nwea

Writing for all: NWEA stances on writing

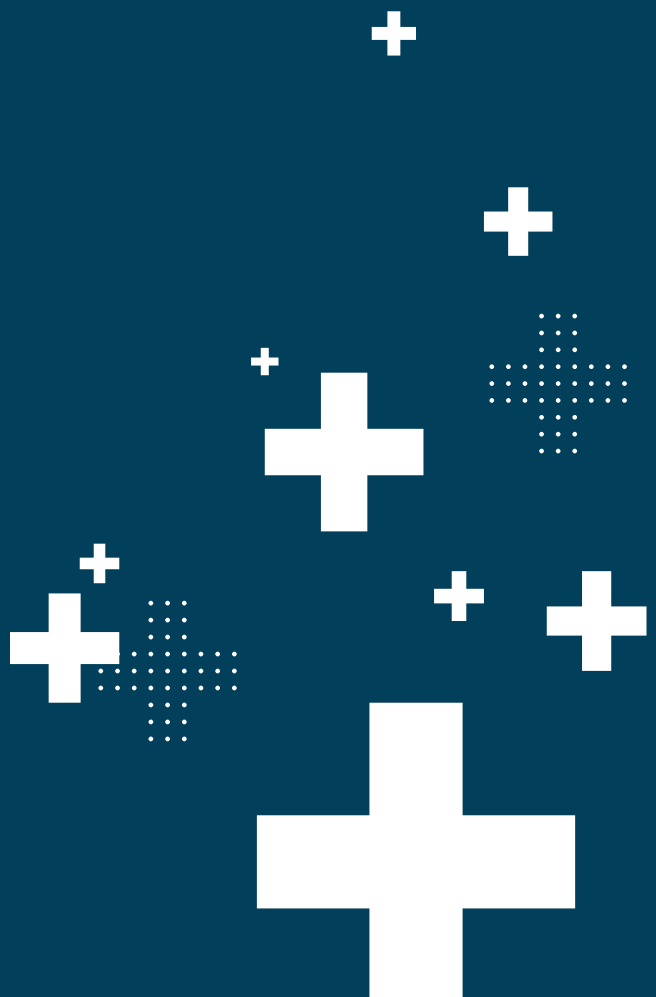


Table of contents

Foreword

We are surrounded by writing: in books and news media, on digital devices, and in our bulging email inboxes. With writing being so ubiquitous, it is easy to lose sight of what a miraculous human invention it is. From the simplest grocery list to the most complex scientific argument, writing extends human cognition and communication, enables critical and creative thought, and powers joint action. Digital technology has expanded the opportunities for writing, as many forms of civic and commercial participation have shifted to the Internet. Everyone now has the chance to write and circulate content through blogs, social media, and email listservs.

This is a moment when we must ensure that all young people learn to write clearly, express themselves thoughtfully, and attend to a widening audience. Writing matters.

Fortunately, as these stances demonstrate, writing has benefits that go far beyond the English language arts classroom. The act of writing is an ongoing process of problem-solving, strategic planning, and self-regulation that teaches students to seek and manage feedback, embrace revision, and understand multiple points of view. Well-designed writing assignments and frequent opportunities for informal writing engage students with content and help them learn in any subject area. These benefits don't end when academic careers end—writing is a tool for lifelong learning and self-expression.

All of us at the National Writing Project appreciate that NWEA® has taken up the call to explore the complex, interwoven, and mutually reinforcing threads of this powerful human invention we call writing.

Elyse Eidman-Aadahl
Executive Director
National Writing Project

Introduction

Writing is a powerful form of human communication that holds past knowledge, generates and spreads new knowledge, and makes possible future knowledge. Writing enables action; it has inspired social movements, scientific exploration, and cultural renaissances. It also opens doors to personal opportunities. While writing is connected to educational, career, and civic opportunities, high-quality writing instruction and support have not been available to all students. To advance our mission of "Partnering to help all kids learn®" and to dismantle persistent inequities, NWEA must contribute to enacting systemic change in writing instruction and assessment through meaningful, collaborative, and innovative methods across our products, services, and advocacy.

Writing is an integral part of modern daily life. We take notes on electronic apps and scribble our to-do lists on scraps of paper. We write emails to our children's teachers, draft instructions to family members, and prepare reports for work. We write when we collaborate on a project or task and when we record our thoughts in a daily journal. We write when we text or create a post on our social media accounts.

We are born with the desire to share thoughts and ideas. For many of us, that comes first in the form of oral communication. As we mature, expression evolves and expands from oral language to a more permanent and enduring form: written language. The medium for writing has also evolved. Now, most writing is done digitally and includes multimodal elements, allowing for instant communication with readers and collaborators around the world. What has remained constant, however, is the process we use to move thoughts from abstract to concrete, from idea to text: through discussion, collaboration, planning, drafting, and revising, we expand or focus ideas, refining them and making them impactful. The skills needed to move from idea to impactful text must be introduced and nurtured in students' K–12 experiences and have relevance in every discipline.

NWEA understands that writing applies to every class and discipline in which students are expected to gather and share knowledge. This includes content areas and classes beyond English language arts (ELA), such as science, social studies, mathematics, world languages, and career-and-technical education (CTE) classes. Writing is connected to improved reading outcomes; it stimulates critical thinking and deepens learning of content. Because writing is fundamental to every discipline and occurs in a myriad of situations, writers need to be equipped with an array of skills to be flexible and effective communicators. *Writing for all: NWEA stances on writing* treat writing as a critical skill that students use across the school day, and the stances are designed to be relevant beyond the ELA classroom.

NWEA understands that writing takes place outside of school, too, with children and adolescents writing more than they ever have before. We recognize that students progress as writers throughout their lifetimes, starting at a very young age as emergent readers and writers and continuing through adolescence and adulthood. Students' learning differences, cultural backgrounds, and lived experiences influence their identities as writers and their approaches to writing, and students should be encouraged to bring their cultural skills, knowledge, and perspectives from their communities to their writing. Students may also bring multiple languages,

dialects, and additional funds of knowledge to their writing. These are assets that enrich their communication of ideas and should be leveraged. Instead of being restricted to composing in only one language, dialect, or register, students should be empowered to engage in translanguaging—using their entire language repertoire—to express themselves fully during the drafting process. As students progress through the writing-development continuum, they must be supported by explicit, recursive, evidence-based writing instruction and meaningful assessment that provides important feedback to enrich their writing; at the same time, teachers must be equipped to support, embrace, and build on the unique diversity of cultures, backgrounds, interests, and abilities that each writer brings on the writing journey.

These writing stances ground the organization's expansion into the teaching and learning space and establish a vision of the future for NWEA. They address why writing is important for students, what writing encompasses, and how NWEA can better meet the needs of the writers we serve through our products, services, and advocacy. The supporting sources we cite represent an evolving field of research; the references will be updated as new research is read and processed.

Stances on writing

1. **Writing empowers; writers use their voices.** As a form of cultural capital, writing is a matter of justice and equity. It is a critical tool for participation in society, presenting the writer with multiple pathways to opportunity, engagement, discovery, expression, influence, agency, and advocacy. Because of writing's social, political, and civic impacts—and because of the lifelong implications for the writer—writing must occupy a prominent space in students' academic experiences.

2. **Writing communicates; writers collaborate.** Writing enables ideas to be communicated to audiences across space and time, with meaningful implications for society. This process is interactive; writers participate in communities to share and refine ideas, respond to ideas from others, and communicate their ideas to new readers. To effectively communicate and collaborate, writers must possess a flexible array of skills that they can apply to address various and authentic purposes, audiences, and tasks.

3. **Writing is both a product and a process; writers use writing to think more deeply and more critically about ideas.** Writers engage in complex, recursive, and goal-driven problem-solving processes when they write. This results in a written product, but the process itself is just as valuable as the product. Writing is a cognitive, nonlinear process that serves as a tool for learning and critical thinking, stimulating the writer to think more deeply about a text, topic, or concept. In this way, writing doesn't just show thinking; it *is* thinking, and it is an essential practice across disciplines.

4. **Writing is expanding; writers are evolving.** Writing changes with the writer and the developmental and social context in which the writer is situated. For example, emergent writers need intentional support with developing transcription skills, while experienced writers often need focused support when composing in new genres. Language, conventions, and genres are culturally situated, and their norms change over time too. Developments

in technology usher in changes with new text creation and sharing capabilities, and savvy writers in digital spaces adapt to and leverage these changes.

5. **Writing is a cultivated skill; student writers deserve a systemic overhaul in teacher preparation, writing instruction, and writing assessment to improve equitable outcomes.** Writers bring a unique and rich bank of assets to writing: funds of knowledge, diverse cultures, languages, and perspectives. To ensure students have full access to civic, economic, and political life and society, writing instruction and assessment must meet the students where they are to support and develop writers who can communicate effectively in a variety of situations.

Research

> **1. Writing empowers; writers use their voices.** As a form of cultural capital, writing is a matter of social justice and equity. It is a critical tool for participation in society, presenting the writer with multiple pathways to opportunity, engagement, discovery, expression, influence, agency, and advocacy. Because of writing's social, political, and civic impacts—and because of the lifelong implications for the writer—writing must occupy a prominent space in students' academic experiences.

Writing has very real and profound benefits for the writer. It can be deeply personal, helping people understand themselves, their complex worlds, their communities, and their identities. It can also be used by individuals as a therapeutic tool to process thoughts and emotions (Graham 2019). Through writing, we can explore and develop a sense of our identity—a voice to express who we are to others. Motivation and self-concept as a writer are integral components to internalizing the value of writing and working toward developing writing skills. Indeed, intrinsic motivation has been shown to have a positive impact on literacy outcomes, while extrinsic incentives have no effect or a negative effect (Camping et al. 2020).

Some students may shrink from writing authentic representations of themselves because the content might be deemed inappropriate by school officials (Haines 2015) or because the students' use of languages and dialects does not conform to "standard" English. If we want students to see writing as a tool for personal development, we must affirm, not diminish, their stories and experiences; we must empower them to engage in translanguaging—using their entire linguistic repertoire, including the range of languages and dialects they speak—to express themselves fully (Ascenzi-Moreno and Espinosa 2018); we must encourage and support them to develop intrinsic motivation and positive self-concept as writers; and we must provide them with opportunities to write about topics that are meaningful to them.

Beyond the impact it has for individuals, writing also has far-reaching applications and consequences in society (Bazerman 2016). It contributes to collective knowledge that endures over time. Wisdom captured in ancient documents is still applied to contemporary scenarios. The printing press helped to democratize knowledge, and the Internet has made knowledge instantaneously accessible. The written word serves as a catalyst for change, inspiring political and social movements, scientific exploration, and cultural renaissances. It also has everyday

practical applications in society: writing establishes laws, records transactions, helps to implement engineering plans, and shares medical innovations.

Writing can be an individual's pathway or obstacle for engaging in, contributing to, and acquiring power within society. Writers use their own voices to gain influence and credibility in their desired forums (Bazerman 2016) and to establish their identities in both social contexts (Ito et al. 2008; Jenkins 2006) and academic contexts (Castelló and Iñesta 2012). Struggles with writing can limit opportunities in college, career, and society (The National Commission on Writing for America's Families, Schools, and Colleges 2004).

> **2. Writing communicates; writers collaborate.** Writing communicates; writers collaborate. Writing enables ideas to be communicated to audiences across space and time, with meaningful implications for society. This process is interactive; writers participate in communities to share and refine ideas, respond to ideas from others, and communicate their ideas to new readers. To effectively communicate and collaborate, writers must possess a flexible array of skills that they can apply to address various and authentic purposes, audiences, and tasks.

Writing uses language to convey meaning, often as a form of social interaction that enables us to create shared meanings with others (Bazerman 2016). All writers—regardless of mono-, bi-, or multilingualism—utilize a unique and unitary linguistic repertoire when communicating (Vogel and García 2017). Understanding and encouraging translanguaging is especially important for multilingual students (e.g., emergent bilinguals) (Velasco and García 2014; Ascenzi-Moreno and Espinosa 2018) as well as for dialect users (e.g., speakers of African American English [AAE]).

Writing as communication is not limited to the ELA classroom; it is an integral feature in multiple disciplines. For example, students develop claims and communicate and critique conclusions in social studies (NCSS 2013). In science, students use writing to construct explanations, design solutions, make evidence-based arguments, and communicate information (National Research Council and NGSS Lead States 2013). Students in math use writing to "construct viable arguments and critique the reasoning of others" (NGA Center for Best Practices and CCSSO 2010b). In ELA, students write real or imagined narratives, compose informational texts, and construct arguments (NGA Center for Best Practices and CCSSO 2010a). World language courses require students to use writing to communicate in more than one language, in a variety of situations, and for multiple purposes (NSFLEP 2015). In CTE classes, students use writing to communicate clearly, effectively, and with reason (NASDCTE/NCTEF 2012). To prepare for the various writing demands of college and career, students must have experience writing across the disciplines.

The different disciplines have diverse writing genres; scientists, historians, mathematicians, and literary critics all write arguments, but the specific norms and conventions of that genre are unique to each discipline. However, genres do not require adherence to rigid constraints, nor are they used solely for structuring a text. Writers use culturally situated, dynamic genre norms as flexible frameworks for thinking about ideas and for communicating those ideas effectively (Chapman 1999). Effective writing requires writers to attend and respond to the unique contexts

and needs of a rhetorical situation (i.e., purpose, task, audience, topic, genre, medium, and format) (Flower and Hayes 1980). Students should be encouraged to discern what kind of writing is necessary to communicate with the targeted audience.

Communication is inherently communal, as it is an exchange of ideas with others. Most writing is situated within social activity and is dependent on interaction with others (Bazerman 2016). Writers brainstorm with others, gather research conducted by other writers, respond to the ideas found in previously published texts, and solicit feedback from peers and teachers to refine their ideas and to clarify their expression. Building a supportive writing community is essential to fostering writing skills (Graham 2019). In order to establish that positive environment, students must first understand the value that writing brings to their learning, thinking, and expression. Writers, including students and their teachers, must feel safe to demonstrate vulnerability while sharing their writing with others. Students must see the merit in and be committed to providing constructive feedback for others.

> **3. Writing is both a product and a process; writers use writing to think more deeply and more critically about ideas.** Writers engage in complex, recursive, and goal-driven problem-solving processes when they write. This results in a written product, but the process itself is just as valuable as the product. Writing is a cognitive, nonlinear process that serves as a tool for learning and critical thinking, stimulating the writer to think more deeply about a text, topic, or concept. In this way, writing doesn't just show thinking; it *is* thinking, and it is an essential practice across disciplines.

Writing is a process that results in a formal or informal product. It involves a set of thought processes that are goal oriented and hierarchal. However, these processes (e.g., planning, drafting, translating, reviewing, and revising) are not linear; they are recursive. Writers move between processes to meet their self-generated goals, and these goals may change as writers monitor their progress (Flower and Hayes 1981). Upon reviewing their writing, writers may discover that their current line of thinking is not viable, and they may return to the planning process to gather additional information or restructure their outlines. They may even discard an entire draft and start over with a new, clearer understanding of their goals. Some writers may rephrase a sentence immediately after writing it, while others may complete a draft—working continuously and uninterrupted—before reviewing the effectiveness of their syntax and word choice.

Writing is not only about creating a final product; it is also a powerful vehicle for learning and thinking. Writing about a concept sets into action a "knowledge-transforming" process (Galbraith and Baaijen 2018, 245), activating both retrieval and encoding of concepts in our memory. Writing also helps us to discover what we know and what we think about a topic. Writers don't wait to write until every idea is perfectly formed; as they write, new ideas are generated, and irrelevant ideas are deleted (Whitney 2021).

The writing process is affected by external factors such as the rhetorical situation (e.g., purpose, audience, and topic) and the physical environment (e.g., loud spaces versus quiet spaces), as well as by internal factors such as writers' behaviors, beliefs, and attitudes (Hayes 1996). Savvy writers

who have a sense of self-efficacy develop self-regulatory strategies to engage in the writing process productively and efficiently (Zimmerman and Risemberg 1997).

Multilingual students use translanguaging throughout the writing process, including using their home language to access their memory and funds of knowledge and engaging in additional translation to convert thoughts to the language specified for the written product (Abdel Latif 2021). They should be encouraged in this use—from writing in their home languages and dialects during planning and drafting to speaking in their home languages and dialects during the collaborative conferencing stage—regardless of the language of the final product (Ascenzi-Moreno and Espinosa 2018; Velasco and García 2014). When multilinguals are restricted to responding in only one language, it impedes their ability to engage in critical thinking and to fully express their ideas (Beck, Llosa, and Fredrick 2013).

Because writing facilitates critical thinking, it should not be considered a separate discipline, restricted to the ELA classroom; instead, it should be approached as an integral part of thinking and working in all disciplines (Goldschmidt 2014). It is a vital tool to guide how students engage in the analysis required by the content area. Writing about content in any discipline deepens students' learning of that discipline's content (Graham, Kiuhara, and MacKay 2020; Bixby 2018; Graham and Hebert 2010). Students should write in every content area—including ELA, science, social studies, math, world languages, and CTE—to hone their thinking and relay what they know. For example, historians use writing to "think like a historian," evaluating sources and making claims through writing; scientists use writing to "think like a scientist," developing models and communicating findings through writing; literary critics use writing to engage more deeply with texts and contribute to the collective culture; and mathematicians use writing to work through mathematical equations and share conclusions. Through the act of writing in each of these disciplines, a deeper understanding of the content is generated and shared.

> **4. Writing is expanding; writers are evolving.** Writing changes with the writer and the developmental and social context in which the writer is situated. For example, emergent writers need intentional support with developing transcription skills, while experienced writers often need focused support when composing in new genres. Language, conventions, and genres are culturally situated, and their norms change over time too. Developments in technology usher in changes with new text creation and sharing capabilities, and savvy writers in digital spaces adapt to and leverage these changes.

Beginning in pre-kindergarten and continuing throughout adolescence and adulthood, writers are constantly developing their skills. As writing researcher Steve Graham (2019, 286) states, "Writing develops across the life span, some forms of writing take many years to master, and writing growth is a consequence of writing and deliberate practice" (Bazerman et al. 2017; Graham, Harris, and Chambers 2016; Kellogg and Whiteford 2009).

Before engaging in the writing process model described by Flower and Hayes (1981), emergent writers (i.e., students in pre-K through third grade) must master a prerequisite process that calls for them to develop transcription skills (i.e., handwriting and typing). The demands of transcription occupy most of the working memory of emergent writers and require them to

develop physical stamina with writing. Once these transcription skills are fluent, young writers have more capacity in their working memory to engage in executive-function skills like self-regulation, planning, and organization, and to generate coherent and intentionally planned text. This emergent writing process is referred to as the simple view of writing (Berninger et al. 2002).

Emergent writers also need a solid grounding in key foundational skills. These skills include handwriting, letter formation, spelling, and sentence construction (Berninger et al. 2002; Graham 2010; Graham et al. 2012; Graham and Harris 2016). Explicit handwriting instruction is correlated with improvements in writing, fluency, quality, and legibility (Santangelo and Graham 2016; Feng et al. 2019). Writing fluency is key to building writing stamina and to facilitating text generation (Kim et al. 2018). Struggles with handwriting and writing fluency have psychological consequences too. Students who struggle with handwriting and writing fluency often develop a negative attitude toward writing and are less inclined to participate in the writing process (McCutchen 1996).

For students who have disabilities that might interfere with handwriting, assistive technology can mitigate potential barriers. Low-tech assistive technology tools can help students with positioning, contrasting, holding writing utensils, organization, etc. These are great tools that can support a range of learners. High-tech assistive technology tools such as eye-gaze software and speech-to-text software are examples of advanced tools that provide a written voice for students who may be unable to engage in more traditional forms of writing. Interventions like dictation are linked with improved writing quality and higher levels of engagement and motivation for students with disabilities (Gillespie and Graham 2014). As writers develop and compositions become longer, keyboarding the writing has advantages over writing by hand. Studies show that students who use a keyboard produce higher-quality writing than students who write with paper and pencil (Goldberg, Russell, and Cook 2003; Morphy and Graham 2012).

In order to grow students' writing abilities, it is essential that educators understand where their students are along the writing continuum. Mastering the writing process takes years, so student writers should be evaluated based on their developmental stage and whether they make progress during the school year (Berninger et al. 2002, 302).

Just as writers evolve, so does society's use of language. Language and concepts of linguistic prestige are often tied to nation-state ideologies and systems of power (Heller 2007). What is referred to as Standard American English (SAE), or Mainstream American English (MAE), involves a system of norms and conventions agreed upon by the dominant society. SAE is not superior to other languages or dialects such as African American English (AAE), which uses its own complex grammar and syntax rule system. Nor is SAE static; for example, while an earlier convention stipulated that *their* should be used to communicate only a plural possessive, the word has evolved to become an inclusive singular possessive that doesn't assume gender in the way *his* and *her* assume gender.

Within SAE is the subgenre of academic English, which encompasses the discipline-specific and cross-discipline language used for school, not for social purposes. Academic language is used in many of the texts students read and write in school. It is a specific type of language

used in specific disciplines to accomplish specific purposes, including honing one's thinking, communicating knowledge to others, establishing credibility within a specific community, and forming self-concept as an academic (Castelló and Iñesta 2012). Savvy writers make intentional language choices to ensure precision of messaging and credibility with their desired audience, which may involve transcending traditional conventions.

As evolving theories in linguistics have expanded our understanding of the notion of a standard language, the advent of digital writing tools has similarly transformed our definition of a text. Texts can include or entirely consist of elements such as visuals, audio, and video. Texts can be nonlinear, too, through use of embedded links that can take readers from one related text to another, if the reader chooses to access them. The invention of the Internet has revolutionized how we communicate with others. Entire new literacies have emerged, such as media literacy, news literacy, and visual literacy (Redmond, Schilder, and Luetkemeyer 2020). Writers must develop their fluency in consuming and producing texts in these new literacies.

Digital writing involves learning new tools and integrating them into the cognitive and functional writing processes to produce multimodal products. At the same time, writers must navigate different networked ecologies, which have their own unique norms. Writers must learn skills like keyboarding (Morphy and Graham 2012), embedding links, including multimodal elements, composing for hybridized genres (Merchant 2007), and constructing visual representations, all while attending to the widely accepted, rapidly evolving digital norms for communication (e.g., a tweet has a character limit, which imposes constraints on how to communicate effectively and concisely; emoticons and GIFs are acceptable and effective stylistic choices when texting and using social media). Writers now have many more decisions to consider when addressing a rhetorical situation than they did prior to the proliferation of digital tools and access to a varied, networked audience (DeVoss et al. 2010; NCTE 2019).

While digital writing may involve more complex decision-making, it is more collaborative, with higher incidence of student motivation and engagement. Computer-based writing also facilitates a more recursive writing process, while paper-based writing tends to be more linear (Goldberg, Russell, and Cook 2003).

The Internet has democratized who and what gets published. Communication can now happen instantaneously, with a potential global audience (DeVoss et al. 2010). While this phenomenon is exciting and empowering, it also has the potential for danger and abuse. Students must be prepared to engage wisely, safely, and responsibly in this networked environment, which is rife with mis- and disinformation. Likewise, students must take on the responsibility to produce and contribute credible content.

5. Writing is a cultivated skill; student writers deserve a systemic overhaul in teacher preparation, writing instruction, and writing assessment to improve equitable outcomes. Writers bring a unique and rich bank of assets to writing: funds of knowledge, diverse cultures, languages, and perspectives. To ensure students have full access to civic, economic, and political life and society, writing instruction and assessment

must meet the students where they are to support and develop writers who can communicate effectively in a variety of situations.

Internal beliefs and attitudes affect the way teachers and students approach writing. Effective teaching and learning require teachers and students to adopt the belief that all students are capable of expressing thoughts and ideas in writing. Teachers must see themselves as writers who engage in the writing process, and they should model for students the techniques, strategies, and perseverance of writing (Graham 2019; Whitney 2021). Educators must also overcome deficit ideology when interacting with multilingual students; they should examine personal and often implicit biases toward language hierarchies, leverage the proven effect translanguaging has on enhancing English language literacy, and create a classroom community that celebrates linguistic diversity (Ascenzi-Moreno and Espinosa 2018; Velasco and García 2014; Williams and Lowrance-Faulhaber 2018).

Assigning writing is not the same as purposefully teaching writing (Whitney 2021). Like reading, writing requires explicit instruction. Students need to be equipped to be flexible writers who can respond to a variety of rhetorical situations in a range of disciplines, including but not limited to language arts. However, many educators, including language arts teachers, have not received adequate—if any—training in best practices for writing instruction. Graham summarizes, "Effective writing instruction involves **(a) writing frequently for real and different purposes; (b) supporting students as they write; (c) teaching the needed writing skills, knowledge, and processes; (d) creating a supportive and motivating writing environment; and (e) connecting writing, reading, and learning" (2019, 288).**

a. **Writing frequently for real and different purposes:** Students should write for authentic audiences and within authentic contexts, including digital and multimodal writing (NCTE 2008). Writing for an authentic purpose and audience is correlated with increased motivation and engagement (Ito et al. 2008) and a positive effect on students' abilities to produce high-quality texts (Purcell-Gates, Duke, and Martineau 2007; Durán 2017). It is important to remember that not all writing is academic; authentic writing can be for personal growth and expression, reflection, participation in society, or entertainment (Whitney 2021). Students are writing more today than they ever have before, yet they don't necessarily see it as real writing because most of their personal writing is digital and occurs outside of school for authentic audiences. In order to prepare students for real-world communication, schools must reconsider and reframe what is designated as writing (DeVoss et al. 2010; Freedman et al. 2016; NCTE 2019).

b. **Supporting students as they write:** Handwriting instruction is key for writing development, but there is no definitive research on the effectiveness of cursive instruction as compared to manuscript (print) instruction. Regardless of which script students are taught, children will develop their own unique handwriting style, and this is for the important and practical reason of efficiency: "Modifications appear to be aimed at increasing handwriting efficiency, as they are commonly associated with faster handwriting. Thus, teachers who insist on a

strict adherence to a particular model are likely to frustrate not only themselves but their students as well" (Graham 2010, 22).

Digital writing instruction requires access to digital writing devices, so it is critical that schools invest in technology infrastructure. Significant improvement in writing outcomes is correlated with students' twenty-four-hour access to laptops (Lowther, Ross, and Morrison 2003). Classroom configurations should allow for collaborative writing using digital devices (Hart-Davidson et al., n.d.).

Research on writing and multilingual students is growing. Teachers and curriculum providers must create purposeful opportunities for multilingual students to translanguage. Simply "inviting students to use their full linguistic repertoire in writing does not guarantee that they will want to" (Durán 2020, 415), especially if they have internalized language ideologies about perceived language hierarchies (Williams and Lowrance-Faulhaber 2018, 415). When teachers are trained to recognize the use of translanguaging, they can more effectively respond to instances of translanguaging in students' written products instead of automatically marking evidence of translanguaging as errors (Soltero-González, Escamilla, and Hopewell 2012).

Research on writing and students with disabilities is limited. Four interventions with statistically significant effects on writing quality of students with disabilities include: strategy instruction, dictation, goal setting, and process writing (Gillespie and Graham 2014). For students with dyslexia, accommodations like spell-check and speech-to-text tools can help with transcription issues, and instruction in self-regulation strategy development and sentence combining can offset some of the cognitive load placed on working memory and executive functions (Hebert et al. 2018). Students who experience physical discomfort when using tools such as pens and pencils should be offered other tools in order to avoid impeding the students' thought processes. These tools might include low-tech supports like pencil grips, slant boards, and graph paper. High-tech supports like transcription software, speech-to-text software, and eye-gaze software can also be used to provide a more efficient way for students to get their ideas into written language. Providing support—not only in the writing instructional components but also with tool functionality and features—is critical for students' success.

c. **Teaching the needed writing skills, knowledge, and processes:** Students need frequent opportunities to write, and those opportunities should include both explicit instruction and dedicated time to apply and practice in their own writing what they have learned. For adolescent students, a large-scale meta-analysis study conducted by Graham and Perin in 2007 found eleven evidence-based writing-instruction elements demonstrate a significant effect on writing quality when taught explicitly: writing strategies, summarization, collaborative writing, specific product goals, word processing, sentence combining, prewriting, inquiry activities, process writing, mentor texts, and writing for content learning. Teaching a "mixture of these elements is likely to generate the biggest return" (Graham and Perin 2007, 11). For younger students (students in grades K–3), research has determined

four evidence-based recommendations for improving writing instruction: providing daily time for students to write (approximately thirty minutes of explicit instruction and thirty minutes of dedicated practice); teaching students to use the writing process for a variety of purposes and to use self-regulated strategies to monitor and guide their engagement with that process; teaching students to become fluent with handwriting, spelling, sentence construction, typing, and word processing; and creating an engaged community of writers (Graham et al. 2012).

What is not effective in writing instruction is the use of isolated, out-of-context grammar instruction, such as drill-and-kill worksheets. In fact, such an approach has a negative effect on writing quality (Graham and Perin 2007). Grammar instruction should be authentic, focusing on function and occurring in the context of mentor sentences in texts that students are reading and through examples and opportunities in students' own writing. Students must also have dedicated time to apply their new understanding of grammar in their own writing (Whitney 2021).

Focusing instruction exclusively on replicating genre text features is also not effective in improving writing quality (Purcell-Gates, Duke, and Martineau 2007). Students must be taught that genres are flexible frameworks for thinking through ideas, anticipating audience needs, and addressing the rhetorical situation; they are not rigid rules for form and organization (Chapman 1999; Bazerman 2016). To gain understanding of these nuances in genre, students require explicit instruction in how to use various genres across and within disciplines.

While there is still a real digital divide among students and schools—those with access to technology, and those without—a more pervasive issue is the digital disconnect between the adult and student generations' attitudes and experiences with digital writing. Integrating technology effectively requires identifying the specific learning goals and determining what tools best foster and accelerate those goals into powerful learning opportunities (DeVoss et al. 2010; Grabill and Hicks 2005; OET 2017). Digital writing instruction demands careful attention to three categories of digital literacy skills: functional skills, such as file saving, file storage, application types, and coding; critical skills, for which digital writing takes place within social, political, and educational contexts and can be used as tools for action; and rhetorical skills, which help students to recognize the conventions of specific writing modes and networked spaces and to choose the best technology to help them achieve their goals (Selber 2004; DeVoss, Cushman, and Grabill 2005; DeVoss et al. 2010). Closing this digital disconnect requires innovations in curricula and professional learning.

d. **Creating a supportive and motivating writing environment:** A supportive writing community is essential for fostering writing skills and using writing to deepen learning. One meta-analysis showed that writing impacted students' learning of content only if it took place within a classroom that valued writing (Graham, Kiuhara, and MacKay 2020).

To achieve a supportive and motivating environment, writers must feel that they are safe to show vulnerability when writing, when sharing their writing with others, and when providing

feedback to peers. Teachers can help to create this environment by exhibiting their own vulnerability as writers and modeling the iterative nature of the writing process. Teachers should write in front of students, modeling elements like planning, drafting, reviewing, soliciting feedback, revising, and editing. This modeling serves as both explicit instruction in writing and cultivation of a classroom community of writers.

There is a tension between writing as generating and shaping ideas and writing as a final product; mental energy on conventions can take away from focus on more intellectually rewarding pieces (Whitney 2021). Because the writing process is used to generate ideas, not all writing products need to or should be graded. Informal writing (e.g., brainstorming, prewriting, notes) is understood to be as important as formal writing (e.g., final reports, essays, responses to an equation) because those informal experiences activate and influence thinking. Both formal and informal writing products give important insights into how a writer is processing information.

When assessing student writing in the classroom, clear, timely, targeted, and actionable feedback is more useful than grades for growing students' skills (Schinske and Tanner 2014). However, not all feedback is helpful for students' learning; in fact, some forms of feedback can be detrimental to learning (Shute 2008). Feedback should be focused at the task and process level, not on personal evaluations of the writer; be offered in manageable chunks; be stated simply while elaborating on the what, why, and how (Shute 2008, 177); and occur throughout the writing process. Quality feedback should address deep-level features of writing (ideas and structure), not just surface-level features like conventions. Opportunities for peer feedback are important too. In fact, research shows that peer feedback has a more positive effect than adult feedback for students who are learning a second language (Biber, Nekrasova, and Horn 2011).

e. **Connecting writing, reading, and learning:** Writing development is deeply connected to reading development. They are separate and distinct skills, yet they draw from the same funds of knowledge (Fitzgerald and Shanahan 2000). For young children without physical disabilities or impairments, learning to draw letters by hand is an integral part of both the writing process and the reading process. Self-generating letters by hand activates key brain regions and establishes the orthographic mapping that is needed for later reading development (James and Engelhardt 2012). Teaching spelling and sentence-construction skills improves decoding skills and reading fluency (Graham and Hebert 2010). Writing about a text, or in response to a text, deepens students' comprehension of that text (Graham and Hebert 2010; Fitzgerald and Shanahan 2000). These benefits are not restricted to the language arts classroom; writing about content in any discipline deepens students' learning of that discipline's content (Graham, Kiuhara, and MacKay 2020; Bixby 2018; Graham and Hebert 2010).

Best practices in writing instruction are well established, but writing assessment is a rather contentious space, often involving the narrowing of measurement constraints and the expansion of innovative models. Different audiences (e.g., writing teachers, researchers, testing

organizations, and students) have different expectations and desires for writing assessments. With the convergence of improved methods to score robust writing samples like e-portfolios, along with a new focused attention on fairness, the time is ripe to bring disparate voices together and rethink writing assessment in the future (White 2019). The reimagining of large-scale assessment of writing is a growing field of research; we will update recommendations and observations as additional research is collected.

Large-scale writing assessment has largely had a technocentric orientation constrained by psychometric theory, but there is a trending shift "from product-oriented assessment to the assessment that focuses on the development of writing ability" (Yao and Yu 2019, 8). Texts produced by writers are not an absolute, final-end product but rather a snapshot into the writers' thinking process within a very constrained and often artificial rhetorical situation. A more effective assessment of writing would address authentic purposes for writing, evaluate multiple products written over time, and examine the writers' processes for developing the products.

Writing assessment researcher Kathleen Blake Yancey (1999, 484) summarizes three waves of writing assessment over the years: "During the first wave (1950–1970), writing assessment took the form of objective tests; during the second (1970–1986), it took the form of the holistically scored essay; and during the current wave, the third (1986–present), it has taken the form of portfolio assessment and of programmatic assessment." Yancey (1999) also discusses the desires of different stakeholders and the tension between reliability and validity. Objective tests serve as an indirect measure of writing, as they assume that measuring something related to writing (e.g., correct subject-verb agreement) is a valid substitute for measuring writing; however, this approach to assessment is more reliable for predicting later student performance in some areas than it is for serving as a valid construct of writing. Direct testing through holistic essay scoring is considered a valid way to assess writing, but it measures only a single written product—a snapshot of a writer's abilities, not an example of a writer's process. Portfolio assessment lends itself more easily to assessing the process, especially when the portfolio involves a reflective component; however, scoring can be time-consuming and costly, and it involves a negotiation among readers and teachers about what constitutes *good* writing, rather than a reliance on a psychometrically sound standard for writing measurement.

Because writing assessment wields considerable power in our society, both inside and outside the classroom, those who are involved in formal writing assessment must give careful consideration to these questions: a) "How shall we evaluate writing?" (Yancey 1999, 486); (b) "Which behavior should we examine?" (486); and c) "Whose needs does this writing assessment serve?" (498).

Liz Hamp-Lyons (2002, 13) predicts that the fourth generation of writing assessment "must be both humanistic and technological, drawing on advances both in computer applications and in our increasing understanding of writing assessment as a complex of processes in which multiple authors and readers are involved and revealed."

In line with Hamp-Lyons's prediction about the role of technology, there has been increasing focus on the use of artificial intelligence (AI) both to score writing for state summative assessments and to provide automated feedback for classroom formative writing assessments. While the use

of AI is a cost-effective approach that ensures perfect inter-rater reliability, it has limitations in classroom settings (Stevenson and Phakiti 2014; Wilson and Andrada 2016; Ranalli, Link, and Chukharev-Hudilainen 2017; Wilson and Roscoe 2020; Palermo and Wilson 2020; Huang and Wilson 2021). Automated writing evaluation (AWE) systems are more robust at focusing their feedback at the editing level, specifically the sentence-and-word level. Unlike humans, AWE systems must use proxy measures to evaluate deep-level features of writing like development and structure. No AWE systems (as of 2019) provide feedback on how well the writer addressed the specific task (Strobl et al. 2019). In addition to evaluation, AWE systems provide feedback, but the feedback can often be too vague and complex for students to decipher and apply, and there is limited evidence of independent transfer of skills. Any potential partnership with AWE systems must be carefully vetted.

To conclude, systemic change must be made in multiple educational spheres in order to improve student writing outcomes. These changes include revising expectations in state standards (The National Commission on Writing in America's Schools and Colleges 2003; Troia et al. 2015), investing in technology infrastructure, requiring teacher candidates to complete a writing-methods course, doubling the amount of time students spend writing in school, requiring students to write within and across all disciplines, and rethinking what we measure in writing and how best to assess it (The National Commission on Writing in America's Schools and Colleges 2003; Graham 2019).

References

Abdel Latif, Muhammad. 2021. "Remodeling Writers' Composing Processes: Implications for Writing Assessment." *Assessing Writing* 50 (October): 1–16. https://doi.org/10.1016/j.asw.2021.100547.

Ascenzi-Moreno, Laura, and Cecilia M. Espinosa. 2018. "Opening Up Spaces for Their Whole Selves: A Case Study Group's Exploration of Translanguaging Practices in Writing." *NYS TESOL Journal* 5, no. 1 (January): 10–29.

Bazerman, Charles. 2016. "What Do Sociocultural Studies of Writing Tell Us about Learning to Write?" *In Handbook of Writing Research*, 2nd ed., edited by Charles A. MacArthur, Steve Graham, and Jill Fitzgerald, 11–23. New York, NY: Guilford Press.

Beck, Sarah W., Lorena Llosa, and Tim Fredrick. 2013. "The Challenges of Writing Exposition: Lessons from a Study of ELL and Non-ELL High School Students." *Reading and Writing Quarterly* 29 (4): 358– 380. https://doi.org/10.1080/10573569.2013.758938.

Berninger, Virginia W., Katherine Vaughan, Robert D. Abbott, Kristin Begay, Kristina Byrd Coleman, Gerald Curtin, Jill Minich Hawkins, and Steve Graham. 2002. "Teaching Spelling and Composition Alone and Together: Implications for the Simple View of Writing." *Journal of Educational Psychology* 94 (2): 291–304. https://doi.org/10.1037/0022-0663.94.2.291.

Biber, Douglas, Tatiana Nekrasova, and Brad Horn. 2011. *The Effectiveness of Feedback for L1-English and L2-Writing Development: A Meta-Analysis*. ETS. https://doi.org/10.1002/j.2333-8504.2011.tb02241.x.

Bixby, Matt M. 2018. "Effective and Efficient Use of Math Writing Tasks." *Mathematics Teacher* 112, no. 2 (October): 143–146. https://doi.org/10.5951/mathteacher.112.2.0143.

Camping, April, Steve Graham, Clarence Ng, Angelique Aitken, John M. Wilson, and Jeanne Wdowin. 2020. "Writing Motivational Incentives of Middle School Emergent Bilingual Students." *Reading and Writing* 33, no. 9 (November): 2361–2390. https://doi.org/10.1007/s11145-020-10046-0.

Castelló, Montserrat, and Anna Iñesta. 2012. "Chapter 10 Texts as Artifacts-in-Activity: Developing Authorial Identity and Academic Voice in Writing Academic Research Papers." *In University Writing: Selves and Texts in Academic Societies*, edited by Montserrat Castelló and Christiane Donahue, 179–200. Vol. 24 of Studies in Writing, edited by Raquel Fidalgo Redondo and Thierry Olive. Bingley, UK: Emerald Group Publishing Limited.

Chapman, Marilyn L. 1999. "Situated, Social, Active: Rewriting Genre in the Elementary Classroom." *Written Communication* 16, no. 4 (October): 469–490. https://doi.org/10.1177/0741088399016004003.

DeVoss, Dànielle Nicole, Ellen Cushman, and Jeffrey T. Grabill. 2005. "Infrastructure and Composing: The When of New-Media Writing." *College Composition and Communication* 57, no. 1 (September): 14–44. http://www.jstor.org/stable/30037897.

DeVoss, Dànielle Nicole, Elyse Eidman-Aadahl, Troy Hicks, and National Writing Project (U.S.). 2010. *Because Digital Writing Matters: Improving Student Writing in Online and Multimedia Environments*. San Francisco: Jossey-Bass.

Durán, Leah. 2017. "Audience and Young Bilingual Writers: Building on Strengths." *Journal of Literacy Research* 49, no. 1 (March): 92–114. https://doi.org/10.1177/1086296X16683420.

Durán, Leah. 2020. "'Todas las poems que están creative': Language Ideologies, Writing and Bilingual Children." *Journal of Language, Identity and Education* 19 (6): 412–427. https://doi.org/10.1080/15348458.2020.1726754.

Feng, Luxi, Amanda Lindner, Xuejun Ryan Ji, and R. Malatesha Joshi. 2019. "The Roles of Handwriting and Keyboarding in Writing: A Meta-Analytic Review." *Reading and Writing* 32 (1): 33–63. https://doi.org/10.1007/s11145-017-9749-x.

Fitzgerald, Jill, and Timothy Shanahan. 2000. "Reading and Writing Relationships and Their Development." *Educational Psychologist* 35 (1): 39–50. https://doi.org/10.1207/S15326985EP3501_5.

Flower, Linda, and John R. Hayes. 1980. "The Cognition of Discovery: Defining a Rhetorical Problem." College Composition and Communication 31, no. 1 (February): 21–32. https://doi.org/10.2307/356630.

Flower, Linda, and John R. Hayes. 1981. "A Cognitive Process Theory of Writing." *College Composition and Communication* 32, no. 4 (December): 365–387. https://doi.org/10.2307/356600.

Freedman, Sarah Warshauer, Glynda A. Hull, Jennifer M. Higgs, and Kyle P. Booten. 2016. "Teaching Writing in a Digital and Global Age: Toward Access, Learning, and Development for All." In *Handbook of Research on Teaching*, 5th ed., edited by Drew H. Gitomer and Courtney A. Bell, 1389–1449. Washington, DC: American Educational Research Association. https://doi.org/10.3102/978-0-935302-48-6_23.

Galbraith, David, and Veerle M. Baaijen. 2018. "The Work of Writing: Raiding the Inarticulate." *Educational Psychologist* 53 (4): 238–257. https://doi.org/10.1080/00461520.2018.1505515.

Gillespie, Amy, and Steve Graham. 2014. "A Meta-Analysis of Writing Interventions for Students with Learning Disabilities." *Exceptional Children* 80 (4): 454–473. https://doi.org/10.1177/0014402914527238.

Goldberg, Amie, Michael Russell, and Abigail Cook. 2003. "The Effect of Computers on Student Writing: A Meta-Analysis of Studies from 1992 to 2002." *The Journal of Technology, Learning, and Assessment* 2, no. 1 (February): 1–52. https://ejournals.bc.edu/index.php/jtla/article/view/1661.

Goldschmidt, Mary. 2014. "Teaching Writing in the Disciplines: Student Perspectives on Learning Genre." *Teaching & Learning Inquiry: The ISSOTL Journal* 2 (2): 25–40. https://doi.org/10.2979/teachlearninqu.2.2.25.

Grabill, Jeffrey T., and Troy Hicks. 2005. "Multiliteracies Meet Methods: The Case for Digital Writing in English Education." *English Education* 37, no. 4 (July): 301–311. http://www.jstor.org/stable/40173204.

Graham, Steve. 2010. "Want to Improve Children's Writing? Don't Neglect Their Handwriting." *American Educator* 33, no. 4 (Winter): 20–40.

Graham, Steve. 2019. "Changing How Writing Is Taught." *Review of Research in Education* 43, no. 1 (March): 277–303. https://doi.org/10.3102/0091732X18821125.

Graham, S., A. Bollinger, C. Booth Olson, C. D'Aoust, C. MacArthur, D. McCutchen, and N. Olinghouse. 2012. *Teaching Elementary School Students to Be Effective Writers: A Practice Guide* (NCEE 2012-4058). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from https://ies.ed.gov/ncee/wwc/Docs/practiceguide/writing_pg_062612.pdf.

Graham, Steve, and Karen R. Harris. 2016. "A Path to Better Writing: Evidence-Based Practices in the Classroom." *The Reading Teacher* 69, no. 4 (January/February): 359–365. https://doi.org/10.1002/trtr.1432.

Graham, Steve, and Michael Hebert. 2010. *Writing to Read: Evidence for How Writing Can Improve Reading. A Carnegie Corporation Time to Act Report*. Washington, DC: Alliance for Excellent Education.

Graham, Steve, Sharlene A. Kiuhara, and Meade MacKay. 2020. "The Effects of Writing on Learning in Science, Social Studies, and Mathematics: A Meta-Analysis." *Review of Educational Research* 90, no. 2 (April): 179–226. https://doi.org/10.3102/0034654320914744.

Graham, Steve, and Dolores Perin. 2007. *Writing Next: Effective Strategies to Improve Writing of Adolescents in Middle and High Schools—A Report to Carnegie Corporation of New York*. Washington, DC: Alliance for Excellent Education.

Haines, Shana J. 2015. "Picturing Words: Using Photography and Fiction to Enliven Writing for ELL Students." *Schools: Studies in Education* 12, no. 1 (Spring): 9–32. https://doi.org/10.1086/680692.

Hamp-Lyons, L. 2001. "Fourth Generation Writing Assessment." In *On Second Language Writing*, edited by Tony Silva and Paul Kei Matsuda, 117–128. New York: Routledge. https://doi.org/10.4324/9781410600899-14.

Hamp-Lyons, Liz. 2002. "The Scope of Writing Assessment." *Assessing Writing* 8, no. 1 (October): 5–16. https://doi.org/10.1016/S1075-2935(02)00029-6.

Hart-Davidson, Bill, Ellen Cushman, Jeff Grabill, Dànielle Nicole DeVoss, and Jim Porter. n.d. "Why Teach Digital Writing?" The WIDE Research Center Collective. Accessed December 13, 2021. https://kairos.technorhetoric.net/10.1/coverweb/wide/index.html.

Hayes, John R. 1996. “A New Framework for Understanding Cognition and Affect in Writing.” In *The Science of Writing: Theories, Methods, Individual Differences, and Applications*, edited by C. Michael Levy and Sarah Ransdell, 1–27. Mahwah, NJ: Lawrence Erbaum Associates, Publishers.

Hebert, Michael, Devin M. Kearns, Joanne Baker Hayes, Pamela Bazis, and Samantha Cooper. 2018. “Why Children with Dyslexia Struggle with Writing and How to Help Them.” *Language, Speech, and Hearing Services in Schools* 49 (October): 843–863. https://doi.org/10.1044/2018_LSHSS-DYSLC-18-0024.

Heller, Monica, ed. 2007. *Bilingualism: A Social Approach*. New York, NY: Palgrave Macmillan.

Huang, Yue, and Joshua Wilson. 2021. “Using Automated Feedback to Develop Writing Proficiency.” *Computers and Composition* 62 (December). https://doi.org/10.1016/j.compcom.2021.102675.

Ito, Mizuko, Heather Horst, Matteo Bittanti, danah boyd, Becky Herr-Stephenson, Patricia G. Lange, C. J. Pascoe, and Laura Robinson. 2008. *Living and Learning with New Media: Summary of Findings from the Digital Youth Project*. The John D. and Catherine T. MacArthur Foundation Reports on Digital Media and Learning.

James, Karin H., and Laura Engelhardt. 2012. “The Effects of Handwriting Experience on Functional Brain Development in Pre-Literate Children.” *Trends in Neuroscience and Education* 1, no. 1 (December): 32– 42. https://doi.org/10.1016/j.tine.2012.08.001.

Jenkins, Henry. 2006. *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century*. The John D. and Catherine T. MacArthur Foundation Reports on Digital Media and Learning.

Kim, Young-Suk Grace, Brandy Gatlin, Stephanie Al Otaiba, and Jeanne Wanzek. 2018. “Theorization and an Empirical Investigation of the Component-Based and Developmental Text Writing Fluency Construct.” In “Special Series: Critical Issues in the Understanding of Young Elementary School Students At-Risk for Problems in Written Expression,” edited by David L. Coker and Young-Suk Grace Kim, special issue, *Journal of Learning Disabilities* 51, no. 4 (July/August): 320–335. https://doi.org/10.1177/0022219417712016.

Lowther, Deborah, Steven M. Ross, and Gary M. Morrison. 2003. “When Each One Has One: The Influences on Teaching Strategies and Student Achievement of Using Laptops in the Classroom.” *Educational Technology Research and Development* 51, no. 3 (September): 23–44. https://doi.org/10.1007/BF02504551.

McCutchen, Deborah. 1996. “A Capacity Theory of Writing: Working Memory in Composition.” *Educational Psychology Review* 8, no. 3 (September): 299–325. https://doi.org/10.1007/bf01464076.

Merchant, Guy. 2007. “Writing the Future in the Digital Age.” *Literacy* 41, no. 3 (November): 118–128. https://doi.org/10.1111/j.1467-9345.2007.00469.x.

Morphy, Paul, and Steve Graham. 2012. “Word Processing Programs and Weaker Writers/Readers: A Meta-Analysis of Research Findings.” *Reading and Writing* 25, no. 3 (March): 641–678. https://doi.org/10.1007/s11145-010-9292-5.

Mueller, Pam A., and Daniel M. Oppenheimer. 2014. “The Pen Is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking.” *Psychological Science* 25, no. 6 (June): 1159–1168. https://doi.org/10.1177/0956797614524581.

NASDCTE/NCTEF (National Association of State Directors of Career Technical Education/National Career Technical Education Foundation). 2012. “The Career Ready Practices.” *Common Career Technical Core*. https://cte.careertech.org/sites/default/files/CareerReadyPractices-FINAL.pdf.

National Commission on Writing for America’s Families, Schools, and Colleges, The. 2004. *Writing: A Ticket to Work . . . Or a Ticket Out*. College Entrance Examination Board.

National Commission on Writing in America’s Schools and Colleges, The. 2003. The Neglected “R”: *The Need for a Writing Revolution*. College Entrance Examination Board.

National Research Council, and NGSS Lead States. 2013. “Appendix F: Science and Engineering Practices in NGSS.” *Next Generation Science Standards: For States, By States*. Washington, DC: The National Academies Press. https://doi.org/10.17226/18290.

NCSS (National Council for the Social Studies). 2013. *The College, Career, and Civic Life (C3) Framework for Social Studies State Standards: Guidance for Enhancing the Rigor of K–12 Civics, Economics, Geography, and History*. Silver Spring, MS: National Council for the Social Studies.

NCTE (National Council of Teachers of English). 2008. *Writing Now: A Policy Research Brief*. National Council of Teachers of English. https://cdn.ncte.org/nctefiles/resources/policyresearch/wrtgresearchbrief.pdf.

NCTE (National Council of Teachers of English). 2019. "Definition of Literacy in a Digital Age." National Council of Teachers of English. https://ncte.org/statement/nctes-definition-literacy-digital-age/.

NGA Center for Best Practices and CCSSO (National Governors Association Center for Best Practices and Council of Chief State School Officers). 2010a. *Common Core State Standards: English Language Arts*. Washington, D.C.

NGA Center for Best Practices and CCSSO (National Governors Association Center for Best Practices and Council of Chief State School Officers). 2010b. "Standards for Mathematical Practice." *Common Core State Standards: Mathematics*. Washington D.C.

NSFLEP (National Standards in Foreign Language Education Project). 2015. *World-Readiness Standards for Learning Languages*. 4th ed. Alexandria, VA: National Standards in Foreign Language Education Project.

OET (Office of Educational Technology). 2017. *Reimagining the Role of Technology in Education: 2017 National Education Technology Plan Update*. U.S. Department of Education. Retrieved from https://tech.ed.gov/files/2017/01/NETP17.pdf.

Palermo, Corey, and Joshua Wilson. 2020. "Implementing Automated Writing Evaluation in Different Instructional Contexts: A Mixed-Methods Study." *Journal of Writing Research* 12, no. 1 (March): 63–108. https://doi.org/10.17239/jowr-2020.12.01.04.

Purcell-Gates, Victoria, Nell K. Duke, and Joseph A. Martineau. 2007. "Learning to Read and Write Genre-Specific Text: Roles of Authentic Experience and Explicit Teaching." *Reading Research Quarterly* 42, no. 1 (January–March): 8–45. https://doi.org/10.1598/RRQ.42.1.1.

Ranalli, Jim, Stephanie Link, and Evgeny Chukharev-Hudilainen. 2017. "Automated Writing Evaluation for Formative Assessment of Second Language Writing: Investigating the Accuracy and Usefulness of Feedback as Part of Argument-Based Validation." *Educational Psychology* 37 (1): 8–25. https://doi.org/10.1080/01443410.2015.1136407.

Redmond, Theresa, Evelien Schilder, and Jennifer Luetkemeyer. 2020. "It's Not What You Think, but How You Think: Cultivating Inquiry in the Digital Age." *Media Education Research Journal* 9 (2): 33–52.

Santangelo, Tanya, and Steve Graham. 2016. "A Comprehensive Meta-Analysis of Handwriting Instruction." *Educational Psychology Review* 28 (2): 225–265. https://doi.org/10.1007/s10648-015-9335-1.

Schinske, Jeffrey, and Kimberly Tanner. 2014. "Teaching More by Grading Less (or Differently)." *CBE—Life Sciences Education* 13 (2): 159–166. https://doi.org/10.1187/cbe.cbe-14-03-0054.

Selber, Stuart A. 2004. *Multiliteracies for a Digital Age*. Carbondale: Southern Illinois University Press.

Shute, Valerie J. 2008. "Focus on Formative Feedback." *Review of Educational Research* 78, no. 1 (March): 153–189. https://doi.org/10.3102/0034654307313795.

Soltero-González, Lucinda, Kathy Escamilla, and Susan Hopewell. 2012. "Changing Teachers' Perceptions about the Writing Abilities of Emerging Bilingual Students: Towards a Holistic Bilingual Perspective on Writing Assessment." *International Journal of Bilingual Education and Bilingualism* 15 (1): 71–94. https://doi.org/10.1080/13670050.2011.604712.

Stevenson, Marie, and Aek Phakiti. 2014. "The Effects of Computer-Generated Feedback on the Quality of Writing." *Assessing Writing* 19 (January): 51–65. https://doi.org/10.1016/j.asw.2013.11.007.

Strobl, Carola, Emilie Ailhaud, Kalliopi Benetos, Ann Devitt, Otto Kruse, Antje Proske, Christian Rapp. 2019. "Digital Support for Academic Writing: A Review of Technologies and Pedagogies." *Computers & Education* 131 (April): 33–48. https://doi.org/10.1016/j.compedu.2018.12.005.

Troia, Gary A., Natalie G. Olinghouse, Ya Mo, Lisa Hawkins, Rachel A. Kopke, Angela Chen, Joshua Wilson, and Kelly A. Stewart. 2015. "Academic Standards for Writing." *The Elementary School Journal* 116, no. 2 (December): 291–321. https://doi.org/10.1086/683984.

Velasco, Patricia, and Ofelia García. 2014. "Translanguaging and the Writing of Bilingual Learners." *Bilingual Research* Journal 37 (1): 6–23. https://doi.org/10.1080/15235882.2014.893270.

Vogel, Sara, and Ofelia García. 2017. "Translanguaging." *Oxford Research Encyclopedia of Education*. Oxford University Press. https://doi.org/10.1093/acrefore/9780190264093.013.181.

White, Edward. 2019. "(Re)Visiting Twenty-Five Years of Writing Assessment." *Assessing Writing* 42 (October): 1–6. https://doi.org/10.1016/j.asw.2019.100419.

Whitney, Anne Elrod. 2021. *Growing Writers: Principles for High School Writers and Their Teachers*. Champaign, IL: National Council of Teachers of English.

Williams, Cheri, and Elizabeth Lowrance-Faulhaber. 2018. "Writing in Young Bilingual Children: Review of Research." *Journal of Second Language Writing* 42 (November): 58–69. https://doi.org/10.1016/j.jslw.2018.10.012.

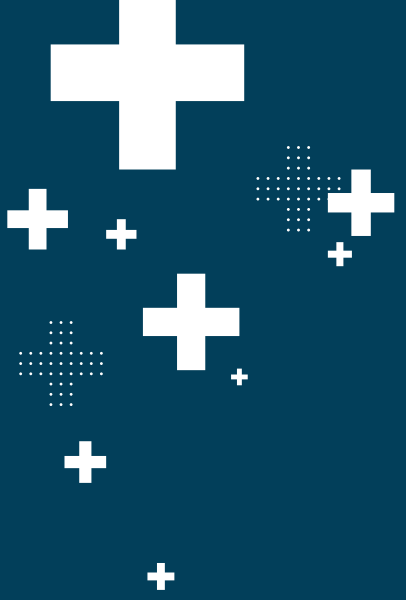
Wilson, Joshua, and Gilbert N. Andrada. 2016. "Using Automated Feedback to Improve Writing Quality: Opportunities and Challenges." In *Handbook of Research on Technology Tools for Real-World Skill Development*, edited by Yigal Rosen, Steve Ferrara, and Maryam Mosharraf, 678–703. Hershey, PA: Information Science Reference (an imprint of IGI Global). https://doi.org/10.4018/978-1-4666-9441-5.ch026.

Wilson, Joshua, and Rod D. Roscoe. 2020. "Automated Writing Evaluation and Feedback: Multiple Metrics of Efficacy." *Journal of Educational Computing Research* 58, no. 1 (March): 87–125. https://doi.org/10.1177/0735633119830764.

Yao, Zheng, and Shulin Yu. 2019. "What Has Been Assessed in Writing and How? Empirical Evidence from Assessing Writing (2000–2018)." *Assessing Writing* 42 (October): 1–11. https://doi.org/10.1016/j.asw.2019.100421.

Yancey, Kathleen Blake. 1999. "Looking Back as We Look Forward: Historicizing Writing Assessment." *College Composition and Communication* 50, no. 3 (February): 483–503. https://doi.org/10.2307/358862.

Zimmerman, Barry J., and Rafael Risemberg. 1997. "Becoming a Self-Regulated Writer: A Social Cognitive Perspective." *Contemporary Educational Psychology* 22, no. 1 (January): 73–101. https://doi.org/10.1006/ceps.1997.0919.



SEP22 | KAP9822