CHAPTER 1

The Writer(s)-within-Community Model

Steve Graham and Angelique Aitken

This chapter presents the writer(s)-within-community (WWC) model, which was first described in a book chapter (Graham, 2018a) and later revised in a peer-reviewed article in the same year (Graham, 2018b). The overarching premise of the WWC model is that writing and the teaching of writing are simultaneously and interactively shaped by the community in which they occur as well as the cognitive capabilities and resources of the writers, collaborators, readers, mentors, and teachers who populate this community. The WWC model grew out of Graham's frustration with cognitive models that ignored the rich social aspects of writing and social models that overlooked the contributions of individual differences and cognition to writing. His thinking about the model initially grew out of meetings held at the University of California, Santa Barbara, sponsored by Chuck Bazerman. For several years, Chuck, Arthur Applebee, Virginia Berninger, Deborah Brandt, Jill Jeffery, Paul Matsuda, Sandra Murphy, Debbie Rowe, Mary Schleppegrell, Kristen Wilcox, and Graham met to discuss writing and its development. While this group did not represent all theoretical views and conceptualizations, its members represented multiple viewpoints and developmental perspectives (Bazerman et al., 2018).

The WWC model that was developed as Graham's contribution to the Bazerman collaborative was never meant to be fixed and unchanging. Almost immediately, he began to modify it (Graham, 2018b) and consider how it could be applied in a more useful manner. This included using the WWC model as a framework for conducting writing research in science education (Graham, 2019) and with formative writing assessment (Graham, 2018c). Karen Harris and Graham (Graham & Harris, 2018) used the WWC model to describe the theoretical basis of the self-regulated strategy development model in writing (SRSD; Harris & Graham, 2016), and the practice-based professional development model used to teach educators to use SRSD (Harris et al., 2012). In more recent explorations (Graham, 2023), Graham examined how the WWC can be used as a lens for studying teachers and the teaching of writing, expanded earlier conceptualizations of executive control in the WWC model (Graham, 2021), and used the WWC as a tool for categorizing writing treatments and assessments (Graham et al., 2023).

These conceptual papers as well as research studies testing one or more aspects of the model (e.g., Camping et al., 2023; Graham et al., 2022; Tavsanli et al., 2023) provided the catalysts for making additional changes in the model. In this chapter, we incorporate changes in the WWC model based on this previous work, while at the same time addressing several aspects of the

model in need of greater development. These changes included addressing more fully the collective motivational beliefs that members of a writing community generally come to share through community participation, writing and reading connections, writing to learn, sources of feedback for reconceptualization at any point in the writing process, and interplay between writing beliefs. We also recognized the growing influence of digital tools in writing by providing illustrative examples for the WWC model that involved virtual environments and artificial intelligence (e.g., ChatGPT).

Organizing Structures of the WWC Model

The WWC model includes three basic organizing structures: *writing community*, *cognitive capabilities/resources of community members*, and *operating principles* (Graham, 2023). We begin our exploration of the WWC model by defining the writing community and its basic components.

Organizing Structure 1: Writing Community

Writing communities form the basic social unit in the WWC model. Writing is a socialized activity that almost always involves multiple people (e.g., writer and reader; teacher, writers, collaborators, and readers; mentor, writers, and readers). A writing community is a group of people who *share a basic set of assumptions and goals, and they use writing to achieve these purposes* (Graham, 2021). People who share similar convictions, beliefs, and identities are not a writing community as defined here unless their association uses writing to achieve shared goals.

Writing does not have to be the only or even the most central purpose of the community, but the community must include one or more writers (and possibly mentors, teachers, and collaborators) who seek to accomplish one or multiple community goals by creating text to be read by one or more persons (readers can be real or imaginary). This definition of a writing community includes situations where a single author serves as both writer and reader, as when a person writes a diary meant only for their eyes.

People commonly belong to more than one writing community at any given time (e.g., a virtual world where members communicate via writing, a group of friends who stay connected through instant messaging). These communities vary in terms of purposes, membership, and duration. For example, an adolescent may be a member of a semester-long college-level AP English course aimed at helping students become ready for the reading and writing demands of college. This youngster may also be a long-term member of an after-school poetry club designed to promote poetry expression in a supportive and safe environment. At home, this same teenager may be a temporary member of one or more social networks involving youth with similar passions, as they use writing to communicate with each other about topics of mutual interest.

The purposes and assumptions underlying these and other writing communities can be explicitly expressed or implied; understood or misunderstood by members; and emerging, relatively stable, or changing. Differences not only exist across writing communities, but within them as well. For example, in a second-grade classroom where writing is taught, students will undoubtedly vary in their familiarity and acceptance of the assumptions and goals underlying writing in this setting. Some children may actively or passively work against the writing goals of the class through limited participation or by being disruptive, whereas other students may embrace these goals and diligently work to support them. Such familiarity, acceptance, and support will not be uniform across or within individual students over time, resulting in contradictions, multiple voices, conflict, and disparate elements (Bazerman & Prior, 2005). These differences can lead to the formation of subgroups within a writing community, with goals that are consistent, inconsistent, or both with community writing purposes.

Despite the differences and heterogeneity that exist between and within writing communities, they share a common set of characteristics. Before describing these characteristics, it is important to note that each of these components includes multiple elements that allow for a broad array of combinations and interactions, which can and do change over time. Thus, writing communities should be viewed as continually emerging and evolv-

ing. When a collection of individuals come together for the first time, as happens on the first day of a freshman English class, they are part of a writing community as defined by the expectations of the university, instructor, and students' past educational experiences. While it may be tempting to view these students as a group and not a community at this point, they are bound together by the purposes of the course, including its purposes for writing (a writing community must have a shared purpose for writing). Instructor and students' initial expectations for the course and writing, however, will continue to emerge and change, as will the cohesiveness of the writing community, depending on members' understanding and commitment to community writing goals, degree and quality of participation in community activities, social relations and sense of belonging, perceived power and ability to address and negotiate developing tensions and challenges, and individual and group success in meeting community objectives.

Purposes

A writing community uses writing to accomplish its purposes, and these purposes can be quite varied (Freedman et al., 2016). For instance, the primary purpose of a workshop for aspiring novelists may be to improve written works in progress, whereas writing done in a social studies class may be designed to help students think more deeply about the reasons behind specific historical events. Writing purposes can be singular or varied as well as simple or complex. For example, parents and a child may establish a writing community with a single and simple goal: The youngster must text his parents if he will not be home by a specific time, telling them where he is and why he is late. In contrast, parents and a child may create a more elaborate writing community where both parents and children are to text each other to share at least one positive thing about their day, share anything that is particularly worrisome, and let each other know when they will not be on time. Purposes of writing communities such as these are subject to change over time as new conditions arise. This includes the dissolution of the writing community once it is no longer needed, as when a child becomes an adult and decides to stop texting parents about daily activities.

Writing purposes in the WWC model are characterized by the *goals* that writing is meant to achieve (a pair of writers tasked with creating a script for a movie), and the *norms* for writing within the community (clarity and accuracy are valued by scientists writing a paper for a peer-reviewed journal). Purposes further involve the *social practices* writing supports (students create a list of rules for cooperative behavior when working on a collective written project for a science class) and the *audiences* that serve as the object of the community's objectives (a graphic comic book created by an older brother for his younger sibling). Purposes further include *motivations and motivational beliefs* for writing that are fostered by the community (e.g., all students in a college writing class can become better writers).

Motivational purposes of a writing community were only partially included when the WWC model was first conceptualized (Graham, 2018a) and revised later that year (Graham, 2018b). We address this oversight here by expanding on the collective motivational beliefs of a writing community (these beliefs parallel those described later for individual writers).

Just as individuals can possess multiple motivational beliefs that may influence their behavior, writing communities establish multiple beliefs as they evolve. This includes collective community beliefs about the value and utility of writing (e.g., medical writers in a pharmaceutical company who place great value on producing easy-to-understand educational and training material), attitude toward writing (e.g., an online forum where writers can post why they like or dislike writing), writing competence (e.g., a second-grade writing class that adopts the motto *I Write Good Stuff*), purposes for engaging in writing (e.g., Black Lives Matter, which began as an online community and used writing to combat racism and police violence), writing success (e.g., a fourth-grade writing class where students are continually encouraged to try hard and attribute writing success to effort), and writing stance/identity (e.g., the *National Lampoon* magazine that established itself as a source for parody and satirical wit).

While each of these collective motivational beliefs can influence the writing work of a community (as well as how writing is taught or mentored), they also commonly interact

to influence each other and the actions of the writing community. For instance, the collective beliefs of an online community that uses writing to address issues of economic inequity are likely to be reinforced and even amplified if the community as a whole has developed a positive attitude about using writing to promote economic equality, gains pleasure from engaging in writing for this purpose, and believes what they write successfully promotes economic equity. Such positive collective beliefs are also likely to create a more positive working environment and result in greater effort by the community to meet its goals. It should be noted that collective beliefs can be nested across writing communities as happens when a school promotes an "I Can Do" attitude toward writing, which is adopted broadly by teachers in the school.

Members

A writing community includes persons who can serve multiple roles including writer, collaborator, reader, mentor, and teacher. At the most basic level, there must be at least one writer and one reader (e.g., a wife who writes love letters to be read by her husband), but writing communities commonly involve persons who serve multiple roles, such as college students acting as a writing tutor (mentor), who read and provide feedback on a tutee's writing (reader), and occasionally shares their own writing (writer).

While writing community members can serve singular or multiple roles when learning, producing, or consuming writing, such organizations generally differ in how power is exercised (Bazerman, 2016). Writing communities can be organized hierarchically (e.g., a college class where an instructor decides how the community will operate) or more horizontally (e.g., an online website where writers request voluntary feedback from other writers). How power is distributed in a community of writers impacts not only how its members operate, but also can influence motivation to carry out community writing goals (Moje & Lewis, 2007).

Membership in a writing community can be open to all, like Scribophile, an online writing group, or limited to a select few, such as the Royal Society of London. Within a writing community, members differ in participation, familiarity with community purposes and practices, commitment and alignment to community goals, perceived value, as well as identities as writers, collaborators, readers, mentors, or teachers (Freedman et al., 2016). As writing communities operate over time, they are open to change, such as expanding or restricting membership, shifting the responsibilities and roles of community members, and changing how power is distributed.

Tools

Writing communities actualize their writing purposes through the application of writing tools. This includes paper and pencil, word processing, speech-to-text synthesis, and artificial intelligence to identify some writing tools used today. The use of writing tools varies across and within writing communities (Yancey, 2009). For instance, an editorial board member of a scientific journal may make notes directly on a paper copy of a submitted manuscript, but write their submitted review using word processing or speech-to-text synthesis. A parent and young child might also use paper and pencil when writing a letter to a family member, but use crayons and construction paper for other writing tasks. Furthermore, writing tools can be situated in virtual communities, such as Second Life, where members adapt an avatar that can communicate in writing with other avatars via instant messaging, blogs, and emails.

The tools that a writing community uses are determined by availability and costs. The letter written by the parent and child above may be composed with paper and pen because these are the only writing tools available to them. Another parent and child may have access to more sophisticated writing tools, allowing them to create multimodal compositions with written text, pictures, drawings, videos, narration, emojis, GIFs, and so forth. Devices that provide different modes for producing writing are not the only tools that members of a writing community can access. For example, students in a college class focusing on the English monarchy and the move to democracy from the 1800s to the present time will likely access information from sources such as books, personal journals, autobiographies, or the internet

when writing an assigned report. The type of tools available to a writing community can influence both purpose and membership. For instance, digital writing tools make it possible to share writing broadly, making it possible for a community to have more expansive writing goals and a larger membership.

Increasingly, writing tools have the capability to assist writers as they compose text (Graham, 2022). This includes word-processing programs with software that assists writers and collaborators with spelling, grammar, word choice, or planning (Morphy & Graham, 2012). It also includes digital tools that provide feedback on aspects of writing such as organization and ideation (Shermis et al., 2016). With the advent of artificial intelligence (AI) programs such as ChatGPT, it is now possible for machines to produce text without the assistance of a human writer. Undoubtedly, some writing communities will use AI to produce text for both positive (translating written text into sign language for people who are deaf) and negative purposes (creating messages meant to scam or mislead). Nevertheless, AI has the potential to provide writers with an accessible and personal collaborator, which can assist in tasks like selecting a writing topic, gathering possible writing content, reworking writers' sentences, and providing timely feedback. For those who serve as mentors or teachers, AI can act as an instructional assistance providing feedback on such things as students' plans for writing, drafts in progress, and the final product. The "genie is out of the bottle" so to speak, and writing communities and their members will seek ways to capitalize on the promise of AI.

Actions

Writing communities develop specific actions or typified practices to actualize their writing purposes (Russell, 1997). These actions include the preferred routines members of a community typically apply to organize the writing environment, distribute responsibility, carry out writing processes, facilitate sharing and reading of resulting written products, and structure how writing is mentored or taught. They also include typified actions for managing the physical, social, emotional, and motivational aspects of writing, including making accommodations and negotiating disagreements among community members. The actions applied by a community to meet writing purposes can involve not only writing, but can also include typified practices involving reading (e.g., reading to acquire writing content, evaluating text), oral language (e.g., discussion about the writing topic; reading text aloud to evaluate it), and learning (e.g., using reading and writing conjointly to learn new material). Developed routines can be used to reinforce the writing goals, norms, motivational beliefs, and stance/identity of a writing community, but they can also lead to changes in how these and other aspects of a writing community operate (e.g., if a routine does not lead to a desired outcome, it may be changed or the desired outcome may be modified).

Typified actions of writing communities are best viewed as temporary and subject to change as new needs and circumstances arise (Many et al., 1996). For instance, a writing community opted to apply a new approach to writing, with some members acting as writers, others providing feedback, and still others editing the final product. They decided to make this change because they viewed it as more effective and efficient than the current approach where each person created, revised, and edited their own text. As this example illustrates, the typified actions of a writing community are not sealed shut. Rather, they are permeable and flexible.

Written Products

To be identified as a writing community, members must create written products. These products can take many forms (written, digital, multimodal), and include completed products, in-process products, and artifacts that are used or created when composing. Examples of such artifacts include plans, notes, drawings, model text, and earlier versions of the text as well as source material like articles, books, interviews, pictures, and film (Moje, 2009). Within writing communities, written products and their artifacts can be housed in a variety of locations including a physical location, computer, or the cloud. Writing products and artifacts may be viewed as temporary and retained briefly (an initial plan), whereas

others may be viewed as more permanent (a published text) and preserved for as long as the community is in operation. In some writing communities, written products and their artifacts may be restricted (Pentagon reports on the capabilities of foreign adversaries). In other writing communities, the created products may be available to all (a community newspaper that is available at no cost).

Physical and Social Environments

Writing communities are situated in physical spaces where people congregate (e.g., classrooms, offices, and homes), digital locales, or both (Johnson, 2001). The location where writing takes place influences the work of a writing community in multiple ways (Stedman, 2003). It can impact how writing is created (digital environments make it easier to obtain feedback from multiple collaborators), the form that it takes (multimodal texts are easier to produce in a digital environment), the audience who reads it (digital locales make it possible to reach a large audience), and even the size of the writing community (physical locations create structural limits to the number of members present at any given time).

Just as writing communities have a physical environment, they also have a social one that evolves as the community carries out its writing priorities. The social environment involves relationships among community members (writers, collaborators, readers, teachers, and mentors). Features of the social context such as a sense of belonging and affiliation, how power is perceived and enacted, stereotypical beliefs about community members, and social relations among community members can enhance or impede the writing work of a community (Bazerman, 2016). The social environment can be pleasant or unpleasant; cooperative or competitive; self-governing or controlling; and supportive, neutral, or hostile. It is generally believed that writing communities work best when the social environment is pleasant, supportive, cooperative, and encourages self-determination (Graham et al., 2015).

As with other structural elements in a writing community, the social environment can impact the community in multiple ways. For instance, when members view the writing purposes of a community as socially important, meaningful, and collaborative, they are more likely to create a shared sense of community purpose, engagement, and motivational beliefs than would be developed in a social environment where members feel disconnected and question the purposes and actions of the community (Hidi & Boscolo, 2007).

Collective History

As a writing community functions over time, it develops a collective history (Schultz & Fecho, 2000). In essence, its operation becomes codified. As an example, some purposes for writing may become increasingly privileged, as when a fourth-grade teacher has students create a journal entry related to assigned readings and then decides to make this a reoccurring and prominent classroom practice. Other practices, like having students plan their papers together, may be abandoned if the teacher judges them to be ineffective or inefficient.

The advantage of creating a collective history is that it provides community members with the knowledge and skills needed to participate in the same shared writing practices. The collective history of a writing community impacts all aspects of its operation including purposes, actions, tools, physical and social context, membership, and what is written. Fortunately, the collective history of a writing community is open to change from inside (e.g., classrooms moving from paper and pencil to digital tools) and outside of the community (e.g., changing educational standards for the teaching of writing). Although writing communities can be more or less nimble when responding to changing conditions (McCarthey, 1994), a collective history that becomes calcified can eventually impede the operation of community, as the community may be unable to address new challenges when they occur (e.g., the emergence of AI).

Cultural, Social, Institutional, Political, and Historical Forces

While writing communities are shaped and constrained by the structural elements described above, the nature and operation of such communities are also molded by external forces. At one level, writing communities

are built by individuals who draw on their experiences in other communities (Moll, 1990), as happens when a teacher models a tenth-grade writing class after the writing class of her favorite high school teacher. At another level, writing communities are influenced by cultural, social, institutional, political, and historical factors. For example, cultural factors differentially shape the purposes for writing instruction. In China, teachers commonly believe students need to learn to write in order to educate their minds, whereas in the U.S. writing is valued as a means for self-discovery and expression (Li, 1996). Several other examples of how external forces influence classroom writing communities include a mandate by the State Department of Education in California in the 1990s that educators deemphasize the teaching of spelling (Shanahan, 2014), white papers by professional organizations that provide teachers with guidance on how to teach writing (Sperling & DiPardo, 2008), and new developments in writing like word processing, speech-to-text synthesis, and AI.

While writing communities can be influenced by other socially derived communities and external factors such as culture or politics, they can have an impact that extends beyond their own boundaries, too. For instance, the book *Silent Spring* by Rachel Carlson served to alert her readers to the dangers of pesticides, but it also helped launch the environmental movement.

Relations between the Structural Elements of a Writing Community

How the structural elements of a writing community function in tandem are presented in Figure 1.1. The center of this figure illustrates how the *writing goals* of a writing community are accomplished through the *actions of community members* as they use *writing tools* to create the desired *written product*. The first ring moving outward from the center of the figure represents community members. This includes writer(s) and possible collaborators, mentors and teachers, and those who read what is written.

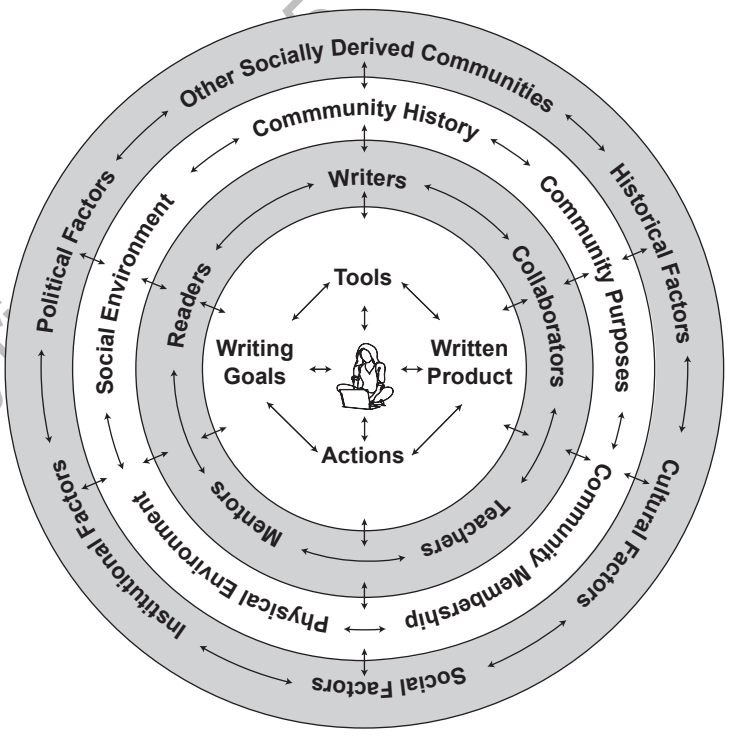

FIGURE 1.1. Components of a writing community.

When writing is created by multiple community members, accommodation and coordination are required (indicated by multidirectional arrows between *writers*, *collaborators*, *mentors*, and *teachers*). To illustrate, for feedback from a collaborator to be useful, it must be presented in a clear manner and the author must be willing to accommodate this feedback. Because the reaction of readers to a written text can influence the writing of subsequent text (Graham et al., 2023), the connection between *readers* and other community members is also represented with a multidirectional arrow. An example of this reciprocal relation is when one student writes a persuasive text and observes the reactions of others to the claims presented. If the reaction is positive, then the student is likely to continue this approach in the future. If the reaction is mixed or negative, the writer may employ a different approach in the future.

How particular *writing goals* are achieved by *writers* and *collaborators* (which in some instances include *mentors* and *teachers*) through the applications of *writing tools* and *actions* depends on a variety of interactions among and between established writing *purposes*, who belongs to the community (*membership*), the *physical/social environment*, and *collective history* of the community. The second ring from the center circle in Figure 1.1 illustrates these interactions, with the arrows showing the reciprocal relationships among them. We illustrate several such interactions below.

First, writing created by community members reflects one or more of its *purposes* for writing. The writing goals for this *purpose* and the writing tools and actions applied to create a written product are influenced by the targeted audience and the norms, social practices, motivational beliefs, and stance/identity the writing community aspires to achieve. Furthermore, which members of the community are responsible for achieving a specific writing *purpose* interacts with community *members*' roles and responsibilities, power within the community, availability and willingness, perceived capabilities, assumed identities, and commitment to writing and the writing community.

Second, the *physical environment* in which the community operates influences the number of *members* who can work on achieving any given writing *purpose* at a specific point in time, Likewise, the *social environment* can impact the willingness of community *members* to work together. This can include refusing to work collectively with one or more collaborators or minimizing effort when forced to do so.

Third, writing communities operate within the confines of other *socially derived communities* and a larger context that includes *cultural*, *social*, *institutional*, *political*, and *historical* forces (see the outer ring in Figure 1.1). As with the elements specified in the other rings, we use reciprocal arrows to indicate that socially derived communities are influenced by forces in the larger context, and these forces interact with each other to influence the nature and operation of specific writing communities and the actualization of their purposes. It should be noted that interconnections between socially derived communities occur to a greater or lesser extent, depending on their purposes and functions. Thus, some socially derived communities (an online gambling club) may have little or no influence on a specific writing community (a first-grade classroom with writing purposes), whereas others may be quite influential (the aforementioned first-grade class may have a significant impact on what a parent and child from that class do at home in terms of writing).

Fourth, there are bidirectional arrows illustrating reciprocal relationships between the rings. We illustrate this reciprocal relationship with an example that connects the inner and outer rings. While Charles Darwin was still in the process of writing *The Origin of the Species*, he received a paper from Alfred Russell Wallace, a lesser-known naturalist. The paper presented Russell's work on natural selection. Darwin was shocked when he read the paper and immediately passed it on to Sir Charles Lyell and Dr. Joseph Hooker, who released a joint paper containing Wallace's paper and written excerpts on natural selection from the yet to be published work of the more famous Darwin. In this case, the writing of Russell, who was a member of multiple scientific writing communities, spurred Darwin to act to ensure the importance of his own publication. The publication of *The Origin of the Species*, in turn, has impacted a broad range of socially derived communities over time, as it has

influenced views about biological development, economic evolution, and the evolution of learning (Graham, 2018a).

Organizing Structure 2: Cognitive Capabilities and Resources of Community Members

The writing purposes of a community are accomplished by its members. For the sake of brevity, the cognitive architecture of one member of a writing community (a writer) is presented in Figure 1.2. Other members of the community who act as collaborators, mentors, teachers, or readers share the same basic cognitive architecture. Consequently, the cognitive architecture presented here applies to all members of a community. Even so, depending on the role one assumes (e.g., writer, reader), a community member will not necessarily apply the exact same cognitive processes and resources. For example, readers can use production processes when reading text (e.g., taking notes), but do not have to do so. Likewise, mentors or teachers draw on their knowledge of effective teaching practices, but it is unlikely that writers and readers need to do so. In describing the cognitive architecture depicted in Figure 1.2, we focus mostly on writers, but will also refer to collaborators, readers, mentors, and teachers in certain contexts.

As noted earlier, context shapes and constrains writing and writing instruction, but writing and teaching writing are simultaneously shaped and bound by the agency, capability, and resources of those who produce it, read it, and teach it. For instance, when producing text, writers (sometimes in conjunction with others in the community) consciously and deliberately establish their own writing goals (usually in concert with community goals), and activate, orchestrate, and adjust when needed writing production processes, knowledge, beliefs, emotional responses, personality traits, and physiologi-

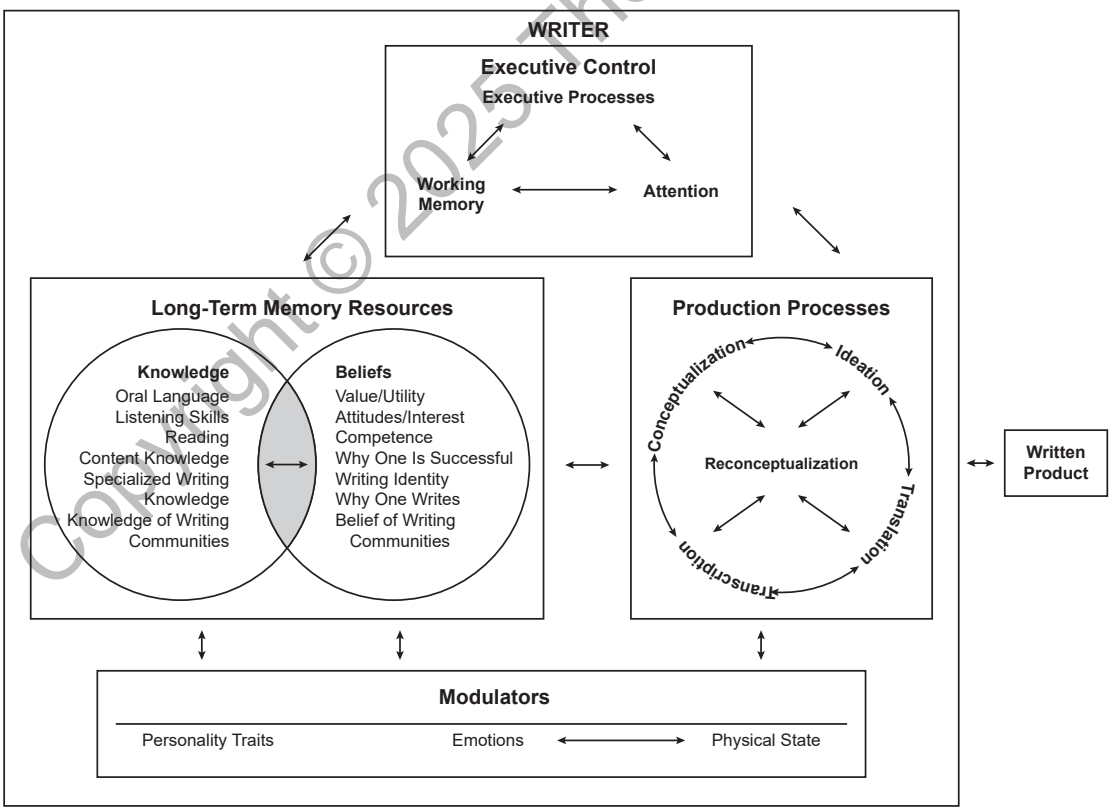

FIGURE 1.2. Cognitive architecture of writing.

cal states to achieve these desired objectives. Similarly, a third-grade teacher may be instructed to use a particular writing curriculum but may choose to add to it, drop parts of it, or modify it in other ways to improve it so that it meets the unique needs of her students and their writing community.

Production Processes

Writing involves production processes, which are the mental and physical operations writers (and collaborators) apply to produce text. These mental and physical operations can also be applied by teachers and mentors when they engage in activities such as sharing their own text, providing feedback, and modeling some aspect of writing. Readers also use the same operations to do such things as taking notes, annotating text, or creating a summary of what was read.

There are five interactive and reciprocal production processes. One process is *conceptualization*, which involves the creation of a mental representation of the writing task (Hayes, 2012). Examples of conceptualization include determining the writing topic, establishing specific writing goals, developing a plan for what to say or do (ranging from impressionistic to detailed), and using established schemas to envision text (e.g., a schema for writing a recommendation). Conceptualization is shaped by the purposes of the writing community, writers' goals, or both. These mental conceptualizations can take many forms including established goals as well as artifacts such as written plans, diagrams, pictures, notes jotted on the composition, and text produced so far. Conceptualization serves as a road map for other production processes, providing a modifiable guide for what is intended and needs to be done.

Ideation, a second production process, involves accessing possible ideas or content for writing from long-term memory (LTM) or from external sources in or outside the writing community (Torrance et al., 1996). Ideation can take many forms (language, images, film, abstract thoughts), and it is represented in writing with measures such as length, number of sentences, number of unique ideas, and richness or quality of ideas. During writing, some ideas undergo cursory examination, and others are examined intensely to determine suitability.

A third production process, *translation*, involves converting ideas, images, and so forth into acceptable sentences. This involves decisions about which words and syntactic structures best convey a writer's intended meaning (Kaufer et al., 1986) as well as considering how ideas in neighboring sentences are connected. This process involves drawing on knowledge of grammar, sentence structure, usage, and vocabulary (including words that connect ideas). It can also use writing tools from the writing community such as a grammar checker, thesaurus, or a collaborator. Translation is represented in writing via measures such as sentence complexity, use of cohesive ties, grammar, punctuation, capitalization, and vocabulary diversity.

With *transcription*, the sentences or sentence parts writers create in their minds are turned into paper or digital text. There are many different tools that writers use to transcribe sentences into text, including handwriting, typing, spelling, speech synthesis, and multimodal software that can integrate text with pictures, drawings, film, verbal dialogue, or images. Transcription is represented in writing by measures such as handwriting legibility, typing and handwriting fluency, spelling accuracy, and rate of composing.

The fifth production process, *reconceptualization*, can be applied to all aspects of writing, as writers can rethink or revise whatever is thought, planned, or produced. This can include fully transforming an initial conceptualization of a writing task to more localized changes such as revising a written paragraph or adding new ideas to one's writing plan. Reconceptualization is represented in writing through measures such as the number and types of revisions made to plans and text (including changes to ideation, translation, and transcription). Reconceptualization can be initiated by writers as they form judgments about their writing plans, text, or some other aspect of the writing process. They can also be prompted through feedback from a variety of sources: teachers, mentors, collaborators, readers, or computer programs (e.g., ChatGPT).

Writers initiate and coordinate writing *production processes* through the *executive control* mechanisms they command (see Figure 1.2); *long-term memory resources* such as knowledge about the writing topic and how to write, beliefs about writing and the

writing task (e.g., production processes may be minimized if the writing task is viewed negatively); and *moderating factors* such as emotional reactions to writing. Production processes are further impacted by the community in which writing takes place. For example, transcription involves handwriting when the only writing tools available are paper and pencil.

LTM Resources

As writers, collaborators, mentors, teachers, and readers engage in their various roles, they draw on resources stored in LTM, including accumulated knowledge and established beliefs. LTM resources are not the only resources writers and other members of the writing community can draw on, as they are likely to have access to other assets such as print and digital source materials. Even so, what and how writing is produced owes much of its richness to the knowledge and beliefs held in LTM (Hayes, 1996).

Knowledge

Long-term memory resources that writers, collaborators, and others that community members access include knowledge of oral language (e.g., phonological, syntactic, semantic, pragmatic, and discourse knowledge); listening (e.g., interviewing others to obtain writing content); reading (e.g., reading directions for a writing task, reading and critically analyzing text produced so far); and writing content (e.g., knowledge about the writing topic, discipline-specific knowledge when using writing as a tool for learning). Before proceeding further, we would like to expand on two of these resources.

First, some writers have access to a single language, whereas others can draw on two or more languages when writing. Writers apply their knowledge of language in multiple ways when writing. This includes using phonological knowledge to spell words, semantic knowledge to express ideas, syntactic knowledge to create grammatically correct sentences, pragmatic knowledge to create appropriate idioms in text, and discourse knowledge to formulate, organize, and construct mental messages for specific types of text. Transfer between languages when writing can be more or less facilitative. For example, students learning a new language (e.g., English) may be able to use their native language competence in writing more readily and with less adjustment when the two languages are more closely related in terms of shared structural linguistic features (Koda, 2008). Transfer from one language to another when writing, however, also depends on writing competence in the first language (Cummings, 1979), as writers must acquire a threshold of linguistic competence in one language before it can facilitate performance in another (Kecskes & Papp, 2003), with some theorists arguing that competency in both languages must reach certain levels of proficiency before transfer can be successful (Cummings, 1979). To illustrate this last point, without specifically focusing on linguistic aspects of transfer, a person who is a capable writer and commonly plans when writing in a native language will likely plan when writing in another language in which they obtain a certain level of competence. Thus, writing skills acquired in one language may serve as an asset in another language (and vice versa), depending on language and writing competence in both.

Second, previous versions of the WWC model (Graham, 2018a, 2018b) did not explore the reciprocal relationships that exist between reading and writing. Knowledge of reading and writing is not only reciprocally connected to knowledge of language, writers draw on knowledge when writing that overlaps with the knowledge they draw on when reading, and vice versa (Tierney & Shanahan, 1991). While reading and writing are not identical (Langer, 1986), they both draw on the same sources of knowledge (Fitzgerald & Shanahan, 2000). For example, general knowledge in LTM is used to generate ideas for writing and to comprehend text. Metaknowledge about the purposes and functions of text is used to construct written messages and interpret what is read. Pragmatic knowledge of text features, words, usage, and syntax is used to encode and decode words as well as construct and comprehend text. Finally, procedural knowledge about goal setting, accessing information, questioning, predicting, summarizing, visualizing, and analyzing is used to regulate writing and the writing process and understand what is read. As a result, the acquisition of knowledge in order to write is dependent on knowledge of how to read (and speak).

Two additional forms of knowledge in LTM are instrumental when writing. One is specialized writing knowledge acquired as a result of participation in writing communities. This includes knowledge about transcription skills (e.g., spelling, handwriting, typing, and keyboarding); translation skills (e.g., types and purposes of sentences, punctuation, and capitalization); text features and purposes (e.g., structural elements of different types of text, purposes of these texts); strategies for producing, drafting, and revising text (e.g., schemas and learned strategies for planning, creating, and revising text); writing tools (e.g., how to use speech to text synthesis); audience (e.g., interest and capabilities of intended readers); and strategies and schemas for controlling writing thoughts, emotions, personality traits, behaviors, inclinations, and the writing environment.

Another form of knowledge is what writers, collaborators, readers, mentors, and teachers know about the writing communities they inhabit. This includes knowledge of a community's purposes and writing goals, members, actions, physical and social environment, and collective history. Teachers and mentors also possess knowledge on how to teach or mentor writers, collaborators, and readers (see Graham, 2023), whereas readers are likely to possess knowledge about other text written by the community and the roles and responsibilities of readers.

Beliefs

Writers acquire a variety of beliefs that influence their writing engagement, expended effort, actions and tools applied, and interactions with collaborators and other members of the writing community (Hidi & Boscolo, 2007). This includes not only beliefs about a specific writing task (e.g., Is it interesting?), but also those about the communities in which writing takes place, as well as beliefs about the value and usefulness of writing, motives for writing, attitudes toward writing, competence as a writer, reasons for success/failure, and writing identities. Previous iterations of the WWC did not address the dynamic, multifaceted, and interactive nature of these beliefs. This is rectified here.

Beliefs about writing can be specific to a particular writing task (i.e., state) or apply more broadly (i.e., trait). While a specific belief can influence what a writer does (e.g., works hard to complete a writing task because of commitment to the writing community), beliefs more commonly interact to influence each other and the task of writing, serving as antecedents and consequences to each other (Camping et al., 2023). To illustrate, the power of a writing motive such as curiosity depends on antecedents such as perceived writing competence, the value placed on writing, attitudes toward writing, beliefs about writing success/failure, and assumed writing identities. For instance, a person who is a highly confident writer may be more likely to see writing as a tool that can be used for multiple purposes, including to satisfy their curiosity about a writing topic (consequence). Likewise, writing beliefs that act as antecedents to writing motives such as curiosity can also serve as antecedents. For example, a writer who is motivated to write to satisfy curiosity about a range of writing topics is likely to write more frequently than those who are less curious. More frequent writing increases opportunities to form or modify relevant writing beliefs on competency, value, identity, attitudes, and reasons for writing success.

Furthermore, the beliefs that writers hold in LTM are influenced by the varying writing communities in which they operate, past writing experiences, acquired knowledge, mastery of control mechanisms for writing, and moderating factors such as emotional responses to writing (Graham, 2018b). For example, young students who are not native English speakers, but are concurrently learning English and how to write in this language, are likely to express different motives for writing than native English speakers because these two groups are learning to write in overlapping but not identical writing communities. The former has less experience writing in English than the latter, and multiple aspects of their social, cultural, and historical backgrounds differ. Each of which can differentially impact these writers' beliefs.

Writing beliefs are not only influenced by context, experience, and other aspects of the writing process, they can act in a reciprocal fashion as well (Busse et al., 2023). Take, for example, self-efficacy and the emotion of anxiety. Self-efficacy and anxiety can act as antecedents or consequences to each other. Those who are successful writers within a

community are likely to evidence increased writing efficacy, making them less anxious about writing. Anxiety, in turn, can negatively influence students' writing, eroding students' efficacy as writers.

The beliefs of teachers, mentors, and readers about writing are equally multidimensional and complex. However, teachers and mentors will possess a variety of beliefs about teaching and those they teach, which can include beliefs about their preparation, teaching competence, teaching identity, the value of teaching, how students learn, and the characteristics of their students (see Graham, 2023, for other beliefs). Readers also possess additional beliefs such as their views on the value of what they read and the writers who produced these texts.

Executive Control

Even when a writing task is tightly constrained by the purposes of a writing community, writers and their collaborators can exercise some degree of agency over what is written and how it is produced (Graham, 2018b). For instance, writers may change a community writing task so that it is more interesting to them (writing about a current heat wave rather than writing about climate change more broadly) or their readers (write about the impact of a heat wave on pets).

Writers exert agency over what they write through executive control (Graham, 2021). Control processes allow writers to initiate, plan, and organize goal-directed writing behaviors as well as evaluate the effects of these actions and make needed adjustments, while also allowing writers to control their actions, thoughts, and emotions (Karr et al., 2018). The use of these executive control processes is conscious, effortful, controllable, relatively slow, limited by attentional as well as working memory resources and capacity constraints, and involves serial processing (MacDonald, 2008). It is characterized by logical thought (often occurring though internal dialogues), where writers, collaborators, readers, mentors, and teachers apply reasoning, problem solving, decision making, and analysis (intuition may also play a role)

Executive control is commonly applied when solving new tasks, novel problems, or tasks requiring flexible responding (this characterizes all writing tasks to some degree). It involves (1) explicit processing of information, requiring writers to maintain information mentally so it can be acted upon; (2) attentional control over cognitive functions, emotions, and behaviors (i.e., focusing and maintaining attention as well as inhibiting interfering behaviors); and (3) flexibility in shifting attentional control as context and task requirements change. In essence, when writers compose, they use executive control to make decisions about what to write and how to write it; direct, maintain, and switch attention as needed; orchestrate multiple aspects of writing (i.e., thoughts, beliefs, emotions, behaviors, writing tools, environment, and interactions with others); and evaluate, react, and make suitable adjustments for all of these actions. Executive control includes executive processes, working memory, and attention.

Executive Processes

Executive processes are the self-regulatory processes by which one directs and establishes agency over the problem at hand (cf. Jacob & Parkinson, 2015). When writing, executive processes include the action of formulating intentions (writing goals), plans (actions to achieve goals), evaluations (monitoring and judging the impact of intentions and plans), and reactions (modifying intentions, plans, and evaluations as needed). When writers formulate their intentions, they can do this in multiple ways and at any point during writing. For instance, writers can formulate intentions to (1) locate a quiet place to write each day, (2) take control of negative emotions about writing once these occur, (3) locate interesting ideas to make text more appealing as they write, (4) stay focused when their attention begins to lag, and (5) check to see if written text is clear. Intentions can be broad such as a goal to tell a story with an unreliable narrator, or narrow like making sure certain words are spelled correctly.

Writing usually involves multiple and hierarchically organized intentions. Furthermore, a writers' intention can shift at any point during composing (Conway, 2005). As an example, a reporter might be assigned to write an article about systematic racism (a community goal). As the reporter thinks about achieving this goal, additional intentions are likely to be formulated, such as

connecting how systematic racism impacts people of different races. While creating an initial draft of the article, the reporter may discover new intentions such as illustrating the effects of systematic racism on housing, transportation, health, and wealth. As the reporter continues to draft and revise the article, some previously established intentions may be eliminated, take a less prominent role, or never be acted on.

Intentions can be actualized by creating and enacting plans to achieve them (although writers do enact some intentions with little or no planning). Plans for accomplishing an intention can take multiple forms. This includes drawing on an already existing schema from LTM (e.g., a blueprint for writing an op-ed piece) that provides a reasonable solution for achieving the desired objective (Hayes, 2012). It can also involve designing a new plan to meet the targeted intention, or modifying an existing schema so it better addresses the desired intention.

The effectiveness of intentions, plans, or both is assessed through evaluation. Evaluation can occur when an intention or plan is first formulated or at one or more points during the composing process. For instance, a teenager writing an outline to guide a podcast could decide to use language that resonates with listeners of the same age. To meet the objective of using such language, the teen can make a concerted effort to use such words when producing the script (plan). To evaluate the effectiveness of this approach, the writer can ask other teens to read the script and identify places where this intention was or was not met.

The final executive control process is reaction. This involves a reaction or judgment related to the information collected during evaluation. For example, in the evaluation example above, it could involve changing words that others identified as problematic. Reactions can lead writers to question the value of their intentions, plans, evaluations, or all three of these processes.

The operation of the executive processes described here is almost always much more complicated than presented here, as writers typically have multiple intentions they are trying to achieve. Furthermore, some intentions take a more prominent role than others, and intentions, plans, and evaluations can overlap and even compete with each other.

Collaborators, readers, mentors, and teachers use these same executive processes to meet community writing purposes. Of course, the form that intentions, plans, evaluations, and reactions take depends on the role and responsibilities assumed by a community member. For instance, readers' intentions may center on understanding, enjoying, or learning from texts produced by writers and collaborators. The intentions of teachers and mentors will focus on teaching and supporting the writing of community members (see Graham, 2023). Readers, teachers, mentors, and collaborators may also develop intentions to use writing in ways that support their roles (collaborators may provide written feedback on a writer's plans and drafts).

Working Memory

Working memory is a temporary and limited storage system where the conscious mental work involved in executive control and writing occurs (Diamond, 2006). This is where knowledge and beliefs from LTM and external information obtained through the senses are temporarily stored and acted on in order to achieve writing intentions. Working memory is also the place where the mental operations involved in regulating attention; activating and managing writing production processes; engaging and suppressing emotions, motivational beliefs, and personality traits; and navigating the environmental and social situation in which writing takes place occur.

It is hypothesized that working memory includes three temporary storage systems (Baddeley, 2000): (1) a phonological loop for verbal material; (2) a visuospatial sketchpad for spatial, visual, and kinesthetic information; and (3) an episodic buffer, where information from the visuospatial pad, the phonological loop, and LTM are bundled together to form integrated units of information. These storage systems provide writers, collaborators, readers, teachers, and mentors with multiple, but integrated spaces, where they can act on different forms of information when writing, reading, or instructing.

As writers engage working memory to achieve the rhetorical goals set by the writing community, themselves, or both, they can gain new insights about the topic or content of their writing. Such learning can

involve implicit knowledge constituting processes, as described by Galbraith and Baaijen (2018). Accordingly, new understandings can develop implicitly, as writers draw possible writing content from LTM. To illustrate, knowledge about a concept is not directly retrievable from LTM, but it is stored "as a fixed set of connection strengths between units within a distributed architecture" (Galbraith & Baaijen, 2018, pp. 241–242). As the writer draws and synthesizes these fixed and implicit connections about the concept, an initial fusion of understanding is obtained. The implicit connections that are accessed and integrated depend on the writers' intentions and the constraints of the writing task. The initial understanding of the concept that develops may experience modification and additional synthesis as the writer evaluates it or as additional text is created. The extent to which writing leads to new understandings of the concept depends on the extent to which understandings produced in this way differ from understandings already held in the writer's episodic memory. If these differ, new understanding of the concept may develop.

Learning through writing can also occur through more direct and reflective knowledge-transforming processes in which knowledge held in working memory is evaluated and mentally manipulated to satisfy a writer's rhetorical goals (Galbraith & Baaijen, 2018). For example, new understandings of a concept being held in working memory may occur as the writer purposefully subjects it to evaluation, rehearsal, and elaboration. New understandings may also develop when the writer considers the targeted concept in relation to other writing content and how to organize it and present it in text (Graham et al., 2020).

Attention

Attentional processes (Jacob & Parkinson, 2015) make it possible for writers to: (1) focus attention on specific aspects of writing (read to locate possible writing content), (2) maintain attention on these selective aspects as needed (continue reading until enough information is located), (3) ignore distractions (suppress the urge to read interesting but irrelevant material), (4) inhibit automatic responses (forgo making a final decision on the value of specific pieces of information until all information is gathered), and (5) switch attention (switching attention between gathering ideas from source material and recording them on paper). Focusing, maintaining, inhibiting, and switching attention, as well as ignoring distractions, occur in all aspects of writing, including what writers, collaborators, readers, teachers, and mentors do alone or with others.

Modulators

Writing production processes, LTM, and executive control are moderated by emotions, personality traits, and physiological states. Emotions involve surprise, joy, anger, sadness, fear, disgust, hopefulness, hopelessness, guilt, disappointment, excitement, shame, embarrassment, pride, relief, anxiety, envy, annoyance, and gratefulness (Boekaerts, 2011). They influence what writers, collaborators, readers, teachers, and mentors want to do (Pekrun et al., 2007), such as when a reader decides to tear up a page from a newspaper after reading a letter to the editor that provoked an angry reaction. Emotions can also influence what a person does, as when a writer experiences anxiety when writing, making it difficult to start a new writing assignment. These modulators can further impact a writer's problem solving, decision making, and other thinking processes (Fridja, 1988), which are mental operations central to executive control.

Personality traits are "relatively stable individual differences in behavioral dispositions that generalize across environments" (Zeidner & Matthews, 2012, p. 111). These are relatively enduring traits that are not fixed, but probabilistic. The following five traits may moderate writing, reading, or teaching: openness to new experiences, conscientiousness, extraversion, agreeableness, and neuroticism (Matthews et al., 2003). Galbraith (1999) provided an empirical example of how personality traits influence writing. He found that students who presented themselves in a pleasing way generated more new ideas while planning, whereas students who were less concerned with projecting a pleasing persona produced more new ideas as they wrote.

Writers, collaborators, readers, teachers, and mentors can be hungry, stressed, tired, or healthy when writing, reading, or teach-

ing. These physiological states matter. For example, lack of sleep impedes concentration and memory (Curcio et al., 2006); hunger negatively impacts performance (Kleinman et al., 2002); and stress affects decision making as well as people working together to achieve a common goal (Dias-Ferreira et al., 2009). As a result, a writer's physiological state can impact what is written and how it is created.

Relationships between Cognitive Resources

To this point, our discussion about cognitive resources has mostly focused on how writers use their mental resources to exercise agency over what they write, how they write it, and how they engage with other community members. In examining how these mental resources are conjointly applied, we shift the focus to those who teach writing (see Graham, 2023).

Teaching is a very complicated task, as teachers exert their agency over the teaching process by using executive control to formulate, initiate, plan, organize, evaluate, adjust, and sustain writing purposes. They execute typified actions to meet these purposes, taking into account the physical and social contexts of their class as well as the collective history established over time. Teachers also use their cognitive resources to regulate their emotions, personality traits, and physical states as they prepare and teach writing. Through this conscious and deliberate mental work, teachers draw on relevant teaching and student knowledge from LTM and external resources (e.g., a lesson plan from the internet). Teachers' success in doing so is facilitated or hindered by their ability to ignore distractions and focus as well as their capabilities to maintain, inhibit, and switch attention when planning, teaching, and providing feedback.

The decisions and actions that writing teachers make through executive control are fueled by beliefs about preparation, teaching, competence, motives for teaching, students, the nature of writing, writing development, the value of writing, identity, attributions for success, and the writing community. The beliefs teachers hold incentivize them to draw on needed resources from LTM or external sources to initiate, direct, and sustain the teaching process. The activities and actions applied by writing teachers, including their use of executive control, attention, and working memory, are moderated by emotions, personality traits, and physical states. All of this occurs in the context of a writing community, which further shapes teachers' actions.

Organizing Structure 3: Operating Principles

There are four basic tenets underlying the WWC model (Graham, 2018a). These tenets are expressed below in terms of writers and the writing community, but could alternately be described in terms of other writing community members such as teachers or mentors (see Graham, 2023). We illustrate each principle with an example (see also Graham 2021, 2018b).

Tenet 1: Interactive Effects between a Writing Community and Its Members

Writing is simultaneously and interactively shaped and bound by the context in which it occurs and the physical and mental actions writers purposefully apply as they exert their own agency. Context here refers to the community where writing is created, and includes the larger cultural, social, institutional, political, and historical forces that influenced its creation. Agency refers to decisions and actions writers purposefully undertake, as they draw on their cognitive capabilities and resources to meet community and personal writing goals. Context influences writers' agency, but agency makes it possible for writers to exert their own impact on what is written and in some instances on how the community operates.

To illustrate how features of the community and writers' executive control capabilities can interact to impact writing, we consider how the conceptualization of a writing assignment in a high school class can involve an interaction between the purposes of writing in this community as well as the agency and degree of control exerted by its students. In an eleventh-grade world history class, the teacher required that each student write a report on the effects of colonialism. The teacher directed students to identify a country subjected to colonialism by a European

country in the 19th or 20th century, and to describe the impact of this colonization on both countries. When the teacher presented this assignment to the class, several students sought to establish some agency over it by asking if it was possible to focus on non-European countries such as the United States or Japan, or if their paper could focus primarily on just one specific outcome (e.g., racism). The teacher indicated they could shift the focus to non-European countries and concentrate primarily on a single effect of colonialism as long as it was explored in sufficient depth. By making such adjustments, it became possible for students to formulate their own intentions for their paper while simultaneously broadening the classroom assignment.

Tenet 2: Capacity Effects of the Writing Community and Members

Writing communities differ in capacity, just as members of a writing community exhibit individual differences in their capabilities. For instance, a writing community that has a clearly agreed on set of purposes, successful actions for meeting these writing goals, digital tools for writing, and a collective history of action has a different capacity for writing than a community that is only several weeks old, does not have the monetary resources to purchase digital writing tools, and is still in the process of establishing its writing purposes and actions for achieving them. Likewise, members of a writing community who are more familiar and accepting of its writing goals, more knowledgeable and skilled at writing, and more positive and confident about their writing capabilities are more likely to be able to use writing to meet community goals than less skilled and less confident writers who are still in the process of learning and making a commitment to these purposes. Consequently, the capacity of a writing community and its members simultaneously and collectively shape and constrain writing (Graham, 2018b).

The interaction between community capacity and the capacity of members can be illustrated by considering the physical environment and individual differences of community members in attentional processes of executive control. Some members of a writing community may be able to better focus attention and avoid distractions when working in a physical environment that is calm and quiet, whereas other members may prefer to write in a calm environment where music plays in the background. For both groups of writers, a chaotic physical environment with an open floorplan and people constantly coming and going may be problematic. While a calmer physical environment should benefit both types of writers, those who seek quiet while writing may find it more difficult to concentrate and avoid distraction when music is playing. Of course, they can seek to establish some agency over this situation by wearing earplugs or locating a place where the music cannot be heard.

Tenet 3: Variability Effects of Community and Individual Capabilities and Resources

Even when the capacity and resources of a writing community or an individual member of the community members are relatively fixed at a certain point in time, they do not necessarily operate in exactly the same way from one day to the next. While a writing community may establish a supportive and cooperative social environment, this does not mean that the working relationships between community members are constant while they work on a particular writing project, as disagreements, disputes, and disparate opinions can temporarily (or even permanently) change the social dynamics. Similarly, writers do not operate like machines, bringing the same level of commitment, effort, or persistence every day as they work on a writing assignment. As a result, variability in the operation of a community or by individual members can simultaneously and interactively shape and constrain writing (Graham, 2018b).

The interaction between variability in community and individual members' capabilities can be illustrated by considering a second-grade language arts class. In the first 2 months of the school year, the teacher tested the use of three different writing approaches with students: (1) planning and drafting; (2) drafting and revising; and (3) quickly drafting a first draft, planning how to change it, and revising the first draft. These schemas for writing met with varying levels of success for two reasons. One, the

teacher was inconsistent in applying each approach because of uncertainty about which approach was best. Two, students were inconsistent in applying their writing capabilities across the 2-month period as they became increasingly aware of their teachers' uncertainty and were confused about why different approaches to writing were applied.

Tenet 4: Effects of Changes in Community and Members' Capabilities

The capacity of a writing community and its members is not static (Graham, 2018b). Both change as a result of factors operating outside the community (e.g., single-page articles are preferred by a magazine as the reading habits of the public change), within the community (e.g., the community explores the use of ChatGPT as a writing tool), and among community members (e.g., with mentoring and experience, community members become better writers). Thus, both writing communities and their individual members are continually developing and emerging. These developments can simultaneously and interactively shape, support, and constrain writing.

To illustrate this interaction, we consider the hypothetical use of ChatGPT in a college English class. In this conjectural context, the instructor decided students were to use ChatGPT in specific ways as they wrote their primary paper for the class. This included using ChatGPT to generate a list of possible themes for a selected topic, creating an essay on the selected theme, providing students with assistance with sentence generation, and supplying feedback on first and second drafts of their papers. The students were directed to use the essay generated by ChatGPT as an initial exploration of ideas currently available about the topic. When writing their essay, students were told they had to use primary and secondary sources, referencing them appropriately, and were asked to add an appendix to their paper where they identified any information generated by ChatGPT that was incorrect or made up. As students drafted their own essay, they were told they could use ChatGPT to help them write or rework any sentence they were creating, using the program as a writing buddy for sentence construction. As a consequence of participating in this fictional writing community, students should acquire new skills and ways of viewing writing (which would likely be used in other writing communities as well). The use of ChatGPT should also change the typical actions for writing that the instructor commonly applies in their classes. Furthermore, as students experiment with ChatGPT and interact with the instructor about its use, this should result in changes in how the writing community operates (e.g., students meeting together after class to explore how best to apply ChatGPT within the constraints specified by the teacher).

Final Comments

In closing, we address two additional points. One, in the original version of the WWC model, Graham (2018a) described six mechanisms for promoting writing growth: learning through participation (e.g., acquiring knowledge and dispositions about the purposes, functions, or actions of a writing community by being an active member of it); learning as a consequence of action (e.g., acquiring knowledge and beliefs about writing by evaluating if applied mental and physical writing actions are effective); learning by expansion (e.g., acquiring knowledge that can be applied to writing by reading text or being taught to read); learning by observing (e.g., acquiring writing knowledge and dispositions by observing others write); learning from others (e.g., acquiring useful writing knowledge or dispositions as a consequence of mentoring, feedback, collaboration, computer-assisted instruction, and teaching); learning through deliberate agency (e.g., increasing writing mastery via a conscious decision to become a more skilled writer); and learning through accumulated capital (e.g., writing growth serves as the stimulus for additional growth as when better writing results in enhanced writing dispositions).

Some of the mechanisms described above rely primarily on incidental methods of learning (e.g., learning through participation), whereas others rely on more explicit methods of learning (e.g., learning from others). A recurring debate in the teaching of writing is which approach is best: a learning is caught or a learning is taught ap-

proach (Skar et al., 2024)? With the former, it is assumed that students acquire needed writing knowledge and skills naturally as a result of writing for real and meaningful purposes. With the latter, it is assumed that writing knowledge and skills must be taught if students are to acquire them. We think this debate and the dichotomy it implies have done more harm than good. There are multiple ways of learning to write, and all of the learning mechanisms described above contribute to one's growth as a writer. As an example, consider learning how to spell. Teaching the regularities underlying English spelling enhances children's spelling capabilities (Graham & Santangelo, 2014), but spelling also improves as a result of frequent reading and writing (Graham, 2000). Both can obviously be applied conjointly to facilitate children's growth as spellers.

Two, success in a variety of educational domains, including writing, is influenced by genetic, neurological, financial, and educational factors (Graham, 2018b). They are also impacted by stereotypical beliefs held by society, such as girls are better writers than boys (e.g., Pajares & Valiante, 2001). Even so, this does not mean that a child living in poverty will be a poor writer, boys will not write as well as girls, or neurologically diverse students cannot learn to write. Writing develops in many contexts and for different purposes across the lifespan (Bazerman et al., 2018), providing multiple and diverse opportunities for us to shine as writers.

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