle *conclude* move with ineffective reasoning: it stays at an abstract level, repeating information that has already been covered and then only mentioning vague hypothetical consequences of lacking safety: worse work performance and productivity. A stronger *conclude* move would have used more specific details about Facebook's organizational culture to articulate why employees failing to bring up concerns due to lack of psychological safety might harm the company (e.g., potentially stopping the Cambridge Analytica scandal before it got out of hand). Finally, the paragraph ends with a strong closing *conclude* move that considers the wider implications of the lack of employee trust on Facebook as a whole.

While 4 of the 13 texts in the low-rated group had paragraphs that scored higher than this example shown in this section, it is representative of the low-rated paragraphs that scored between 1 and 1.33. The low-rated group exhibited similar problems to the mid-rated group but with less consistency and control. They often had paragraphs that missed one or two of the expected *know*, *see*, or *conclude* moves, did not stay on topic, or had flaws in their reasoning. Like the mid-rated paragraphs, these low-rated paragraphs generally had strong *conclude* moves that used causal relations to connect a claim and support, but had little variety in the logical relations that connect the moves, as they also relied heavily on relations of addition and consequence.

DISCUSSION

Drawing on best practices of linguistically responsive teaching (deJong & Harper, 2005; Lucas et al., 2008) informed by SFL genre pedagogy (Dreyfus et al., 2016; Humphrey, 2016), this article reported on student writing outcomes from our language-based approach to make explicit the analytic and argumentative linguistic resources needed to effectively write the Analysis section of an OB case analysis. We used particular tools—an LCT-based *semantic wave* heuristic and an SFL-based *I know, I see, and I conclude* heuristic—to scaffold the writing of analytical paragraphs that move from abstract to concrete and back to abstract and oscillate between OB and case knowledge. Our materials exemplify how a complex theory like Hao's (2020) model of reasoning can be simplified to advance writing pedagogy. These tools are useful for unpacking the language of analysis and argumentation, valued discourse patterns in many disciplinary genres that are challenging for many students, particularly L2 writers (Coffin & Donohue, 2014; Hirvela, 2013, 2017; Hirvela & Belcher, in press; Miller & Pessoa, 2016).

Although there were clear differences between students' control of valued language resources, our findings show that the workshop materials provided an important resource for reasoning, analysis, and building knowledge. Even in the low-rated Analysis sections, most students wrote at least one paragraph that exhibited mostly effective uptake of the workshop materials.

Beyond this baseline finding, our analysis revealed interesting differences in the quality of students' logical reasoning. The high-rated group took ownership of the scaffolding materials by creatively adapting them to express their reasoning. They consistently implemented the *know, see, conclude* heuristic in varied ways while effectively guiding the reader between these moves with varied logical relations. This is noteworthy because it indicates the flexibility of this heuristic and the possibilities for student agency it affords, possibilities that are sometimes questioned when mentor texts and sample texts are incorporated into writing pedagogy (cf. Artemeva & Freeman, 2016; Martin, 2013). We attribute their more sophisticated uptake of the materials to their more extensive writing experience and advanced language abilities compared to the mid- and low-rated students. These findings align with similar research in writing arguments in history (Pessoa et al., 2018). The mid-rated group's writing shared many of these characteristics, with at least one paragraph scored high, but exhibited inconsistencies in the ordering of the moves, the logical connections between them, or the packaging of information from abstract to

concrete. With minor revisions, they could have produced high-rated analyses. While most of the low-rated group produced a paragraph that showed uptake of the workshop materials, these students were inconsistent across the section, and often missed one of the expected *know, see, or conclude* moves, focused on too many OB concepts, or had flaws in their reasoning.

Taken together, these findings provide further support for the value of linguistically responsive instruction to help students meet disciplinary genre expectations (Dreyfus et al., 2016; Humphrey & McNaught, 2016; Mitchell & Pessoa, 2017). Our approach emphasizes the role of language for students to effectively display what they have learned through writing (Lucas et al., 2008) by making explicit the linguistic resources needed to write analytically and argumentatively. Our approach also offers a model for interdisciplinary collaborations that increase disciplinary faculty's awareness of the linguistic demands of their writing assignments (for more information on interdisciplinary collaborations, see Pessoa et al., in press; Zappa-Hollman, 2018, this issue; for more information on the importance of creating interdisciplinary faculty communities on linguistically responsive instruction, see Hillman, this issue).

While this study focuses on one assignment, the language-focused tools presented can be applied to other academic contexts which require students to write analytically and argumentatively (Lucas et al., 2008). Beyond this OB class, we have used these language-focused tools to scaffold case analysis writing in Information Systems courses at our institution (Mitchell et al., 2021) and to scaffold the writing of analytical syntheses and problem analyses in our first-year writing courses. For example, in our first-year writing courses, we use Bourdieu's (1986) concepts of economic, social, and cultural capital as our disciplinary framework to study problems related to inequality. Students use the framework to synthesize the authors we read and then apply it in an analysis of a case study of their choosing (e.g., news stories about a particular instance of inequality). We have found that explicitly articulating *what it means to analyze*—teaching students to see disciplinary knowledge as comprising frameworks to be applied to “data”—is a powerful beginning step. Then, supplementing their understanding of analysis with explicit resources for *how to represent analysis in writing*—such as the wave and *know-see-conclude* heuristics—is a valuable way of equipping students with tools that demystify complex processes.

We continue to explore ways of reasoning and knowledge building in the case proposal and other genres, refining and expanding the toolkit we provide students. The *know-see-conclude* heuristic is flexible: through our analysis, we discovered ways our students effectively

adapted it to their purposes, ways that we have used to inform subsequent workshops in the course. Instructors can examine genres they teach to uncover valued ways of reasoning and building knowledge, while also improving their linguistically responsive teaching approach by learning from what their students produce.

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