11 WAC and Critical Thinking: Exploring Productive Relationships

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Abstract: Writing across the curriculum (WAC) activities are often characterized as useful strategies for enhancing student learning. In this chapter, WAC activities are considered as critical thinking activities. Drawing on Bloom's taxonomy of cognitive skills as modified by Anderson and Krathwohl (2001), three types of WAC activities are described—writing to learn, writing to engage, and writing to communicate—in terms of how they can contribute to both language learning and disciplinary learning.

Keywords: writing across the curriculum, critical thinking, writing to engage, writing to learn, writing in the disciplines, writing to communicate

I began thinking about writing across the curriculum (WAC) in 1987, when I took a graduate seminar on WAC with Richard Young at Carnegie Mellon University.[1] A few years later, almost immediately after I began to work as an assistant professor at Colorado State University, I was drawn into a WAC initiative that focused on how best to implement WAC at a research-intensive university. Our inquiry had been prompted by the realization that our colleagues in other disciplines—and in particular in engineering, where we were then focusing our efforts—understood why they should use writing to support learning and teaching in their courses, but nonetheless chose not to do so. Essentially, our colleagues were telling us, "Yes, morally and ethically, I know I should use writing in my courses. It would be good for them." Still, they would go on to say, "But I don't have the time to do it."

We took this kind of resistance to WAC as a good sign, as a potential opportunity to address the root causes that led to it. We were not alone in view-

1 This chapter is adapted from the opening keynote at the EAC Conference. By looking at the ways in which writing-across-the-curriculum (WAC) activities intersect with critical thinking activities, I invited listeners to consider the ideas outlined as a framework for examining how WAC activities are structured.

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ing it in this way. A rich literature on faculty resistance to innovation exists, and there was already, even at that point, only twenty years after WAC had emerged as a higher-education movement, a substantial amount of scholarship about faculty resistance to WAC (see, for example, Couch, 1989; Kaufer & Young, 1993; McLeod & Soven, 1992/2000; and Swanson-Owens, 1986). As a result, since that time, my colleagues and I at Colorado State University have consistently viewed the local context in which we work as the starting point for our discussions of how to reduce the resistance to WAC we encountered among our colleagues in other disciplines.[2] Those discussions, in turn, have led us to explore the connections between writing and critical thinking.

Viewing Writing and Speaking as Transformative Acts

There are many reasons why writing and critical thinking are related. Among them is the role writing plays in assessing learning. In most cases, when we ask someone to demonstrate that they have engaged in critical thinking, we do not use multiple-choice exams. We do it through some sort of performance, often one that involves writing or speaking. We ask people to talk to us about what they are thinking, or we ask them to write it down.

A more important reason is that writing and speaking are transformative acts. Long ago, when my life revolved around competitive running, I gave a series of talks to the American Lung Association Running Club in Minneapolis, Minnesota. The members of the club had suffered heart attacks or some other sort of cardiovascular setback, and they had decided that running was a way to regain their health. The first time I talked with them, I stumbled through my talk. I felt foolish. Running was something I knew well. I was a college track and cross country coach. I was a successful competitive runner. I was part owner of a chain of running stores. But I could not talk clearly about it right away—at least, not for that audience. Later, my talks improved, and I was able to talk about running almost as well as I could do it.

During my graduate studies, I learned why I had struggled to talk about running, something I knew so well. Drawing on the work of Marlene Scardamalia and Carl Bereiter (1987), I began to see writing and speaking as rhetorical acts

2 My thinking about WAC was shaped initially by the work I did with Richard Young, then by my colleagues Kate Kiefer, Dawn Rodrigues, and Don Zimmerman, and later by my colleagues Donna LeCourt, Nick Carbone, Sarah Sloane, and Sue Doe. They stand out among many others for their generosity and thoughtfulness. And since then, of course, I have benefited from extensive conversations with members of the WAC Clearinghouse editorial board and the larger WAC community.

that involve the transformation of knowledge for a particular audience. Essentially, as you adapt your message for a particular audience, as you transform your knowledge in ways that allow them to understand your thinking, you engage in an act of cognitive change—a kind of critical thinking. My sense then and now is that, because it involves the thoughtful transformation of knowledge for a particular audience, writing is itself an act of critical thinking.[3]

Faculty in the disciplines at that time seemed to think, and even now some might say, "That's nonsense. Writing and speaking are just the presentation of knowledge." Yet that act of transformation—that act of critical thinking—is central to what we do as teachers of writing, and this has long been recognized by scholars in the WAC community, such as Sue McLeod (1988/2000; McLeod & Maimon, 2000; McLeod et al., 2001), John Bean (1996, 2011), Bill Condon 2001; Condon & Kelly-Riley, 2004; Condon & Rutz, 2012), Marty Townsend (2001; Townsend & Zawacki, 2013), Christine Farris (Farris et al., 1990), and Chris Anson (Anderson et al., 2015, 2016; Anson, 2017; Rutz, 2004), among many others. When we talk about writing in the disciplines, or speaking in the disciplines (the kind of speaking that typically involves prepared presentation or debates or more deliberate kinds of communication), we are talking about transforming knowledge in ways that other people can understand. And through that act of transformation, writers and speakers will come to understand their knowledge and personal experience more deeply themselves.

I would extend this discussion of transforming knowledge into how my thinking about writing across the curriculum has changed over the years. In the United States, when we talk about WAC, we focus on two major approaches: writing to learn and writing in the disciplines, which is sometimes referred to as writing to communicate. As I began to explore WAC and critical thinking many years ago, I felt that those two approaches were not sufficient to explain the different things we can do with writing in our classrooms. Eventually, I came to think of a third—a middle way—I have been learning a little bit of Mandarin Chinese, so it seems appropriate to talk about a middle way: *writing to engage*. Engagement is connection—in this case, connection to knowledge and to the sharing of that knowledge with others; it is transactional.

Understanding and Rising to the Challenge: WAC and Critical Thinking

Since 1991, I have been involved in a range of efforts at Colorado State Uni-

3 I am focusing on writing when I think of critical thinking because it is typically a deliberate and thoughtful act. Speaking can spur us to think critically, but it does not always do so.

versity to encourage faculty to think about how they can improve their teaching and their students' learning.[4] Like most universities in the US, we have worked through the shift from a focus on delivering information during class sessions to trying to do more to engage students during class. This kind of change can take time and, as is the case with many colleges and universities, we have more progress to make. The reasons for this are fairly straightforward and are particularly pressing at research-intensive institutions. In a nutshell, we expect our faculty members to publish, to teach well, to generate funding, to perform service for the university and the profession, and to engage with the local and regional communities we serve.

That is, we expect a great deal. And perhaps we expect too much. If we are to continue to improve teaching and learning, we need to help faculty members adopt strategies that lead to improved pedagogical outcomes without imposing additional burdens. My experience leading teaching and learning efforts at my institution has helped me understand that we can accomplish this by focusing on critical thinking. Simply put, our faculty members—and I think this is typically the case at many institutions in the US and internationally—often view the development of strong critical thinking skills as one of their most important teaching goals.

This understanding is where I began to view the connections between critical thinking and writing as not only the key to reducing resistance to WAC but also as a central part of our efforts to improve teaching and learning. As I noted earlier, the idea that writing is intimately related to critical thinking is perhaps as old as WAC itself. Indeed, it would take several pages to list all of the people who have talked about writing and critical thinking since Barbara Walvoord offered the first WAC seminar in the 1969-70 academic year. That connection, however, tends to be understood in idiosyncratic, often deeply personal terms. Each of us seems to have a slightly different understanding of what critical thinking is and how we can best encourage it. And that is perfectly fine, viewed in a general sense. As I continued to reflect on the connections between writing and critical thinking, however, it seemed as though we could improve both our understanding of those connections and how we shared that understanding with our colleagues across the disciplines so that they, in turn, could engage their students more fully in the learning process.

I began my exploration of the connections between writing and critical thinking by considering what have become traditional reasons to use WAC

4 In addition to my work with WAC and writing program administration, I've served as the founding director of our Institute for Learning and Teaching, director of our online and distance learning division, and as Associate Provost for Instructional Innovation.

pedagogies: to help students learn, to improve communication skills, and to prepare students for careers and civic life. But I realized that there were other reasons to adopt WAC. This emerged from my work with faculty on curriculum development and course design (see Figure 11.1). One of the primary goals we shared with faculty members was to *challenge* students. Creating a written document or preparing a presentation, we told them, takes much more effort –and typically results in far deeper learning—than cramming for a multiple-choice exam. A second goal we encouraged them to pursue was to *engage* students with their courses. We asked, for example, "How can we get students to do things that are related to the course, that get them involved in the content of the course, that get them thinking about the approaches and methods used in their disciplines or professions?"

Figure 11.1. Additional reasons to use WAC.

Our third and fourth goals, *supporting interaction* with classmates and instructors and *providing instructor feedback* on student work, were equally important in our curriculum development and course design efforts. To support student efforts to meet the challenges we set for them and to help them engage more deeply with the course, we need to help them work and share their ideas with other students them. And to help them understand how they are performing in the course, we need to provide them with regular and timely feedback.

With this in mind, my colleagues and I at Colorado State University, a group that included Kate Kiefer and Sue Doe, began to think about WAC as a lever for helping our faculty reconsider how we taught and how our students learned. In turn, our focus on WAC became deeply implicated in

our efforts to support the development of curricula that engaged students in critical thinking.

Drawing on Critical Thinking Traditions

As I thought about the connections between critical thinking and writing, I began to consider the question of which critical thinking framework to employ. In part because so many of my colleagues across the disciplines were aware of it and in part because of its frequent use by the course designers with whom I was working, I was drawn most strongly to Benjamin Bloom's Taxonomy of Cognitive Objectives as modified by Lorin Anderson and David Krathwohl (2001). This is a robust framework within which to approach critical thinking. It is also one of the main sources of the idea of "higher order" and "lower order" critical thinking skills (see Figure 11.2).

Certainly, other important approaches exist, and they have had strong effects on my understanding of critical thinking. Jean Piaget (1936) and Lev Vygotsky (1978, 1987) have offered influential developmental frameworks. William Perry (1970, 1981) has offered an interesting but often-criticized scheme that aligns individuals with various epistemological positions. Patricia King and Karen Kitchener (1994) have developed a reflective judgment model that is intriguing and powerful. And we can also look to the various conceptions of critical thinking that are based in problem-solving, as John Bean (1996, 2011) has done in his books.

In my work with curriculum development and course design, however, I have found Bloom's taxonomy to be particularly useful. When Bloom was working with his colleagues, he developed terms that reflected a highly conceptual approach to cognitive activities, terms such as *knowledge*, *comprehension*, and *synthesis*, among others. When Lorin Anderson, who was one of Bloom's students, began to work with the taxonomy, he used verbs to shift the focus from naming to action. The modified taxonomy asks questions such as: Can you *remember* what you just read? Can you *understand* what you have read or experienced? Can you take a theoretical framework that you understood and *apply* it to a real-world situation or a text? Could you take that situation apart, break it down into its bits, and *analyze* it? Could you *evaluate* something? Can you *create* something new? The result of Anderson's work is a more accessible set of terms that describe general classes of cognitive activities (see Figure 11.2) that not only engage students but also can be observed and measured.

After some thought, I modified it again to include an important aspect of the composing process: reflecting (see Figure 11.3).

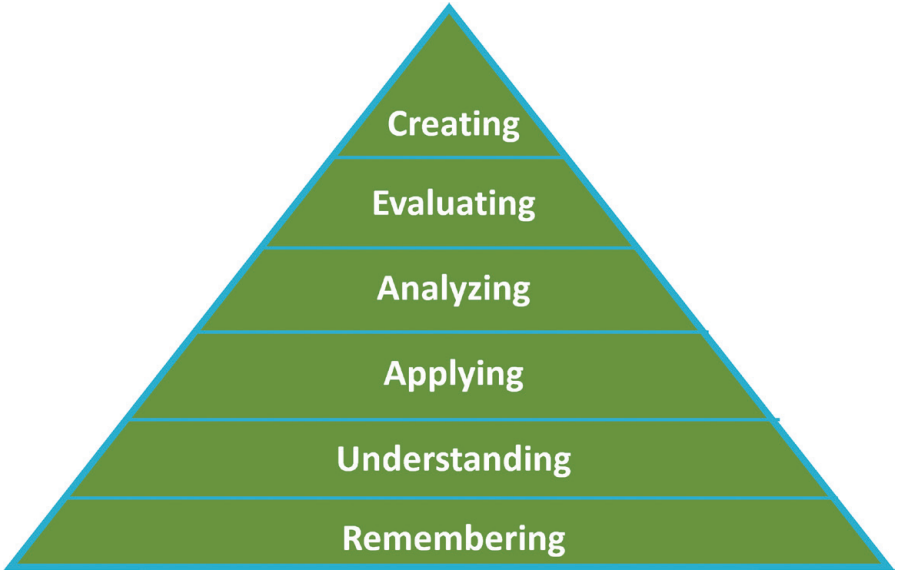

Figure 11.2. Bloom's taxonomy as modified by Anderson and Krathwohl (2001).

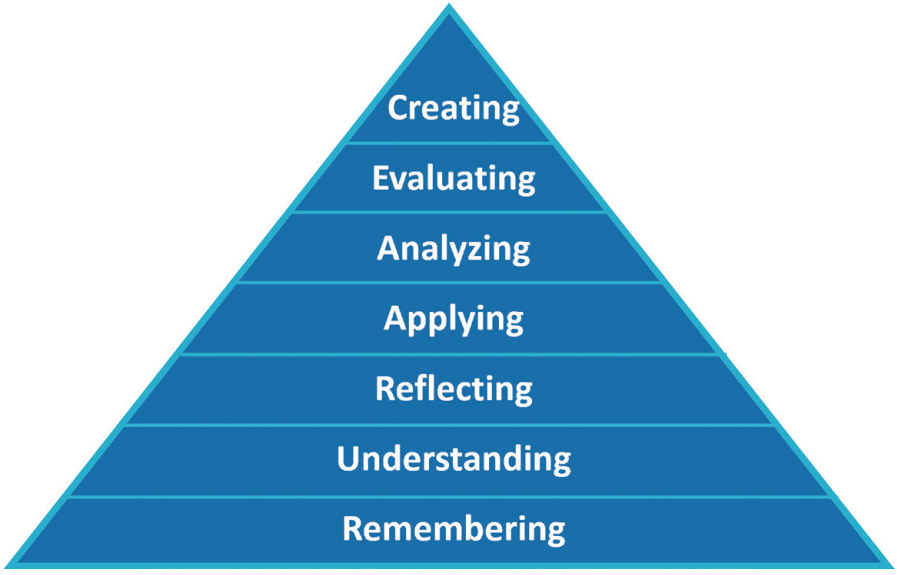

Figure 11.3. Bloom's taxonomy, modified to include the critical-thinking skill reflecting.

I find this list of terms useful. Sometimes, for instance, we assign work to students that is far more complex and demanding than we had intended. Perhaps, like me, you have found yourself thinking, "They just didn't get it." And perhaps this thought is followed by the realization that you've designed an assignment or examination that would challenge even an expert. We can address situations like these by thinking carefully about the kinds of critical thinking we want our students to engage in at a given point in a course. Doing so allows us to design learning experiences that are in line with the knowledge they have gained in the course so far and the kinds of thinking processes we want them to understand and control. We can ask, for example, whether our goal is to help students commit information to memory, to understand a concept, or to get to the point where they can explain their knowledge to somebody else, as we might do if we were drawing on Scardamalia and Bereiter's (1987) idea of knowledge transformation.

Certainly, as with any framework, we can identify problems with Bloom's taxonomy. Despite presenting it as a taxonomy—a set of categories—it signals a hierarchy, one that has led to the popular idea of lower- and higher-order thinking skills. And that hierarchy, at least in Western cultures, carries with it an implied value judgment. I find this problematic, and it is certainly worthy of careful thought. We might ask, for example, whether it is always the case that engaging in a "higher-order" thinking skill (for example, creating something) is more important than engaging in a "lower-order" thinking skill (for example, acquiring knowledge or working to understand something). For teachers and students, I suspect, the answers to questions such as these are heavily dependent on the teaching and learning goals in a particular course.

As teachers, we should view these activities not as if one leads inevitably to the next—although they often build on one another—but rather as a set of thinking activities that we engage in at different points as we learn and then use what we have learned. We should also consider the roles these activities might play in a particular learning situation. For example, our teaching goals in an introductory chemistry course would most likely focus on helping students remember and begin to understand core concepts and perhaps start to apply them. In a more advanced upper-division chemistry course, in contrast, we would probably want our students to engage in analyzing, evaluating, and perhaps creating. Both courses would be challenging, but because the second builds on the first, the nature of the challenge would differ. Notably, the "higher-order" thinking skills required in the advanced course would be impossible, in any meaningful sense, if students could not remember and understand the underlying concepts and processes they learned in the intro-

ductory course. It is also worth noting that even advanced students who are already engaging in higher-order thinking skills are likely to return to basic concepts and refresh their understanding of them. In this sense, it seems most useful to view these thinking skills as interrelated and recursive—as types of thinking we move among as we work on particular tasks or engage with particular ideas.

Reconsidering Approaches to WAC

Over the years, as I worked to develop a more expansive understanding of how writing activities and assignments might be used to enhance teaching and learning, I began reconsidering the two dominant approaches to WAC that I referred to earlier: writing to learn and writing in the disciplines. These two approaches are sometimes viewed as not only different but also in conflict with each other, with writing to learn viewed as WAC and writing in the disciplines viewed as something other than WAC—that is, as another approach to using writing altogether. I take the view that writing to learn and writing in the disciplines are best viewed as approaches that fall within the larger framework that WAC provides. I believe they are best viewed as two ends of a spectrum of WAC activities. Figures 11.4 and 11.5 offer brief overviews of the two approaches.

Writing to Learn: Using writing to help students learn course concepts, conceptual frameworks, skills, processes, and so on. It is useful for helping students remember and understand course content, issues, and ideas (as opposed to cramming for exams).
Best characterized as "low-stakes" writing:

- Focus on content; little or no attention to form since students often struggle with new information and ideas
- Limited feedback and comparatively little instructor effort; assignments are typically not graded

Typical activities include:

- In-Class Responses to Prompts
- Reflections
- Summary/Response
- Posts to Discussion Forums and Email Lists
- Definitions and Descriptions

Figure 11.4. Characteristics of writing to learn.

Writing in the Disciplines/Writing to Communicate: Using writing to help students learn how to contribute to discourse within a discipline or profession.
Best characterized as "high-stakes" (typically graded) writing:

- Instructor time is required for designing and responding to student writing.
- Potential for student academic misconduct

Typical activities include:

- Reports
- Articles and Essays
- Presentations
- Poster Sessions

Figure 11.5. Characteristics of writing in the disciplines/writing to communicate.

Writing to learn focuses largely on the content of the course. It is an aid to learning. It supports reflection. It supports remembering and understanding. Because it is typically seen as low-stakes writing (Elbow, 1997), it does not require a great deal of response from instructors. Some instructors will offer feedback in the form of quick marks on a document, such as check marks or brief notes. Some instructors simply collect the work and offer a general response to the class as a whole at the next class session.

In contrast, most instructors who use a writing-in-the-disciplines approach do so to help their students learn how to engage in discourse within a particular discipline or a profession. In this sense, it can be seen as preparation for professional life. It focuses on learning the disciplinary orientations and conventions that can help the writer become a contributing member of a discipline or profession. In this sense, it is typically what Peter Elbow (1997) calls high-stakes writing.

As WAC scholars, we should help instructors who use a writing-in-the-disciplines approach become aware of two key issues. First, it takes time to design and respond to writing that conforms to disciplinary conventions. If you are working with instructors who are pressed for time, you might turn to discipline-based writing activities, such as poster sessions, which require less response time than assignments such as term papers or longer reports. Students typically work on posters in small groups, and they can be asked to provide feedback on the drafts produced by other groups. During a poster exhibition (such as the final session of a class or during finals week), they can

further respond to questions from the instructor and other classmates. This can reduce the time needed for the instructor to respond without reducing the challenge and complexity of the assignment.

Second, some students might be tempted to plagiarize or engage in other forms of academic misconduct on a major writing assignment—although this is more often the case with common assignment genres, such as term papers, than it is with specialized disciplinary genres. To reduce the possibility of plagiarism in more common assignment genres, instructors can stage an assignment by asking for topic proposals, working bibliographies, source evaluations, and outlines or rough drafts, or some combination of materials like this. This will allow instructors to see what students are working on, and it will likely reduce the potential for academic misconduct.

Remapping WAC to Critical Thinking

To map out the connections between WAC and the thinking skills defined by Bloom and his colleagues, I set up a spectrum from remembering to creating. Then I laid that over the approaches we use in WAC, which are writing to learn and writing in the disciplines (see Figure 11.6). As I did so, I found myself asking, "Where do we draw the line? Where does one shift over? Does this alignment work?" It might be that I was foolish to view WAC activities and assignments as falling along a spectrum. Certainly, I found myself thinking that it did not quite fit.

Figure 11.6. Mapping WAC to critical thinking.

I mentioned earlier that I have been thinking about a middle way in WAC, a bridge between writing to learn and writing in the disciplines. Certainly, I recognize that engagement occurs all along the spectrum I have set up in Figure 11.6. Writing-to-learn activities can be highly engaging. And there is little doubt that writers can be highly engaged when they write for an audience. Over the years, however, I have come to the conclusion that there is value in naming a set of activities that do not fit neatly into either writing to learn or writing in the disciplines. I am calling this set of activities writing to engage.

Writing-to-engage activities ask students to use language to carry out tasks that are relatively distinct from writing-to-learn and writing-in-the-disciplines activities and assignments. These tasks could work well in a second-year or third-year course. They might even be used in a second-semester first-year

course. I like the term because it allows us to fine-tune our understanding of the range of activities we can ask our students to carry out. I recognize, however, that people who have worked in WAC for years—and, in particular, those who have focused on writing to learn for many years—will say, "Well, we do this. This is part of writing to learn." My colleagues Terry Myers Zawacki and Marty Townsend, for example, told me after I had given this talk at the conference that they have long viewed writing to learn in ways that overlap with the notion of writing to engage (personal communication). My response to this perspective is that there is value in parsing our activities more finely. Doing so will allow us to better understand what we are asking our students to accomplish. And this, in turn, will help us assess and ultimately enhance our students' learning experiences. I show how this parsing might be represented in Figure 11.7, which not only shows the alignment between the three approaches to WAC and various cognitive activities but also indicates that these approaches overlap.

Figure 11.7. Remapping WAC to critical thinking.

Writing to engage involves students in cognitive activities—reflecting, applying, analyzing—that they draw on as they begin to engage with the information, ideas, and arguments within a discipline. While students who work on these kinds of writing activities and assignments might not be participating in typical forms of disciplinary discourse, they would certainly be starting to grapple with what their disciplines care about. In contrast to writing-to-learn activities, which tend to focus on work that is typically carried out as learners are exposed for the first time to new information and ideas in a given field, writing-to-engage activities focus more strongly on the work of transforming knowledge they have already gained (Scardamalia & Bereiter, 1987). This process of transformation also has important implications for our understanding of prior learning and transfer (see, for example, the essays in Anson & Moore, 2016). Writing to engage can be seen as a key driver in helping students begin to gain an understanding of writing within a given discipline or profession.

In making a distinction between writing to engage and writing to learn, I want to avoid suggesting that students will not gain new knowledge as they work on writing-to-engage activities or assignments. They certainly will, particularly when a writing task asks them to explore content more deeply. What

I do want to suggest, however, is that writing to engage tends to focus more on the transformation of knowledge—on deepening the connections among what is already known by the writer—than on acquiring new knowledge. There is certainly overlap between these two types of WAC activities, as Figure 11.7 indicates. And it is likely that some activities and assignments that fall near the borders of writing to learn and writing to engage might best be characterized as falling in both categories. Similarly, I see this kind of classification issue coming up at the borders of writing to engage and writing in the disciplines.

I have seen writing-to-engage activities and assignments offered by some of the faculty members I have worked with. In these cases, they have wanted to accomplish more than they could with a typical writing-to-learn activity. For example, a colleague from sociology assigned a short paper that asked students to report on their application of a sociological theory they had been discussing in class to a YouTube video about the interactions among a particular group of people. It seemed fairly straightforward: "You've studied two approaches to this area. Here's a video. Watch it. Pick one of the approaches. Apply it. And then tell me why you didn't pick the other approach." This is not something the students could publish, and it is unlike professional discourse in sociology. But it is useful because it helps students engage with the ideas in the course at a fairly deep level. I describe writing to engage in Figure 11.8.

Writing to Engage: Using writing to help students work with and develop greater control of course concepts, conceptual frameworks, skills, processes, and so on.
Assignments can:

- Build on writing-to-learn activities
- Support a higher level of engagement than writing-to learn assignments
- Range from low-stakes (typically ungraded) to high-stakes (typically graded) assignments
- Focus on reflecting, applying, and analyzing and might include some attention to evaluating

Typical activities include:

- Application of Frameworks to Texts, Media, Cases
- Evaluations of Alternative Approaches and Methods
- Reflections, Critiques, Comparisons
- Proposals, Brief Reports, Progress Reports

Figure 11.8. Characteristics of writing to engage.

Looking Ahead

The writing-to-engage approach stands between the long-standing writing-to-learn and writing-in-the-disciplines approaches to WAC. It not only offers a middle way, so to speak, but also allows instructors who use communication activities and assignments to create meaningful, engaging assignments that are not limited to the genres typical of a given discipline or profession. In this sense, writing to engage aligns with both the *meaning-making writing tasks* construct developed by Paul Anderson, Chris Anson, Robert Gonyea, and Robert Paine (2016) and the findings of Michele Eodice, Anne Ellen Geller, and Neal Lerner's (2017a, 2017b, 2019) Meaningful Writing Project (http://meaningfulwritingproject.net/). It also aligns with work in writing transfer (Anson & Moore, 2016; Winslow & Shaw, 2017). I explore these connections more deeply elsewhere (Palmquist, 2020).

Writing to engage also serves as a potential response to some of the questions explored at the second English Across the Curriculum Conference about how best to enhance student communication skills. Conference presenters—some of whose work is included in this collection—raised important questions about the role of writing and speaking activities and assignments in a wide range of courses, and in particular, in courses that prepared students for careers that involve speaking and writing in English. My hope is that, as a concept, "writing to engage" might prove useful to instructors who are leading these courses and for those working with instructors on language learning pedagogy.

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