ACADEMIC STANDARDS FOR WRITING

To What Degree Do Standards Signpost Evidence-Based Instructional Practices and Interventions?

ABSTRACT

Though writing plays an important role in academic, social, and economic success, typical writing instruction generally does not reflect evidence-based practices (EBPs). One potential reason for this is limited signposting of EBPs in standards. We analyzed the content of writing standards from a representative sample of states and the Common Core State Standards (CCSS) for writing and language to determine to what degree EBPs were signposted, variability of this signposting, and the overlap of practices signposted in states' standards and the CCSS. We found a few practices signposted fairly consistently (e.g., isolated components of writing process instruction) and others rarely so (e.g., use of text models), as well as great variability across standards, with some covering almost half of the EBPs and others far fewer. Only a few states' writing standards overlapped considerably with the CCSS. We discuss the implications of these findings for teacher professional development and for evaluating standards.

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ACADEMIC writing is an essential part of the K–12 experience, as students are expected to compose texts to demonstrate, support, and deepen their knowledge and understanding of themselves, their relationships, and their world (Bangert-Drowns, Hurley, & Wilkinson, 2004; Graham, 2006; Graham & Perin, 2007). Additionally, writing appears to be crucial for students' success

on high-stakes achievement tests that have become a linchpin in school reform efforts in the United States, which have been motivated in part by global competitiveness (e.g., Jenkins, Johnson, & Hileman, 2004; Reeves, 2000). Likewise, there is a growing trend to use writing proficiency as one determiner of graduation eligibility and in making decisions regarding grade retention and promotion (Zabala, Minnici, McMurrer, & Briggs, 2008).

In postsecondary education, universities use writing to evaluate applicants' qualifications, and proficient writing is expected for completion of a college degree (National Commission on Writing for America's Families, Schools, and Colleges [NCWAFSC], 2003, 2004, 2005). Once students leave an educational setting, writing serves as a gateway for employment and promotion (NCWAFSC, 2004). It is logical to conclude that, as the United States further transitions to an economy based in large part on information, technology, and services, the demands for proficient writing in the workplace will continue to escalate (Bazerman, 2006). Of course, writing also serves many purposes in today's civic life. In a nationally representative sample of 700 adolescents, 85% reported using some form of electronic personal communication (e.g., text messages, social network posts, blogs, e-mails) for daily social interaction, self-exploration and expression, and reflection on current events (NCWAFSC, 2008). Writing also may reduce psychological and physical distress and, consequently, health-care utilization (Harris, 2006). Together, these facts make the case for the central role of writing in society.

Despite its importance for success as a lifelong learner and productive citizen, a large segment of the population struggles with writing: nearly three-quarters of the nation's children and youth are not able to produce texts that are judged to fully meet grade-level expectations (National Center for Education Statistics, 2012; Persky, Daane, & Jin, 2003; Salahu-Din, Persky, & Miller, 2008). Likewise, nearly a third of high school graduates are not ready for college-level composition courses (ACT, 2007) and three-quarters of college faculty and employers rate their students' and employees' writing, respectively, as only fair or poor (NCWAFSC, 2004). One potential reason why so many individuals struggle with writing is the infrequent deployment of evidence-based instructional practices and interventions (EBPs) in many classrooms (e.g., Burns & Ysseldyke, 2009). EBPs are a prima facie mechanism for boosting student achievement because they include methods, programs, or procedures that integrate the best available research evidence with practice-based professional expertise in the context of student and family characteristics, values, and preferences (see American Psychological Association, 2005; Sackett, Straus, Richardson, Rosenberg, & Haynes, 2000). Of course, the research evidence supporting particular EBPs is often incomplete in terms of representing the full complement of student population characteristics and the entire range of educational contexts in which EBPs might be deployed. The use of an EBP derived from research, consequently, may not be the only or even the best course of action for every student in every circumstance (this is why research evidence must be integrated with other knowledge to teach effectively). Nevertheless, professional practice is founded upon a shared body of specialized knowledge, and EBPs comprise one sector of that body of knowledge in education.

With respect to the implementation of EBPs for writing, self-report data from a national sample of elementary teachers show that instruction in planning, revising, and editing strategies for composing texts occurs less than 10 minutes a

day (Cutler & Graham, 2008). In secondary classrooms (see Applebee & Langer, 2006, 2011; Kiuhara, Graham, & Hawken, 2009), teachers report frequently giving writing assignments that require little analysis, interpretation, or actual composing (i.e., abbreviated responses, worksheets) and devoting less than 3 hours per marking period to instruction related to writing strategies (and even less time to other aspects of instruction). A large percentage of primary grade teachers report making few or no adaptations for struggling writers (Graham, Harris, Fink-Chorzempa, & MacArthur, 2003), and high school teachers report infrequently adapting their teaching for lower-performing writers (Kiuhara et al., 2009). Data from classroom observation studies are generally discouraging as well, though there are certainly some excellent writing teachers who adopt many EBPs (e.g., Foorman & Schatschneider, 2003; Moats, Foorman, & Taylor, 2006; Rowan, Camburn, & Correnti, 2004).

Why are EBPs for writing not more widespread in U.S. classrooms? The lack of clear, coherent, and consistent research-based standards to help guide teachers' instructional efforts may be a culprit (Duke, 2001; Dutro & Valencia, 2004; Spillane, 1998; Troia & Maddox, 2004). Academic standards are designed, ideally, to inform curriculum development, guide instruction and assessment, provide clear goals for student achievement, and raise performance expectations (e.g., Stecher, Hamilton, & Gonzalez, 2003). There is a limited body of scholarship that indicates improvements to states' writing standards (and assessments) can positively influence classroom instruction. For example, in response to changes in their state's writing standards and high-stakes tests, teachers reportedly increased instructional emphasis on writing for specific audiences and purposes, at least those valued by the state's tests (Hillocks, 2002; Stecher, Barron, Chun, & Ross, 2000), writing across the curriculum (Applebee & Langer, 2011; Taylor, Shepard, Kinner, & Rosenthal, 2002) and the time allocated to daily writing (Stecher et al., 2000). Nevertheless, the impact of these instructional changes on actual student writing performance was found to be negligible (Stecher et al., 2000).

There are several plausible reasons why improvements to learning standards in the domain of writing would not translate to better student writing outcomes. First, assessments used for educational accountability, or high-stakes tests, which by their very nature only sample a portion of learning standards (often those that are readily measurable), may counteract benefits of enhanced standards by narrowing the writing curriculum (e.g., Applebee & Langer, 2011; Hamilton, 2004; Hillocks, 2002; Stecher, 2002). Second, research (e.g., Kurz, Elliott, Wehby, & Smithson, 2010) suggests that the intended curriculum (prescribed by standards) often does not correspond to the enacted curriculum (i.e., what is actually taught, when it is taught, and how) or the learned curriculum (i.e., what knowledge, skills, abilities, and dispositions students attain). Moreover, many argue that standards should not prescribe but simply guide teaching anyway (Myers, 1994). Third and key to the study reported here, standards may or may not emphasize particular instructional practices that positively impact student writing. Learning standards that do not support and shape the deployment of EBPs in classrooms may hinder the goal of raising student achievement because teachers are not directed toward these practices through the standards, and thus must rely on external sources for pedagogical knowledge. Unfortunately, no studies have evaluated this aspect of standards.

In this study, we describe the degree to which writing standards, including the newly adopted Common Core State Standards for writing and language (CCSS-WL), "signpost" EBPs for writing. We use the term signpost to reflect the interconnectedness of the language used in standards and the definitions of specific instructional practices that presumably could be employed to help students attain standards. As such, signposting implies a bidirectional relationship between the content of standards and classroom instructional practices—standards help shape classroom instruction and specific instructional practices can help students meet the standards. We also examine the extent to which EBPs signposted in state standards overlap with the practices signposted in the CCSS-WL, as substantial mismatch implies that Common Core adopting states will have much work ahead to develop teachers' capacity to enact different practices not signposted in previous standards. Of course, academic standards are designed to explicate the "what" of instruction, not necessarily the "how." Nevertheless, standards can and often do signpost for educators particular ways in which the standards can be attained via instructional practices. For example, a focus on writing process in a set of standards implies that educators must have students engage in the processes of planning, drafting, revising, editing, and publishing texts and consequently use a process-based approach to teach writing in at least some circumstances. Likewise, a call to provide guidance, support, and feedback in early elementary standards but not standards for later grades does, in fact, specify instructional action—in this case scaffolding.

We had three research questions in this descriptive study: (1) What EBPs are signposted most and least in a purposive sample of standards, including the CCSS-WL? (2) What variability exists in EBP signposting across sets of standards and across grades? (3) To what degree do EBPs signposted in states' standards align with those signposted in the CCSS-WL? These are salient research questions if we assume standards affect classroom instructional practices and that certain practices are more likely to help students attain specific standards. If specific EBPs are signposted more often than others, this may communicate to teachers that greater value is accorded these practices and encourage them to use them and not others. Differences in EBP signposting across sets of standards and even across grades might be linked to variations in instructional quality and coherence and student achievement. Obviously we are making an assumption that may or may not be valid: EBPs that are signposted are more likely to be enacted. This assumption requires empirical exploration and is not the goal of this study. Because we examined the presence/absence of EBPs in standards, the first step in our research (described below) was to identify what writing instructional practices are, in fact, evidence based. We relied on published meta-analyses of writing instruction to accomplish this goal because meta-analysis affords the most reliable mechanism for identifying the efficacy and/or effectiveness of a particular practice.

Method

Evidence-Based Practices

We conducted a thorough review of the PsychINFO and ERIC databases for quantitative meta-analyses of studies examining writing instruction and assessment using

the title search terms *writing, written, text, composition, composing, spelling, handwriting, effect, synthesis*, and *meta-analysis*. We also contacted the author most frequently associated with such meta-analyses, Dr. Steve Graham, to identify any in-press or other published meta-analyses. The search yielded 21 relevant citations from journal articles, book chapters, and dissertations (noted with an asterisk in the references). Of these, five reports of meta-analysis were excluded because they did not examine the impact of writing instruction or assessment practices on writing outcomes (Frisina, Borod, & Lepore, 2004; Graham & Hebert, 2011; Harris, 2006; Hebert, Simpson, & Graham, 2013; Smyth, 1998). Thus, we examined 16 meta-analyses to extract a list of EBPs for writing.

Prior to extracting EBPs from the meta-analyses, each report of meta-analysis was evaluated for methodological rigor using an adapted version (available from the first author) of the Meta-Analysis Reporting Standards (MARS) of the American Psychological Association (2008). We adapted the MARS in two ways: (1) desirable but nonessential standards for discerning methodological rigor were eliminated (e.g., title and abstract features), and (2) a three-point rating scale (0 = absent, 1 = partially present, 2 = fully present) was added to permit determination of the degree to which each reporting standard was met. The scale included 38 standards, yielding a total score between 0 and 76 for each meta-analysis. The standards evaluated the following key features of meta-analyses: (*a*) empirical and theoretical grounding and analytic rationale, (*b*) primary study inclusion and exclusion criteria, (*c*) moderator and mediator analyses, (*d*) search strategies, (*e*) primary study coding procedures, (*f*) data reduction and statistical modeling, (*g*) results reporting, and (*h*) discussion of generalizability, implications, and limitations. Three trained graduate student raters (the third, fourth, and fifth authors) independently scored each of the meta-analyses for methodological rigor. The two-way mixed-effects intraclass correlation for mean ratings was .98. Given the high degree of scoring interrater reliability (IRR), we used the mean score assigned for methodological rigor. We established a threshold score of 38 to consider a meta-analysis minimally suitable for our purposes; consequently, two meta-analyses (Graham & Harris, 2003; Schramm, 1991) were considered no further due to low scores.

Provided in Table 1 are (*a*) the citation for each meta-analysis from which we extracted EBPs, (*b*) the mean score for methodological rigor using the adapted MARS, (*c*) the mean effect sizes for writing-related outcomes associated with distinct practices reported in each meta-analysis, (*d*) the grades in which the primary research associated with each practice was conducted, and (*e*) the definition we adopted for each practice. Definitions were based on those provided in the meta-analyses and in source studies, though we did reclassify or combine some practices for the sake of parsimony (e.g., peer vs. adult feedback in Graham, McKeown, Kiuhara, & Harris, 2012; prewriting activities vs. planning and drafting instruction in Rogers & Graham, 2008). Additionally, some practices reported in the meta-analyses were not included in Table 1 because they did not relate to standards in any obvious way (e.g., free writing and individualized tutorials/programmed materials in Hillocks, 1984; teacher reinforcement in Rogers & Graham, 2008) or demonstrated negative or negligible effects on writing outcomes (e.g., traditional grammar instruction in Graham & Perin, 2007 and Hillocks, 1984).

Following review of these meta-analyses, we developed a list of EBPs to search for within standards based on a content coding framework we previously developed for

Table 1. Details of Meta-analyses Used to Derive Evidence-Based Practices

Citation	Grades Studied	Intervention	Definition	Outcome	Mean Effect Size [a]	Mean Adapted MARS Score
Atkinson (1993)	3, 12, college	Process writing instruction	Instruction that involves (1) writing for real/authentic/ multiple purposes and audiences (e.g., other than teacher); (2) engaging in cycles of planning, translating, and reviewing; AND (3) personal responsibility and ownership of writing projects (e.g., student choice and student-directed decision making).	Writing quality	.52	63.00
	10–college	Inquiry instruction	Teach students to develop content for writing by analyzing immediate and concrete data derived from investigations/experimentation, textual/source analysis, or information provided a priori.	Writing quality	.45	
	K, 1, 6–8, 10–college	Use of word processor	Students use a computer application as a primary tool for the production (including composition, editing, formatting, and possibly printing) of any sort of printable material.	Writing quality	.32	
Bangert-Drowns (1993)	Elementary–college	Use of word processor		Writing quality	.27	48.33
				Text length	.52	
				Motivation	.12	
				Adherence to conventions	.16	
				Frequency of revision	.18	
Bangert-Drowns, Hurley, & Wilkinson (2004)	Elementary–college	Writing to learn	Writing is used as a mechanism for learning content area or topical information and the writing process and features parallel learning processes and features in that they are active, personal, and constructive and refined by feedback.	Academic achievement	.17	61.67
Gersten & Baker (2001)	1–9	Comprehensive writing program	A process-based approach plus strategy instruction, skill instruction, and/or text structure instruction (and may include technology applications).	Writing quality	.81	51.00
				Metacognitive effect	.64	
				Motivation	.40	

Table 1. (*Continued*)

Citation	Grades Studied	Intervention	Definition	Outcome	Mean Effect Size [a]	Mean Adapted MARS Score
Goldberg, Russell, & Cook (2003)	1–12	Use of word processor		Writing quality	.41	67.00
				Writing length	.50	
Graham (2006)	2–8, 10	Strategy instruction	Instruction in which students are explicitly and systematically taught (through modeling and guided practice with feedback) one or more strategies for planning, drafting, revising, and/or editing text with the goal of independent strategy usage; strategies invoke a series of steps to solve a problem.	Writing quality	1.16 (unweighted) PND 90	54.67
				Text length	1.10 (unweighted) PND 88	
				Genre elements	1.88 (unweighted) PND 92	
				Frequency of revision	.90 (unweighted) PND 87	
				Adherence to conventions	.30 (unweighted)	
Graham, Harris, & Hebert (2011)	4, 8, 10, 12, college	Use of word processor		Writing quality	.48	69.00
	8, 12, college	Decreasing spelling errors	The use of varied means to identify and correct spelling errors in students' written work and understanding that misspelled words influence readers' judgments about the message and the person who wrote it.	Writing quality	.38	
	7, 12, college	Decreasing grammar errors	The use of varied means to identify and correct grammar errors in students' written work and understanding how grammar errors influence the evaluation of writing.	Writing quality	.56	

Table 1. (*Continued*)

Citation	Grades Studied	Intervention	Definition	Outcome	Mean Effect Size [a]	Mean Adapted MARS Score
	6, 8, 11–college	Transcription skills instruction	Focus on process of teaching students spelling, handwriting, and keyboarding (typing) skills to improve quality of writing.	Writing quality	.75	
Graham, McKeown, Kiuhara, & Harris (2012)	1–6	Process writing instruction		Writing quality	.40	73.00
	1–6	Comprehensive writing program		Writing quality	.55	
	2–6	Strategy instruction		Writing quality	1.02	
	2–6	Self-regulation & metacognitive reflection	Student regulates quality and productivity of writing or content learning through monitoring, reflection, and evaluating his or her behaviors and performance through tracking.	Writing quality	.50	
	3–6	Creativity/imagery instruction	Teach students to use visual images or other means to enhance creativity in writing.	Writing quality	.70	
	2–6	Text structure instruction	Teach students how different types of texts are structured and formed.	Writing quality	.59	
	1–6	Use of word processor		Writing quality	.47	
	2–6	Teacher/peer feedback	Verbal or written information, including praise, in response to an author's work or a group's efforts at any point in the writing process received from peers and/or adults.	Writing quality	.59	
	2–6	Peer collaboration	Students cooperatively work with their peers to plan, draft, revise, and/or edit their compositions.	Writing quality	.89	
	1–3	Transcription skills instruction		Writing quality	.55	
	2–6	Prewriting activities	Activities (e.g., using graphic organizers or brainstorming ideas or strategies) that are designed to help students gather, generate, and/or organize ideas prior to writing and/or write a first draft that later will be reworked.	Writing quality	.54	

Table 1. (*Continued*)

Citation	Grades Studied	Intervention	Definition	Outcome	Mean Effect Size [a]	Mean Adapted MARS Score
	4–6	Setting Product Goals	Teachers or students set observable, specific, and individual goals for what students are to accomplish in their writing such as how much students should write; the focus is on the written product and not the process.	Writing quality	.76	
	2–6	Providing extra writing time	Duration and/or frequency of sustained student writing are increased (e.g., write frequently).	Writing quality	.30	
Graham & Perin (2007a)	4–10	Strategy instruction		Writing quality	.82	74.67
	4–12	Process writing instruction		Writing quality	.32	
	4–8	Self-regulation & metacognitive reflection		Writing quality	1.14	
	5–6, 8, 10–12	Summarization instruction	Teach students how to summarize text through explicit and systematic instruction. Instruction can include strategies for summarizing text or activities designed to improve students' text summarization skills. Summary writing must be the focus.	Writing quality	.82	
	4–6, 8–12	Peer collaboration		Writing quality	.75	
	4–8	Setting product goals		Writing quality	.70	
	4–12	Use of word processor		Writing quality	.55	
	4–7, 9	Sentence combining instruction	Involves teaching students to construct more complex and sophisticated sentences through exercises in which two or more basic sentences are combined into a single sentence.	Writing quality	.50	
	7–9, 11–12	Inquiry Instruction		Writing Quality	.32	
	4–6, 9	Prewriting Activities		Writing Quality	.32	
	4, 6, 8–9, 12	Use of Text Models	Students read and analyze examples of one or more texts in order to recognize and emulate the patterns or forms in these examples in their own writing.	Writing Quality	.25	

Table 1. (*Continued*)

Citation	Grades Studied	Intervention	Definition	Outcome	Mean Effect Size [a]	Mean Adapted MARS Score
Graham & Sandmel (2011)	1–12	Process writing instruction		Writing quality	.34	71.67
Hillocks (1984)	Elementary–college	Process writing instruction		Writing quality	.18	56.67
	Elementary–college	Inquiry instruction		Writing quality	.56	
	Elementary–college	Sentence combining instruction		Writing quality	.35	
	Elementary–college	Use of text models		Writing quality	.22	
	Elementary–college	Use of rubrics	Set of criteria embodied in a scale or set of questions for scoring writing as part of instruction in order to engage students in applying the criteria and formulating possible revisions or ideas for revisions.	Writing quality	.36	
Morphy & Graham (2012)	2–11	Use of assistive technology	Students use computers that are packaged with other software or hardware that supports the writer. Supports include spelling and grammar checkers, software for formatting text, speech synthesis (typed text is converted to speech), speech recognition (writers' speech is converted to typed text), planning and outlining software, software for prompting students while writing, as well as software that provides feedback on specific aspects of the written text.	Writing quality	.52	71.67
				Text length	.48	
				Organization	.66	
				Adherence to conventions	.61	
				Motivation	1.42	
Rogers & Graham (2008)	2–8, 12	Prewriting activities		Writing quality	PND 74	68.67
				Genre elements	PND 96	
	2–5, 8–12	Setting product goals		Text length	PND 79	
	1, 4–5	Use of word processor		Text length	PND 70	

Table 1. (*Continued*)

Citation	Grades Studied	Intervention	Definition	Outcome	Mean Effect Size[a]	Mean Adapted MARS Score
	4, 8–12	Teaching editing	Strategies that involve using checking routines (e.g., read-aloud to locate and correct errors) or other means by which to correct errors in written work, including usage, capitalization, punctuation, and spelling mistakes.	Decrease errors	PND 84	
	6–8, 10–12	Sentence combining instruction		Increase complete sentences	PND 86	
	8–9	Paragraph structure instruction	Teaching ways to organize information in paragraphs.	Paragraph schematic structure	PND 97	
	2–3, 5–7	Self-regulation & metacognitive reflection		Text length	PND 51	
Torgerson & Elbourne (2002)	1–6	Use of assistive technology		Spelling	.37	61.67

[a] Effect sizes reported are either Cohen's *d* (weighted unless noted otherwise) derived from experimental or quasi-experimental research studies or percentage of nonoverlapping data points (PND) derived from single-case experimental research studies.

examining writing standards and assessments (Troia et al., submitted), which is described below. Thus, the EBPs were linked with existing standard content codes and, in some cases, additional key words or phrases required by the definition of the EBP. For instance, the EBP of teacher and/or peer feedback was signposted by a content code of *feedback* (verbal or written information in response to an author's work at any point in the writing process received from peers and/or adults). In contrast, the EBP of sentence-combining instruction was signposted by the presence of the content codes associated with *sentence fluency* (the variety, appropriateness, and use of sentences in the text), *general grammar* (a general reference to the structure of language at the word and/or sentence levels), or *specific grammar* (the intentional application of specific morphosyntactic elements or rules, such as specific parts of speech, sentence fragments and run-ons, verb tense and agreement, phrase and clause structures, etc.) plus the key word "combining" or "rearrange." The list of 28 EBPs and the required content codes and key words/phrases are provided in Table 2 (note that two EBP categories were further subdivided based on our content coding and thus there are 28 EBPs in total—teaching prewriting/planning/drafting was divided into three subcategories and transcription skills instruction also was divided into three subcategories). Because EBPs are directly linked to the linguistic content of standards (which was organized by categorical strands), they are listed in the order they correspond to the content coding strands (e.g., the first five EBPs listed relate to the standards coding content strand of writing processes).

As can be seen in this table, many of the coding decisions for EBPs were based on what might be best described as logic statements. For instance, the definition for process writing instruction includes three essential features: (1) writing for real/authentic/multiple purposes and audiences; (2) engaging in cycles of planning, translating, and reviewing; and (3) personal responsibility and ownership of writing projects. Thus, this EBP could be signposted only if the content of a set of standards for a grade or grade band referred to (*a*) the general writing process or a combination of planning, drafting, and revising *and* (*b*) both purpose and audience *and* (c) self-regulation or the keyword "choice." Omission of even one of these parts of the logic statement would exclude the assignment of the EBP of process writing instruction to the set of standards.

Sample of Writing Standards

We selected a purposive sample of states to examine the degree to which their K–8 writing standards signposted EBPs and to compare them with the CCSS-WL. We selected 14 states (see Table 3) that represented diversity with respect to geographical location, population density, and performance of eighth graders on the 2007 National Assessment of Educational Progress (NAEP) state-level writing assessment. In addition, we limited our sample to states that had not altered their writing standards within the 4 school years prior to the 2007 NAEP administration (assuming that stability in standards would create less "noise" in the relationship between a state's standards and its associated performance on the NAEP). NAEP performance data and population data for each of these states, as well as length of time their standards were in force prior to the fall 2007 administration of the NAEP writing test, are presented in Table 3.

Standards Content Coding

As is typical for standards content analysis research (e.g., Porter, 2002), our coding taxonomy employs broad content strands (i.e., categories) to designate major instructional and developmental foci in writing as well as specific content indicators within each strand that provide categorical elaboration. The taxonomy was derived from several theoretical frameworks to assure a broad representation of current thinking about writing development, instruction, and assessment. Specifically, we drew upon Hayes's cognitive model of writing (Flower & Hayes, 1981; Hayes, 1996) to develop two content strands—(1) writing processes and (2) metacognition and knowledge; sociocultural theory (Prior, 2006)—to form the (3) context strand; genre theory (Dean, 2008) to inform two strands—(4) purposes and (5) components; and linguistic models of writing (Faigley & Witte, 1981)—to create the (6) conventions strand. The last strand—(7) motivation—was inspired by both cognitive and motivation theories of writing (Troia, Shankland, & Wolbers, 2012). We included an eighth strand to capture information within standards that was not clearly related to writing but appeared to be potentially relevant to writing and connected to one of the other strands. We also included a single code for information within standards that appeared to reflect important information but that did not fit any of the coding categories. This coding taxonomy, containing 112 separate content indicators across the strands, allowed us to differentiate sets of standards in terms of their content using linguistically based micro-analysis. While other writing theories could have been applied, they made no additional contributions for the purpose of coding content in the standards. Content coding employed the content indicators for a fine-grained analysis rather than the strand categories, which would have yielded insufficient detail.

An individual content indicator code was applied within a unit of content analysis (i.e., the lowest consistent level of content information in a set of standards) only once to avoid duplication, but multiple different codes could be assigned to any given unit. To accommodate the potential for additional information presented at higher levels of organization for a set of standards, unique codes were assigned at these superordinate levels, but duplication of codes from the lower levels was not allowed. Thus, a state that only used two levels of organization for its standards could be compared to another state that used four levels without bias being introduced by the specific organizational pattern chosen by a state. Additional information regarding our content coding taxonomy and procedures can be found in Troia et al. (submitted).

Coding Reliability

Content coding for the CCSS-WL and the sampled states' writing standards was completed by two trained graduate student raters (the third, fourth, or fifth authors). The standards for grades 1 and 6 were coded and resolved first before coding and resolving differences in the remainder of the K–8 standards for each set to ensure adequate reliability. This process was necessary due to the number of judgments needed to accurately interpret the content of each state's writing standards. All discrepancies were resolved through discussion. The content coding IRR ranges across grades and medians (prior to reconciliation) were as follows: CCSS-WL range .76 to

Table 2. Evidence-Based Practice (EBP) Codes

EBP Code	EBP	EBP Definition	Required Content Code(s) and Key Words/Phrases
10001	Process writing instruction	Instruction that involves (1) writing for real/authentic/multiple purposes and audiences (e.g., other than teacher); (2) engaging in cycles of planning, translating, and reviewing; AND (3) personal responsibility and ownership of writing projects (e.g., student choice and student-directed decision making).	[General writing process OR prewriting/planning, drafting text, and revising] AND [purpose AND audience)] AND [self-regulation OR "choice"] DO NOT DOUBLE CODE WITH 10002
10002	Comprehensive writing instruction	A process-based approach plus strategy instruction, skill instruction, and/or text structure instruction (and may include technology applications).	[EBP10001] AND [srategies OR genre-specific organization and content OR writing conventions]
10003	Strategy instruction	Instruction in which students are explicitly and systematically taught (through modeling and guided practice with feedback) one or more strategies for planning, drafting, revising, and/or editing text with the goal of independent strategy usage; strategies invoke a series of steps to solve a problem.	[Strategies]
10004	Teaching prewriting/planning/ drafting	Activities (e.g., using graphic organizers or brainstorming ideas or strategies) that are designed to help students generate and/or organize ideas prior to writing and/or write a first draft that later will be reworked.	[Gather information OR prewriting/planning OR drafting text]
10005	Teaching editing	Strategies that involve using checking routines (e.g., read-aloud to locate and correct errors) or other means by which to correct errors in written work, including usage, capitalization, punctuation, and spelling mistakes.	[Editing]
20001	Utilizing a word processor	Students use a computer application as a primary tool for the production (including composition, editing, formatting, and possibly printing) of any sort of printable material.	[Computer technology]
20002	Utilizing assistive technology	Students use computers that are packaged with other software or hardware that supports the writer. Supports include spelling and grammar checkers, software for formatting text, speech synthesis (typed text is converted to speech), speech recognition (writers' speech is converted to typed text), planning and outlining software, software for prompting students while writing, as well as software that provides feedback on specific aspects of the written text.	[Computer technology PLUS "spell or grammar checker," "software for formatting, planning, outlining, or feedback," "speech recognition, speech synthesis, text-to-speech, speech-to-text"]
20003	Utilizing rubrics	Set of criteria embodied in a scale or set of questions for scoring writing as part of instruction in order to engage students in applying the criteria and formulating possible revisions or ideas for revisions.	[Procedural facilitator PLUS "rubric"] AND [revising OR editing]

Table 2. (*Continued*)

EBP Code	EBP	EBP Definition	Required Content Code(s) and Key Words/Phrases
20004	Peer collaboration	Students cooperatively work with their peers to plan, draft, revise, and/or edit their compositions.	[Collaboration]
20005	Providing extra time for writing	Duration and/or frequency of sustained student writing are increased (e.g., write frequently).	[Disciplinary context OR writing in/out of school OR quantity of writing OR time for writing]
20006	Feedback	Verbal or written information, including praise, in response to an author's work or a group's efforts at any point in the writing process received from peers and/or adults.	[Feedback]
20007	Utilizing text models	Students read and analyze examples of one or more texts in order to recognize and emulate the patterns or forms in these examples in their own writing.	[Text models]
30001	Summarization Instruction	Teach students how to summarize text through explicit and systematic instruction. Instruction can include strategies for summarizing text or activities designed to improve students' text summarization skills. Summary writing must be the focus.	[Summarize]
30002	Inquiry instruction	Teach students to develop content for writing by analyzing immediate and concrete data derived from investigations/experimentation, textual/source analysis, or information provided a priori.	[Respond OR analyze OR synthesize OR reflect OR evaluate OR research]
40001	Paragraph structure instruction	Teaching ways to organize information in paragraphs.	[General organization OR general structure OR general content OR elaboration/detail] PLUS "paragraph"
40002	Text structure instruction	Teach students how different types of texts are structured and formed.	[Genre-specific organization and content]
40003	Creativity/imagery instruction	Teach students to use visual images or other means to enhance creativity in writing.	[Style PLUS "voice," "tone," "style," "effect," "view"] OR [figurative language] OR [semantic aspects PLUS "sensory" OR "imagery" OR "vivid"]
50001	Decreasing spelling errors	The use of varied means to identify and correct spelling errors in students' written work and understanding that misspelled words influence the readers' judgments about the message and the person who wrote it.	[General spelling OR specific spelling] AND [editing]
50002	Decreasing grammar errors	The use of varied means to identify and correct grammar errors in students' written work and understanding how the grammar errors influence the evaluation of writing.	[General grammar OR specific grammar] AND [editing]
50003	Transcription skills instruction	Focus on process of teaching students spelling, handwriting, and keyboarding (typing) skills to improve quality of writing.	[General handwriting OR manuscript OR cursive] OR [keyboarding] OR [general spelling OR specific spelling]

Table 2. (*Continued*)

EBP Code	EBP	EBP Definition	Required Content Code(s) and Key Words/Phrases
50004	Sentence-combining instruction	Involves teaching students to construct more complex and sophisticated sentences through exercises in which two or more basic sentences are combined into a single sentence.	[Sentence fluency OR general grammar OR specific grammar] PLUS "combining" OR "rearrange"
60001	Writing to learn	Writing is used as a mechanism for learning content area or topical information and the writing process and features parallel learning processes and features in that they are active, personal, and constructive and refined by feedback.	[Reflect] AND [topic knowledge]
60002	Self-regulation & metacognitive reflection	Student regulates quality and productivity of writing or content learning through monitoring, reflection, and evaluating his or her behaviors and performance through tracking.	[Self-regulation]
70001	Setting product goals	Teachers or students set observable, specific, and individual goals for what students are to accomplish in their writing such as how much students should write; the focus is on the written product and not the process.	[Goals]

Table 3. State Standards Sampled, Demographics, and 2007 NAEP Performance

State	Region	2010 Population (Millions)	2007 NAEP Writing Scale Score[a]	Years Standards in Force Prior to Fall 2007
AL	Southeast	4.8	148 ↓	8
AR	Southeast	2.9	151 ↓	4
CA	West	37.3	148 ↓	10
CO	West	5.0	161 ↑	7
FL	Southeast	18.8	158 ↑	11
IN	Midwest	6.5	155 =	7
MA	Northeast	6.5	167 ↑	6
MN	Midwest	5.3	156 =	4
MS	Southeast	3.0	142 ↓	5
NV	West	2.7	142 ↓	6
OH	Midwest	11.5	156 =	5
TN	Southeast	6.3	156 =	6
TX	Southwest	25.1	151 ↓	9
WI	Midwest	5.7	158 ↑	9

[a] Symbols indicate state scale score is significantly above (↑), significantly below (↓), or statistically equivalent (=) to national sample scale score average of 154.

.95 (median of .89); AL range .81 to .97 (median of .88); AR range .71 to .94 (median of .80); CA range .77 to .97 (median of .88); CO range .85 to .97 (median of .96); FL range .70 to .88 (median of .83); IN range .74 to .95 (median of .88); MA range .75 to .87 (median of .79); MN range .86 to .95 (median of .89); MS range .88 to .95 (median of .91); NV range .76 to .99 (median of .93); OH range .80 to .95 (median of .93); TN range .72 to .91 (median of .84); TX range .84 to .99 (median of .96); and WI range .97 to .99 (median of .98) . The reliability for assignment of EBPs across grades K–8 was evaluated for six of the states sampled (AL, AR, CA, MN, TX, WI) and the CCSS-WL; the mean exact agreement between two trained graduate student raters (the third and fourth authors) ranged from 96% to 100%.

Results

Reported in Table 4 are the evidence-based writing instruction practices signposted by standards from the sample of 14 states and the CCSS-WL for K–2, 3–5, and 6–8 grade bands. The pluses indicate the practice was signposted in the standards at least once within the grade band. Because in many cases a practice was, in fact, signposted only in one or perhaps two grades in the band, the range of EBPs signposted in each grade band also is reported. For instance, AL has 14 total practices signposted at least once in grades K–2, but the range of practices signposted is 4 (in kindergarten) to 14 (in second grade). Consequently, the range of EBPs signposted is more representative of the consistency with which they are signposted. Florida and Wisconsin do not exhibit a range because these states had standards for each grade band rather than unique standards for each grade; in other cases where there is no range, it is because signposting of EBPs was consistent across the three grades. As a point of reference, the greatest range occurs for TX in grades K–2 (8–19 EBPs signposted). The percentage of EBPs signposted in each grand band (averaged across the three grades) is reported as a summary statistic. We also calculated for each grade band for each state

Table 4. Signposted EBPs for Sample States and CCSS-WL

	AL			AR			CA			CO			FL		
EBP	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8
Process writing instruction															
Comprehensive writing instruction		+	+	+	+	+					+	+			
Strategy instruction				+											
Teaching prewriting	+		+	+	+	+	+	+	+	+	+	+		+	+
Teaching planning	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Teaching drafting	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Teaching editing	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Utilizing a word processor	+	+	+	+	+	+		+	+	+	+	+	+	+	+
Utilizing assistive technology			+		+			+		+	+	+			
Utilizing rubrics				+	+	+		+							
Peer collaboration	+		+		+	+							+	+	
Providing extra time for writing	+	+	+	+	+	+						+	+	+	
Feedback	+	+	+	+	+	+							+	+	+
Utilizing text models	+		+	+											
Summarization instruction		+		+	+	+		+	+			+			
Inquiry Instruction	+		+	+	+	+		+	+		+	+		+	+
Paragraph structure instruction		+		+	+	+	+	+	+			+			
Text structure instruction				+	+	+	+	+	+	+	+			+	+
Creativity/imagery instruction		+		+	+	+	+	+	+			+			+
Decreasing spelling errors	+	+		+	+	+							+	+	+
Decreasing grammar errors		+		+	+	+			+				+	+	+
Spelling instruction	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Handwriting instruction	+	+	+	+	+		+	+		+	+	+	+	+	
Keyboarding instruction								+					+		
Sentence-combining instruction		+	+	+	+	+		+							
Writing to learn															
Self-regulation & metacognitive reflection	+	+	+	+	+	+					+	+			
Setting product goals															
Range of EBPs signposted	4–14	14–16	13–15	13–21	16–19	18–19	2–8	9–14	8–10	4–9	5–9	9–10	12	14	12

Table 4. (*Continued*)

EBP	AL			AR			CA			CO			FL		
	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8
EBPs signposted across grades (%)	32	55	50	61	63	65	21	39	32	15	27	35	43	50	43
CCSS-WL alignment	.83	.69	.69	.92	.94	.92	.42	.75	.77	.50	.50	.69	.58	.75	.77
	IN			MA			MN			MS			NV		
	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8
Process writing instruction															
Comprehensive writing instruction		+	+										+	+	+
Strategy instruction	+	+	+						+						
Teaching prewriting	+	+	+	+	+	+	+	+	+		+	+		+	+
Teaching planning	+	+	+		+	+	+	+	+	+	+	+	+	+	+
Teaching drafting	+	+	+				+	+	+	+	+		+	+	+
Teaching editing	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Utilizing a word processor	+	+	+	+	+	+	+	+	+		+				
Utilizing assistive technology		+													
Utilizing rubrics				+	+	+								+	+
Peer collaboration	+			+	+	+									
Providing extra time for writing			+				+	+	+						+
Feedback	+	+	+								+	+	+	+	+
Utilizing text models		+												+	
Summarization instruction		+	+		+	+		+		+	+	+		+	+
Inquiry instruction		+	+	+	+	+	+		+	+	+	+	+	+	+
Paragraph structure instruction	+	+	+	+	+	+		+	+	+	+			+	+
Text structure instruction	+	+	+		+	+			+		+	+		+	+
Creativity/imagery instruction	+	+	+	+	+	+			+				+	+	+
Decreasing spelling errors				+	+	+		+	+		+	+	+		+
Decreasing grammar errors			+	+	+	+	+	+	+		+	+	+		+
Spelling instruction	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Table 4. (*Continued*)

	IN			MA			MN			MS			NV		
	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8
Handwriting instruction	+	+		+	+		+	+	+	+			+	+	
Keyboarding instruction		+	+					+	+						
Sentence-combining instruction		+			+	+									
Writing to learn															
Self-regulation & metacognitive reflection															
Setting product goals															
Range of EBPs signposted	3–10	13–15	13	11–12	13–15	13–15	4–10	12–13	14–16	4–7	8–10	8–10	8–9	10–12	12–13
EBPs signposted across grades (%)	26	45	46	40	49	49	26	44	51	19	32	32	31	40	45
CCSS-WL alignment	.67	.75	.85	.67	.81	.77	.50	.69	.92	.33	.69	.54	.50	.56	.77

	OH			TN			TX			WI			CCSS-WL		
	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8
Process writing instruction															
Comprehensive writing instruction	+	+	+	+	+	+	+	+	+						
Strategy instruction	+	+	+	+	+										
Teaching prewriting	+	+	+	+	+	+	+	+	+				+	+	+
Teaching planning	+	+	+	+	+	+	+	+	+	+	+	+		+	+
Teaching drafting	+	+	+	+	+	+	+	+	+					+	+
Teaching editing	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Utilizing a word processor	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Utilizing assistive technology				+			+	+	+						
Utilizing rubrics				+	+	+		+	+						
Peer collaboration				+	+			+	+				+	+	+
Providing extra time for writing				+	+	+	+	+	+	+	+	+		+	+
Feedback	+	+	+	+	+	+	+	+	+	+	+	+	+		
Utilizing text models	+	+			+	+	+	+	+				+		
Summarization instruction				+	+		+	+	+	+	+				

Table 4. (*Continued*)

	OH			TN			TX			WI			CCSS-WL		
	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8	K–2	3–5	6–8
Inquiry instruction	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Paragraph structure instruction		+	+	+	+	+		+	+					+	
Text structure instruction	+	+	+		+	+	+	+	+		+	+	+	+	+
Creativity/imagery instruction	+	+	+	+	+	+	+	+	+	+	+	+		+	+
Decreasing spelling errors	+	+	+	+	+		+	+					+	+	
Decreasing grammar errors	+	+	+	+	+		+	+	+					+	+
Spelling instruction	+	+	+	+	+		+	+	+	+	+	+	+	+	+
Handwriting instruction	+	+		+	+		+	+	+				+		
Keyboarding instruction														+	+
Sentence-combining instruction													+	+	
Writing to learn						+									
Self-regulation & metacognitive reflection				+	+	+	+	+	+						
Setting product goals								+	+						
Range of EBPs signposted	8–16	15–17	15	15–19	16–21	16	8–19	19–22	22	9	9	9	8–9	12–14	11–12
dBPs signposted across grades (%)	45	56	54%	63	64	57	46	75	79	32	32	32	31	46	42
CCSS-WL alignment	.83	.75	.77	.75	.88	.69	.83	.88	.92	.42	.50	.62	–	–	–

	EBP Signposted across K–2 Standards (% Out of 41)	EBP Signposted across 3–5 Standards (% Out of 41)	EBP Signposted across 6–8 Standards (% Out of 41)
Process writing instruction	0	0	0
Comprehensive writing instruction	29	41	49
Strategy instruction	17	10	10
Teaching prewriting	6	80	95
Teaching planning	76	93	95
Teaching drafting	66	76	80
Teaching editing	71	100	95
Utilizing a word processor	66	83	83

Table 4. (*Continued*)

	EBP Signposted across K–2 Standards (% Out of 41)	EBP Signposted across 3–5 Standards (% Out of 41)	EBP Signposted across 6–8 Standards (% Out of 41)
Utilizing assistive technology	7	17	15
Utilizing rubrics	17	32	37
Peer collaboration	27	27	32
Providing extra time for writing	32	49	56
Feedback	41	54	54
Utilizing text models	20	20	22
Summarization instruction	20	54	39
Inquiry instruction	61	73	98
Paragraph structure instruction	24	71	56
Text structure instruction	29	71	85
Creativity/imagery instruction	39	71	73
Decreasing spelling errors	34	54	39
Decreasing grammar errors	34	59	54
Spelling instruction	98	95	88
Handwriting instruction	88	61	24
Keyboarding instruction	2	20	17
Sentence-combining instruction	7	20	17
Writing to learn	0	0	7
Self-regulation & metacognitive reflection	20	29	32
Setting product goals	0	5	7

a CCSS-WL alignment index—the proportion of EBPs in the CCSS-WL also signposted by the state's standards. Finally, the last portion of Table 4 includes the percentage of grade cells (out of a total of 41 grade cells for the 15 sets of standards; recall that FL and WI collapse standards across grades) in which each EBP was signposted across all standards we evaluated for each grade band; this provides a summary statistic representing the degree to which a particular practice was signposted by grade band.

There are several patterns evident when examining Table 4. First, the EBPs signposted by most states' standards and the CCSS-WL at most grades include (*a*) executing the various aspects of the writing process—teaching prewriting (mean of 81%), planning (mean of 88%), drafting (mean of 74%), and editing (mean of 89%)—though not in the context of integrated process-based writing instruction, as demonstrated by no signposting for process writing instruction; (*b*) spelling instruction (mean of 94%); (*c*) using a word processor to compose (mean of 77%); and (*d*) inquiry-based writing instruction (mean of 77%). Conversely, the EBPs signposted least in the group of standards we studied across grades include (*a*) integrated process-based writing instruction (mean of 0%; note that process writing instruction is not coded when combined with other types of writing instruction to form a comprehensive writing instruction program, so the percentages should be interpreted accordingly—see Table 2); (*b*) using writing as a means to learn content area information (mean of 2%); (*c*) setting written product goals (mean of 4%); (*d*) strategy instruction (mean of 12%); (*e*) using assistive technology (mean of 13%); (*f*) keyboarding instruction (mean of 13%); (*g*) sentence-combining instruction (mean of 15%); (*h*) using text models (mean of 21%); and (*i*) self-regulation of writing and writing metacognition (mean of 27%).

Second, there is a general trend of greater signposting of EBPs in third through eighth grade compared with kindergarten through second grade (ranging from an increase of 5% for setting product goals to an increase of 47% for paragraph structure instruction), most likely reflecting increased writing content coverage in the standards for older students across states and the CCSS-WL. This general trend is reversed for handwriting, spelling, and strategy instruction. In 10 cases the percentage of EBPs signposted in middle school grades 6–8 is lower than in upper elementary grades 3–5; for four EBPs this drop is substantial (handwriting instruction—37%, summarization instruction—15%, paragraph structure instruction—15%, decreasing spelling errors through editing—15%). More typical is a higher percentage of EBPs signposted in middle school grades than in the upper elementary grades. For three EBPs this increase is substantial (text structure instruction—14%, teaching prewriting—15%, inquiry-based instruction—25%).

Third, the variability with which EBPs are signposted tends to be substantially greater in grades K–2 (mean range difference of 4.7) than grades 3–5 (mean range difference of 2.3) or grades 6–8 (mean range difference of 0.9). Thus, consistency of EBP signposting within grade bands increases across grade bands. Fourth, based on the percentages of EBPs signposted across grades for the sets of standards we evaluated, CA, CO, MS, and WI have the least signposting of EBPs in their standards, with means of 31%, 26%, 28%, and 32%, respectively. Conversely, AR, TN, and TX have the greatest signposting, with means of 63%, 61%, and 67%, respectively.

Finally, with respect to alignment with the CCSS-WL, AR (mean alignment index of .93) and TX (mean alignment index of .88) exhibit the strongest alignment overall,

while CO (mean alignment index of .56), MS (mean alignment index of .52), and WI (mean alignment index of .51) exhibit the weakest. In most cases, alignment with the CCSS-WL increases across grade bands. Alignment and the percentage of EBPs signposted are strongly related: $r = .75$, $p < .01$ for grades K–2, $r = .83$, $p < .01$ for grades 3–5, and $r = .69$, $p < .01$ for grades 6–8.

Discussion

Standards-based education reform is predicated on the assumption that rigorous academic standards (and the high-stakes assessments aligned with them) exert a powerful positive influence on classroom instruction. Although academic standards are intended primarily to guide instruction via specification of what major competencies students should demonstrate at a given grade in a given domain of learning, standards also might guide instruction via signposting specific practices (e.g., Cohen, 1996). To our knowledge, no other study has attempted to identify the degree to which standards, for writing or any other domain of learning, signpost EBPs. It is clear from our findings that standards do indeed signpost specific writing instruction practices and that there is variability in the degree to which different standards do this.

Specifically, we found three states (AR, FL, TN) in our sample that consistently signposted in each grade K–8 at least 12 of the 28 EBPs for which we coded; another two states (OH, TX) did so at most of those grades. Only TN consistently signposted more than half of the EBPs for which we coded. Conversely, in each grade we considered, CO, MS, and WI consistently signposted less than 12 of the practices. The CCSS-WL signposted between 9 and 14 EBPs in a given grade. EBP signposting might prove to be a valuable new measure for evaluating the rigor of academic standards; however, as we noted earlier, EBP signposting may not necessarily lead to effective instructional practices and associated increases in student achievement (see Beck, 2007, about the potential disconnect between the imprecise nature of standards and the classroom). This remains an open research question and ultimately will determine the value of measuring EBP signposting in standards. A more plausible implication of our findings is that in cases where standards don't signpost many practices, there is probably a greater burden on professional development to introduce such practices to teachers—the practices themselves cannot be inferred or extracted from the standards and thus educators must rely on external sources (e.g., professional development) for their content and pedagogical knowledge.

As for alignment with the CCSS-WL, AR and TX displayed the highest degree of overlap in EBPs signposted—teachers in AR, a CCSS-adopting state, may require less effort to transition to the new standards than say teachers in MS or WI, where the degree of overlap is only around 50%. In these adopting states with limited overlap, teachers may not see the relevance of particular instructional practices they may have previously used for implementing the new CCSS-WL (e.g., summarization instruction) or they may have to learn about new practices that are signposted in the CCSS-WL but absent from their state's prior writing standards (e.g., peer collaboration). Professional development efforts will need to focus on transitioning from one set of standards to the other by identifying shared content and signposted EBPs as well as discrepancies along these dimensions, providing implementation guidelines for specific practices, and identifying relevant curriculum materials that are aligned

with the content of the CCSS-WL and that reflect EBPs signposted in the core standards. Of course, professional development also should make salient those EBPs that are not signposted in the CCSS-WL.

We also found in the group of standards we evaluated that most EBPs are signposted with greater frequency in later grades, save for basic transcription skills instruction (spelling and handwriting) and strategy instruction, which were signposted more often in grades K–2. It is evident that states' standards relay a message to teachers that transcription skills should be mastered early, which reflects the importance of automaticity in basic transcription for freeing cognitive resources for more complex composing operations (e.g., Berninger & Amtmann, 2003). Moreover, standards point to a greater number of discrete EBPs over time (and do so more consistently), probably because they add greater content breadth in each grade, content that is generally maintained once introduced. In the domain of writing, this may be advantageous because it mimics the transition from novice to competent (and perhaps expert) writer, in which topic and domain knowledge and skills are acquired over time and these funds of knowledge and skill become more automated, integrated, and flexible to permit the writer to attack novel writing tasks with more complex and deeper strategic approaches, though less complex and superficial approaches can be applied when they suffice (e.g., Alexander, 2003; Bereiter & Scardamalia, 1993).

Particular practices, such as teaching elements of the writing process, spelling instruction, and using word processing software, were signposted more often than others, such as an integrated process approach to teaching writing, using assistive technology to support the writing process, and keyboarding instruction. These findings suggest some tension in what is communicated through standards. For instance, although using the computer to write is valued in many sets of standards, keyboarding instruction, without which many students would struggle to word process their papers (e.g., Graham et al., 2012), is not. Likewise, although spelling instruction appears to be valued in many standards, instruction in the use of assistive technology (e.g., spell check, speech recognition) that might help students bypass spelling difficulties or aid in better spelling (e.g., MacArthur, 2006) does not appear to be valued. It is important that those groups charged with developing standards recognize the importance of consistency and coherence in the content of standards and the values expressed therein, as well as the impact of the messages standards convey to educators, students, and families.

Study Limitations

This study, like any other, has limitations that should temper any conclusions drawn from the information presented. First and foremost, one cannot presume that signposting of EBPs or other instructional practices in standards leads to corresponding classroom teaching actions. There are far too many other intervening variables, such as teachers' experiences, values, beliefs, and attitudes regarding writing, writing instruction, and standards (e.g., Graham, Harris, Fink, & MacArthur, 2001; Graham, Harris, MacArthur, & Fink, 2002; Lipson, Mosenthal, Daniels, & Woodside-Jiron, 2000), the quality and quantity of professional development and knowledge in this domain (e.g., Cutler & Graham, 2008; Gilbert & Graham, 2010; Pritchard & Honeycutt, 2006; Troia & Maddox, 2004), and the curriculum materials

used to enact the standards that exert an influence on classroom writing instruction. But, as we have argued above, the degree of signposting of EBPs in standards does have implications for how schools address these intervening variables.

Second, we based our analysis on EBPs derived from high-quality meta-analyses, considered the "gold standard" for determining the efficacy (and potentially the effectiveness) of discrete interventions and instructional routines. Other instructional practices that improve writing performance have empirical support (e.g., vocabulary instruction, conferencing, the use of authentic and relevant writing tasks), but were not included in the meta-analyses we examined because too few individual quantitative studies examined these practices to be synthesized through meta-analytic techniques to derive reliable effects estimates. Thus, our list of EBPs, while clearly based on the best available research evidence, is not exhaustive. Standards may very well have signposted other valuable writing instruction practices for which we did not code. Conversely, it is important to remain cognizant of the limits of EBPs for prescribing writing instruction for all students—the research undergirding EBPs does not include every different kind of learner (e.g., students with disabilities and/or gifts and talents, English language learners) in every potential educational context (e.g., inner city school, small-group remedial sessions, English immersion classes) in every grade for every kind of writing (e.g., poetry, informative papers, procedures). Simply put, an EBP designation does not guarantee a practice will be successful with every learner in every situation, so flexibility with integrating professional expertise, research evidence, and student and family preferences and needs to help each student attain grade-level writing content standards remains paramount.

Third, we analyzed standards from a relatively small, though representative sample of states. We were limited to (*a*) states from which we could collect standards documents and (*b*) states that had not subjected their standards to major revision several years prior to the 2007 NAEP writing assessment. State performance on the 2007 NAEP versus the 2011 NAEP writing test was used as a benchmark for selecting standards to include in our evaluation because state-level writing performance data are only available for the 2007 assessment. Our data only reflect EBP signposting for the state standards we sampled and cannot be generalized to the entire nation. Moreover, six of the states (AL, AR, FL, IN, MS, NV) revised their standards after 2006 but prior to CCSS adoption; we did not evaluate these revised standards, which may have aligned more or less with the core standards than their previous ones.

Conclusion

Many educators prefer to rely on the advice of successful teachers of writing (e.g., Atwell, 1998) or professional authors (e.g., King, 2000) to guide their own writing instruction because they mistrust educational research, which is the foundation of EBPs (e.g., Boardman, Arguelles, Vaughn, Hughes, & Klingner, 2005; Jones, 2009). They may also rely more often on professional advice because there is not a comprehensive writing instruction research base. Researchers can help inform teachers and other practitioners about the benefits of using rigorous replicated research to select teaching practices that will help students attain academic standards (and the plausible constraints of the research for employing a practice with a particular student) and

the limitations of practices derived from isolated case studies and professional wisdom, particularly those practice recommendations that fall outside the list of EBPs for a domain or that counter prevailing EBPs. However, a potentially more expeditious and potent strategy for enhancing the credibility of EBPs in the classroom may be to point educators to these practices through education policy and accountability mechanisms (e.g., academic standards, teacher credentialing standards, high-stakes assessments) with well-aligned professional development efforts. The effects of professional development might be greatly enhanced if standards included companion materials that link the standards with EBPs and provide concrete implementation guidelines.

Research is needed to determine the validity of the degree of EBP signposting for evaluating standards by way of determining whether variability in this measure is reliably associated with teachers' application of EBPs in their classroom instruction. Such research will have to accommodate the complex interplay of the characteristics of standards with other education production functions such as professional development, high-stakes assessments, available classroom resources, and teacher quality. Additionally, the meditational effects of teachers' knowledge, beliefs, and values on instruction as they enact the intended curriculum should be studied. Likewise, teacher interpretation of standards, which is not well understood, is probably another important mediator to examine. Of course, efforts to examine the impact of standards on classroom instruction should look toward the salutary effects on student achievement.

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