



## *A Writer(s)-within-Community Model of Writing*

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This chapter presents a new model of writing that merges sociocultural and cognitive perspectives. It provides a single ideation of how writing is enacted.<sup>1</sup> While other models are possible, including ones that blend cognitive, sociocultural, and other perspectives, new conceptualizations such as this one are useful, as they spark dialogue and new ways of thinking within a discipline (Mitchell, 2003). The chapter further proposes mechanisms that promote development of the two basic units in the model: writing community and writer(s).

The development of this model grew out of a personal dissatisfaction with current models describing writing from either a cognitive or a sociocultural perspective. Available cognitive models mostly ignore cultural, social, political, and historical influences on writing, and devote little attention to specifying the mechanisms that advance writing development (Graham, 2006). Likewise, sociocultural perspectives on writing often “do not speak particularly well to the process of becoming literate” (Perry, 2012, p. 65), and they generally ignore the cognitive and motivational resources writers bring to the task of writing. These criticisms are not meant to distract from the contributions of prior models of writing, but to suggest that a model that embraces both of these perspectives is likely to result in a fuller and richer understanding of writing.

The basic tenet underlying the model presented here is that the community in which writing takes place and the cognitive

capabilities and resources of those who create writing simultaneously shape and constrain the creation of written text.<sup>2</sup> In essence, writing involves an interaction between the social context in which it occurs and the mental and physical actions writers are able to enlist and engage. In turn, I propose that writing cannot be fully understood without considering how the communities in which it takes place and those involved in creating it evolve, including how community and individuals reciprocally influence each other.

In presenting the model, I first examine the concept of *writing community* and describe its components and operation, illustrating how they shape and bind what is written. Next, I describe the cognitive architecture *writers and their collaborators* bring to the act of composing, specifying the components of this architecture and how they interact to shape and constrain text production. While I describe the cognitive architecture of writers and collaborators separate from the description of writing community, this should not be taken to imply that they are somehow disconnected. What members of the writing community bring to the act of writing is an integral part and resource of the writing community.

After describing the concept of writing community and the cognitive architecture of its writing members, I provide an example of how features of the writing community and writers' cognitive capabilities and intentions work in tandem. Finally, I propose mechanisms that promote change in writing communities and the capabilities of writers within the community.

## **The Writing Community**

The model presented here assumes that writing is inherently a social activity, situated within a specific context (i.e., writing community). This is consistent with the view that writing is a socialized activity (Barton, 1991; Hull & Schultz, 2001) that almost always involves multiple people (i.e., author and collaborators, author and readers, the author as own reader). A writing community then is a group of people who share a basic set of goals and assumptions and use writing to achieve their purposes.<sup>3</sup> Moreover, it is a community in which writing takes place. Other activities can occur and can even be more central, but one or

more members of the community must engage in writing as part of community pursuits. An example of this is a seventh-grade science class that decides to clean up a local stream polluted by littering, and as part of this endeavor engages in writing designed to highlight the problem and solve it by writing letters to local newspapers and designing flyers encouraging local residents not to pollute the stream.

The basic components of a writing community are described below and their interaction is visually depicted in Figure 9.1. This conceptualization draws heavily on activity theory (Greeno & Engeström, 2014; Lave & Wenger, 1991) and the concept of genre as typified ways of engaging in activities for social purposes (Bazerman, 1994).

### *Basic Components of a Writing Community*

#### PURPOSE

Purpose involves how writing is used within a community (e.g., Shanahan, Shanahan, & Mischia, 2011), and includes the goals writing is intended to achieve (e.g., facilitate learning or display knowledge in a college anthropology class), the value of different writing activities to the community (e.g., brevity and accuracy in writing is valued in many businesses), norms for what constitutes specific types of writing (e.g., prized attributes and evaluative criteria), stance/identity the community wants to project (e.g., *Mad Magazine* projects an irreverent persona), and the audience that is the object of the community's intentions.

In some instances, the purpose of writing in a community is singular, as when an adolescent is charged with tweeting parents periodically to give updates on activities or location. In other instances, the purposes are broader and more varied, as is the case with a newspaper in which writing is used to report daily events, shape opinions, and entertain. Purposes can further range in intent from communities like the Iowa Writers' Workshop, where the primary purpose is to become a better writer, to a blogging community focusing on fostering and maintaining social connections and friendships, to a fan fiction site where members share a common passion.

## MEMBERS (INCLUDING WRITERS AND COLLABORATORS)

Members of a writing community include those who compose text (writers and collaborators)<sup>4</sup> as well as those who serve as an audience for it (Cameron, Hunt, & Linton, 1996). In some writing communities, one or more individuals may serve as mentors who help others acquire the cognitive skills, knowledge, dispositions, strategies, and modes of action needed to successfully achieve the communities' writing goals (Freedman, Hull, Higgs, & Booten, 2016). In a school setting this can be a teacher. At work it might involve one or more colleagues. At home it is usually another family member.

Membership in a writing community can vary considerably, ranging from small, as when a married couple write love notes to each other, to much larger, as when friends communicate via social media. It can further range from exclusive, as when restricted to a college writing class, to more inclusive, such as an Internet forum site open to all.

Members can differ in their familiarity with the purposes and practices of the community. Some members may be new to the group, or sporadic participants, while others may be quite knowledgeable and regularly involved. Additionally, members of a community can differ in their identities as writers, presumed value to the community, and level of commitment and affiliation (Freedman et al., 2016).

Roles and responsibilities of members also differ (Kalman, 1996). For instance, a supervisor may assign different people to write specific sections of a report or allow them to decide how to distribute the workload. As this example illustrates, how power is distributed can affect how a writing community operates (see also Moje & Lewis, 2007). A writing community can have a hierarchical structure, as is common in schools, where an adult assumes the role of teacher. Or the power structure can be more horizontal, as when writers voluntarily come together to act as sounding boards for one another's writing.

## TOOLS

The tools a community employs to accomplish writing tasks vary between and within communities (Yancey, 2009). They can range from paper and pencil to a digital writing tool such as a word processor. It is now possible to write via hand, dictation, typewriter, word processor, or speech synthesizer, to name some of the more prominent options (Gabrial, 2008). Some of the newer writing tools make it possible to produce compositions with text, narration, pictures, and videos. Others such as the Internet provide ready tools for acquiring information for writing, soliciting help from other writers, and sharing the final product broadly.

A writing community can also elect to use one or more writing tools that provide specific assistance to writers (Morphy & Graham, 2012), such as spellchecking or automated essay scoring. A digital writing workbench developed by a team at the Center for Applied Special Technology (<http://www.cast.org/>) that included Tracey Hall and me provides an example of a tool with multiple forms of assistance. This Web-based tool includes production options that allow students to create single or multimodal versions of their writing plans or paper through typed text, drawn images, or recorded narration. The tool further divides the writing process into distinct stages (e.g., planning, drafting, revising, and editing), providing options to assist writers at each stage of writing. These options include mechanisms that help students generate and organize possible writing ideas, videos and descriptions illustrating how to carry out specific writing processes, and methods for acquiring feedback from peers about plans or the composition itself. These forms of assistance distribute the cognitive load of writing, as help is available from the machine, teachers, and peers.

## ACTIONS

Actions are the typical practices that a writing community employs to achieve writing objectives (Russell, 1997). These include the activities members of the community commonly engage in to define the writing task; structure the writing environment;

distribute responsibility; carry out the process of composing; and manage the social, motivational, emotional, and physical aspects of writing (including disagreements when necessary). To illustrate, a newspaper develops multiple typified patterns of practice so that it can reliably and efficiently produce a daily or weekly broadsheet. These include practices that reporters use to gather information for articles, the form articles take in different sections of the paper (e.g., international news, business, sports, entertainment, local news, and editorial), decisions by editors of each section on which articles to include and how they are edited, how and where selected articles are positioned and formatted, and how the paper is distributed to the public. Production and dissemination of the paper are further shaped by the values, norms, identities, forms of reasoning, and types of text valued by the newspaper industry at large and said newspaper in particular.

Typified patterns of action that writing communities adopt are best viewed as temporary, subject to change as new circumstances and needs arise (see for example Many, Fyfe, Lewis, & Mitchell, 1996). This means that the boundaries and actions of a particular writing community are not sealed shut, but permeable and flexible.

## WRITTEN PRODUCT

As members of a writing community engage in the process of composing they produce written products. This includes completed text and not fully completed text as well as pictures, narration, or videos if these are part of the composition (Moje, 2009).

Written products include not only what is written, but other tangible artifacts writers use while composing such as notes, drawings, past drafts of text, or recordings of an author's ideas for a piece of writing. They also include text, pictures, film, and recorded interviews produced by others, such as a model text to be emulated or a recorded interview that provides content for the envisioned text. These products reside within the writing community, whether they are housed in a physical or a digital environment.

### PHYSICAL AND SOCIAL ENVIRONMENTS

Writing communities operate in a range of physical and social environments (Jones, 1998; Hsiang & Graham, 2016). This includes almost any physical place where people congregate (e.g., homes, classrooms, offices) as well as digital locales (e.g., email, social media, websites devoted to writing). These locales influence a writing community in multiple ways (Stedman, 2011), as they affect how many members of a community can be present at any given time, the types of tools available to writers, how writing is carried out, and even the goals set by a community (e.g., the reach of a community can be increased by including digital environments).

The social environment involves the relationships among members of the community (i.e., writers, collaborators, audience, and mentors), and includes a variety of factors that may enhance or impede writing, such as the health of the social relationships among community members (Allodi, 2007), members' sense of belonging and affiliation (Brandt, 2001), stereotypical beliefs about community members (Kwok, Ganding, Hull, & Moje, 2016), and how power and autonomy are perceived and enacted (Bazerman, 2016). The social environment can be supportive, neutral, or hostile; pleasant or unpleasant; competitive or cooperative; controlling or self-governing; or any combination of these. It is generally assumed that work in a community is facilitated when the environment is pleasant, supportive, cooperative, and encouraging of choice and agency (Graham, Harris, & Santangelo, 2015). While most of us prefer such conditions, there are many situations, especially at work, where one or more of these attributes is absent, but the goals of the community are still accomplished (Locke, Shaw, Saari, & Latham, 1981).

### COLLECTIVE HISTORY

The work carried out by a writing community does not occur by happenstance, but is shaped by a collective history (Schultz & Fecho, 2000). As a community (e.g., a writer and an editor; a college composition class, a police officer writing a crime report)

operates over time, its business becomes codified (Bazerman, 2016; Brandt, 2001; Greeno & Engeström, 2014). The types of writing it conducts and its intended audiences become more defined, as do the values, norms, and stances evident in the writing it produces. Selected writing tools become preferred, and the community devises common practices for carrying out the act of composing. The social dimensions of the community also become defined, for better or worse, with members of the community developing specific identities, roles, and responsibilities. By creating a community of members who know how to participate in the same shared practices, this collective history shapes the purposes, actions, tools, environment, and even the membership of the community, and ultimately the writing products produced. The permanence of these regular and recurring practices, however, as well as the narrative underlying the history and purpose of the community, are open to change, from both within and outside (Dyson, 1999; McCarthy, 1994).

### *Operation of the Components of a Writing Community*

Figure 9.1 presents the basic components of the writing community and how they are related to one another. At the center of the figure is a diagram of the way one or more writing goals are accomplished through the use of writing tools and actions to create the desired written product. This is accomplished by members of the community and includes one or more writers and possible collaborators (represented by the first ring moving outward from the center of the figure).

The involvement of multiple members of the writing community, as either writers or collaborators, requires accommodation and coordination if the writing goals are to be accomplished (represented by directional arrows between writers and collaborators in Figure 9.1). For example, if a writer seeks feedback on a first draft of a composition from another community member (i.e., a collaborator), then the writer must be willing to accommodate and consider possible alternatives to the current written product. The feedback from the collaborator must also be provided in a useful form and in a timely way.



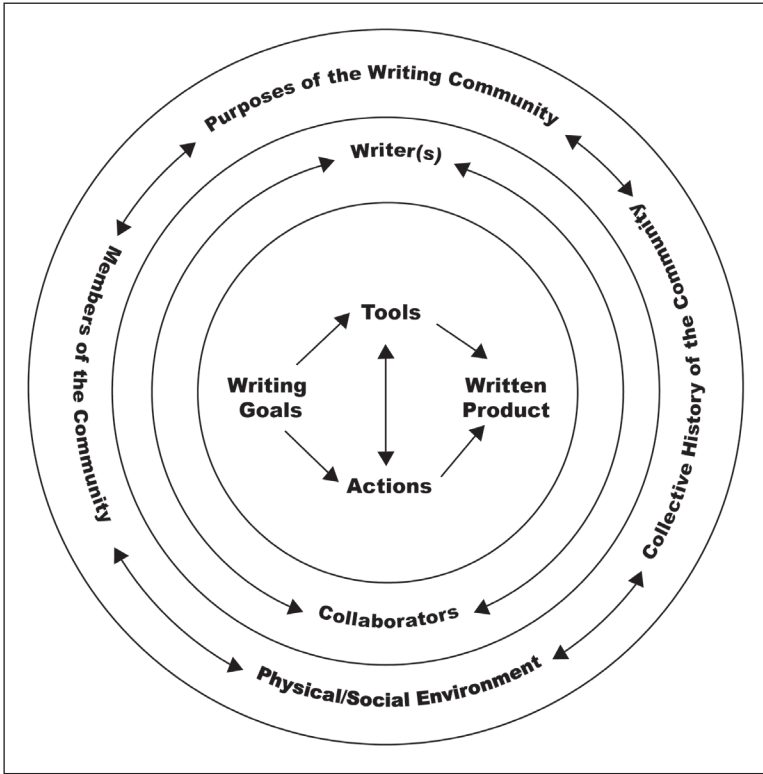


FIGURE 9.1. *Basic components of a writing community.*

How the writer and possible collaborators achieve the desired writing goals through the use of specific writing tools and actions depends on multiple interacting features of the writing community including its purposes, members, physical/social environment, and collective history. This is represented in the outer circle of Figure 9.1 (the arrows illustrate the reciprocal interactions among these features).

First, the desired goals the writer and possible collaborators are trying to achieve through the use of specific tools and actions commonly reflect one or more of the community's central purposes. Writing goals and the resulting written product are further influenced by the kinds of writing the community values as well as its norms, stance/identity, and audience of interest.

Second, who is involved in creating the desired written product depends on members' roles and responsibilities as well as their availability and willingness. Commitment to the community, perceived capabilities, identities as writers or collaborators, and interest in the writing project at hand can further influence who participates. These influencing factors, however, can be ameliorated by how power is distributed among community members, as when a teacher assigns one child to write a text and another to provide feedback on it.

The physical environments in which the community operates affects how many members are likely to engage in a writing activity (e.g., if chairs and desks are not arranged for collaborative work), the types of tools applied (e.g., only paper and pencil are available), as well as the goals and resulting written product (e.g., digital resources allow a diverse audience and multiple forms of text). Likewise, the social context influences writers and collaborators in multiple ways. For instance, members' desire to work together and level of engagement and commitment are influenced by the social climate of the community and the social interactions among its members.

Lastly, the collective history of the writing community not only determines its membership, but gives direction to the types of writing goals members typically undertake, the preferred tools and typified actions used to achieve these objectives, and the form the subsequent written product takes. This collective history further shapes the physical and social dimensions under which members of the community carry out the process of writing.

As this examination of the writing community illustrates, multiple features of this organization and their interactions shape and bind the resulting written product. For example, how writing is conceptualized within a community (i.e., purposes) greatly influences the nature and form of writing. Consider argumentative writing in a biology and in a social studies class. In both classes, students generally apply the same structural components for building an argument (claim, grounds, warrant, support, rebuttal, and qualifications; see Smagorinsky & Mayer, 2014). These components, however, do not necessarily appear in the same form or even to the same degree across these two areas of study (e.g.,

what counts as legitimate support can differ from one discipline to the next).

I have defined a writing community as a group of people who share a basic set of goals and assumptions and use writing to achieve their purposes, suggesting homogeneity, cooperation, and symmetry. While this may be the case, writing communities as conceptualized here are likely to involve considerable variability in their operation. Within a particular writing community, such as a third-grade classroom, contradictions, disparate elements, conflict, multiple voices, and heterogeneity will exist (Bazerman & Prior, 2005; Swales, 1990). Although most of the members of this classroom may share a common understanding of their and each other's roles and obligations, how to operate within the physical and social confines of the classroom, and how to use specific tools and sanctioned forms of actions to achieve writing objectives, these understandings will not be uniform or consistent across or within individuals. Students will differ in terms of their familiarity with each of these factors as well as their acceptance of them. Relationships between students as well as between teacher and students will fluctuate across situations and time. Further, some students may passively or actively work against the goals of the community by limiting participation or by being disruptive, with some children applying both of these options.

Writing community as envisioned here also involves multiple structural components (e.g., purposes, members, tools, actions, collective history). This should not be interpreted to suggest greater permanence than intended. Writing communities are not static entities, but should be viewed as continually emerging. They can also cease to operate. For instance, a writing community may be short-lived, such as the example provided earlier of an adolescent charged with tweeting parents periodically to give updates on activities or location. With the youngster's increased maturity, the purpose for this community may no longer exist.

While reducing the description of writing community to specific structural components provides a useful means for presenting this construct, it has the potential disadvantage of obscuring its complexity and multiplicity. Each of these components consists of multiple elements that allow for a broad array of interactions

and combinations, which are subject to change across time and situations. This allows for considerable variety across and within writing communities.

Finally, any attempt on my part to foreground the concept of writing community does not mean that other socially derived communities are not important. A single writing community coexists with many other communities, including other writing ones. Consequently, writing communities operate across integrated networks (Bazerman & Prior, 2005), and cannot be fully understood in isolation (I will return to this later in the chapter).

## **Writers and Collaborators**

Writing is accomplished by members of the writing community and includes those who compose text (individually or collectively) or collaborate in its construction (e.g., provide direction, give feedback). They are represented in Figure 9.1 as writers and collaborators. This section foregrounds these members of the community to examine how their cognitive capabilities, resources, and intentions also shape writing.

If the writing community is the social context in which writing takes place, then *individual* writers and their collaborators are the keys that turn the engine and initiate the process behind meaning making in writing. The fact that writing takes place in a social context does not mean that it is driven solely by a community's regular and recurring practices, including how writing is conceptualized. Just as writing communities are a driving force behind what is written, so is the agency of individuals (Zimmerman & Risemberg, 1997). I provide two examples below to illustrate this.

One of my favorite examples of agency in writing involves the author and drama critic Robert Benchley (Hendrickson, 1994). As a student at Harvard, he took a final examination where he was asked to discuss how the United States and Great Britain viewed problems that existed in the arbitration of issues surrounding international fisheries. He chose to discuss the problem from the point of view of the fish!

A second example involves Samuel Steward, who ran a tattoo parlor in Chicago while teaching English at Loyola University

(Mulderig, 2015). He wrote a column in the *Illinois Dental Journal* from 1944 to 1949 that had virtually nothing to do with dentistry, addressing topics that ranged from body-building to getting drunk. His writing “gig” started simply enough, with his dentist asking him to write a column for the journal entitled “The Victim’s Point of View.” While he started off by creating essays that fit the purpose of the column, he soon abandoned this approach to write about things that interested him. He basically hijacked the historical purpose and collective history of the journal to create a venue where he could write about his prejudices, likes and dislikes, and foibles. This does not mean that context did not matter. For example, his articles were shaped by the allowable page length for a paper published in the journal.

### *The Cognitive Capabilities of Writers and Their Collaborators Shape What Is Written*

The two examples above demonstrate a fundamental tenet of the model of writing presented in this chapter. While context shapes and constrains the creation of text and the ultimate form of the written product, it is not the only force at play. Writers and their collaborators make a multitude of decisions that drive and shape what is written. In effect, they exert some degree of agency over the writing process that extends beyond the influence of the writing community. For instance, even when writing is assigned, as often happens in writing communities such as classrooms or at work, the designated writer or writers must decide to undertake the task, determine how much effort to commit, formulate their intentions, determine their ownership over the writing task, decide what cognitive resources to apply, pick what tools to use, and consider how to distribute the various tasks involved in writing (Zimmerman & Risemberg, 1997). These decisions are fueled at the individual level by one’s perceived value, utility, and interest in the writing task under consideration; emotional reaction to the writing tasks, motivations for engaging in it; knowledge about the topic, expectations for success, and beliefs about causes of success; dispositions for approaching new tasks, and identities as a writer. It is also influenced by one’s beliefs about the value of

the writing community as well as one's assumed role, identity, and success in said community.

Writers' and their collaborators' sense of agency, intentions, ownership, values, expectations, and identities, in turn, fuel effort and provide the impetus for drawing on available cognitive resources, regulating the writing process, and executing production procedures. Cognitive resources include acquired knowledge about speaking, listening, and reading as well as specialized knowledge about writing, the topic under consideration, the presumed audience, the writing tools to be used, and knowledge about the purposes and practices of the writing community in question. The use of these resources is initiated and coordinated through control mechanisms that one brings to bear to regulate attention; the writing environment; tools for writing; and the processes involved in planning, producing, and polishing text. These control mechanisms also regulate the motivational beliefs, emotions, personality traits, and physiological factors that influence writers and their collaborators as well as the social situation in which writing takes place. This allows those composing text to engage in production processes including conceptualizing the writing assignment, generating and gathering ideas, translating ideas into acceptable text, transcribing this text onto paper or in digital form, and engaging in reconceptualization with any or all of these production processes.

The beliefs, knowledge, control mechanisms, and production procedures that writers and collaborators bring to a writing task are not always benign. Just like context, they shape the composing process and what is written (Graham, 2006). As we shall see later, development of these cognitive resources is shaped by one's experiences writing in socially derived communities.

### *Limitations in Cognitive Architecture Shape and Constrain Writing*

The writing model presented here is based on the assumption that writing is a cognitively demanding task, and that limitations in humans' cognitive architecture constrain the process of writing. Research with adults demonstrates that writing does "not simply unfold automatically and effortlessly in the manner of a well

learned motor skill . . . writing anything but the most routine and brief pieces is the mental equivalent of digging ditches” (Kellogg, 1994, p. 17). Writing is challenging because it is a very complex skill involving the execution and coordination of attention; motor, visual, and executive functioning; memory; and language skills (Hayes, 1996). It is also challenging because the cognitive apparatus we possess has specific limitations (Mayer, 2012; Paas & Sweller, 2014). To illustrate, the cognitive processes we use to process information as we write are limited by how much information can be handled at any given time (about seven elements at a time) and for how long (about twenty seconds without rehearsal). Likewise, while the amount of information we retain over time is quite large, accessing this information is not always an exact process (Torrance, Thomas, & Robinson, 1996).

The capacity problem is especially problematic for writing. There are many competing actions that writers (as well as collaborators) can and often must attend to during writing. Let us consider a writer’s creation of a single sentence by hand. The writer must decide what to say. This is shaped by the writer’s intentions in writing the sentence in the first place, and requires bringing one or more ideas forward and determining whether they are suitable given the author’s intentions, the audience, and the context. The writer must give the idea more precise form by crafting the idea into a grammatically correct sentence, selecting just the right words to convey his or her intentions, make sense to the reader, and be appropriate to the situation at hand and the writing community in which it is created. This sentence must then be transcribed into text where words are spelled correctly and punctuation and capitalization occur according to convention. While doing this, the writer must manage both pencil and paper so that the created text is legible. Failure to adequately attend to these transcription processes increases the risk of the reader’s misunderstanding the intended message. This process does not necessarily proceed so neatly, though, as the writer may be refining, reconsidering, and revising the idea and intentions throughout the process as well as constructing, transcribing, and reworking the sentence in parts rather than as a whole. Of course, I have not catalogued everything that happens here, as the writer has to focus and maintain attention, inhibit shifting attention to

distracting stimuli, and shift attention to appropriate processes while creating the sentence. This whole process becomes even more complex if we consider the construction of a larger piece of text, as issues such as coherence, organization, text features, and so forth become relevant.

If the cognitive actions the writer (or a collaborator) takes require conscious attention that exceeds the capacity of the processing system, then the result is cognitive overload and interference (McCutchen, 1988; Paas & Sweller, 2014). Having to consciously think about how to spell a word while writing, for instance, can impact a writer in three ways (Graham & Santangelo, 2014). It may tax the writer's processing capacity, leading him or her to forget ideas not yet committed to paper. Uncertainty about how to spell a word may lead to the selection of a different word the author knows how to spell, potentially undermining the preciseness of the intended message. Lastly, having to apply cognitive effort to either of these two situations means the applied resources are not available for engaging in other effortful writing processes.

Cognitive overload has multiple consequences for writing development. Many of the cognitive actions involved in writing require conscious attention, effort, and resources for young beginning writers (McCutchen, 1988). To prevent cognitive overload, they devote their processing capacities mainly to generating ideas for writing via a knowledge-telling approach (e.g., writing by remembering) and transcribing ideas using their developing but effortful handwriting and spelling skills. In the process, other resource-intensive cognitive actions such as planning, monitoring, and evaluating are minimized.

In their different writing communities, writers and collaborators learn multiple tactics and strategies to deal with the processing limitations of the human cognitive architecture. For example, a writer may alter the nature of the task by dividing writing into smaller tasks, such as developing a basic plan for the composition and then using the plan to guide the process of producing text. Responsibility for writing may also be distributed by putting one person in charge of gathering and organizing relevant information, putting different persons in charge of writing specific sections of the report, and charging yet another person with rewriting and polishing the composition so that it speaks with a single voice.



So, just as writing communities shape and bind writing, so does the cognitive architecture of writers and collaborators. This has important implications for writing communities, as the demands on the processing system can be reduced when cognitive actions are firmly established through the typified actions or routines of the community (Paas & Sweller, 2014). For instance, I have to spend very little cognitive effort thinking about the structure of a letter of recommendation for a student, as I have created a schema that is well entrenched in my memory. Likewise, when developing writers master the intricacies of typing, handwriting, speech synthesis, or some other writing tool, the instrument becomes so automatic that it operates in a modular fashion exacting little if any toll on a writer's processing system (Graham & Harris, 2000). As a result, writing communities can and often do provide instructional assistance to their members on specific aspects of writing so that they can operate more successfully within the community (Bazerman, 2016).

### *Components of the Cognitive Architecture of Writers and Collaborators*

Figure 9.2 presents a schematic diagram of the relationship among the different cognitive components involved in writing. This schematic structure is presented for a single writer, even though multiple members of a community may be involved as writers and collaborators in carrying out a writing project. It is assumed that the basic components are universal, even if there are individual differences in the capacities and functioning of each component. These components develop with experience and age, and beginning writers are less adept at using their cognitive capabilities and have fewer resources to draw upon than their more skilled counterparts (Graham, 2006). Thus, how beginning and more mature writers compose differs<sup>5</sup> (see Scardamalia & Bereiter, 1986, for example). Likewise, the writing capability of a more mature writer is not a single thing, as writers may have more or less experience with different kinds of writing in different writing communities, resulting in different resources for each (Bazerman et al., 2017).

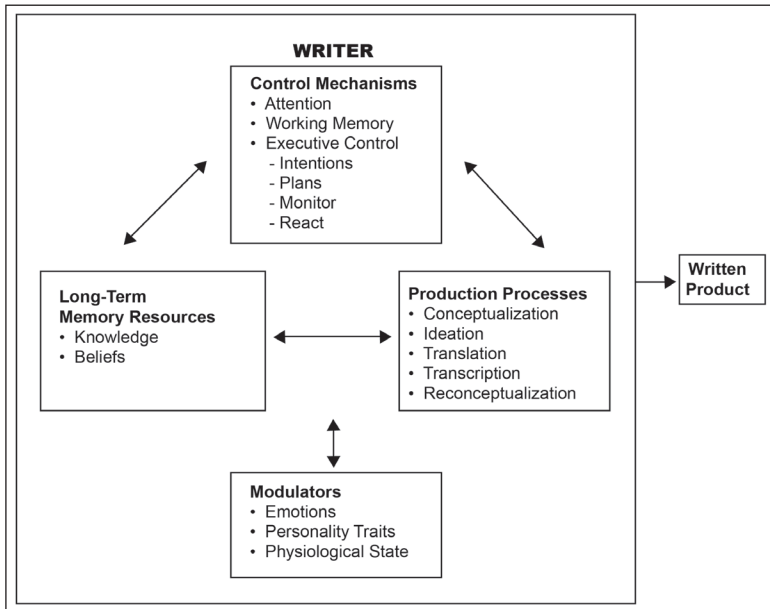


FIGURE 9.2. *Cognitive mechanisms involved in writing.*

### LONG-TERM MEMORY RESOURCES

Our writing lives owe much to the richness of our long-term memory. It holds our beliefs and knowledge about the value of writing and expectations for success; interest and knowledge about possible writing topics; identities as writers and views and knowledge about various writing communities; knowledge and beliefs about our emotional reactions and personality traits; specialized knowledge about writing and audiences; and knowledge about how to speak, listen, and read. While not all of these beliefs and knowledge are called upon each time we write, each can potentially impact how and what we write.

In this model (see Figure 9.2), I refer to such beliefs and knowledge as long-term memory resources (see also Hayes, 2012). These are not the only resources a writer can draw upon, as other resources that reside outside the writer in one or more writing communities are likely available too. This includes other collaborators as well as various tools that support the process of composing, as noted earlier.

**Knowledge.** One form of knowledge that forms a platform for writing is oral language skills, as writers draw on their speaking skills as they write (Shanahan, 2006). The role of oral language skills in writing is evident in many situations, such as dictation or the use of speech synthesis whereby text is created through speaking. Likewise, as we engage in the process of turning ideas into sentences, we often vocalize the text to be produced, allowing us to try out, evaluate, and modify the form the sentence takes (e.g., Chenoworth & Hayes, 2001). In essence, oral language serves as a platform for creating written text.

Oral language includes many different sources of knowledge that writers draw upon. These include phonological, semantic, syntactic, and pragmatic knowledge (Brown & Attardo, 2009). Such knowledge helps writers spell words (phonological knowledge), choose the right words to capture their meaning (semantic knowledge), create a sentence that is grammatically correct and conveys the writer's intentions (syntactic knowledge), and use the appropriate idiom or expression at the right time (pragmatic knowledge).

Many writers are able to draw on resources from more than one language (Cumming, 2016). This is true even for those learning to speak and write in a second language. First language skills (L1) serve as an asset to second language writing (L2), as writing skills in the first language can transfer to and support writing in a second language (Fitzgerald, 2006).

Another language resource that resides in long-term memory is listening skills. Writers use their skills at listening when they interact with other collaborators, listen to source material such as an oral interview, or listen to the text as it is read aloud or to them.

A third language long-term memory resource is reading. Reading plays multiple roles in writing. This includes reading to evaluate text already written, reading to understand and analyze the writing task (when directions are written), and reading to understand and critically analyze source text, locate possible writing ideas and content from it, and connect and organize said content with other source material and prior knowledge (Hayes, 1996). Reading and writing also draw on similar knowledge, skills, and strategies (Shanahan, 2006). For example, a reader who has acquired extensive knowledge about how to decode words encoun-

tered in text can apply these same skills to figure out how to spell a word (Graham, 2000). Likewise, readers acquire knowledge about the basic elements or features of a particular type of text as a result of reading such text (Bereiter & Scardamalia, 1984).

Long-term memory also contains all of the specialized writing knowledge that individuals acquire as a result of their collective experiences in writing communities. This includes knowledge about text transcription skills (e.g., spelling, handwriting, typing, keyboarding, and thumbing when text messaging); written sentence construction (e.g., punctuation, capitalization, the more frequent use of subordinate clauses when writing specific types of text); text purposes and features (e.g., how writing is used to accomplish different purposes, the features of different types of text, quality indicators of strong writing, specialized vocabulary for specific types of text, and rhetorical devices for creating a specific mood); processes for producing and revising text (e.g., schemas for text construction and strategies for setting goals, gathering and organizing possible writing content, and drafting text, as well as monitoring, evaluating, and revising plans and text); tools for writing (e.g., facility in and experience using word processing as a tool for composing); attributes of specific audiences (e.g., assumptions about how much a specific audience will know about the targeted topic); and schemas for controlling thoughts, behaviors, inclinations, or the writing environment. Long-term memory further includes knowledge about one's emotional reactions to writing under different conditions and how one's personality traits typically influence writing and working with other writers.

Writing is ultimately dependent upon having something to write about. All or some of the content for writing may come directly from long-term memory resources. Studies have shown that one's knowledge about a topic predicts the quality of the text produced, but this can depend upon what one is writing about (Olinghouse, Graham, & Gillespie, 2015).

A final, but equally important, source of knowledge for writing is knowledge about different writing communities. For a specific writing community, this includes one's knowledge about its purposes (e.g., goals, norms, group identity, intended audience, and value of writing to the community), members (e.g., roles,

status, and number of members), actions (e.g., how writing is typically undertaken, how writing tools are commonly used, and how the act of writing is distributed among community members), physical and social environment (e.g., knowledge about where writing takes place, social and power relationships and how to negotiate them, and assumed identities and affiliations of various members in the community), and collective history.

**Beliefs.** In addition to the potentially rich knowledge base individuals bring to the act of writing, long-term memory resources also include a host of beliefs (see Figure 9.2). These beliefs can foster or hinder writing, as they influence whether one engages in writing, how much effort is committed, and what resources and tools are applied. They can also determine how one interacts with other members of the writing community. Drawing on contemporary models of expectancy-value theories in motivation (Eccles, 2005; Wigfield, Tonks, & Klauda, 2009) and other recent research in motivation (Duckworth & Yeager, 2015; Graham & Weiner, 2012), I identify six broad sets of beliefs that influence individual writers.

One set of beliefs that individuals bring to the act of writing involves their judgments about the value and utility of writing (Graham & Weiner, 2012). These are task-specific beliefs that encompass one's attitudes toward writing and its usefulness. These includes one's beliefs about the: (1) importance of doing the writing task well (attainment value), (2) enjoyment derived from doing the writing task (intrinsic value), (3) how the writing task relates to future goals (utility value), and (4) what has to be given up to engage in the writing task (cost). These expectancy-values are likely influenced by one's interest in the topic that is the focus of the writing task.

Another set of beliefs that writers develop though experience involves their views of their competence as writers. This encompasses the basic question of whether a writer can expect to carry out the writing task successfully. Central to this question is the self-concept of efficacy, which involves beliefs about one's writing capabilities. Writers with a higher sense of efficacy ("can do" beliefs) tend to choose more challenging writing tasks and exert more effort when writing (Pajares, Johnson, & Usher,

2007). In contrast, writers who develop a sense of helplessness when it comes to writing (“cannot do” beliefs) attribute their performance difficulties to personal inadequacies, express anxiety and boredom, and show marked deterioration in performance during tasks (Dweck, 1999). These two different beliefs are likely shaped not only by writers’ experiences in various contexts, but by writers’ epistemological beliefs, which include their implicit theories about whether ability is fixed or modifiable through effort (Dweck & Leggett, 1988).

A third set of beliefs involves judgments about why one engages in writing. One dimension of these beliefs (Deci & Ryan, 2000) is that a person engages in a writing task because it provides enjoyment or inherent satisfaction (intrinsic motivation) as opposed to engaging in it because of promises of reward or fear of punishment (extrinsic motivation). A second dimension involves a person’s goal orientation (Elliott, 1999). Persons with a mastery goal-orientation engage in a task because they seek to gain competence, whereas those with a performance goal-orientation seek to display their competence or experience the feelings of pride that come with success (performance approach goals) or seek to avoid doing worse than others, displaying low ability, or experiencing the feelings of shame that accompany failure (performance avoidance goals). Both mastery and performance approach goals have been associated with better performance, whereas performance avoidance goals have not. As with beliefs about competence (see the paragraph above), implicit theories about intelligence are related to performance goals (e.g., those who view intelligence as malleable are more likely to adopt mastery goals; Elliott & Dweck, 1988).

Writing beliefs also involve judgments about why one is successful (or not) when writing. Perceived causes of success can be attributed to at least three factors (Weiner, 1985): locus (success is viewed as being due to factors within or outside the individual), controllability (causes of success are viewed as amenable or not amenable to personal control), and stability (causes are viewed as fixed, such as ability, or not fixed, such as effort). These beliefs can influence writers’ persistence and performance. To illustrate, if a student receives a low grade on a writing assignment and attributes that grade to low aptitude, he or she may experience

reduced expectancy for success on future assignments and may be less inclined to devote as much effort to them, resulting in lower grades on future assignments. In contrast, successful performance attributed to effort is likely to promote expectancy for future success, resulting in greater effort and better writing on upcoming assignments.

Writers also develop beliefs about their identities as writers, including beliefs about the voice and stances they project when writing (Bazerman, 2016). These beliefs are not uniform, as writers can assume multiple identities depending on their experiences in different communities (Hull & Schultz, 2001). For instance, Knobel (1999) described a 13-year-old who had one identity as a writer at school (“I’m not a pencil man,” p. 104) and another out of school, where he designed advertisements for his lawnmowing service. The identities that writers form are not just about writing, but interact with other identities they establish over time, such as their ethnic, racial, cultural, and peer-group identities (Graham & Weiner, 2012).

Writers further develop beliefs about specific writing communities. These include beliefs about the value of the writing community, the tasks it undertakes, and why it undertakes them. They also include beliefs about a writing community’s success in achieving its writing goals, and the reasons the community is successful. This set of beliefs also includes judgments about identity (as discussed above) as well as about social belonging, social climate, and interactions within the community.

## CONTROL MECHANISMS

The control mechanisms in the writing model (see Figure 9.2) enable a writer to direct, maintain, and switch attention as needed when writing; establish agency by making decisions about what is composed and how; determine the degree of ownership over the writing task; regulate multiple aspects of writing (i.e., thoughts, beliefs, emotions, behaviors, writing tools, interactions with collaborators, and the arrangement of the writing environment); and monitor, react, and make adjustments for all of these actions. The three specified mechanisms in Figure 9.2 (attention, working memory, and executive control) are drawn mainly from

the literature on executive functioning (Diamond, 2006; Jacob & Parkinson, 2015), but were also shaped by theories from self-regulation (Bandura, 1986; Zimmerman & Risemberg, 1997). Each is described in turn below. The three control mechanisms are included in one form or another in the Hayes (1996, 2012) model, but I arranged them differently and I did not conceptualize them in exactly the same way he did.

**Attention.** The processes involved in the control mechanism of attention (see Figure 9.2) allow writers to choose what is attended to and what is ignored (Jacob & Parkinson, 2015). This includes five basic actions: focusing attention on a selective or relevant aspect of the writing enterprise (e.g., brainstorming and writing possible ideas on paper), maintaining attention on that aspect as needed (continuing to brainstorm until a reasonable number of ideas is produced), ignoring distracting aspects or features (e.g., suppressing the urge to correct the spelling of an idea as it is written down), inhibiting automatic responses (e.g., forgoing evaluating an idea as it is generated), and switching attention (e.g., switching attention between mental generation of an idea and committing it to paper). The processes of focusing, maintaining, inhibiting, and switching attention, as well as ignoring distractions, occur at all stages of the writing process, and involve what a writer does in solitude, in conjunction with the tools selected for writing and the actions undertaken with collaborators.

**Working Memory.** While attentional processes allow a writer to choose where attention is or is not focused, working memory (see Figure 9.2) provides a limited and temporary storage system where information is held and acted upon (I draw heavily on Baddeley's 2000 conception of working memory). Working memory is where the internal work of writing occurs. It provides a space where all nonautomated composing activities take place, as knowledge and beliefs from long-term memory and external information delivered via the senses are brought into working memory, processed, and acted upon in order to regulate attention, writing processes, writing tools, motivations, emotions, personality traits, and the environmental and social situation in which writing takes place. While actions in working memory are internal, they are the source



for the production processes (see Figure 9.2) writers engage in when writing.

I represent the executive control processes (to be covered next) as separate rather than as part of working memory as was done by Baddeley (2000), because this provides a way to bring executive functioning and self-regulation together under the same umbrella. Similar to Baddeley's revised 2000 model, the model of working memory here includes three storage systems: a phonological loop for temporarily holding verbal material; a visuospatial sketchpad for briefly storing visual, spatial, and kinesthetic information; and the episodic buffer, where information from the other two temporary stores and long-term memory are bundled together to form integrated units of visual, spatial, and verbal information.

**Executive Control.** Executive control (see Figure 9.2) involves the processes of setting goals (formulating intentions), initiating actions to achieve them (planning), evaluating goal process and impact (monitoring), and modifying each of these as needed (reacting). These processes are the mechanisms by which writers and collaborators establish agency over the writing process. They are not separate from the confines of the writing community, but operate in conjunction with them. Even when writers have no control over the writing task assigned (as often happens in school or the world of work), writers and collaborators use these executive-control processes to shape what is produced, personalizing what is produced and how it is produced.

The four actions of formulating intentions, planning, monitoring, and reacting can be applied to all aspects of the writing process (e.g., defining the writing assignment, developing a writing plan, gathering possible writing content, organizing that content, constructing sentences, transcribing sentences into text, integrating visual and verbal features into text, reading and rereading plans and text for evaluative purposes, reformulating plans or text based on these evaluations, and editing and creating a polished final product). They can also be applied to managing one's emotions and dispositions, interacting with collaborators, using selected writing tools, and arranging the writing environment.

The first phase of executive control involves formulating intentions. Intentions are goals. They direct how attention is al-

located and what the writer and collaborators do. Writing often involves multiple, hierarchically structured goals (Conway, 2005). For instance, a child may be given the task to write a summary of a passage read by the class. The quest to achieve this goal can lead to the formulation of a host of smaller intentions, such as identifying the gist of the passage, noting important details in it, structuring the summary so that the gist is presented first followed by important details, converting ideas into sentences that are paraphrased and not taken verbatim from the read material, making the produced text legible, and eliminating grammatical and spelling errors. The writer may also decide to ask another student to provide feedback on the summary before submitting it or to write it at home after supper when it is quieter. While the student is engaged in writing the summary, new intentions or goals may surface (e.g., the student decides to add personal asides in the summary), whereas other intentions may advance, retreat, or disappear (e.g., legibility is no longer important as the student decides to write the summary on a word processor). The process of formulating intentions is potentially active and ever evolving as the composing process proceeds (Hacker, Keener, & Kircher, 2009).

Once an intention is formulated then a plan is put into place for achieving it. I propose two possible mechanisms for generating this solution. One, the writer may draw on a schema held in long-term memory that provides a reasonable solution for achieving the intended goal (Hayes, 2012). For example, if a writer's goal is to clean up spelling errors in text, he or she may write a second version or even a third version of misspelled words to see if they look right because he or she remembers that this approach or schema worked in the past.

If a ready schema is not available for achieving a formulated intention, then the writer can generate solutions by engaging in problem solving (Paas & Sweller, 2014). For example, when developing this model, I was unsure how to handle my goal of drawing broadly on many different literatures, so I generated a solution that involved consulting handbooks that focused on many aspects of learning and development. A writer can also modify an existing schema taken from long-term memory so that it is relevant for the intentions at hand.

Just because a plan is selected/created does not mean that it will be successful or even that the intention it was designed to achieve was a good choice. Thus, another important phase in the executive-control mechanism is to monitor the effectiveness of the intention and its plan. Because a writer typically formulates multiple intentions when writing, evaluation for some goals will occur at the point the plan is executed, for others it will occur again sometime after the fact, and for still others it will pop up consistently throughout the act of writing. To illustrate, a writer who is writing an article for a magazine for 20- to 30-year-olds may decide that one of the overriding goals for the piece is to sound young and smart by using certain words and employing ideas that resonate with these readers. The author may frequently evaluate the text as it is being produced to see whether this goal and plans for achieving it are working. While creating the text, the author may set a goal to immediately capture the audience's attention by using a hook that appeals to their sense of irony. As soon as the hook is created, it may be evaluated, but the writer may also return to it the next day to evaluate it anew. The evaluation criteria a writer applies will not be the same for different goals and will vary by writing community.

The fourth phase involves the writer's reaction to the evaluation conducted as part of monitoring. A writer may view the desired intention and its plan as useful and effective, and move on to formulating another intention or returning to a previous intention put it into play. Or the writer may be unsatisfied with the outcome, and will be faced with a decision: make a change, move on, or move to another goal?

As noted earlier, executive-control mechanisms not only direct and regulate a writer's thoughts and behaviors, but help the writer direct and manage work within the writing community. This includes applying strategies for regulating the writing assignment (e.g., changing the assignment so it is more interesting), writing community (e.g., modifying a typified way that the writing community carries out writing activities), writing environment (e.g., restructuring the writing environment so that it is conducive to success), social situation (e.g., choosing whom to work with or how the writing task is to be distributed), writing tools (e.g., choosing what tools to use or what features of a tool to activate or

switch off), writing process (e.g., setting rhetorical goals, creating an advanced plan, self-vocalizing while crafting sentences, setting writing aside for a day before making revisions), attention (e.g., monitoring and recording the amount of time spent writing), motivation (e.g., engaging in self-reinforcement or goal-oriented talk), emotions (e.g., purposefully controlling excitement, counting to 10, reminding oneself that getting frustrated is not helpful), personality traits (e.g., creating a strategy to manage time more effectively), and physical readiness (e.g., making sure not to come to the writing task sleepy or hungry).

**Summary.** Control mechanisms provide writers with a temporary storage space where intentions and plans can be formulated (through reasoning, problem solving, and decision making), resulting in thoughts, actions, emotions, and behaviors that can be regulated, monitored, evaluated, and adjusted as needed. This temporary storage space draws on long-term memory resources (knowledge and beliefs) as well as input from outside the writer. In turn, acting on ideas for writing in working memory as well as establishing goals and plans for writing, monitoring their success, and deciding to make changes when needed can provide new insights, knowledge, and beliefs that are added to long-term memory resources.

## PRODUCTION PROCESSES

Production processes (see Figure 9.2) are the mental and physical operations writers apply to produce text (similar operations are included in the Chenoweth & Hayes 2001 model). These production processes are guided by decisions made in the writing community (e.g., to produce a specific type of text) and/or by decisions made by the writer through the control mechanisms involved in setting writing goals (intentions), initiating actions to achieve them (plans), evaluating goal process and impact (monitoring), and modifying goals and plans as needed (reacting). Production processes draw on long-term memory resources, such as topic knowledge, language, and specialized writing knowledge, as the writer constructs a mental representation of the writing task (conceptualization), draws ideas for the composition from

memory and/or external sources (ideation), takes the most pertinent of these ideas and transforms them into acceptable sentences (translation), commits the sentences to paper or digital print (transcription), and engages in the act of revision (reconceptualization). Engagement and persistence in employing these production processes are likely influenced by some combination of beliefs writers hold about the value/utility of writing, their capabilities as writers, motivations for engaging in writing, reasons for success, and identities as writers. In turn, engagement in these production processes can lead writers to acquire new knowledge and affect how they view writing and themselves, adding to their long-term memory resources (Graham, Harris, & Mason, 2005).

**Conceptualization.** One production process involves forming a mental conceptualization of the writing task or assignment (see also Hayes, 2012). The starting point for this may be goals established by the writing community (e.g., an employer assigns a writing task with specific goals), goals established by the writer, or some combination of the two. This resulting mental conceptualization, which includes remembered goals and text produced so far, serves to guide other production processes, as it provides a mental road map of what has been done and what was intended. It is open to modification, as the writer engages in evaluations of the intentions, plans, and text produced.

**Ideation.** A second production process is ideation. This involves accessing possible ideas or content for writing from internal memory sources or external sources within or outside of the writing community (see Torrance, Thomas, & Robinson, 1996, for a discussion on idea generation during writing). Ideas can take more than one form, as they can involve language, an image, or an abstract thought. In some instances, an idea may undergo intense scrutiny by a writer to determine whether it is suitable given his or her conceptualization of the writing task. In other instances, as may happen when writing an entry in a diary, it may receive only a passing appraisal.

**Translation.** Ideas viewed as pertinent for the text being assembled must be turned into acceptable sentences (translation).

This involves deciding which words and syntactic structures best convey an author's intended meaning (see Kaufer, Hayes, & Flower, 1986, for a study of sentence production). Writers draw on their own knowledge of grammar, sentence structure, usage, and vocabulary to do this, but may also rely on external aids from the writing community such as a thesaurus or grammar checker.

**Transcription.** Sentences must also be converted to text, either on paper or digitally (transcription). Transcriptions skills include handwriting, typing, and spelling, but are expanding to include other production methods such as speech synthesis, using thumbs to create a message on a smartphone, or inserting pictures, videos, or narration into a digital text. Developing facility with most transcription procedures is important, as slow transcription skills can interfere with other production processes like conceptualization, ideation, and translation (see Graham, 2006).

**Reconceptualization.** The production process of reconceptualization applies to all aspects of writing, as writers can rethink and revise whatever is produced, including their writing goals, plans, notes, and text as well as procedures for producing and presenting a paper. This reconceptualization not only involves adding to, rearranging, or taking away from what is produced already; it can involve transformation, too, as when writers reformulate their intentions (Scardamalia & Bereiter, 1986).

Of course, production processes cannot be considered as separate from the material experiences and tools writers use to produce text within their writing communities. For instance, when reconceptualization takes place and how frequently it occurs is related to the tools writers use to produce text (MacArthur & Graham, 1987).

## MODULATORS

The fourth component of cognitive architecture (see Figure 9.2) involves the physical and psychological factors that modulate the workings of the other components: long-term memory resources, control mechanisms, and production processes. The modulators are emotions, personality traits, and physiological states.

**Emotions.** Emotions are “affectively charged cognitions, feelings, mood, affect, and well-being” (Boekaerts, 2011, p. 412). They include joy, surprise, sadness, anger, disgust, and fear as well as secondary emotions such as hopefulness, hopelessness, jealousy, disappointment, guilt, shame, embarrassment, excitement, pride, relief, envy, anxiety, annoyance, and gratefulness (Fridja, 1988). Emotions make writers want to do things or not do them (Pekrun, Frenzel, Goetz, & Perry, 2007). For instance, the anger that results from reading a newspaper article that espouses an objectionable viewpoint may lead a person to write a letter of rebuttal. Further, if one believes he or she is a good writer, a writing task may activate positive emotions such as joy and pride and result in greater effort and persistence. In contrast, if a writer has serious doubts about his or her competence, this may activate emotions of shame and anxiety, resulting in difficulties starting writing tasks, focusing on them, and managing them (Daly, 1985). Positive or negative emotions can enhance or reduce effort allocation and management (Boekaerts, 2007) and can combine with cognitive information in long-term memory, such as beliefs about capabilities, causes of success (or failure), and the value and utility of writing, to further moderate the relationship between emotions and writing performance.

Emotions can affect more than attention, as they can influence recall, problem solving, and decision making (Fridja, 1988). As noted earlier, these cognitive processes are central to executive-control processes of formulating intentions, initiating plans, monitoring goal process and goal impact, and reacting as needed. It should not be assumed, however, that negative emotions toward writing such as writing anxiety mean that those experiencing these emotions are weaker writers than those not experiencing them. Rather, they tend to worry more about writing, judge their text more harshly, and engage in more negative self-talk (Madigan, Linton, & Johnson, 2006). While emotions can modulate what a writer does cognitively, it is possible that the emotions of individuals in a community of writers influence the mood and work of the community, too, just as emotions themselves are responsive to social situations and relationships within that community.

**Personality Traits.** Another modulator that can potentially influence what a writer does is personality traits. Personality is defined as “relatively stable individual differences in behavioral dispositions that generalize across a range of environments” (Zeidner & Matthews, 2012, p. 111). According to contemporary approaches to the study of personality, this construct involves multiple and relatively enduring traits that are not viewed as fixed, but probabilistically affect a person in his or her interaction within a situational context. These traits center on openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (see Costa & McCrae, 1992).

The work of Galbraith (1999) provides an example of how personality traits influence the writer. He found that students who control their expressive behavior to present themselves in a pleasing way versus those who are less likely to filter their expressions differ in how they plan, with the former producing more new ideas when planning and the latter doing this as they wrote.

Just as emotions can influence the writing community, so may personality traits (see Zeidner & Matthews, 2012). For instance, interactions within a community are influenced by the agreeableness, openness, conscientiousness, sociability, and self-consciousness of its members.

**Physiological States.** A writer comes to the task of writing in varying physiological states (see Figure 9.2). From one situation to the next, a writer may be more or less hungry, stressed, tired, or healthy. This matters, as these factors influence performance. For example, too little sleep can lead to problems with concentration and memory (Curcio, Ferrara, & De Gennaro, 2006). Performance is also negatively impacted when daily nutritional needs are not met (Kleinman et al., 2002). Stress influences cognitive processes like decision making, but also affects people working together toward a common goal (Driskell & Salas, 1996). As a result, physiological status can impact a writer affectively and cognitively, and may under the right circumstances influence the work of a writing community as well, just as the demands imposed by a writing community can influence one’s physiological state.



## An Example of How Community and Writers Work in Tandem

A basic assumption of the writing model is that writing involves an interaction between the social context in which it occurs and the mental and physical actions writers are able to enlist and engage. While the two previous sections (i.e., writing community and writers/collaborators) provide some illustrations of this interaction, I demonstrate this here with a more detailed example involving the conceptualization of a writing task.

Writing tasks can be assigned by one or more members in a community, determined individually, or created collectively. For example, a high school teacher may ask students to complete a written report on the impact of hip-hop on poetry, a student in the same classroom may decide to pursue this topic independently, or the teacher and students may negotiate the topic of the report to include other types of music and poetry.

Whether writing is assigned, self-determined, or collectively determined, a starting point in the writing process is to create goals for the task and an initial conceptualization of it. This is directly influenced by the specific features of the writing community as well as what the writer(s) bring to the situation. In turn, how writers conceptualize the writing task influences what they do cognitively (Many et al., 1996) and can further influence the writing community (e.g., a teacher may provide more time for completing the hip-hop report if students working on it have different ways of conceptualizing it).

In constructing a mental conceptualization for a report on hip-hop and poetry, students in a class are likely to have overlapping but not exactly identical ideas for the goals of this task because of their collective history (much of this information will be held in community members' long-term memory, but can also be represented in the community as well through posted rules, example text, and so forth). Students in our fictional class, for example, know their teacher prefers that students work together as they plan and revise their compositions and that the end product is a multimodal writing composition. They also know that the audience for writing projects developed in this classroom is the teacher,

and that the purpose of such writing is mainly evaluative. They further understand that other members of the class have specific beliefs about one another's skills as writers and their knowledge about hip-hop and poetry. They know what tools for writing are available in the classroom (mostly paper and pencil and several computers), and they will likely need to do some or most of their work at home or in the library (physical environment) where other needed tools are available. They realize that they need to choose whom to work with and where (social environment), and that there are specific actions that the teacher expects them to engage in as they work on this project, including deciding whom to work with as they plan and revise their paper, how to distribute the collective load during each of these activities, and the creation of an initial writing plan and timeline for the teacher to review. As this example illustrates, the various features of the writing community shape and bind the conceptualization and goals for the writing task in multiple ways.

The knowledge, beliefs, emotions, personality traits, and physiological states of each writer further shape and bind how the writing task is initially conceptualized. For instance, the writing task is likely to be conceptualized differently by those with more or less knowledge about hip-hop and poetry or students who value this type of report writing versus those who do not. Similarly, students' emotional reactions to the writing assignment (e.g., excitement, anxiety), their basic personality traits (e.g., conscientiousness, willingness to entertain new ideas), and their physical states (e.g., healthy versus sick) will determine how the writing task is defined, how the goals for writing are refined, and how much effort is expended in achieving them.

A writer's initial conceptualization for the hip-hop and poetry task may range from minimal (e.g., I want to work with Alfredo and include hip-hop lyrics from Jay-Z) to more extensive (e.g., a detailed outline with rhetorical and content goals, possible writing partners, specific writing tools, and a timeline). With the exception of very limited writing tasks (e.g., writing a note to tell your spouse where you are), this initial conceptualization is likely to evolve as the writer or writers: (1) monitor and react to the success of initial intentions/plans, (2) discover new intentions/plans as a result of the text and byproducts of writing that are created

through the composing process, and/or (3) interact with members of the community to shape the intentions and the developed text. For example, an initial conceptualization may become richer, as the writer thinks of new ideas as text is created or after others provide feedback about the text produced so far. Similarly, these processes may lead to replacing part or all of an initial conceptualization and goals. The point here is that conceptualization and goals for writing are usually not stagnant, but are dynamic and changing. It is important to note that the fluidity of this mental representation can be affected by changes in the community (e.g., the original teacher becomes ill and a substitute teacher takes over the class and decides to place additional boundaries around the writing task) as well as events that affect individual writers (e.g., a student's parents purchase a home computer that makes it easier to add video and narrative clips). Conceptualizations can further involve shared community intentions that develop as students work with peers and teachers to develop their projects.

Before turning to mechanisms that promote development, it is important to reiterate that writing occurs within both the writing community and the heads of writers. As students engage in the hip-hop/poetry assignment above, considerable work will take place in both. Teachers will likely confer with students about their paper, asking questions and providing suggestions. Students may talk among themselves, sharing and gathering ideas and feedback from one another. They may further collaborate with classmates on all or parts of the writing process. External resources such as the Internet, records, autobiographies, or interviews may be accessed. Students may share drafts of their paper with others for feedback, or they may use their peers as a sounding board for their ideas, frustrations, and accomplishments.

At the same time, students will bring their cognitive architecture to bear to help them focus and maintain attention, decide how much effort to invest (including their level of ownership of the writing task), access relevant beliefs and knowledge, plan and evaluate, as well as monitor and react so they can operate successfully within this writing community and carry out the processes involved in composing their paper. The interplay between cognition and community is complex, as it involves reciprocal relationships that do not remain constant. To illustrate, as students work

alone and together with peers and teacher, the multiple voices, contradictions, disparate elements, conflicts, and heterogeneity described earlier will surface. As students and teachers monitor what happens within the community and with their own writing projects, reactions by each may result in shifts in how the community or individual students operate. For example, the teacher may modify the writing assignment because of time constraints, or individual writers may become more or less engaged in completing the assigned writing project.

## **Mechanisms That Promote Development**

A model of writing is not complete without addressing how development occurs. The model presented here proposes that writing development is shaped by participation in different writing communities, engagement in the practice of writing, and changes in the cognitive and affective properties of the writer. Writing development is not just about the individual, though, as writing communities are shaped by the collective actions of their members, writing communities influence one another, and writing communities are influenced by larger forces involving history, culture, politics, institutions, and society.

Before turning more specifically to the mechanisms that shape development of writing communities and individual writers, it is important to note that writing development is not a single thing. Writers develop expertise with a variety of different types of writing. The purposes and situations in which these forms of writing are applied vary, as do the audiences to which they are directed. In fact, it is difficult to obtain a general measure of writing achievement (Coffman, 1966; Graham, Hebert, Sandbank, & Harris, 2016), and there are relatively low correlations between writing within and across genres (Graham, Harris, & Hebert, 2011).

## ***Mechanisms That Shape the Writing Community***

Writing communities are built by and in turn shaped collectively by individuals. The purposes and ultimately the actions of writing and other socially derived communities are initially constructed by

people, drawing on their experiences in other communities (Moll, 1990). For example, a writing program may be implemented by parents at home that is similar to the writing practices applied at school (Morrow & Young, 1997) or writing practices from home can be brought directly into the school (Dyson, 1999).

It is important to note that writing communities can influence other socially derived groups. A famous illustration of this point involves *The Origin of Species*, written by Charles Darwin for a scientific writing community. The ideas in this book have been applied not just to views about biological development, but to other areas too, such as economic evolution (Hodgson & Knudsen, 2010) and the evolution of learning (Geary, 2008). In addition, writing in one community may provide capital in other socially derived communities. For instance, learning to write makes one a better reader, and writing about material presented in other learning situations enhances comprehension of material read (Graham & Hebert, 2011). This provides individuals with skills that can be applied beyond the writing communities where they were first developed, as reading is a fundamental skill in a variety of socially derived communities today.

Writing communities can further develop as a function of changes in the community itself (Greeno & Engeström, 2014). This can include changes in the tools used by a writing community. For instance, Charley Kempthorne was a writing community of one for more than fifty years, writing a diary entry each day for himself, where he reflected about his past experiences and his burgeoning belief in God (Ansberry, 2016). This writing community evolved considerably after he started posting his diary entries on Facebook. Similarly, Wikipedia evolved from a companion site to a free online encyclopedia (i.e., Nupedia) that used highly qualified volunteers and a peer-review process to a more catholic community in which the users of Wikipedia created and curated entries.

Writing communities are also shaped by larger forces. Consider the interaction between history and writing tools. Five thousand years ago, the purposes of Sumerian writing communities revolved around the activity of recording goods (Cook, 2003). As writing tools evolved from marks on clay to marks on paper to marks on computer screens, the number and types of writing

communities exploded, especially with the advent of the printing press (Hendrix, 2016). Today, almost nine out of ten people worldwide write (Swerdlow, 1999).

Another example involves the impact of culture on writing communities. A classic study by Scribner and Cole (1981) provides an excellent demonstration of this point. They studied the Vai, who operate between multiple cultures, learning to write in English in school, using Arabic to study the Quran, and learning an indigenous script at home.

Finally, political and institutional factors influence the nature of writing communities and ultimately the development of writing. Formal schooling in the United States provides an excellent example. Writing instruction in schools (K–12 and college) has been shaped by a variety of professional institutions such as the Committee of Ten, the National Council of Teachers of English, the Modern Language Association, the Conference on College Composition and Communication, and the Dartmouth Seminar (Sperling & DiPardo, 2008). Perhaps even more influential in recent years are edicts and mandates from local, state, and federal governments. These have resulted in reforms emphasizing accountability (e.g., standardized tests) and the privileging of specific approaches to instruction (e.g., California’s proposing a literature-based/whole language approach to instruction in 1989). These mandates have specific consequences for the writing communities targeted. For instance, periodic standardized writing assessment can make writing more central to the mission of schooling and change teachers’ writing practices in positive ways (see Graham, Hebert, & Harris, 2011), but it can also narrow the writing curriculum in unintended and negative ways (Hillocks, 2002).

### *Mechanisms That Shape Writing Development at the Individual Level*

I propose five mechanisms that shape writing at the individual level (they are not completely separate from one another). They occur within the context of specific writing communities, but cut across them too.

## LEARNING BY DOING

One mechanism that promotes writing development is learning by doing or learning through experience. I highlight three approaches to learning by doing here. One, through participation in a writing community, an individual writer learns a community's goals, identity, norms, specialized knowledge, evaluative criteria, forms of reasoning, action routines, tool use, and the identities, affiliations, roles, attitudes, beliefs, relationships, and expectations of other members in the writing community (Bazerman, 2016; Greeno & Engeström, 2014). Participation further allows the individual writer to gain a sense of the physical and social conditions under which the writing community operates, including how power is distributed. Participation in a writing community can lead an individual writer to develop a sense of belonging and identity (Hull & Schultz, 2001), but it can also lead to negative outcomes as well, such as rejection of the goals of a community and passive or even aggressive resistance to it (e.g., those who find writing challenging at school may act out in inappropriate ways when it is writing time).

A second way of learning by doing is to learn as a consequence of action (Graham & Harris, 1994). As students write, they put into play various mental operations and behaviors to achieve their goals. These vary from routine actions to ones that are applied for the first time; personally created actions to ones prompted by a mentor or collaborator; and actions that involve personal judgments to ones that involve external judgments of success. These actions have consequences: they are successful or not successful. If a writer views a particular action as successful, then it is more likely to be used in the future. If it is not successful, then it is less likely to be applied later. Evaluations of these actions can also influence a writer's beliefs (Zimmerman & Campillo, 2003). A writer who routinely views writing actions in a specific writing community as unsuccessful is likely to become less confident about his or her writing capabilities in that situation.

A third means for learning by doing involves learning by expansion. As writers engage in the act of reading, for example, they may acquire important insights into writing, as they think about why an author used a particular word, phrase, sentence,

or rhetorical device to deliver the intended meaning (Tierney & Shanahan, 1991). This learning can be deliberate, as when a writer is asked to read and emulate a model text (Knudson, 1989), or unintentional, as when writers extract rhetorical knowledge (Bereiter & Scardamalia, 1984) or knowledge about spelling (Graham, 2000) as a consequence of reading. Another example involves the acquisition of content or vocabulary knowledge as a result of listening to a lecture or reading a book. Both types of knowledge may be applied by a writer when creating future texts. The acquisition of these different types of knowledge can influence one's beliefs, as an individual may be more interested in writing about a topic after acquiring new information about it or may feel more confident as a writer as a result of writing skills acquired vicariously through reading.

#### LEARNING BY OBSERVING

Writers also develop as a result of learning by observing. This involves observing other writers and readers (Couzijn, 1999). Examples of this kind of learning activity include observing another writer carry out the processes involved in writing or watching a reader try to carry out directions written by oneself or someone else. The success of learning by observations depends on the writer's focusing attention on relevant features of the event observed, retaining in long-term memory the pertinent information, and translating the retained information into successful action when writing (Schunk, 2012).

#### LEARNING FROM OTHERS

Writers further develop as a function of learning from others. This typically involves learning from other people within specific writing communities (Graham, Harris, & Santangelo, 2015), but it can involve learning from a machine, as when feedback is given via automated essay scoring (Graham, Hebert, & Harris, 2015). One way in which learning with others occurs is through a writer's collaboration with another student to create a composition. Collaborations such as these can result in one or both writers learning something new from the other about how to



write. They can also result in changes in beliefs. For instance, one of the writers might decide, as a result of the experience, that she is a very good editor.

Another way that learning from others occurs is through one or more individuals in a writing community serving as mentors to teach skills a writer needs to be successful. Teaching or mentoring can involve an array of activities, including discussion about text and writing, modeling specific writing skills or behaviors, providing guided practice, sequencing learning activities, coaching, creating a supportive writing environment, designing writing tasks that engender specific writing processes, providing feedback, facilitating self-reflection, and displaying a positive attitude toward writing, to provide a few examples. For school-age developing writers, most of these activities result in improvements in the quality of what they write (Graham, McKeown, Kiuahara, & Harris, 2012; Graham, Harris, & Chambers, 2016).

#### LEARNING THROUGH DELIBERATE AGENCY

Writers can develop as a result of learning through deliberate agency. This involves a deliberate decision on the part of the writer to: (1) become more skilled (Kellogg & Whiteford, 2009), (2) apply what was learned in a previous situation or community to new ones (Bazerman, 2016), or (3) build new ideas about writing within the context of old ones (diSessa, 2014). The first deliberate action described above can be illustrated by considering the famous American jack-of-all trades, Benjamin Franklin, who set a goal to become a better writer by trying to emulate some of the best British writers of his day (Bigelow, 1868).

To illustrate the other two actions above, I provide an example from my own research (Graham et al., 2005), of third-grade children who identified something they learned through instruction that could potentially be applied in another setting. They then set a goal to apply it in the new setting, determined how it needed to be modified for the new setting, and evaluated whether it worked or did not work and why. This occurred multiple times over the course of the study. This deliberate articulation, externalization, and application of what was learned resulted in improved writing in instructed and uninstructed genres.

## LEARNING THROUGH ACCUMULATED CAPITAL

The fifth catalyst for development is learning as a result of accumulated writing capital. In essence, development as a writer serves as stimulus for further development. As writers acquire more knowledge about writing, develop new strategic approaches to writing, or become more motivated, any of these outcomes may spur further development (Graham, 2006). For example, as writers become more knowledgeable about the craft of writing, they are more likely to become intrinsically motivated to write, value writing, view themselves as competent writers, and develop a positive image of themselves as writers. Likewise, more motivated writers are likely to be more invested in writing, devoting greater effort, persistence, and cognitive resources to composing, including creating strategic solutions to solve new writing problems (Alexander, Graham, & Harris, 1998).

## Final Comments

This chapter proposes that writers differ in cognitive capabilities, resources, and functioning. It further proposes that where writing communities acquire their competence varies widely, and that these communities are dynamic and evolving structures. Thus, variations in contexts and individuals are the catalysts for differences in writing development within a writer and between writers. I would like to end this chapter by considering a contextual and an individual factor not specifically addressed in the model. Both play important roles in shaping writing.

First, family wealth predicts children's skills as writers, at least on writing tasks emphasized in schools (Graham, 2006). As a group, children from poorer families do not perform as well on measures of writing as children from more affluent families (Walberg & Ethington, 1991). This is not to say that children from poor families are destined to become weaker writers (see Pressley, Raphael, Gallagher, & DiBella, 2004, for instance). Rather, poverty increases the risk that young writers will not reach their full potential.

Second, I did not address the role of the brain, genes, and the interplay between gene, brain, and environment in writing or its development. This does not mean that these factors are unimportant. Research in behavioral genetics demonstrates that in a variety of educational domains nature and nurture contribute almost equally to development, interacting with environmental factors (Haworth & Plomin, 2012). Moreover, the development of the brain “supporting writing undergoes continual change, in part, because of genes that regulate neural migration, neural development and function that supports writing” (p. 118), and such change is further influenced by interactions between the brain and the environment (James, Jao, & Berninger, 2016). As more insight into the interactions among writers’ genes, brains, and environments is obtained, it should be possible to build a broader and more complete model of writing and the factors that contribute to its development.

## Notes

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2. Written text can include pictures, drawings, verbal narration, and videos. Neither film nor an oral speech alone is considered writing in this chapter, but any text used to create them would count as writing, such as a screenplay. There are instances where writing may not involve print, however, as when very young children produce marks, scribbles, lines, or pictures with the intent to construct meaning through writing (see Rowe, 2008).
3. An exception to this definition is a community that includes a single person who acts as both author and reader. A writer composing a diary for personal consumption provides an example of a one-person writing community, as this person acts as both writer and reader.

4. The functions involved in writing can be and often are distributed across members in a writing community (see Klein & Leacock, 2012).
5. Mature writers, however, can and do use writing strategies similar to those applied by beginners at times, as when they apply the knowledge-telling strategy to write an entry on a social media site detailing the events of the last hour, with little or no reflection on these events.

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