CHAPTER FOUR

COMPPLICATING THE RELATIONSHIP BETWEEN

DISCIPLINARY EXPERTISE AND WRITING DEVELOPMENT

Ryan McCarty

ARIANA: I think that the fact that I took—I’ve taken courses all over the place. I’ve taken econ. I’ve taken sciences. I’ve taken poli sci. I’ve taken English. I’ve taken Hebrew classes. All these different disciplines. Learning how to read and write within those disciplines, I think that I learned that good writing changes depending on the situation and the academic discipline.

INTERVIEWER: Do you consider yourself better at one kind of writing than another, depending on the class?

ARIANA: No. I think that I don’t know if I necessarily adapt to these different writing styles because it’s not like I’m a professional in one of these fields. I don’t really think that I’m better at one just because I don’t think I know enough about one to really write in that style.

One of the difficulties with discussions of writing development is that development is often conflated (or at least talked about in tandem) with theories of disciplinary expertise, a tendency that might not align well with the views of a student like Ariana, who sensed that she was developing writing abilities that differed across settings, but without actually developing—or even necessarily seeking—expertise in any particular disciplinary context. Instead, she reflects that her development as a writer hinged on her ability to learn to distinguish between the ways that writing and its varied forms are enacted in different contexts for different purposes. It is this broad array of writing experiences, not an in-depth focus on one site of writing, that characterizes her sense of what it means to learn and write in college. So it seems that at least in the case of Ariana—a successful student by most institutional standards, graduating with a 3.74 undergraduate GPA and acceptance into the University of Michigan medical school—there is very little evidence that she would
agree with conventional wisdom about writing development that tends to focus on students’ abilities to move from novice to expert status in one distinct academic context.

However, the centrality of this conflation of development and expertise can be found in some of the most important work of the discipline. Mary Soliday discusses the ways that professors in the disciplines share their genre expertise, illustrating how this helps students develop discipline-specific features in their writing. In their reading of the findings of the National Research Council–sponsored *How People Learn*, Kathleen Yancey, Liane Robertson, and Kara Taczak argue that, while gaining expertise might be an ephemeral pursuit, writing development consists mainly of developing the often highly specialized expert practices common to a particular context (38–42). Similarly, Anne Beaufort notes that what someone looking to gain “writing expertise is ultimately concerned with is becoming engaged in a particular community of writers who dialogue across texts, argue, and build on each other’s work” (18). In the tradition of studies in discourse communities and communities of practice, such conceptions of writing development position students in the complex role of negotiator among texts, mentors, and individual situations, all with the goal of learning to approximate a particular form of communicating. Nancy Sommers and Laura Saltz emphasize the importance of novice status in writing development, but note that this must eventually give way to a single disciplinary expertise, lest students become “globetrotters, moving from course to course, constantly breaking new ground in new subjects every time they write, never cultivating the disciplinary expertise in content and method that is necessary to question sources, develop ideas, and comfortably offer interpretations” (146). Chris Thaiss and Terry Myer Zawacki’s three stages of writing development position student development as a progression toward understanding the methods, genres, epistemologies, and contents of a particular discipline. Writing development, it appears, is a question of picking a particular academic or professional language and style, then striving to gain fluency in it.

As we moved further into our longitudinal study, though, it became clear that this kind of target-language assumption, in which students see their writing development as a striving to develop unmarked fluency in one disciplinary academic language, was simply not what we were hearing from some participants or seeing in their writing. Students might agree with Beaufort that part of developing writing fluency means they “must also develop knowledge of genres whose boundaries and features the discourse community defines and stabilizes” (20). Zach, a pre-med student majoring in ecology and evolutionary biology and minoring in writing, emphasizes this kind of development in a reflection on his development as a writer,
completed as part of the writing minor Capstone course: “I am now a perfectly well-adapted scientific writer, streamlined to convey concepts and findings in a concise and objective manner. . . . It has historically been a necessity to write this way in science in an effort to convince skeptical readers that your findings are based on truth rather than opinion.” His sense of scientific writing is a common one, privileging concision and markers of objectivity and nodding toward the functional reasons that STEM writers have adopted those practices.

As his reflection continues, though, it becomes less clear that Zach is content to allow these genres and discourses to remain stabilized in the ways that Beaufort and others frame them vis-à-vis disciplinary expertise: “However, I believe that even more societal value can be drawn from scientific truths by conveying them in a way that draws on the passion of the audience, not just the rationality. As I have learned though, such an endeavor must be undertaken carefully and subtly so as not to distract from the empirical evidence.” While he maintains the exigencies attached to presenting empirical evidence in scientific writing, Zach also insists that “good writing” consists of more than what he has learned about writing in the sciences. For this reason, he sought out different writing experiences by minoring in writing. The program’s acceptance of genres that Zach did not often encounter in his STEM courses allowed him to develop other abilities to address a wider range of audiences and purposes.

As Zach’s case illustrates, students often viewed their development as writers in ways that went far beyond the boundaries of expertise in particular settings, though it is important to reiterate that this is not necessarily because students cannot or are not willing to produce writing that conforms to the expectations of those settings when the situation requires it. Still, they frequently express the desire to infuse their writing with features of writing from other contexts—sometimes to satisfy the desire for narrower conceptions of personal voice, as Zak Lancaster describes in chapter 6 in this collection—but often to address what they perceive to be the needs of their audiences, as Zach’s comments do. That is, for some students, writing development seems to entail both learning the practices expected for a particular situation and incorporating—or at least thinking about—other practices that might be useful for readers to either understand or appreciate the text. Accordingly, then, many students echo Beaufort’s sense that real gains in writing expertise only happen “in the context of situational problem-solving” or through real-world “apprenticeship situations” (22). However, many students see this kind of disciplinary expertise as just one distinct knowledge that they integrate with other writing experiences in other contexts to form a larger sense of what it means to be a good writer.

Often, the recognition that they can leverage disciplinary expertise in other
contexts is central to students’ own narratives of their writing development. In case after case, we found students such as Leo, a minor who felt that his writing development was facilitated not only by a focus on disciplinary expertise, but also by reflecting on writing across his college experiences, as he notes in his exit interview: “I’ve become very self-aware of how I’m writing, and what I’m writing. I think that that has been a culmination of every class I’ve taken; little fragments of writing.” Like Ariana, Leo views his writing experiences not as discrete and bounded by established disciplines, but as contributing to a sense of writing development that prioritizes dexterity and cross-connection. It is this view of writing development that I explore here: one that highlights students’ tendencies to see their writing development as a process of learning many genres and practices from a range of disciplines, professions, and extracurricular contexts, often holding these practices up for comparison, with the goal of leveraging all of those knowledges against each other to be more effective across all of the contexts in which they write. However, students’ constant references to the contexts in which they learned to write in certain ways keep their pursuit of “good writing” grounded in the particularities of actual writing situations. They want to be better writers, but do not fall into the trap of believing in what Brian Street terms the “autonomous model of literacy,” in which skills and practices can be learned apart from contexts of actual use (19). Instead, it is through their reflections on times when they leveraged their range of writing experiences from across contexts that many students come to develop a richer sense of the nuances of writing in particular disciplines, professions, and extracurricular activities.

Students gained striking insights about specific writing contexts by holding them up for comparison with writing in other contexts. An excellent example is Katie, a nonminor communications and international studies double major. In her exit interview, she described herself as initially struggling to understand how to navigate between the writing she had learned in a public relations summer internship and academic writing in her majors:

I guess when I first came back I thought, “Okay, great. I know how I’m supposed to write for PR. That’s communication. It’s what I want to do so I’m going to try and apply that here.” I started writing and then I hadn’t turned it in yet, luckily, but then I realized, “Oh, wait, that’s a different setting. I have to go back to how I was writing before the summer” and I did much better on those assignments after that.

Her realization that there were distinct rhetorical differences when addressing audiences in public relations and communications deepened her sense of exigency
Beyond “good communication.” Instead, she began to recognize that influences from these different contexts positioned her as a more nuanced communicator, free to draw on diverse understandings of writing. While other students might attribute this difference to a simple academic/professional dichotomy, delegitimating the work of college writing in the face of a concise and to-the-point writing style, Katie instead focused on how information is presented differently for different audiences and purposes. For instance, she distinguishes between differing genres’ presentations of information, pointing out that

[a] press release is written like a newspaper article. You have to lead with the most important thing, and then you give the background information later on. Whereas, in college I’d been writing, have the background information at the top and then get more and more specific or get to your point at the bottom.

For Katie, then, the process of developing as a writer involves first seeing writing in public relations as more or less equivalent to writing in communications, but later recognizing more nuanced requirements for each different setting. Ultimately, she claimed that it was this collection of writing experiences that developed her sense of self as a writer: “I guess maybe that’s what’s developed me into the writer I am today, the different assignments and the different maybe audiences that I’m supposed to be writing to, the different purposes of the assignments.” The emphasis on a broad collection of writing experiences is noteworthy, illustrating that, for Katie, the writer she has become is one who can effectively distinguish between exigencies of particular contexts, drawing on the appropriate resources in her writing repertoire.

Again, we see that the students described in this chapter are not discounting the importance of learning the languages and styles of their respective disciplines—on the contrary, we saw time and again through analyses of interviews and writing that the students in this study make significant moves toward adapting the linguistic features of their new disciplines. Similarly, I will make the case that some students exhibit exemplary disciplinary writing abilities and problem-solving approaches. If, as Jenny Rice puts it, “expertise is less an individual quality than it is a description of the activity of posing problems (and consequently of solving them),” then these students frequently can be seen as developing experts, shifting their approaches to writing to suit the purposes at hand (122; emphasis original). However, their understanding of how and why they develop writing for particular purposes is centered not on a single way of posing and solving problems, but on the incorporation of knowledges and writing conventions from across many contexts. These students speak of themselves and their writerly exigencies as spanning many intellectual,
personal, and future-professional spheres, and while they often acknowledge the need to conform to particular expectations at times, they see their most substantial moments of writing development in cases when they draw from across a wide repertoire of writing resources.

To further complicate the relationship between disciplinary expertise and writing development, this chapter presents two cases that illustrate the rich range of resources that students learn to draw on when writing. These two cases were selected for the contrast they provide, with one student directing her attention toward developing disciplinary expertise—though not always in the ways we might expect—and the other looking for ways to leverage disciplinary writing knowledge in other contexts. They are also interesting because they offer such very different approaches to writing in the STEM fields. Both students recognize the need to understand the highly specialized nature of writing in the sciences, but they also both find it necessary to take classes in other departments to further their own writing development. Finally, these cases offer an opportunity to contrast students who minored in writing with those who did not. In many of the chapters in this collection, we see evidence that writing minors develop more nuanced abilities to talk about writing, to reflect on their processes, and to shift their knowledge about writing to new situations. However, this minor/nonminor distinction is not airtight, as Lizzie Hutton and Gail Gibson suggest in their discussion of students who favor a more integrative view of “kinds of writing” (chapter 3). While it is true that many of the students who did not minor in writing appear to lack the ability to use the language of writing that writing researchers find most familiar, these two cases suggest that writing development happens in many ways, sometimes conforming to the expectations of teachers and researchers of writing, and sometimes in ways that are so discreet and nuanced, we might hardly notice them if students did not point them out.

To draw out these distinctions, I discuss how these two students are developing markers of disciplinary language in their writing and how they are thinking about blending those norms with features of other writing, often in ways that are difficult for readers to notice. Still, these students’ stories of their writing development illustrate ways that even the most seemingly straightforward disciplinary writing might be a product of what Thaiss and Zawacki describe as the third stage of writing development, where “the student uses the variety of courses in a major: varying methods, materials, approaches, interests, vocabularies, etc., toward building a complex but organic sense of the structure of the discipline,” and also of dialogue with the methods, materials, approaches, etc., encountered in courses far from the students’ majors (139). Like the student comments included earlier in this chapter, these cases illustrate how students think about disciplinary expertise
as one factor in their overall writing development. While developing such expertise is sometimes an explicit goal of these students’ wide-ranging explorations of writing within various genres during their college years, at other times that expertise is developed as a tool to be leveraged with expertise developed in other contexts.

**Kris: Developing Expertise through Dialogues**

At first glance, Kris might seem like the most straightforward example of the overlap between disciplinary expertise and writing development. Unlike most students in this study, she did not carry a minor or double major, instead choosing to focus solely on the discipline of microbiology. Eventually, her collected writing developed into one of the most thorough approximations of disciplinary discourse that we found in the study, making it seem as if she developed as a writer in the most discipline-focused sense. Indeed, as represented in Anne Gere’s chapter on students’ writing experiences after completing college, Kris’s success as a graduate student in microbiology at UM further solidifies her status as a burgeoning disciplinary expert. However, her interviews suggest a much more nuanced story, as she describes a process of negotiation that might otherwise go unnoticed when looking at her writing samples. These negotiations span considerations of developing individual style within the discipline as well as how to dialogue with other disciplines when thinking about her research. In this way, Kris’s case illustrates how even students who seem to be striving for expertise in a single disciplinary discourse do so by drawing from much further afield than we might assume.

Though Kris became a highly successful disciplinary writer, her relationship with writing started as a struggle. After coming to the UM and receiving a recommendation to enroll in the Transition to College Writing course available for students who need support before enrolling in first-year writing, she eventually found a deep commitment to writing, sparked by her work in a microbiology lab where she conducted and wrote up research that earned her honors and led to her acceptance in a graduate program. Over the course of her undergraduate career, she read voraciously from the major publications of the field, learning to write in many of the major and supporting genres of her discipline with high levels of success (see Gere’s conclusion for more on Kris’s development as a reader in the discipline). Kris’s honors thesis, titled “Identification of 5-methylcytidine and N6-methyladenosine DNA Modifications in the *Bacillus subtilis* Genome” is an unmistakably disciplinary piece of writing, exhibiting high levels of lexical, syntactic, and rhetorical conventions, as this excerpt illustrates:
While *ccrM* expression is itself tightly controlled by *CtrA*, the master cell cycle regulator, it regulates many cell cycle genes via **methylation status of various promoters**, including *ctrA* and **genes encoding cell division proteins, polarity determining proteins, proteins involved in cell shape, division, and DNA replication** [21]. *C. crescentus* CcrM homologs have been identified in at least 20 other α-proteobacteria [38] and are essential in *A. tumefaciens* [39], *S. meliloti* [40], and *B. abortus* [41]. (emphasis mine)

This excerpt, taken from the literature review in her introduction, illustrates command of a specialized lexis, as well as a tendency toward discipline-appropriate use of nominalizations, such as “*ccrM* expression” and noun clusters, which are bolded above. Such condensation of participants and processes into dense noun groups is prevalent across scientific writing, allowing writers to make processes themselves the subject of discussion, and compacting those processes into single lexical items or noun groups (Halliday, Kirkwood, and Martin; Fang and Schleppegrell).

Kris’s writing displays successful development of such disciplinary features, and her interviews also show signs that she is developing some metalinguistic awareness of these practices as well. This awareness is notable in her exit interview description of her realization that the content of her writing was meaningfully linked to the language of the discipline:

> At first when I was starting to read papers, I thought scientists used unnecessarily large words to describe things. Then what I found as I started writing was that we have a specific vocabulary, just like any field does, and it’s just way easier to communicate in that way. You can use one word to describe what would have to be used as a whole sentence.

Though she does not use linguistic terms such as **nominalization** or **noun clustering**, her conscious recognition of the language patterns is more important than the terms themselves. Kris’s reference to individual words that can replace whole sentences is probably pointing at least partly to the kinds of specialized language that encodes processes as nouns in cases such as “expression” and “replication,” which would require a great deal more writing to unravel, as Michael Halliday, Alexander Kirkwood, and James Martin point out in their studies of scientific discourse. Kris’s recognition that the dense forms of scientific writing exist for practical purposes leads her to see such writing as more than a rigid pattern to be emulated. Instead, her development of metalinguistic awareness with respect to her disciplinary writing allows her to begin to take on such discourse features as her own, as Thaiss and Zawacki’s third-stage students learn to do while working their ways into disciplinary expertise. See Lancaster, chapter 6 of this volume, for an in-depth
discussion of the ways that students conceptualize the relationship of voice to disciplinarity and overall writing development.

As Kris takes on the identity of a member of her disciplinary community, she often attributes this development to her deep participation in labs, research projects, and journal clubs. Her reflections on scientific writing and her writing itself seem to suggest that Kris is developing her writing by becoming an expert in her discipline—she is learning to write like a microbiologist by being a microbiologist, and her growing understanding of the ways that such writing functions allows her to stake out a place for herself. Most importantly for her, she is conscious of the need to develop an individual style without straying from the conventions of the discipline. She describes her experiences learning this skill during her exit interview: “you’re not told how to do it, so you don’t automatically pick up on somebody else’s style, and make that your own. You still have to form it in such a way that it’s your own style, but that you can communicate it in a more effective way with the person that’s reading it.” This talk about her development of style is individualized insofar as Kris seems to be referencing an approach to writing that is distinct to each writer, but she avoids the pitfalls of seeing style as “my voice” in the way that Lancaster describes them. Instead, she conveys a sense of developing awareness of how others in the field might write, balancing that against her own approach, all while considering the rhetorical necessities of her audience. Expertise, then, is a matter of not just mimicking a given set of conventions, but of understanding how to find a place for herself within the space of that particular disciplinary style.

But Kris also develops an awareness of her approach to writing outside of her own discipline, through interdisciplinary interactions in the lab, where she is able to weigh the cardinal understandings and approaches to writing about microbiology against those of collaborators from physics. She describes in her exit interview the process of collaborative research and writing as an interaction between two distinct ways of knowing and writing:

As biologists, we think that the biology perspective is very important. We know what’s important for other biologists to read, and what they think. From the physics standpoint, they’re like, “We’ve got this number here. The number is solved. The equation is set. We’re good.” At least, that’s how we perceive their side. We’re like, “But the number is not of biological relevance unless we put it in this framework.” You see that back and forth.

The distinction between how biologists and physicists think about matters of proof when writing is quite rhetorically savvy in its discussion of shifting exigencies in
writing, provides yet another striking example of Kris’s development of metalinguistic awareness, with an emphasis on not only the content emphasized by each discipline, but also on the ways those disciplines write about such content. Importantly, though, Kris reflects that it was through this interdisciplinary interaction that she developed this awareness; her development of disciplinary expertise was a result of negotiating differences with other disciplines and ways of communicating.

Similarly, she reflected that one of the most significant steps in her writing development came from the writing she did in a course well outside her major. In a philosophy course on medical ethics, Kris wrote an argument for mandated vaccinations, drawing on the argumentative structures of that course and discipline to talk about a topic related to her own disciplinary work. Shifting to argumentative methods from outside of her usual STEM contexts forced her to reexamine the kinds of thinking and writing she did as a microbiologist. Emphasizing the usefulness of this experience in her exit interview, she equates writing about science in a philosophy course with writing to a nonspecialist audience for a grant proposal. Both help her to see the form and content of her STEM writing with new nuance:

The philosophy course provided more of a contrast, I think more of a development, because it was a different form of writing. It also helped me reflect upon the way we write in science. Between the two, it showed me how I can communicate effectively when we do talk about—okay, so you’re talking to more of a lay audience as opposed to the scientific community in communicating your research. Let’s look at different ways to read and write.

Kris credits the contrast provided by cross-disciplinary and nonspecialist writing with helping her to understand her disciplinary work. In the philosophy course, it is the adoption of new forms of writing that makes her more aware of the forms she would regularly use, while the assumed readers of the grant proposal—who are often nonspecialists and not familiar with the technical jargon of the discipline—require her to think more about the link between ideas, language, and audience.

For Kris, then, development as a writer certainly involves the goal of developing expertise in one disciplinary discourse. But her understanding of that development is distinctly not isolated to her discipline. Instead, she sees her disciplinary expertise developing in dialogue with her other writing experiences. Her own expert voice developed through comparison with other members of the discipline and other ways of writing across the curriculum. She reflects on this in the last moments of her exit interview, when asked to give her advice to novice writers early in their college careers: “I would encourage them to read broadly, to write broadly, to
try different techniques, and, most importantly, to not be afraid of failure.” The note about not being afraid of failure provides an important reminder that Kris initially struggled with writing, and her process of drawing from a wide range of influences as she developed as a writer grew out of these struggles. Thus, she suggests a notion of development that recognizes that even when students produce the most seemingly monologic disciplinary texts, it is important to note the extent to which they are influenced by engagement with a wider range of texts and practices.

**Jonah: Developing a Hybrid Approach to Writing**

If Kris reminds us that it is important to look far outside the student’s home discipline for influences contributing to writing development, Jonah’s case is important insofar as it shows how a writer can develop by drawing on disciplinary expertise in nonacademic writing. The goal is not just to develop as a disciplinary expert, but to be able to leverage that expertise in new situations. So, as he tells it, Jonah’s is the story of a student consciously broadening his repertoire with the goal of hybridizing the texts he writes as well as his own writerly self-conception as he pushes against notions of what it might mean to be a “science” or “English” writer.

When he first enrolled in the study, Jonah was a pre-med student, majoring in evolutionary anthropology. He applied to the minor-in-writing program because he felt that he would benefit in his future career as a doctor if he could “learn more ways in which to perfect various forms of writing,” as he put it in his application essay. However, he was already eagerly taking classes in the English department, and during his entry interview he spent more time talking about the work he was doing in those courses than in his STEM concentration. Midway through his junior year, Jonah switched his major, eventually earning a less-common BS in English, with minors in biochemistry and writing. After finishing his undergraduate work, he was hired to write for *Blizzard Watch*, a website devoted to the online gaming communities associated with Blizzard Entertainment, the production company responsible for creating and maintaining such massive online game franchises as *Diablo*, *Overwatch*, and *World of Warcraft*, which Jonah wrote about extensively for his minor in writing courses. These fairly in-depth writing experiences across contexts left Jonah with a range of writing resources to draw on. Indeed, in the reflections written while minoring in writing and in his interviews, he describes his writing development as an ongoing recognition of the ways that diverse kinds of writing can be leveraged for seemingly unrelated situations. That is, he recognizes that writing differs across the contexts he has encountered, but argues that his de-
velopment as a writer comes not from simply acquiring fluency in particular discourses, but by learning how to write more effectively by drawing on and adapting resources from across his repertoire.

This process of drawing from a range of resources began, perhaps predictably, as Jonah started to develop an awareness that writing functioned differently depending on the situation. Because he wrote in a wide range of contexts, from English courses to labs to online gaming spaces, and because of his tendency—in his estimation—to write more like an English major than his peers in the pre-med track, Jonah developed a strong sense early on that writing in different contexts was to be kept separate. Early comments on his development of writing in STEM courses as well as analysis of writing from those contexts illustrate attempts to adopt a very standard disciplinary style. For instance, in his entry interview, his discussions of writing feedback in STEM courses generally focus on learning to edit out elements that are considered unnecessary:

I guess a lot of the times I have to go back and look at old stuff that I’ve written, and when the instructors, “You don’t need to say this,” I go, “Okay, don’t say that.” I guess I just have to constantly remind myself, just say what you wanna say and be done and move on. It’s more of as I’m writing, a constant reminder to myself, “Hey, you stated the fact, you don’t need to say anything else.”

Jonah’s early sense of writing in the sciences is normative, emphasizing the separation of this discourse from others by deleting unnecessary explanations beyond simple reporting of “facts.” Though he would eventually develop a more nuanced approach to thinking about the relationship between “facts” and “explanation,” when he first enrolled in the study, Jonah identified a clipped and concise style as one of the most important factors when writing in the sciences.

Indeed, analysis of his writing confirms Jonah’s sense that he was developing discipline-specific concision. STEM writing from earlier in his undergraduate years, like this biochemistry lab report, illustrates a more straightforward disciplinary style:

TLC spotting of the crude solid and the starting material (PABA) was done, as well as a co-spot of both. **Results** showed an \( R_f \) value of 0.35 for the crude product, and \( R_f \) value of 0.16 for the PABA, and two separate spots with \( R_f \) values of 0.35 and 0.16 for the co-spot. **The separate RF values** indicate that the product is different from the starting material, and the complete separation of spots in the co-spot indicates that the product is pure. When performing melting point analysis, our crude product melted at 88.6° C. This
melting point matches the known data for Benzocaine, which has a melting point range of 88–90° C. (bold and underlining added)

There is much to be said about the ways that Jonah achieves a “forward, to the point, no fluff” style of writing here, as well as the level of metalinguistic awareness that he has developed to conceptualize such writing. The passive voice and agency shift from researchers to abstractions, as bolded above, is a general rhetorical move in the sciences (Gross, Harmon, and Reidy), and is one of the most familiar linguistic differences noted by students beginning to develop lab and research writing. The nominalizations and noun clusters that characterized Kris’s writing are also present, as underlined. While Jonah regularly employs these practices in his writing, he does not mention them explicitly when describing his writing in STEM courses. Still, Jonah’s approximation of both of these linguistic features illustrates a development of language considered appropriate for this disciplinary context and is evidence of his steps toward disciplinary expertise in lab and research writing.

Similarly, in a chemistry paper written the same year, Jonah successfully approximates the linguistic tendencies common to writing in the sciences in ways that might be considered clear and straightforward, while also showing a developing ability to use familiar academic narrative structure to describe previous research:

[1] Primary attempts to create luminescence in plants were accomplished using firefly luciferase by Ow et al. in 1986. [2] By adding luminescence to the plants, researchers were able to use the luciferase as both a genetic marker and a genetic tag that could be used to identify other target proteins within the cells of the plant. [3] However, use of the firefly luciferase as opposed to the other forms of luciferase led to a dependence on externally applied luciferins to induce the luminescence. [4] In addition, this method of luminescence did not protect against the transgenic contamination of other plants. (underlining and numbering added)

Jonah’s continued use of dense noun groups, as underlined, illustrates a growing comfort with this feature of writing, particularly in the third sentence, which posits one large nominal group leading to another equally dense nominal group. There are signs of larger genre-based development as well. This paragraph follows a familiar pattern for creating a research space (Swales) within previous findings, as Jonah (1) topically introduces previous research, (2) describes how such research has approached the topic, then (3) problematizes and (4) further problematizes that approach. After following these steps, Jonah is situated to continue his discussion of developments in genetic modification research in this area.
Thus, it would appear that Jonah was on his way to developing his writing in terms of disciplinary expertise, not only recognizing the need for clarity and concision, but also beginning to deploy grammatical resources particular to the register of the discipline. However, as he continued his college studies, Jonah became less content with maintaining this strict division learned in his disciplinary courses, instead developing a sense of himself as a writer drawing on a wide range of styles to best suit the needs of his audiences. This shift is most visible in the layout of the eportfolio Jonah designed for the Capstone course in the minor. Jonah chose to use a large caffeine molecule to serve as his central image, with each of the molecule’s constituent atoms linking to a different text from his undergraduate career. As Naomi Silver notes in chapter 8 in this collection, such multimodal design elements are an especially effective way for students to “make even more literally visible the innovative negotiations and play” they engage in as hybrid writers (p. 244). For Jonah, these negotiations are a matter of combining experiences and abilities from across a range of contexts, including both academic sites that favor text-heavy expression and gamer communities based around graphics and video.

He explains this choice, noting in his exit interview that an important “part of the sciences is the microscopic scale and how things come together. What I wanted this to show was different pieces of my writing coming together to show who I am as a writer. Like the different parts of this molecule they all come together” to create a larger whole. Importantly, Jonah does not propose an autonomous view of writing and literacy in which a skill such as writing is learned free of contexts and then applied to situations as the need arises. Instead, Jonah views his own writing development in terms of experience with many different forms of writing, each contributing to his greater dexterity as a writer. As he reflects on his growth as a writer in his eportfolio, making “characteristics” of different writing work together effectively was one of the difficulties that he grappled with most during the minor Capstone course:

All of these characteristics have improved over my years of being a student writer—the World of Warcraft piece I wrote certainly utilized some of these aspects and was arguably better for it! In their own right, they certainly have value and can contribute to the betterment of a piece. But making them all work together, and then some, is more difficult.

Jonah’s desire to integrate influences from across his academic experiences is most visible in his final project for the Capstone course: a large multimedia text introducing newcomers to aspects of gameplay and culture in World of Warcraft, a
massive online game in which players develop their own characters, hone specialties, create alliances with other players, communicate and plan via text and voice-based features, and keep track of updates to the sprawling landscape of the game. In twenty-one pages of introductions, descriptions of basic controls, explanations of norms and practices in the online community, and presentations of testimonials from other players, Jonah draws on narrative elements he associates with writing from his English and writing minor courses, as well as conventions he learned as a member of the World of Warcraft gaming community. But in his exit interview he also notes places where he drew on writing knowledge developed in STEM courses, identifying one page that included an infographic with particularly in-depth figures and his own discussion of the kinds of things players could learn from reading such texts, describing “a lot of the time where I would take that scientific approach where I would try to say as much as I can about numbers and facts. Without going too far above people’s heads, but also without dumbing it down too much.” Though simplistically stated and somewhat deficit-oriented in its view of how scientists write for nonspecialists, Jonah’s sense that he is better able to write this page because of his experiences writing in STEM courses is noteworthy insofar as it seems to support the integrative-view-of-writing theme of his eportfolio.

However, it is difficult to find significant examples of the grammatical patterns identified in his other STEM writing:

The picture to the left is an example of how one might visually represent a boss encounter. While such a visual representation might be limited in its capacity to demonstrate the entirety of an encounter, it is still useful for boiling an encounter down to its bare essentials and making for a quick overview. For this particular fight, the image conveys what each role must do through the use of role icons; demonstrates key traps in the fight raiders must watch out for through the use of still images; and makes note of the special phase of the encounter by off-setting the description to the bottom. In short, the salient details are all present for raiders who need a quick rundown/refresher of the fight.

Significant use of nominalizations and dense noun clusters is limited, with only one example in which the process of representing something (bolded above) is nominalized as the subject in the beginning of the next sentence (underlined). This pairing is a frequently used pattern in scientific and “school-based” texts (Fang and Schleppegrell; Schleppegrell). Such limited carry-over of these features of writing could call into question the validity of Jonah’s claim that he is writing in this text like he does when he is writing like a scientist, since the two styles differ in such a
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notable way, grammatically speaking. However, this analysis might further indicate that Jonah had developed these features in his disciplinary writing but was still in the process of consciously developing the metalanguage to recognize or describe them; if this is the case, it might be unsurprising that there is only limited transfer of these features from STEM writing to Jonah’s *World of Warcraft* text, given the importance of meta-awareness to transfer, as Anna Knutson discusses in chapter 7 in this volume.

One feature that Jonah does carry over more significantly from his STEM writing is a tendency to shift active agency to abstractions, particularly numbers and figures. His organic chemistry lab writing contained several “results” and “values” that were acting as main participants in sentences, while his *World of Warcraft* piece discusses a “visual representation” that has limited “capacity to demonstrate,” and an “image” is tasked with conveying, demonstrating, and even making note of special phases. There are, of course, differences in the ways he is presenting these active numbers and figures, but what is important to consider is how Jonah sees writing as directly linked to his science writing.

So, unlike Kris, Jonah does not see the goals of his writing development in terms of building expertise in a single disciplinary discourse. Instead, he privileges the development of a broad repertoire of writing approaches, which he can draw on for particular rhetorical and communicative effects. When he needs to convincingly phrase a description of laboratory research, he can employ the appropriate language features, but when he needs to explain a technical concept, he can draw on the structured logic of scientific writing to make his explanation clear and concise. Importantly, he has become a professional writer through his pursuit of this wide range of approaches to writing. Having cultivated the ability to write “scientifically” in his explanations of online gaming, Jonah used the space of the minor in writing to further develop an individualized approach that moves fluidly between resources from across his writing experiences. Graduating from college, he felt less like an expert in a single disciplinary discourse than Kris, but that was not his goal. For Jonah, like many students, the ability to write with dexterity across a range of situations is more valuable than disciplinary expertise.

Conclusion

Though they do so in different ways, these cases suggest that students’ theorizations of their own writing development do not always limit this development to expertise in a single disciplinary discourse. Instead, they locate their writing development at
the intersections of many sites of learning and writing, as they negotiate between
the ways of writing they might encounter in their majors and those they might
bring from other courses and extracurricular contexts. While not all students were
as successful at identifying and putting into practice these diverse elements from
across their writing experiences (see Knutson, chapter 7 of this volume, for a dis-
cussion of the ways that Grace spends a good deal of time struggling to develop the
rhetorical agility that might facilitate such moves), an unexpected number did see
their writing development in more expansive terms. Here at Michigan, this trend
should perhaps not be altogether surprising, as it builds on previous research that
revealed students’ complicated relationships to disciplinarity and upper-level writ-
ing course selection (Gere et al.). Initially aimed at assessing the efficacy of upper-
level courses for apprenticing students into practices common to their majors, Gere
et al. revealed that “students instead take up the requirement [to take upper-level
writing courses] in a more selective way: as an entry into networks of strategies, au-
diences, and relationships that will help prepare them for their post-undergraduate
academic and professional lives” (258). Often, students take these writing courses in
departments far from their majors, explicitly to develop their writing in ways that
their disciplines do not encourage. For many of these students, such diverse course
selection is the best or only way that they feel they can develop as well-rounded
writers, prepared for the range of tasks they expect to encounter in the future.

However, it is worth noting that this isn’t a disposition that is unique to students
in privileged positions at this particular institution. In their longitudinal study of
students who began their college paths struggling in basic writing courses, Anne
Herrington and Marcia Curtis describe a similar tendency, with students working
to make links across a range of academic and private interests. While they provide
a rich discussion of the relationship between the student’s private communities and
the discourse community of the student’s chosen area of study, they caution that
their “framing of discourse community . . . focusing as it does on each student’s
formal or informal ‘major,’ does not account for the important function that specific
classes, including ones outside of that cluster, played in helping these individuals
make the link between private and social and between personal and academic” (375).

Like the students in this study, Herrington and Curtis’s participants understood
their development as multifaceted, drawing on a range of personal interests, gen-
eral education courses, courses in their majors, work experiences, and extracurric-
ular pursuits. The shortcomings of their study are replicated in this one, insofar as
this chapter is certain to only scratch the surface of the broad range of influences on
these students’ writing development. Deepening our understanding of this kind of
development should certainly highlight what Doug Brent simply calls “a rhetorical
education,” which “could be defined narrowly as the sum of courses or programs designed explicitly to teach rhetorical knowledge and skill,” including first-year writing, disciplinary writing courses, and traditional advanced composition and rhetoric courses, but might also “be defined in the broadest possible terms as the sum of all experiences in a person’s life, both inside and outside formal educational settings, that help him or her develop rhetorical knowledge and skills” (559). Such a definition of writing development is related to disciplinary expertise, to be sure, but also asks what else contributed to that disciplinary understanding, what students plan to do with it, and how it relates to their developing sense of themselves as educated communicators across a range of contexts.

WORKS CITED


