Special Issue Article

Confronting the Challenges of Undergraduates' Argumentation Writing in a "Learning How to Learn" Course

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Abstract

In this article, we share what we learned about undergraduates' struggles in writing quality summaries, comparison texts, and argumentative essays that were components of a unique course, Learning How to Learn. This course was designed to address core psychological issues that impede optimal learning for students from all majors, many of whom are preparing to attend professional or graduate school. Although never intended to be a course devoted to academic writing, the struggles we uncovered made it apparent that without addressing these students' writing difficulties, especially with argumentation, optimal learning was not achievable. For each form of writing central to the course (i.e., summaries, comparisons, and argumentation), we not only describe the challenges we have documented over the past six years, but also the instructional responses we instituted to counter those

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challenges. We conclude by sharing insights we have garnered from this experience that may serve others who are confronting similar issues in their students' writing abilities.

Keywords
argumentation, argumentative essay, academic writing, comparative writing, summaries

The purpose of this article is to describe challenges we have encountered in college students' argumentation writing that emerged within an innovative course created to improve undergraduates' ability to learn effectively and efficiently, and to share our responses to those challenges. What we seek to contribute to this special issue and to the literature on argumentation is a nuanced portrayal of how the efforts to improve college students' knowledge *of*, interest *in*, and strategic capacity *for* learning interface with writing activities meant to record, reveal, and enrich their learning. The theoretical perspective on the confluence of learning and writing that guided the design of the course curriculum, and the role ascribed to argumentation writing, was shaped by the integration of a pragmatic view of learning (Dewey, 1910; James, 1890; Peirce, 1905) with a social-cognitive orientation toward writing in academic contexts (Bereiter & Scardamalia, 1987; Graham, 2018). As such, we placed a premium on the relevance of the instructional content of Learning How to Learn (LHL) to students' interests, current academic pursuits, and future career goals (Alexander, 2003; Markus & Nurius, 1986; Schoute et al., 2022). Also, in keeping with the Deweyan principle of "learning by doing" (1916), we engaged students in personally relevant experiences, such as crafting an argumentative essay on a topic that they found controversial and worth investigating.

Moreover, the argumentative essay task, as we envisioned it, would embody planning, thinking, and reasoning processes that had been taught and reinforced over the semester and would build on certain forms of writing (i.e., summaries and comparative analyses) that were integral to the course. In effect, we wanted students in LHL not only to demonstrate the ability to locate relevant readings on a specific topic and to identify and record key arguments, evidence, and counterarguments from selected readings but also to integrate ideas from those readings into a coherent and cohesive essay that explained and supported their position (Gil et al., 2010; Nussbaum & Schraw, 2007). We also wanted students to share their viewpoints and the reasoning underlying judgments with classmates through quality discussions (Murphy et al., 2018). The summary and comparative writing activities in LHL were also meant to be functional—another critical characteristic of pragmatism

(Dewey, 1905). Specifically, as a way to increase the value of those writing tasks, students were free to refer to the summaries and compare-and-contrast analyses of readings they had recorded in their personal journals when taking the course exams.

Another precept guiding our actions throughout the course was that knowledge building is a cornerstone of deep learning that students could transfer to other academic contexts and to their lives outside of college (Alexander, 2018; Alexander & Murphy, 1999). To that end, what we stressed in lectures and modeled through activities (e.g., ideational mapping) was that the knowledge students were acquiring about topics like problem solving, motivation, and transfer should not be regarded as separate either in mind or in practice. Rather, the knowledge garnered about one topic should facilitate learning of other topics, thereby contributing to knowledge building and transfer (Alexander, 2018). We applied that same principle to the summary, compare-and-contrast analyses, and the argumentation writing activities built into the fabric of LHL. For one, we considered the ability to craft a good article summary to be a prerequisite to students' ability to compose a comparison of two articles presenting contrasting views on a given subject, such as expertise (Alexander, 2003; Bransford et al., 2000). Further, students' engagement in the writing of an argumentative essay as a culminating activity in the course was not only meant to build on their competencies at summary and comparative writing but also to reinforce themes threaded through the curriculum of LHL, such as the need to justify one's claims with appropriate evidence.

In effect, we viewed the synergy among teaching, reading, and writing as essential for fostering the habits of mind and habits of action that should lead to deeper and more effective learning (James, 1890; Peirce et al., 1923). This framing positions the writing activities within LHL, including the argumentative essay, within a "more social than developmental, more situated than conceptual" model of writing and learning advocated by Ackerman (1993) in his provocative treatise on "The Promise of Writing to Learn." Further, it instantiates the tenets of Graham's (2018) Writer(s)-Within-Community Model within a particular community where writing and learning were intertwined. In accordance with Graham's model, we recognized that the effectiveness of the writing activities meant to promote student learning, such as the argumentative essay, would be shaped by (a) the very character of the LHL community and the goals shared by its members; (b) the affordances and constraints existing within LHL and the general capacities of students populating that community; (c) the variability within the learning community at any point *in* time and changes manifested in the community *over* time; and (d) the codevelopment of students' learning and writing arising from cognitive, social, and motivational/affective forces operating within the community.

In characterizing this learning community, for instance, we would note that the students were freshmen, sophomores, juniors, and seniors majoring in social sciences, physical sciences, life sciences, and applied sciences. Thus, there was no singular disciplinary focus to the learning or writing in LHL. What these students had in common, however, was a goal to become better learners so that their academic performance would improve or so they would be better prepared for the demands of professional school, graduate studies, or the workforce. As to the affordances and constraints that defined this community, we would include the labs that accompanied the lectures, the active and engaged style of instruction, and the informative feedback that students regularly received. Given the differences in students' class standing, major, and future goals, we expected significant variability in students' writing experiences. For instance, students in history or journalism, compared to students in computer science or mechanical engineering, typically engage in more reading and writing in their major courses. Nonetheless, we expected that all students, regardless of class standing or major, would show improvement in the ability to write and learn effectively over the semester.

What became apparent, however, especially after 2 years of the COVID pandemic and online education, was that we needed to reappraise students' overall writing capacities. We realized that the students had less understanding of how to write summaries of academic readings or how to compare two readings with varied orientations to the same issue than we had previously thought. Consequently, there was more attention on "learning to write" than we had initially envisioned; more time was spent on developing students' basic knowledge of the purposes and elements of well-written summaries and compare-and-contrast analyses. For the writing of argumentation, which was the culminating writing activity, it became important to provide students with specific resources and scaffolding that would facilitate their writing (Engle & Conant, 2002). Moreover, it was evident that we not only had to provide students with explicit guidance on the forms of writing core to the course, but that students' relevant knowledge and their personal interest in the topic of the writing also mattered greatly (Alexander et al., 1994). Thus, as those leading this community, it fell to us to provide basic content that would be required and to work toward a learning environment that was supportive and motivating if learning and writing were to co-develop to the degree we wanted.

Instructional Features of "Learning How to Learn"

When the first author designed the "Learning How to Learn" (LHL) course, it was intended to immerse college students in educational psychology research that was pertinent to their continued academic development. As a

general education course for the university, LHL was expected to draw non-education students from across the university, which in fact, it did. Since 2018, LHL has been a large lecture course enrolling 100-150 students each semester from almost every academic unit on campus outside education. Of these students, approximately 15% majored in arts and humanities (e.g., law, English, history, theatre), 53% in natural and computer sciences and engineering (e.g., physics, biochemistry, kinesiology, computer science), and 29% in social sciences (e.g., psychology, marketing, economics, community health), and 3% had not decided on a specific field of study. Each week, students attended two 50-minute lectures—taught by the first author—and participated in a 50-minute lab session with enrollments of about 20 students. Although the lecture period included an array of activities, such as group discussions, course projects, individual and group assignments, and assessments, the lab sessions allowed for more intimate discussions, clarification of lecture content, and focused feedback. This pairing of lectures with lab sessions is not common to undergraduate courses in the College of Education, especially outside the context of field experiences. Yet, this structure was deemed critical for a more in-depth examination of key concepts and processes and for more personalized attention to students' sociocultural backgrounds and academic needs. Combined with increased opportunities for peer interactions, the exchange of ideas, and the ongoing discussions, we saw the lecture-lab structure as a means of enhancing the sense of community among LHL students.

The overarching goal of the course—to help students become more efficient and effective learners—carried over into reading assignments, as well. Rather than hand students a textbook that overviewed the content of educational psychology, they were required to read relevant articles or chapters on topics such as learning, problem-solving, strategic processing, expertise, and motivation. The summaries and comparisons generated for those readings were essential to the students' performance because the major assessments in LHL consisted of open-ended, multiple-part questions. Those questions required students to apply what they had learned to novel problems and to justify their responses with references to the readings and lectures.

Another key project in the course was a multiple source use (MSU) task for which the argumentative essay was the final product (Barzilai et al., 2015; List & Alexander, 2019). What is characteristic of MSU tasks is that they are focused on a controversial topic for which different points of view are represented in the literature. Students are required to search for, read, and summarize several documents addressing the controversy in preparation for crafting their written argument. We expected that students' familiarity with writing summaries and comparing course readings would help them deal

with the demands of synthesizing the content from the documents they chose and integrating that content—both pros and cons—into their argumentative essays. Thus, in the conceptualization of this course, we recognized from the outset that we would be placing high reading and writing demands on the students. Nonetheless, we regarded these demands as justified. As with others in the field of learning and development, we held that these college students required tools that would allow them to succeed not only in this course and related academic subjects but also in their continued studies and professional careers once they graduated. In effect, the ability to capture the essence of what they read or hear, to see similarities and differences in whatever information they encounter, and to think critically and analytically when confronted with controversial issues, are foundational to personal and professional growth (Alexander, 1997).

Course Ideals Meet Performance Realities

It is safe to say that we, as instructors and teaching assistants of LHL, were shocked when we discovered that our initial assumption—that students enrolled in this college course had been writing summaries, crafting comparisons, and even constructing evidence-based arguments during their secondary and tertiary education—did not hold true. We recognized that some of the students enrolled in the course came from majors for which they were expected to read challenging texts (e.g., history or philosophy) or engage more frequently in writing (e.g., journalism or communication). We were also aware that all undergraduate students were required to take several writing courses as part of the general education requirements for the university. Specifically, all students had to first take a 3-credit 100-level English course on expository writing. This introductory class is then followed by a 3-credit 300-level professional writing course meant to focus on writing specific to students' majors (e.g., technical writing, business writing, writing for health professions). Despite these experiences and requirements, many students reported that they had never been told how to write a summary and were even more "clueless" about how to compose a compare-and-contrast piece.

As the instructors and teaching assistants in this course—all educational psychology researchers—we were well versed in the difficulties many college students have in carrying out an MSU task, especially when that task culminated in an argumentative essay (Bråten et al., 2020; Du & List, 2021). Yet, we were aware that few, if any, MSU studies took place within the context of an ongoing course, especially one that incorporated routine experiences meant to scaffold this more advanced form of academic reading and writing. Moreover, the ecological validity of the writing tasks embedded in

course requirements would seem to offset certain motivation problems that plague the orchestrated, laboratory-type investigations that populate the MSU literature (List & Alexander, 2017). Nonetheless, as we discovered, writing for these students was undeniably challenging—whether they were writing summaries, comparisons, or an argumentative essay; whether they were freshmen or seniors; and whether they were majoring in biological sciences, engineering, business, computer science, or psychology.

Consequently, although it was not our initial intention to teach writing skills explicitly, it soon became apparent that the ability to learn well and deeply in higher education depended in no small measure on students' ability to communicate clearly and effectively through writing (Emig, 1977). For whatever reason, it appeared to us that the students enrolling in this course had had far less exposure to academic writing than we had anticipated. It was this awareness that led us to systematically analyze the nature of the difficulties that these undergraduates were manifesting in their academic writing, especially argumentation, and to consider what could be done pedagogically to help overcome those challenges. Because of the preparatory role that summary writing and article comparisons played in students' construction of a well-written argumentative essay based on multiple documents, we want to first overview the challenges they posed for students.

Documenting Challenges in Students' Summary Writing

When the first author initially designed this course, she required students to create a summary of the articles they were assigned weekly in their journals. Consistent with the text-processing literature, she anticipated abbreviated texts that included essential components of the readings (Dole et al., 1991; Friend, 2001). These components include the source information, the authors' purpose or overarching goal, and any key points the students would want to retain (e.g., Alhussain, 2017; Hood, 2008). The instructional goals were for students to engage with course readings to the extent that they would be able to garner more information from the lectures and discuss those readings with peers in class.

Because of our misguided assumption that students enrolled in LHL would be competent at the reading and writing tasks central to the course, we initially provided them no explicit instruction on the writing of summaries. What also contributed to our overestimation of students' abilities at this particular task was the fact that the majority of research on improving summary writing seemed to focus on students with learning disabilities (e.g., Gajria & Salvia, 1992; Peterson & French, 1988), EFL, ESL, and ELL learners (e.g., Karbalaei

& Rajyashree, 2010; Khoshsima & Nia, 2014), or students in developmental writing courses (MacArthur et al., 2015). There was little, if any, discussion of summary writing interventions for non-identified college students like those in LHL (Luo & Kiewra, 2019). Thus, in earlier iterations of this course, we simply graded students' summaries for completion—awarding 0s (not completed) and 1s (completed)—reasoning that students' engagement with the reading would be sufficient. When we realized that students' summaries seemed to have little effect on their content mastery, we planned to assess each of the summaries that students wrote in their journals for presence as well as quality to encourage them to improve their summarizations. However, the low quality of these summaries precluded the possibility of judging the quality of summaries in depth, forcing us to move to a more simplistic 0-2 system based on the presence and quality of the source information, the identification of the author's purpose, and inclusion of key points from the reading.

Common Issues in Students' Summaries

From our inspection of students' journal entries, we identified substantive aspects of their summaries that were problematic: (a) how to document the source of the reading; (b) what counts as more or less important content to incorporate; (c) how much content to include; (d) how to synthesize text effectively; and (e) whether to record exact words or paraphrase content (Chew et al., 2019). For example, we were surprised to find that a number of undergraduates did not know what source information was critical. It was a frequent occurrence to find only an abbreviated title or only authors' last names or perhaps a date standing in for the basic source information. This was one issue that we could easily rectify by providing students with a model to follow.

One complicating factor was that much of the subject matter covered in LHL was new to the students, as was reading primary sources rather than textbook distillations. This challenge was especially acute for more theoretical papers that did not have a readily discernible text structure. Even more challenging for a large cross-section of the students was how to effectively synthesize or condense multi-page articles into a summary of reasonable length. In fact, many students approached summaries in a linear fashion, jotting down phrases from the reading as they were encountered rather than identifying more general themes or key points threaded through paragraphs or pages of the text. Other students used text features such as bolded or highlighted words or the headings and subheadings in the text to identify important ideas or the structure of the reading (Scheiter & Eitel, 2015). Although attention to signaling in texts has long been a recommended learning and study strategy (Lorch & Lorch, 1995; Meyer et al., 2018; Ozcelik et al.,

2010), this approach was not particularly effective in summary writing for the undergraduates. While this strategy served to condense the content in the readings and touched on key terms or ideas, the resulting summaries were largely a smattering of unconnected words, phrases, or sentence fragments.

The resulting length of the summaries was also initially problematic for the majority of students. Some students wrote as many as four handwritten pages in their journals to summarize a 25-page article, whereas others wrote no more than half a page. Often, the long summaries were not more effective as synopses of the article contents than the painfully short ones. A substantial minority of the undergraduates (approximately 15%) were overly reliant on the original wording and phrasing used in the source text. This was the case even though we forewarned them that verbatim copying of the source text could be detrimental to a deeper understanding of the content and might unintentionally result in plagiarism. These students seemed either unwilling or unable to paraphrase or synthesize (Alexander & Schoute, 2022). In contrast, there were students who were intentional *and* selective in the use of authors' exact language, often as a way to preserve an especially salient quote.

One shortcoming in the students' summaries that we had not anticipated was the absence of paragraphs. To be more precise, we were struck by the large portion of students (about 75%) who delivered summaries consisting of a single, uninterrupted paragraph. It appeared as if students were oblivious to the function and mechanics of paragraphing. In these single-paragraph summaries that would run on for more than a page, there were no headings or subheadings to guide the reader. Further, there were no intentional linking words or markers within those written summaries to alert the reader to related ideas (e.g., first or second; Oostdam, 2005) or to indicate any association between text segments (e.g., "in contrast," "for example," or "because"). It soon became evident that this "paragraphing" problem permeated all their writing, including extended responses on the course assessments. In fact, approximately 45% of the students continued to write summaries without any paragraph breaks well into the semester. The persistence of this problem led the first author to inform students that points would be deduced if written projects or course examinations came without appropriate paragraphing. That "threat" reduced this problem but never eliminated it.

Instructional Response

Once these various problems in students' summary writings began to emerge, we realized that instructional guidance was necessary. Armed with this new understanding, we initiated certain instructional actions that we carried forward into subsequent semesters. For one, we had students produce

summaries of the reading the first week without guidance. We used those initial summaries as a baseline of their ability to preparing concise reports of academic texts. In Week 2, we contrasted the features of their attempts with the characteristics of quality summaries described in the literature (Anderson & Hidi, 1988; Brown & Day, 1983; Garner, 1982). We also provided students with worked examples of summaries they could use as models.

It was that awareness that led us to seek guidance from experts in academic writing, like Dr. Susan De La Paz (De La Paz & McCutchen, 2017; De La Paz et al., 2022), on how to support students who struggled with not only argumentation, but also summary and comparative analysis writing that were precursory to composing a quality argumentative essay. Dr. De La Paz, one of the editors for this special issue, helped us develop video models for the course that directly addressed the process and the product of quality summary writing, text comparisons, and written argumentation (Alexander, 2019-2020; van Meerten et al., 2020). Students have found these videos helpful, and we have seen improvement in their writing after they watched the videos, especially in their summaries (van Meerten et al., 2020). This concerted effort was mutually informative, as we learned more about students' academic writing capacities and how it could be improved, as well as how summaries contributed to students' learning and further writing. However, because of almost 2 years of online instruction, we have not been able to put this instructional tool to empirical test, which we hope to do in the future. Despite such serious impediments, we have learned much about college students' academic writing as it manifests in this special instructional environment. We also feel justified in sharing what we have learned as a guide to others interested in academic writing within an existing course structure.

From then on, students would periodically receive feedback on their journal summaries from the teaching assistants. What we learned from this instructional approach was that some of the struggles that students had in writing quality summaries could be more easily rectified than others (e.g., recording source information). A more challenging problem, especially in the early weeks of the course, pertained to students' ability to distinguish more important from less important information in the readings (Garner, 1985). Thankfully, as students become more familiar with the subject matter, their ability to discern more important from less important content improved.

Identifying Problems in Students' Comparative Analyses

One of the overarching goals of LHL was to teach students the power of thinking and writing relationally, that is, the identifying of connections within

and across academic content to forge a more cohesive knowledge base, foster memory and recall, and facilitate transfer (Alexander & The Disciplined Reading and Learning Research Laboratory [DRLRL], 2020). The emphasis on comparative analysis of assigned readings was one way this goal was reinforced. As Hamman and Stevens (2003) argued:

> To be able to compare and contrast concepts or topics is an essential part of students' conceptual and metacognitive knowledge. [. . .] The process of comparing and contrasting supports learners making cognitive connections between topics and groups of topics to "identify and learn key concepts and networks of information." (Dickson, 1999, p. 29)

Specifically, students were occasionally assigned two readings representing different perspectives on the same topic. In those instances, students were asked to compare these two readings in their journals by identifying key similarities and differences. These pieces were meant to be brief, analytical overviews of the more salient points of comparison between the readings, which had already been summarized separately. For example, they read a chapter describing traditional views on expertise (Bransford et al., 2000), followed by an article that offered a contrasting model of expertise development (Alexander, 2003). There were quite a number of similarities and differences that the students could have noted in their comparison, such as (a) stages of development; (b) factors differentiating experts from nonexperts; (c) consideration of noncognitive forces; (d) the perceived path to expertise; and (e) who could achieve expertise. What actually appeared in the comparisons for many students was less rich and far less organized, as the following examples illustrate (see Table 1).

What immediately became clear when examining the students' written comparisons was that they did not seem to know how to approach such a task strategically. Instead, they would sometimes state the obvious, such as that the two readings addressed the same topic, or they would revert to listing salient points for each reading separately. Another problem in their comparative writing, which carried over to their writing on the class assessments, was students' failure to explicate the point of comparison being described or to include both sides of the comparison. For the two readings on expertise, for instance, a student might write that the chapter on expertise suggested that anyone can become an expert—leaving it to the reader to guess how the other reading, the research article, differed on this point. Still other students juxtaposed two unassociated characteristics from the readings, as shown in Table 1. In effect, students did not seem to recognize that each similarity or difference identified in the comparative analysis should specify the particular

Table 1. Examples From Students' Comparative Analyses.

Strategies	Student Writing Examples
Listing key or salient aspects of the sources separately	"MDL: about achievement and motivation; tells how to achieve expertise; 3 levels > acclimation, competence, expertise, not just novice or expert; MDL is a process; expert helps mold terrain of field and guide others. An expert traditionally: knows a lot of info in their domain; can apply learning; defines expertise as a benchmark, there is only novice or expert, no in between; no attention to motivation; experts find patterns."
Including trivial points of comparison	"Both articles regard the topic of expertise" "They are also both similar in the fact that they define expertise as discovering new information" "Alexander's MDL is definitely more detailed and precise than the traditional view"
Including incomprehensible similarities and differences	"Both express some form of knowledge" "Same: problem solving abilities"
Not including reference to *both* sources	"In MDL, motivation is broken down into two separate interests, situational and individual"
Not including or aligning the points of comparison	"Alexander focused on three forces that influenced competence, which are motivational, cognitive, strategic. Bransford focused more on the qualities that experts exude." "They both depend on a large amount of knowledge"

characteristic or dimension that was the basis for the comparison being made and address that point for both readings. No clear pattern could be identified as to why, for some, identifying points of similarity seemed more challenging than differences or why the opposite was true for others.

Instructional Response

There were several ways in which we attempted to scaffold students' crafting of comparisons during the semester. As with summaries, the first author provided the students with explicit feedback on the shortcomings identified in their comparative writing based on our general criteria for these tasks, which were to state the points of comparison, address both readings or perspectives, and identify whether those points indicated similarities (=) or differences (≠). To improve students' performance on these three aspects, we introduced

Table 2. Sample Graphic Organizer for Comparative Analysis.

	Comparison of models of expertise		
	Traditional	+/−	MDL
Purpose			
Domains			
Factors			
Structure			
Assumptions			
Role of schooling			

what Robinson and Kiewra (1995) would classify as a visual argument strategy for comparative analysis. In effect, we allowed students to generate a visual representation of the similarities and differences between the readings that were compared. A sample graphic model we provided students (see Table 2) served to remind them to address the three criteria for an effective comparative analysis. The first author also used versions of these comparison graphics when juxtaposing different concepts (e.g., knowledge building versus information management) or constructs (e.g., self-efficacy and attribution theory) in lectures. There were also times when students would share their comparisons of the readings in small work groups, occasionally assisted by the teaching assistants.

There was a marked improvement in students' comparative analyses over the semester once these instructional steps were initiated. Nonetheless, certain challenges remained. For one, some students favored the use of Venn diagrams to capture similarities and differences, which caused problems when they tried to make the points of comparison explicit and when they had to pair the similarities and differences they listed. For another, it was not always apparent that students invested the time and effort required to understand the readings deeply enough to engage in effective comparative analysis. These continuing challenges may reflect problems in their content knowledge, strategic abilities, or their motivations for learning. We regarded these ongoing problems in students' comparative analysis as nontrivial for several reasons. For one, if these students cannot recognize points of similarity and difference across readings, then it becomes hard for them to build a coherent knowledge base around the topic at hand. For another, we had doubts as to how effective students who struggled with comparative analysis would be at extracting similar or dissimilar claims, sources of evidence, or methodological features among four or more texts (i.e., multiple source use), as they would be required to do for the argumentative essay writing task.

Struggling With Written Argumentation Within a Multiple Source Use Task

Over the course of multiple years of teaching this undergraduate course, all the while conducting classroom-based studies, we came to several important insights about students' performance in more advanced writing tasks—centered primarily on written argumentation. The various challenges we have documented for students' writings of summaries and comparisons were amplified when students were tasked with producing argumentative essays based on their analysis, synthesis, and integration of multiple documents they selected on a controversial topic. As noted at the outset of this article, the multiple source use (MSU) project with the ensuing argumentative essay was a major component of the LHL curriculum in that it tied together a number of the key objectives covered over the semester. In addition to the summary and comparison writings that students regularly produced, there were discussions surrounding the credibility of sources, justification of claims and positions, the integrity of online information, and relational thinking that were directly relevant. We expected that the synergy of the cognitive and social support we provided in this course would foster more effective argumentative writing and learning from sources in the LHL community.

Although aspects of the MSU task have varied over the years, the core elements have remained consistent across semesters. These elements reflect the purpose of the writing experiences envisaged for this course. Specifically, in keeping with Dewey's tenets of pragmatism, we sought to promote the *power of thought* by requiring students to produce argumentation writing hinged on thoughtful and deliberate conclusions as opposed to impulse and my-side bias (Dewey, 1910, p. 66). To support this training of the *power of thought*, students were always required to summarize the readings they selected in their journals. Further, to make the content and task personally relevant to the students, a controversial topic was used to frame the task, which was based on what an earlier cohort of students regarded as controversial (Alexander, 2003; Markus & Nurius, 1986; Schoute et al., 2022). Besides heightened perceptions of relevance, we made this decision to let students identify the topic also because the most common topics researched in the MSU literature, such as climate change or vaccinations, generated no controversy among the students (Bråten et al., 2011; Monroe et al., 2019). Over the years, the selected topic for the MSU project varied from whether the over-reliance on technology was cognitively, emotionally, physically, or socially harmful to whether marijuana should be legalized.

In the first iteration of the course-embedded MSU task, students were presented with a library of 10 documents on the topic of the harmful effects of

overdependence on technology. The documents selected for the task varied by credibility (*The New York Times* vs. *Natural News*, a fake news website), specific content (an opinion piece based on expert opinion or a data-backed article), genre (feature article or blog), and stances on the topic (pro, con, neutral, or two-sided). We presented the documents in a form that mimicked a Google search page. For subsequent MSU projects, students were free to conduct their own search and select their own documents from the Internet—a process that they recorded in a search and selection log.

For the past eight semesters, the rubric used for scoring the argumentative essays, which was drawn from the literature on argumentation and from prior MSU studies (Anmarkrud et al., 2014; Barzilai et al., 2015; Toulmin, 1958), has been maintained. As seen in Table 3, the rubric documents include not only mandatory elements (i.e., four documents, position statement, justifications, counterarguments) and evidence of essential component processes (i.e., sourcing, critical analysis, synthesis) but also indicators of writing quality (i.e., cohesion and comprehensibility within and across paragraphs). Further, there was no word limit set for the essay, and the students had more than a week to finalize and submit their written product.

Componental Process of Multiple-Document-Based Argumentative Writing

The data gleaned from the aforementioned rubric were submitted to Bayesian network analysis (Singh et al., 2019). Bayesian analysis is a statistical method that affords the modeling of componential processes and gives insight into their interrelations, particularly how the change in the performance of one or more components subsequently impacts other components (Jensen & Nielsen, 2007; Pearl & Russell, 2001). This analysis proved quite revealing about the componential process involved in undergraduates' construction of an argumentative essay based on multiple and varied sources.

Based on the established literature on argumentation and the relatively recent scholarship on multiple source use, we distilled the process of multiple-document-based argumentative writing into the following *components*: inclusion of multiple relevant *sources*, furnishing a *claim*, providing *justifications* and *counterarguments*, engaging in *critical analysis* synthesis, and producing a written piece that exhibits *overall cohesion* (List & Alexander, 2019; Toulmin, 1958). Foremost, the results demonstrated that the process of writing argumentation from multiple documents does not progress linearly from *sources* to *claims* to *justifications* and so on. Instead, composing the essay entails an interdependence among elements specified in the rubric. For instance, we found that *critical analysis* was crucial for producing relevant *justifications* and for

Table 3. Rubric for Scoring the Argumentative Essays.

| Component	Points awarded		
	0	1	2
Writing ability	Incomprehensible paragraphs, or incoherent content	Generally comprehensible and moderately coherent	Fully comprehensible, and highly coherent
Claim	No claim statement, or an incomprehensible claim	Claim statement presented, but not fully articulated	Claim statement well-articulated
Sources	No source cited, or only noncredible source(s) cited	Only one credible source cited	Multiple credible sources cited
Justification	No evidence of justifying how the evidence supports the claim	Some evidence of justification for the claim but not fully elaborated	Clear evidence of well-elaborated justification for the claim
Counterargument	No presence of counterargument(s)	Only one counterargument presented, or multiple counterarguments vaguely presented	Multiple counterarguments well-articulated
Critical analysis	No analysis of the sources or information from the sources	Limited analysis of information from sources, or superficial treatment of contrasting views or content in the sources	Strong critical analysis of the sources and the views, content, or information from the sources
Synthesis	No evidence of synthesis of information from across the sources	Some evidence of synthesis of information from across the sources in only part of the essay, or in a limited way	Clear evidence of synthesis of information from multiple sources at paragraph level or document level
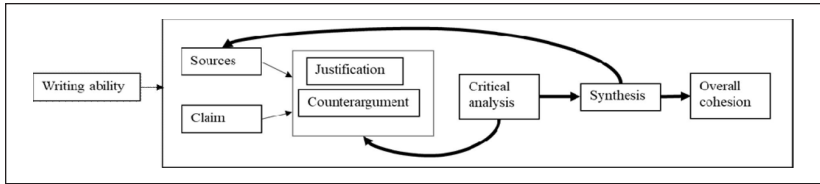
Figure 1. Componental process model of multiple source use (MSU) argumentative essay writing.

recognizing *counterarguments* within the readings. *Critical analysis* was, in turn, dependent on the selection of appropriate *sources*, which was reflected in stronger *justifications* and the inclusion of more relevant *counterarguments*. This componental model of the process of crafting the argumentative essay borne out by the data is presented in Figure 1.

This Bayesian analysis proved highly informative in uncovering challenges students manifested in writing an argumentative essay. Before delving into the particulars of those findings, it is essential to note that the majority of students have a limited understanding of what argumentation means and, consequently, what an argumentative essay should encompass. Repeatedly, in discussions following the MSU project, students explained that they had been taught that the goal of argumentation, whether written or oral, was to successfully defend one's espoused position or viewpoint. It was not about objectively weighing alternative viewpoints and conflicting evidence in order to arrive at a reasoned and well-grounded position. As such, the online search was conducted to identify documents that supported their position. For sources addressing the opposing viewpoint, students selected those that were intentionally less trustworthy or that made less-compelling arguments.

The laudable intent of MSU studies to open students' minds to deeper reflection on controversial topics (Barzilai et al., 2015) seems to have been lost on the undergraduates in LHL, and we would predict on many college students. Given this, in our Bayesian study, we found evidence that the process of argumentation begins to flounder when students are unable to consider perspectives and data that run counter to their stances or viewpoints. In fact, 40% of students failed to provide even one counterargument (Singh et al., 2019). While this outcome could be due, in part, to students' limited understanding of argumentation or argumentative writing, that is not sufficient to account for the challenges that endure from semester to semester, even with project modifications. For instance, based on findings from the Bayesian study and subsequent empirical studies (Alexander & DRLRL, 2020; Schoute et al., 2021; Sun et al., 2020), we decided not to ask students

about their stance on the controversial topic under investigation. We hoped this decision would reduce the amount of my-side bias we witnessed in the essays (Wolfe & Britt, 2008). While that decision may have ameliorated the search for confirming evidence, it did not eliminate the students' belief that they should use the project to "win" the argument. Moreover, it remains clear that a quality argumentative essay hinges on students' ability to engage in critical analysis of source materials and to effectively compare and contrast, synthesize, and integrate relevant information across those written documents. Each of these essential components represents a challenge for the undergraduates who enroll in LHL.

Profiling Argumentative Writing From Multiple Documents

Students' struggles with the effective use of multiple documents in building integrated argumentation were also evident in two profile analyses of their engagement with information sources (Schoute et al., 2021; Sun et al., 2020). Unlike the Bayesian network analysis that revealed the general componential process, the profile analyses allowed us to gain a more nuanced understanding of the differential source processing patterns the undergraduates demonstrated, which afforded insights into the variability in the strategic capacity and motivational/affective engagement among these students. By using this learner-centered analytic approach, we were able to identify the specific challenges different groups of students faced and understand the prevalence of those problems. In the first profile analysis we conducted, we sought to characterize students' source use behaviors when working with a predefined library (Sun et al., 2020). In the second profile analysis, we studied students' search and selection of documents in an open online environment (Schoute et al., 2021).

Profiling document use from a given library. As noted, we first conducted a cluster analysis based on the quantity and quality (e.g., source credibility, position on the topic) of the documents students accessed, read, summarized, and cited from a given set of 10 documents (Sun et al., 2020). This analysis resulted in the identification of four distinct profiles:

1. *Disengaged* ($n = 14$): students who accessed few documents and cited the minimum number of readings in their argumentative essays;
2. *Noncritical* ($n = 15$): students who accessed a relatively large number of documents but were not critical about the credibility of the ones they chose to read or cite;
3. *Casebuilder* ($n = 30$): students who mainly read and cited documents with a view that supported their own preexisting positions on the

topic but were not highly evaluative of the credibility of the documents they chose; and

4. *Critical-Analytics* (*n*=36): students who chose credible sources representing alternative views and cited those opposing views in their essays.

These profiles predicted the quality of the final written argumentation students produced, as assessed by the rubric in Table 3, with the *disengaged* students scoring lower than the other groups. These profiles corresponded to the theoretically defined stances toward MSU tasks described by List and Alexander (2017). As those authors indicated, these profiles reflected not only students' evaluations of the readings and integration of them into the written products but also their affective engagement with the MSU task (e.g., potential bias by their prior positions on the topic).

As this cluster analysis revealed, only about one-third of the students who completed the MSU task demonstrated a critical-analytic stance, meaning they were able to critically evaluate the credibility of the documents and to consider both sides of the arguments. A majority of the students (about 65%) manifested limited levels of critical evaluation of sources in building their arguments, either biased by their prior stances on the issue (the *casebuilders*) or limited by their ability or willingness to discern reliable from unreliable documents (the *noncritical* and the *disengaged*). Such outcomes again support the contention that these undergraduates may have been operating from a misconception as to the intent of the MSU task and what constitutes an argumentative essay.

With the goal to further characterize the ways in which different profiles of students processed the contents of the documents, we analyzed the summary notes they prepared for their selected sources, as well as their use of those notes in their essays. Specifically, we randomly selected 10 cases from each cluster and coded those students' summary notes for the presence of several key components on a binary basis (i.e., 1=present, 0=not present). These components included

- meta-information about the documents (e.g., authors and genre type);
- general claims presented in those readings;
- specific evidence substantiating those claims;
- whether the information students noted was consistent or conflicting with their pre-existing positions on the topic;
- whether their notes were copied verbatim from the readings, paraphrased, or substantially transformed by the students (e.g., synthesizing information within and between documents); and
- whether they included any evaluative comments about the information that they included in the summary.

For the argumentative essays written by those selected students, we documented

- the numbers of higher- and lower-credibility sources cited;
- the number of cited documents that supported and contradicted students' positions on the topic;
- whether a document was cited with elaboration or merely mentioned without any reference to its details;
- whether students drew on specific evidence or data described in the documents as support of their own arguments and as counterevidence;
- whether students referred to source information of the documents they cited; and
- whether students provided any critiques of the document content in the essays.

These follow-up descriptive analyses afforded more insights into the degree of critical analysis and synthesis of multiple documents that each profile exhibited. For instance, the *disengaged* students' summary notes focused on the major claims or stated positions of the authors without referring to the evidence authors used to substantiate their claims or positions. Further, these disengaged students' argumentative essays consisted largely of personal opinions or experiences not connected to the documents they read. Only the *non-critical* students failed to consider source credibility or critically analyze the content of the documents they selected. In their summary notes, these students mainly recorded general claims and the supporting evidence without evaluating the credibility of the source or its content. Consequently, in their argumentative essays, they tended to incorporate low-credibility information as support for their arguments and include unsubstantiated or weak conclusions.

In contrast to the disengaged and the non-critical students, *casebuilders* tended to record relatively detailed information on the specific evidence presented in the readings. Interestingly, as they read the documents with similar positions as their own, these students often copied segments of the sources verbatim. By having this verbatim content in their journals, these students were able to cite specific evidence to support their claims in the argumentative essays. Not surprisingly, however, they failed to address counterarguments or counterevidence sufficiently, even when these counterpoints were recorded in their journals. Finally, the students who populated the *critical-analytic* cluster appeared to engage more deeply with their selected readings. There was more paraphrasing and synthesizing in their journals as they recorded authors' major claims and the evidence substantiating those claims. In their essays, these

critical-analytic students presented more critiques and evaluative comments on the cited information, and importantly, addressed counterpoints and counterevidence more explicitly and elaboratively. However, even among this group of students, we saw room for improvement in terms of cohesion and integration of cross-document content in their argumentative essays.

This profile analysis highlighted limitations in students' conception of argumentation, their abilities to critically evaluate source reliability and content quality, to deeply analyze and synthesize information within and across documents, and to integrate opposing perspectives and evidence cohesively in the final essay. The different manifestations of these limitations in the identified profiles point to the potential for more focused interventions pertaining to the use of multiple documents to address a critical question, as well as the writing of a quality argumentative essay.

We recognize that the clusters identified from this analysis were constrained by the setup of the MSU task and the clustering variables included in the analysis. Thus, the findings from the Sun et al. (2020) study only applied to situations when students were given a prespecified set of readings. In students' day-to-day encounters with informational sources, however, it is often the case that they need to search for information online. What search terms they choose and how they decide which sources to read and use for argumentation are critical for the quality of the resulting written products. We thus made modifications to the subsequent MSU task to incorporate the online search process and conducted a second profile analysis to understand patterns in students' source search and selection processes.

Profiling Search and Selection of Documents in Open Online Searches. In a subsequent iteration of the MSU project, we deliberately moved away from a preselected library of documents and, instead, allowed students to select their sources by means of an open online search. This decision was made to create a more ecologically valid task. This change allowed us to examine students' specific search behaviors, their reasons behind source selection, and how the search and selection patterns linked to their argumentative essay. From a theoretical perspective, an understanding of how students approach information search and selection is critical for forming a more complete conception of the process of using multiple sources. According to the Integrated Framework of Multiple Texts (IF-MT; List & Alexander, 2019), students' search for information is affected by the task-specific parameters, their knowledge, motivation, and competencies, and any preexisting biases toward the controversial topic at the heart of the task (List & Alexander, 2017). As this framework suggests, an MSU task unfolds in three stages. First, during the *preparation* stage, students consider the task parameters and make initial

judgments about how they will engage in the search. In the *execution* stage, students activate behavioral and (meta-)cognitive strategies as they read, summarize, and analyze the materials they have chosen. Finally, in the *production* stage, students synthesize and integrate what they have learned about the task topic in order to create their final product, which was the argumentative essays for LHL.

As students conducted their open searches, they documented their activities by means of a search log that recorded

- number of searches,
- exact search terms used in each search,
- number of sources scanned, opened, and read,
- epistemic (e.g., relevancy, trustworthiness) and nonepistemic (e.g., length, position in search results) criteria they applied to decide which sources to read and summarize in their journals, and
- usefulness and credibility ratings of the sources they read and summarized in preparation for the argumentative essay.

The cluster analysis based on the information from the search logs indicated four distinct profiles (Schoute et al., 2021):

1. *Uninvested* ($n=37$): students who conducted the least number of searches, used biased search terms, and seemed to focus on meeting the minimum requirements of the task;
2. *Nonstrategic* ($n=34$): students who conducted a considerable number of searches and applied all criteria indiscriminately when choosing which sources to read and summarize;
3. *Biased* ($n=28$): students who recorded the highest number of searches but were highly selective in the sources they chose to read and summarize, likely to find documents that aligned with their preexisting viewpoints rather than based on the credibility of the documents; and
4. *Open-minded* ($n=25$): students who conducted a planful and unbiased search using neutral search terms and based their document selection primarily on source credibility rather than the viewpoint represented

These resulting profiles were generally consistent with the different stances toward MSU tasks described by List and Alexander (2017, 2019) and were similar to clusters unearthed in our previous study (Sun et al., 2020). For instance, the *uninvested* students appeared to exert the least effort in the MSU task, similar to the *disengaged* students in the Sun et al. (2020) study.

The *biased* cluster is comparable to the *casebuilders* in the earlier analysis in that these students seemed to use the task to reinforce or "prove" their initial views. In contrast, the *open-minded* students seemed to exhibit more thoughtful consideration of the controversial issue. They also tended to evaluate the credibility of sources they ultimately selected in a manner similar to the *critical-analytic* students that Sun et al. identified. The one profile unique to the Schoute et al. (2021) analysis was the *nonstrategic* cluster. This profile reflected problems in students' information search that the previous profile study could not capture, as the Sun et al. study confined students to a finite set of carefully chosen documents. The emergence of the nonstrategic profile highlighted new challenges for some students when facing an unlimited amount of information online.

What the Schoute et al. (2021) profile analysis also revealed was that only 20.2% of the 124 ($n=25$) students populated the *open-minded* cluster, whereas the majority (57.3%, $n=71$) of students fell into the less optimal *uninvested* and *nonstrategic* groups. These data suggest that a lack of motivation or limited strategic knowledge may have prohibited more effective information search and selection for these students. Perhaps more importantly, these cluster analyses revealed that undergraduate students' struggles to compose quality argumentative essays begin long before they put words on the page. Indeed, the quality of those resulting essays reflected deeper problems rooted in these students' beliefs about the nature of argumentation but also their motivation and cognitive abilities to consider two sides of an argument—problems that then carry forward into their plans for searching, locating, summarizing, and subsequently integrating relevant sources into a written argument.

Instructional Response

Both the Bayesian network analysis and the two profile analyses proved quite informative as to the impediments to quality argumentative writing for the undergraduates enrolled in LHL—impediments that warranted instructional responses. For one, we needed to confront students' misconceptions about the goals of MSU tasks, particularly when controversial topics are involved. For another, we wanted to make students aware of more or less optimal strategies for planning and executing an effective online search for relevant and credible documents that addressed both sides of a controversy. Further, it was evident from the componential analysis that these students also required assistance in understanding how to bring the information that they had gathered in the form of an integrated, cohesive, and well-structured argumentative essay. In response to these impediments, we adopted additional instructional practices

to support students' multiple-document-based argumentation writing. These practices continue to be an integral part of the LHL course today.

As we have typically done in LHL, we do not lecture students on these points a priori but use their actual performance data to reveal the specific strengths and weaknesses in their execution. In effect, we contrast their demonstrated behaviors and outcomes to what is considered optimal. For instance, we have each student summarize and chart their data from the search logs and then we compile those data by majors and for the entire class—a procedure that we use often throughout LHL. Once those analyses are done, we reveal search data from the Schoute et al. (2021) study and the resulting profiles. We then ask the students to compare their individual and group data to those reported in the 2021 study and to judge which cluster best fit their performance. Against this backdrop, we turn to the students' misguided beliefs about what constitutes argumentation within MSU tasks, particularly when they are probing a topic that they have decided is controversial for them and their peers. In effect, the students come to recognize that the open-minded profile regarded as optimal is regrettably exhibited by only a small number of them, an outcome that can be easily altered once they recognize the rationale for such searches.

Finally, while these steps help to set the stage for a quality argumentative essay, we also must instruct students in how to use what they have learned through the search process to craft a quality product. In keeping with the pragmatic principles and social-cognitive orientation to our instructional approaches, we work toward that end in LHL in several ways. For one, we remind the students that their summaries will be invaluable sources of information for their essays, so they should choose what to summarize more purposefully. We also let them use the tools of compare-and-contrast analyses previously described to juxtapose arguments and evidence from opposing perspectives. In doing so, we reinforce the functionality of the summary and comparative writing activities they have practiced by demonstrating how these tools can help them see the connection among points within and across selected documents and thus formulate better-integrated arguments and counterarguments. In addition, we provide them with the specific criteria for judging argumentation quality with the intention to fill the knowledge gap or correct any misconceptions about what good argumentation entails. With these criteria, students can self-evaluate their written products and identify areas for improvement.

Further, we have students use their summary notes and essays to engage in a critical-analytic discussion on the controversial topic, with an emphasis on uptake of the ideas expressed by another. These discussions are not only helpful in engaging them more deeply with different arguments around the controversy but also serve to illustrate how arguments are connected and thus

improve the cohesion in their writing. Participating in meaningful conversations with peers about the controversial topic also serves to increase their motivation in the task. Lastly, we foreground to students that the final exam would have a brief argumentative essay component, in which they would have to address an equally controversial point forwarded by Heather Wilson about the increasingly fragmented nature of U.S. higher education and a resulting lack of expertise among graduates (Wilson, 2011). By doing so, we try to instigate their interest in improving their argumentative skills, guided by the extensive feedback we leave to their first argumentative assignment, both for better achievement in the course and for developing abilities to address more critical questions of importance to them. Taken together, we seek to strengthen students' task-related knowledge and beliefs, strategic competency, and motivated engagement by interweaving the cognitive, social, and motivational forces that are concomitantly at work in shaping students' writing development.

Conclusions and Implications

As we noted throughout this article, the context in which we came to focus on undergraduates' academic writing, and particularly their ability to craft argumentative essays, was a course designed to alter their habits of mind and habits of action that should translate into deeper and more effective learning about learning (James, 1890; Peirce et al., 1923). While we are not experts in the field of writing, we have expertise in learning and academic development and an understanding of how the interplay of reading and writing contributes to students' general and domain-specific learning. This background, combined with growing concerns about students' approaches to learning, led the first author to design the Learning How to Learn (LHL) course. Every reading and writing activity in LHL was purposefully included to provide students with knowledge and strategies that should help them become more competent learners in whatever career path they pursued.

As educational researchers, we also recognized the necessity of gathering data within and across semesters that would illustrate what features and processes were having the desired effect on students' academic development, and which were not. In essence, we would characterize the ongoing research on LHL as an ecologically valid design experiment carried out over eight semesters (Alexander & DRLRL, 2020; Cobb et al., 2003). It was through this continuous analysis that we became aware of the challenges in undergraduates' argumentation writing that we described herein.

Over the eight semesters of this ongoing design experiment, we have learned much about college students' capacities and variabilities as learners

and writers; what affordances and constraints exist within the instructional community of Learning How to Learn that facilitates or frustrates their growth; and what we must do as instructors and teaching assistant to shore up students' knowledge and abilities while ensuring that they remain interested and invested in the community's shared goal of becoming more effective and efficient learners (Graham, 2018). We conclude this article by sharing the main insights we have garnered from this undertaking in hopes of informing others who see writing generally and argumentation writing more particularly as integral to effective learning. Specifically, we would contend that:

- *Among college instructors and teaching assistants, there is quite likely an underestimation of the influence students' writing abilities exert on their academic development.*

As the developer of the "Learning How to Learn" course, the first author came to that undertaking with 40 years of college teaching experience and expertise in learning and academic development (e.g., Alexander, 1997, 2006). Yet, those multiple decades of experience did not prepare her or the other instructors and teaching assistants for the realization of how ill-prepared and generally uncomfortable high-achieving college students are in academic writing. We were aware that argumentation was a challenging form of writing and is often a writing genre relegated to older students. Within the multiple-source research, there is the recognition that the writing of quality arguments will be cognitively and motivationally demanding for students. However, we were taken aback to realize how demanding writing argumentation was for the students—to say nothing about the summaries and comparisons that were precursors to the argumentative essay. Even more unsettling for us was our growing awareness that the very goal of this special course— improved learning in academic domains— was undermined by students' less-than-optimal writing performance. It would seem that learning to write and writing to learn are inextricably intertwined.

- *Even high-achieving undergraduates representing a range of college majors struggle with academic writing.*

Perhaps naively, we initially operated under the assumption that high-achieving students who were admitted to universities such as ours would have been experienced and somewhat competent at academic writing. Although there is ample research indicating that writing can be problematic for undergraduates who have certain learning difficulties (Graham et al., 1991) or whose mother tongue is not English (Reichelt, 1999), no

comparable literature exists for capable or high-achieving college students. Nonetheless, this has not been our experience in the "Learning How to Learn" course. This is not a developmental course for those with documented problems in learning, nor is it a developmental writing course that focuses on students with identified writing issues.

Further, this course has often been populated largely by juniors and seniors who are preparing to go to professional or graduate school. Thus, there was no reason for us to expect that academic writing, especially of summaries or comparative analyses, would pose such challenges for many of the students—but it clearly did. When we discuss such writing issues with the students, they often mention that they did little writing in high school and even less in college. Understandably, this claim was more often voiced by students majoring in engineering, the biological sciences, computer science, and the like. But it was also our social science majors in such areas as psychology, history, or education that reported similar trends in their education backgrounds. Whether these self-reports are accurate or not, we no longer take academic writing ability for granted for any of the undergraduate students we teach.

- *There are numerous factors, both external and internal, that seemingly contribute to college students' struggles with academic writing.*

One insight we garnered from these semester-long design experiments is that there are both cognitive and affective/motivational factors that seem to support or inhibit students' academic writing. Some seemed rather common-sensical perhaps, while others proved more surprising. For example, as educational psychologists, we are well aware of the impact that learners' motivations have on learning and performance. For those students populating *disengaged* or *uninvested* clusters, for instance, there were multiple indicators that the less-than stellar argumentative essays they produced were at least partially reflective of the underwhelming time and attention they devoted to planning and executing the assigned MSU task. List and Alexander (2017) discussed affective/emotional factors in the CAEM model for MSU projects. Yet, it was surprising to us that these factors should be as evident in the "Learning How to Learn" course, where the reading and writing were integral to their learning and performance and not done as part of a disassociated experimental, laboratory-type study.

These internal factors were perhaps exacerbated by such external conditions as lack of face-to-face instruction for more than 18 months (Usher et al., 2021); an educational environment that favors multiple-choice, declarative knowledge assessments that require little, if any, writing (Scouller, 1998); and the potential effects of word-processing (with its grammar and spelling

checks) in the crafting of connected discourse (Morphy & Graham, 2012). The instruction prior to LHL the students may or may not have received about useful strategies or techniques to improve their writing would be another factor likely to separate the more capable from the less capable writers in our course (Juzwik et al., 2006).

- *Reshaping undergraduates' beliefs about the nature of argumentation and altering their approaches to writing quality argumentation is an uncertain enterprise for college instructors and teaching assistants.*

Speaking of somewhat surprising realizations—we were not prepared for the fact that the students in "Learning How to Learn" came armed with the entrenched belief that argumentation, whether written or oral, was about proving oneself right. If we accept these students' explanations for their orientation to the MSU task and the culminating argumentative essay, it is understandable why so few exhibited critical analysis or open-mindedness of the form we researchers of critical thinking, evidence-based reasoning, or multiple source use, tout. From the vantage point of these students, my-side bias is not a flaw in reasoning or logic but a viable strategy to succeed at supporting their position. If, in fact, this is the orientation to argumentation to which these students have been long exposed, then it will take more than specifying the criteria for a quality argumentative essay to dismantle their beliefs and alter their behaviors.

- *Undergraduates' struggles to summarize or synthesize what they read and to recognize different and even opposing perspectives or claims within and across multiple documents undermine their abilities to produce quality argumentation.*

From the outset of this course, we operated under the assumption that the writing challenges for these students would be nested within the argumentative essay. We did not presume that writing summaries or creating comparative analyses would be trying for these students. Yet, as we have repeatedly noted, this expectation could not be upheld when assessing students' writing. More to the point for this article, we would conclude that students who cannot synthesize information, distinguish more important from more tangential information in what they read, or identify significant points of similarity or difference across information sources are likely to struggle when called upon to construct a quality argumentative essay. This is especially true when the foundation for that essay is meant to come from the distillation of readings that examine a controversial topic from varied perspectives. As

was shown in the Bayesian study of the components of argumentative writing, the orchestration of multiple cognitive processes is required before the endpoint of a well-formed essay is reached. Moreover, the progression of those cognitively demanding components of argumentation are unlikely to be achieved without instructional support and guidance, a base of relevant topic or subject-matter knowledge, along with knowledge specific to written argumentation.

- *Even if undergraduates' knowledge about quality summaries, comparisons, and argumentation can be significantly improved, it remains to be seen whether they are willing to exert the effort required to achieve such quality.*

Finally, we as instructors and teaching assistants in "Learning How to Learn," have developed a deeper appreciation for the power of human motivation to either foster or frustrate efforts to change habits of mind and habits of action related to academic writing—or any of the other abilities we hope to foster in the students. Even those students who are committed to achieving high grades in our course, even if they do not really care about the content in any deep or personal way, still manifested nonoptimal motivations over the semester. These students who fit the profile of *compliers*, or what Alexander (2018) refers to as *information managers*, may well succeed at scoring points in their college classes, but they will likely complete their education without a deep understanding of what is truly required to become competent in any profession that demands more of them than rote memorization or superficial reasoning.

Closing Thoughts

Despite the many challenges we have documented herein, we remain optimistic that a well-conceived and well-executed intervention carried out within an ongoing course like "Learning How to Learn" can prove successful at elevating college students' academic writing. Further, we retain the belief that as students' academic writing improves, so does students' ability to learn more effectively. Of course, we appreciate that more and varied research studies are required within the context of existing courses to both address the challenges and build on the insights we have shared here. For one, it falls to us to create an intervention that achieves the overarching goals of this course devoted to learning and academic development. Yet, we look to others who teach in higher education to consider their courses as meaningful contexts in which to investigate the effects of argumentation or other forms of writing on the depth and quality of student learning.

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Eric C. Schoute is a senior doctoral student in the DRLRL. His research focuses on topics such as critical and critical-analytic thinking, writing and written

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