Does Teacher Self-Efficacy Predict Writing Practices of Teachers of Deaf and Hard of Hearing Students?

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Abstract

Forty-four elementary grade teachers of deaf and hard of hearing students were surveyed about how they taught writing and their beliefs about writing. Beliefs about writing included their self-efficacy to teach writing, attitude towards writing, and epistemological beliefs about writing. These teachers from 15 different states in the United States slightly agreed they were efficacious writing teachers and they were slightly positive about their writing. They slightly agreed that learning to write involves effort and process, moderately disagreed that writing development is innate or fixed, slightly disagreed that knowledge about writing is certain, and were equally split about whether writing knowledge comes from authorities and experts. On average, teachers applied the 22 instructional writing practices surveyed at least once a month. They reported their students wrote weekly, and their writing was supported through goal setting, feedback, and prewriting activities. Writing instruction mostly focuses on teaching grammar and how to plan compositions. Teacher self-efficacy uniquely and statistically predicted reported teaching practices after attitude towards writing and epistemological beliefs were first controlled. Recommendations for future research and implications for practice are presented.

Key Words: deaf, hard of hearing, writing, teacher self-efficacy, instruction, attitudes, epistemology

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Teachers play a critical and essential role in students' development. As Cochran-Smith and Zeichner (2005) observed, "Teachers are among the most, if not the most, significant factors in children's learning…" (p. 1). This is true for students in general as well as deaf and hard of hearing (DHH) students (Garberoglio et al., 2012). Despite the importance of teachers, more research is needed if we are to understand what teachers do and what influences their actions (Graham, in press).

One area of research receiving increased attention over the last four decades is the study of teachers' beliefs and their possible impact on teaching (e.g., Chan & Elliott, 2004; Fives & Buehl, 2012; Klassen et al., 2011; Tschannen-Moran et al., 1998). Particularly prominent in the study of teachers' beliefs is the concept of teacher self-efficacy. Self-efficacy involves, "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainment" (Bandura, 1977, p. 3). Teachers' sense of self-efficacy is commonly viewed as an important teacher characteristic, as it has been hypothesized that teachers who are more assured about their teaching capabilities are better teachers, more committed to teaching, evidence higher levels of job satisfaction, and positively impact students' achievement (e.g., Aloe et al., 2014; Midgley et al., 1989; Ross et al., 1996). A recent analysis by Zee and Koomen (2016) of 165 teacher self-efficacy studies supported these claims, demonstrating that teacher self-efficacy directly and indirectly influences classroom practices, student outcomes, and teachers' well-being. While the studies reviewed varied in terms of overall quality, the consistency of the findings across investigations makes it clear that teachers' sense of self-efficacy is an important determinant of teachers' classroom actions.

While teacher self-efficacy has often been studied as a general or omnibus trait (Ross et al., 1996), Bandura (1981) cautioned that self-efficacy beliefs vary depending on subject area, task, circumstance, or instructional activity. Many researchers have heeded Bandura's warning, examining teacher self-efficacy in specific academic domains such as writing, math, or reading (e.g., Graham et al., 2001; Midgley et al., 1989; Yildirim, 2012), different cultures (e.g., Bañales et al., 2020; Hsiang & Graham, 2016), or with specific groups of teachers (e.g., Graham et al., in press; Rietdijk et al., 2018). The current study applied Bandura's recommendation by examining the self-efficacy of elementary grade teachers of DHH students. More specifically in the present study, we focused on these teachers' sense of self-efficacy to teach writing, and whether this sense of self-efficacy predicted their reported writing practices. We did this after first controlling for variance due to their attitude towards writing and their epistemological beliefs about writing.

Previous studies have assessed general education teachers' self-efficacy to teach writing and examined the variance it accounts for regarding how they teach this complex skill (e.g., De Smedt et al., 2016; Gilbert & Graham, 2010). General education elementary grade teachers slightly to moderately agree that they are efficacious writing teachers (Graham, 2019), and research by Brindle et al. (2016) indicated that teacher self-efficacy can uniquely account for up to 13% of the variance in reported writing practices after other teacher beliefs (e.g., attitudes toward writing, orientation to teaching writing) are first controlled. Many of the studies (e.g., Gilbert & Graham, 2010; Hsiang et al., 2016) examining if self-efficacy predicts teaching practices involved random sampling of teachers from across the country, increasing the generalizability of these findings.

The current study is the first investigation to our knowledge to specifically examine these issues with teachers of DHH students. A previous study by Garberoglio et al. (2012) investigated

teachers and administrators' self-efficacy for managing the classroom, promoting engagement, and using instructional strategies when teaching DHH students. While teachers reported a high sense of self-efficacy in each of these three areas, the study did not provide any insight to participants' self-efficacy for teaching a specific subject like writing nor did it examine if self-efficacy predicted classroom practices. It is especially important to make such an examination, as self-efficacy for teaching writing predicts how much time teachers devote to teaching writing (Graham, 2019), and teacher self-efficacy directly and indirectly influences classroom practices and student outcomes (Zee & Koomen, 2016). Self-efficacy for teaching writing is important for teachers of DHH students because some of these children evidence difficulty learning to write (e.g., Antia et al., 2005, 2009), and self-efficacy is a malleable factor (Bandura, 1977) that may provide a venue for enhancing these children's writing practices.

Research Questions

We asked the following research questions:

1. What levels of self-efficacy for teaching writing, attitudes towards writing, and epistemological beliefs about writing are held by elementary grade teachers of DHH students?
2. How frequently do elementary grade teachers of DHH students teach writing and support students as they write?
3. Does teacher self-efficacy predict teaching and supporting students' writing after variance due to teachers' attitudes towards writing and epistemological beliefs about writing are first controlled?

The theory of writing that guided the present investigation was the Writer(s)-within-Community model (WWC; Graham, in press, 2018a, 2018b; Graham & Harris, 2018). This

model proposed that the teaching of writing is a social activity that takes place within specific communities, such as an elementary grade classes for DHH students. A basic principle underlying the operation of the model is that writing and teaching writing are simultaneously and interactively shaped by the communities in which they occur as well as the cognitive capabilities and resources of community members who write or teach writing. Accordingly, the teaching of writing is shaped and bound by the characteristics of a classroom writing community including purposes for writing, typified actions for teaching and supporting writing, physical and social environment in which writing occurs, available tools for writing, and the history of the class over the course of the school year. At the same time, teachers' instructional intentions and actions are shaped and bound by their beliefs and knowledge about writing, teaching, their students, themselves, and their classroom writing community. The WWC model is particularly pertinent to our study because it addresses both social and cognitive viewpoints of writing, and it emphasizes the role of a variety of beliefs in the learning and teaching of writing. No other currently available models of writing do this.

Teacher Beliefs

Central to the current investigations are teachers' beliefs. Teacher beliefs play an essential role in the WWC model (Graham, in press), as it is assumed that they fuel the decisions teachers make, influencing what instructional actions and teaching tools are applied as well as how much effort is invested in the teaching process. Teacher beliefs include judgements about competence to teach writing, attitudes about writing, epistemological assumptions about how writing develops and is learned, purposes for engaging in writing and writing instruction, views about one's identities as a writer and teacher, opinions about why one is successful as a writing teacher, and conclusions about the value, capabilities, and purposes of the classroom writing

community and its members (including perceived writing competence of one's students). The WWC model proposes that these beliefs singularly and interactively impact teachers' instructional behaviors. For example, teachers who are highly positive about their capabilities to teach writing (i.e,. efficacious) may devote considerable time and attention to teaching writing if they believe they will be effective, but the positive influence of self-efficacy may be attenuated for teachers who conjointly believe that good writing is an innate ability and not a learned one (i.e., epistemological beliefs).

Teacher Self-efficacy. In this investigation, we focused primarily on teachers' beliefs about their self-efficacy. This is one of the few teacher characteristics that is consistently related to student achievement (see Zee & Kooman, 2016), including students' writing achievement (De Smedt et al., 2016; Parker et al., 2006; Tschannen-Moran & Barr, 2004). In essence, students' writing performance is higher in classrooms and schools where teachers are more confident about their capabilities to teach writing. Further, teachers who report a greater sense of self-efficacy to teach writing are more likely to devote greater attention to teaching this skill than teachers who are less confident (e.g., Brindle et al., 2016; De Smedt et al., 2016; Gilbert & Graham, 2010; Hsiang & Graham, 2016; Rietdijk et al., 2018). Teacher self-efficacy is also malleable, as it can be enhanced through instruction (Dillard 2004; Oh, 2011). These findings make self-efficacy for teaching writing an important variable in the study of teachers of DHH students, especially since there are no previous investigations addressing this topic with these educators.

Attitudes and Epistemological Beliefs. We did not limit our examination to teacher self-efficacy, as we also examined teachers' attitude towards writing and their epistemological beliefs about writing. Attitudes are an indication of how much a person likes or dislikes something

(Ekholm et al., 2018), and teachers who are more positive about their own writing may be more likely to teach writing than teachers who feel less positive about how they write (Hsiang et al., 2018).

Epistemological beliefs about writing in the current study were based on teachers' opinions of whether writing development is innate or fixed, writing development occurs through effort and process, writing knowledge is certain, and writing knowledge comes from experts and authority figures (see Chan & Elliott, 2004 and Schraw & Olafson, 2003 for a discussion of these epistemological beliefs applied to learning more broadly). These epistemological beliefs are assumed to be independent dimensions that can shape teachers' instructional actions (Fives & Buehl, 2012), as they serve as a filter for initiating, maintaining, and interpreting classroom practices.

Epistemological beliefs that writing development is innate or fixed or occurs through effort and process address teachers' beliefs about how one learns to write. These two dimensions of how writing is acquired range from naïve epistemological beliefs that writing development is predetermined and learned quickly or easily, respectively, to more sophisticated epistemologies that writing can be learned gradually and is acquired through personal effort, respectively (Chan & Elliott, 2014). Items assessing teachers' epistemological beliefs that writing development is innate or fixed are exemplified by statements like: "Some people are born good writers, others are stuck with limited writing capabilities" and "People cannot do much about how well they write." Items that measure epistemological beliefs that writing development is a consequence of effort and process are illustrated by: "How well you write depends on your effort" and "With practice, once can become a good writer."

Epistemological beliefs about the nature of writing knowledge also range from naïve to more sophisticated (Chan & Elliott, 2014). The epistemological belief that writing knowledge is certain ranges from the belief that such knowledge is unchanging to it is tentative and uncertain, exemplified by statements like: "Knowledge about writing is certain and does not change" and "Judgements about what is good writing is uncertain." The epistemological belief that writing knowledge comes from experts and authority figures ranges from the belief that this knowledge resides in authorities and is best acquired from experts to writing knowledge is constructed by teachers, and it is illustrated by: "I have no doubt that what experts say about writing is true" and "Experts know more about teaching writing than I do, so I rely on their judgment."

The WWC model (Graham, in press, 2018a, 2018b) emphasizes the singular and interactive effect of teachers' beliefs on their instructional actions when teaching writing. As a result, we included attitude towards writing and the four epistemological beliefs as control variables when examining whether teacher self-efficacy predicted the writing practices of elementary grade teachers of DHH students.

Instructional Practices

To examine teachers' writing instructional practices, we focused our attention on the social and cognitive aspects of learning to write. This is consistent with the WWC model (Graham, in press, 2018a, 2018b) which is based on the premise that writing and learning to write involve social as well as cognitive processes. It also reflects the types of approaches applied to teaching writing in the field of deaf education (see Strassman & Schirmer, 2012). Deaf education researchers have tested a variety of socially-oriented instructional procedures for teaching writing including apprenticeship models, collaborative writing, communities of practice, teacher established goals for writing, and teacher feedback (e.g., Kluwin & Kelly, 1992;

Schirmer et al., 1999; Schirmer & England, 2003; Wolbers, 2008b). They have also applied a variety of cognitively-oriented instructional models where DHH students were taught skills, strategies, and writing knowledge (e.g., Akamatsu, 1988; Berent et al., 2007; Schirmer et al., 1999; Wolbers, 2010). Other studies have embedded both social and cognitive aspects in writing instruction provided to DHH students (Dostal & Wolbers 2014, 2016; Wolbers, 2008a; Wolbers et al., 2012; Wolbers et al., 2018).

Consequently, we examined if elementary grade teachers of DHH students supported students' writing through social mechanisms such as collaboration, teacher and student established writing goals, feedback, editing assistance, positive feedback/ praise, pre-writing activities, and writing multiple drafts. We further examined if participating teachers reportedly taught DHH students the cognitive skills they need to be successful writers. This included planning and revising strategies, self-regulation strategies for writing, editing skills, paragraph construction, vocabulary for writing, grammar skills (including differences between ASL and English grammar for writing), as well as knowledge about different genres and the characteristics of writing. Teaching writing also included queries about how frequently students wrote (i.e., practice writing) and whether teachers used formative assessment procedures to guide their writing practices. While we did not survey all possible writing practices the participating teachers might have used, as teachers are not likely to complete such a long survey, the instructional practices queried were ones that teachers were likely to apply in order to address their students' writing challenges. This includes challenges with English syntax and semantics when writing, transition from ASL to English, organization, ideation, regulation of the writing process, as well as planning, revising, and editing (see Strassman & Schirmer, 2012; Williams & Mayer, 2015). Currently, we know almost nothing about how writing is taught to elementary

grade DHH students. This study addresses this issue by examining how teachers in 15 states in the United States provided such instruction. These teachers were part of a larger instructional study conducted by the authors.

Predictions

We anticipated that elementary grade teachers of DHH students would be slightly to moderately positive about their self-efficacy to teach writing. While teachers of DHH students in Garberoglio et al. (2012) expressed a high sense of self-efficacy for classroom management, promoting engagement, and using instructional strategies in general, we anticipated teachers in this study would not be as confident as those in the Garberoglio et al investigation about their capabilities to teach writing for two reasons. One, elementary grade teachers indicate that writing is the content area they are least prepared to teach. For example, grade four to six students in the Netherlands (Rietdijk et al., 2018) and Flanders (De Smedt et al., 2016) reported their preparation to teach writing was inadequate. Two, teachers around the world commonly express mild to moderate confidence in their ability to teach writing. This includes teachers in Europe (De Smedt et al., 2016; Dockrell et al., 2016), the United States (Wilcox et al., 2016), and China (Hsiang et al., 2016).

It was further expected that teachers of DHH students would be slightly positive about their attitude towards writing, as this is commonly the case with teachers in general (De Smedt et al., 2016; Margardida et al., 2016). In terms of epistemological beliefs about writing, we predicted that teachers of DHH students in this study would agree that students learn to write through effort and process and that knowledge mostly comes from authorities or experts, but they would disagree that writing development is innate or fixed and writing knowledge is certain. These predictions are generally consistent with findings from the only other two studies

investigating these beliefs (Graham et al., 2020; Hsiang et al., 2020). However, it must be noted that teachers in the United States indicated that writing development is innate or fixed and is acquired through effort and process, whereas teachers in the Greater China region only emphasize that writing development is a result of effort and process (Graham et al., 2020).

We also predicted that the majority of elementary grade teachers of DHH students in this study would indicate they used all or most of the instructional writing procedures included in the survey, but they used most of these procedures infrequently. With a few exceptions, teachers surveyed in classrooms around the world indicated they use a variety of procedures to teach writing, but use these techniques periodically (see for example De Smedt et al., 2016; Dockrell et al., 2016; Margardida et al., 2016; Rietdijk et al., 2018)).

Finally, it was hypothesized that teacher self-efficacy would predict how often participating teachers indicated they taught writing and supported students' writing. Teachers who are more positive about their self-efficacy to teach writing should be more likely to teach writing and support it because they believe their teaching efforts are effective (Zee & Kooman, 2016). While attitude towards writing and epistemological beliefs served as control variables, it was possible that they would each make a unique and statistically significant contribution to predicting teachers' writing practices because such beliefs shape what teachers do and serve as a filter for interpreting their actions (Fives & Buehl, 2012).

Method

Participants

School partners and teacher participants were recruited nationwide. Information was shared with school administrators at conferences and through listservs or email. Announcements were also made at the annual meeting of Association of College Educators—Deaf and Hard of

Hearing (ACE-DHH); ACE-DHH colleagues distributed information to their local school programs. . As long as school partners confirmed that they serve 3-6th grade deaf and hard of hearing students, they were included. School partners were not excluded based on setting or communication philosophy. Partners participating in the research provided letters of support for an IES grant application.

Teachers in this study were part of a larger, IES funded study examining the self-efficacy of Strategic and Interactive Writing Instruction in elementary grades (Wolbers et al., 2021). They came from 15 states across the United States (i.e., Connecticut, Florida, Illinois, Kentucky, Louisiana, Massachusetts, Michigan, New York, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, and Washington). They included elementary grade teachers from residential schools for the deaf, day schools for the deaf, self-contained classes for DHH students in public schools, as well as pull out/itinerant programs for these students in public schools.

Across the 15 states, there were 44 elementary grade teachers of DHH students in 24 schools. One school included nine teachers; another school five teachers, nine schools contributed two teachers, and twelve schools had one teacher each. All but three of the teachers indicated they were White. Two teachers were Black and one teacher was Asian. Teaching experience ranged from 1 to 36 years (M = 12.43; SD = 9.64). Three of the teachers reported they had taught for just one year. All teachers identified as female except for one male teacher.

Fourteen percent (N = 6) of the teachers indicated they had completed an undergraduate degree; 68% (N = 30) had obtained a Master's degree; and 16% (N = 7) had an Education Specialist degree or 30 hours beyond the Master's degree. As a group, the teachers were generally positive about their preparation to teach writing, with 14% (N = 6) indicating it was exceptional, 66% (N = 29) adequate, and 21% (N = 9) minimal. Sixty-one percent of

participating teachers indicated they used a formal writing curriculum/program in their classroom. These 27 teachers identified 19 different writing curriculum/programs they applied. The most commonly used approach was Lucy Calkin's workshop approach applied by five teachers. No other program was applied by more than two teachers, and these programs represented an eclectic mix of approaches including the writing instruction recommended in basal reading programs as well as programs like Step up to Writing and the 6 + 1 traits.

Approximately two-thirds (N = 29) of the teachers indicated their personal philosophy for teaching DHH students was ASL-English bilingual. All but one of the remaining teachers indicated they supported a total communication approach, with two thirds (N = 9) of them indicating that total communication included the use of American Sign Language (ASL). One teacher supported an Oral/Aural approach. Teachers did not always hold the same philosophical view as the school where they taught. This was the case for 16 teachers. According to the teachers, 39% (N = 17) percent of their schools supported an ASL-English bilingual approach, whereas 54% of the schools supported a total communication approach; two thirds (N = 16) of these schools involved total communication with the use of ASL. Seven percent (N = 3) of the schools used an Oral/Aural approach.

Five of the teachers indicated they were deaf and one was hard of hearing. Eighty-six percent (N = 38) of teachers were non-native ASL users. On average, they indicated they had used ASL for 15.50 years (SD = 9.26). The remaining six teachers noted they were all native ASL users.

For DHH students in the 44 teachers' classrooms, their average standard score was 56.6 (median – 55.3, Range = 1-105) on the Broad Written Language Subtest of the Woodcock Johnson Test of Achievement (Schrank et al., 2014). On average, students in these teachers'

classes were two standard deviations below the mean for this test in terms of their writing capabilities.

Procedures

Prior to implementation of the Strategic and Interactive Writing program, the 44 participating teachers were sent a link to complete a survey on line. They received a letter explaining the purpose of the survey as well as the study. They were asked to answer questions honestly. They were told their responses would not be shared with other school personnel and would remain anonymous. All 44 of the teachers completed the survey in full.

Measures

The survey directed teachers to indicate their gender, race, number of years teaching DHH students, education completed, and adequacy of their preparation to teach writing. It also asked them to indicate if they were native ASL users (non-native users were asked to indicate number of years using ASL), and implemented a writing curriculum/program to teach writing (naming the program if they did). They were further asked to identify their personal philosophy for teaching DHH students as well as the philosophy of their school.

In addition to the questions above, teachers were asked to complete measures about their beliefs about writing and how they taught writing to their students. Measures assessing beliefs about writing included scales for self-efficacy to teach writing (taken from Graham et al., 2001), attitude towards writing (taken from Brindle et al., 2016), and epistemological beliefs about writing (taken from Hsiang et al., 2020). In previous studies, the self-efficacy items used in this study represented a single measure with acceptable reliability as did the items used to measure attitude towards writing (e.g., Brindle et al., 2016; De Smedt et al., 2016). The measure assessing epistemological beliefs is a reliable multi-dimensional scale measuring various aspects of

teachers' beliefs about the nature of writing, writing development, and knowing about writing (Graham et al., 2020; Hsiang et al., 2020).

The questions for the measure to assess how teachers taught students to write were taken from surveys developed by Cutler and Graham (2008) and Gilbert and Graham (2010). These surveys focused on the teaching of writing in primary (1 to 3) and intermediate grades (4 to 6). Studies conducted with elementary grade teachers demonstrated that the items included in the current study reliably assessed teachers' reported practices directly teaching writing and supporting students as they write (e.g., Brindle et al., 2016; Hsiang et al., 2016).

Teacher Self-efficacy for Teaching Writing

The self-efficacy scale for teaching writing included nine items, asking teachers if they: had effective ways to teach writing, could improve writing by finding better ways of teaching, knew the steps for teaching a writing concept so it could be mastered quickly, could exert extra effort to help a student write better, knew how to increase student retention of information not remembered, could help students with the most difficult writing problems, could adjust a writing assignment for a student experiencing difficulty, knew how to redirect disruptive behavior during writing time, and could accurately assess if a writing assignment was at the correct level for a student experiencing difficulty. Each item included a six-point Likert-type scale where teachers could indicate they strongly disagreed (score of 1.0), moderately disagreed (score of 2.), slightly disagreed (score of 1.0), slightly agreed (score of 4.0), moderately agreed (score of 5.0), and strongly agreed (score of 6.0). Coefficient alpha for this scale for the teachers participating in this study was 0.75.

Attitude towards Writing

Four items assessed teachers' attitude towards writing (I enjoy writing; I am a good writer; I enjoy learning about writing; I use writing as a tool for learning). Each item included the same six-point Likert-type scale applied with self-efficacy (higher scores represented a more positive attitude). Coefficient alpha for this scale for the teachers participating in this study was 0.84.

Epistemological Beliefs about Writing

To assess epistemologically beliefs about writing, we applied a 30-item scale developed by Hsiang et al., (2020). This scale measures five dimensions of writing epistemological beliefs: writing development is innate or fixed, writing development occurs through effort and process, writing knowledge is certain, writing knowledge comes from experts and authority figures, and writing growth involves the application of heart and mind. We did not administer the five items assessing "heart and mind" because they were developed specifically for Chinese culture and teachers.

Teachers responded to the remaining 25 items assessing using a six-point Likert-type scale (strongly disagree [1.0], moderately disagree [2.0], slightly disagree [3.0], slightly agree [4.0], moderately agree [5.0], and strongly agree [6.0]; higher scores provided a more positive response). Coefficient alphas for innate or fixed, effort and process, authority or expert, and certain knowledge for teachers in this study were 0.73, 0.75, 0.73, and 0.66, respectively.

Teachers' Reported Writing Practices

Teaching Writing. Twelve items assessed the teaching practices teachers applied to teach writing. This included teaching planning strategies, revising strategies, writing self-regulation, vocabulary, paragraphs, editing, elements of different genres, and grammar. It also included items on acquiring writing knowledge through models of writing, formative assessment

to guide instructional practices, independent writing time, and teaching the differences between ASL and English grammar for writing. With the exception of teaching the differences between ASL and English grammar, each of the other practices are evidence-based practices for teaching writing to elementary grade students (Graham et al., 2012; Rogers & Graham, 2008). The teachers responded to each item using an eight-point Likert-type scale that included the following descriptors: never (score of 1), several times a year (score of 2), once every two months (score of 3), monthly (score of 4), weekly (score of 5), several times a week (score of 6), daily (score of 7), and several times a day (score of 8). A higher scores indicated the teaching activity occurred more frequently. Coefficient alpha for this scale for the teachers participating in this study was 0.80.

Supporting Students' Writing. Ten items assessed procedures teachers used to support students as they wrote. This included providing praise/positive reinforcement, teacher feedback, teachers' goals for writing, peer collaboration while writing, pre-writing activities to gather and organize writing content, collaborative decisions about writing with the teacher, students completing multiple writing drafts, teachers editing students' writing, students establish writing goals for their own writing, and plan and compose with the teacher. The first six items listed are evidence-based practices for supporting elementary grade students as they write (Graham et al., 2012; Rogers & Graham, 2008). Each item included the same seven-point Likert-type scale used to respond to reported practices for teaching writing (higher scores indicated that the supporting practice occurred more frequently). Teachers responded to these items with the same eight-point scale used for teaching writing above. Coefficient alpha for this scale for the teachers participating in this study was 0.79.

Results

Table 1 presents the means and standard deviations for each of the teacher beliefs' measures. It also presents the percentage of teachers who indicated a specific response (e.g., strongly disagree) for all items on a specific measure. Table 2 presents the means and standard deviations for the total score on this measure and each of the 12 items. It further includes the percent of all teachers who marked a specific response (e.g., monthly).

Teachers' Beliefs about Writing

The teachers of DHH students in this study slightly agreed that they were efficacious teachers of writing (M = 4.41; SD = 0.68; range = 2.44 to 5.67). Eighty-six percent of teachers' mean score on this measure was 4.0 (slightly agree) or higher. This was the most common response to the nine items on this measure (32.3%), followed by moderately agree (31.8%; see Table 1).

Teachers were also slightly positive about their attitude towards writing (M = 4.37; SD = 1.00; range = 1.83 to 5.83). The mean score of 64% of the participating teachers was 4.0 (slightly agree) or higher. The most common response by teachers to the four items on this scale was moderately agree (30.3%), followed by slightly agree (22.7%; see Table 1).

Teachers' epistemological beliefs about writing were more varied. They moderately disagreed that writing development is innate or fixed (M = 2.13; SD = 0.69; range = 1.00 to 4.50), with 91% of them slightly to strongly indicating that writing development is not innate or fixed. The most common response by teachers to the six items on this scale was strongly disagree (37.9%), followed by moderately agree (34.1%; see Table 1).

Teachers slightly agreed, however, that learning to write involves effort and process (M = 4.61; SD = 0.69; range = 2.86 to 5.68), with 84% of them slightly to strongly agreeing with this belief. The most common response by teachers to the seven items on this scale was moderately

agree (44.8%), followed by slightly agree (20.8%; see Table 1).

As a group, teachers were ambivalent about the belief that writing knowledge comes from authority or experts, as their mean score on this measure was at the mid-point of the scale (*M* = 3.53; *SD* = 0.81; range = 1.40 to 5.40). Fifty-seven percent of teachers' scores on this construct were above the midpoint, indicating that slightly more than one-half of the participating teachers agreed slightly to strongly with this position. The most common response by teachers to the six items on this scale was slightly agree (28.0%), followed by slightly disagree (24.6%; see Table 1).

Finally, teachers slightly disagreed that knowledge about writing is certain (*M* = 2.92; *SD* = 0.64; range = 1.40 to 4.40), with 66% of them slightly to strongly indicating that writing knowledge is not certain. The most common response by teachers to the six items on this scale was slightly disagree (33.0%), followed by moderately disagree (20.8%; see Table 1).

Teachers' Reported Writing Practices

Teachers' mean score on the 12 items that queried them about directly teaching writing was 4.49 (*SD* = 0.94; range = 3.08 to 6.58). On average, teachers applied the 12 teaching practices monthly. The most common response by teachers to items on this scale was weekly (22.6%; see Table 2).

On average, teachers had students write independently (*M* = 5.34; *SD* = 1.48) and taught grammar (*M* = 5.30; *SD* = 2.00), differences between ASL and English grammar (*M* = 5.14 *SD* = 1.98), and planning strategies (*M* = 5.07; *SD* = 1.25) at least weekly. The following teaching practices occurred monthly or less often on average: apply formative assessment to guide writing practices (*M* = 4.70; *SD* = 1.80), taught revising strategies (*M* = 4.59; *SD* = 1.45), taught paragraph writing (*M* = 4.09; *SD* = 1.48), taught self-regulation writing strategies (*M* = 4.09; *SD*

= 1.67), taught editing (*M* = 4.07; *SD* = 1.78), taught vocabulary (*M* = 3.93; *SD* = 1.82), acquire writing knowledge though models (*M* = 3.80; *SD* = 1.81), and teach elements of different genres (*M* = 3.48; *SD* = 1.64).

Teachers' mean score on the 10 items that asked them about supporting students as they wrote was also 4.49 (*SD* = 0.88; range = 2.20 to 6.20). The most common response by teachers to items on this scale was weekly (21.0%; see Table 2).

On average, teachers applied the 10 writing support practices monthly. On average, teachers provided praise/positive reinforcement daily (*M* = 6.84; *SD* = 1.01) and feedback on students' writing several times a week (*M* = 5.91; *SD* = 1.25). Teachers established goals for students' writing (*M* = 5.09; *SD* = 1.46) and have students engage in prewriting activities (*M* = 4.84; *SD* = 1.38) on a weekly basis. The remaining writing support practices occurred monthly or less often on average: teachers plan and compose with students (*M* = 4.50; *SD* = 1.49), collaborate with teacher on writing (*M* = 4.18; *SD* = 1.81), students complete multiple writing drafts (*M* = 4.16; *SD* = 1.35), teacher edits students' writing (*M* = 2.84; *SD* = 1.60), and students establish goals for their writing (*M* = 2.82; *SD* = 1.59).

Teacher Self-efficacy Predicts Teachers' Reported Writing Practices

To determine if teacher self-efficacy to teach writing predicts teachers' reported writing practices with DHH students, two step-wise regression analyses were conducted. In the first regression analysis, we examined if teacher self-efficacy predicted teachers' reported use of teaching practices after first controlling for variance due to attitude towards writing and epistemological beliefs about writing. The second regression analysis was identical except the outcome variable was teachers reported use of practices to support students as they wrote. In both analyses, attitude towards writing and the four epistemological measures (innate or fixed,

effort and process, authority or expert, and certain knowledge) were entered as a block in the first step of the regression analysis. Teacher self-efficacy was entered in the second step of the analyses. Although teachers were nested within schools, we did not conduct multi-level regression analyses, as the Intraclass Correlation Coefficient (ICC) between school and the two outcome variables (i.e., teaching writing and supporting writing) was zero.

The correlations between the reported teaching of writing and supporting writing, the control variables, and teacher self-efficacy are presented in Table 3. Teachers' scores for teaching writing and supporting writing were strongly correlated (0.763), indicating that teachers who more frequently taught writing were more likely to support students as they wrote, and vice versa. Teaching writing and supporting writing were statistically and significantly related to teacher self-efficacy (0.325 and 0.361, respectively). Teacher self-efficacy was statistically and significantly related to attitude towards writing (0.319) and the epistemological beliefs of effort and process (0.554), and authority or expert (0.321). The epistemological belief of innate or fixed was statistically and significantly related to authority or xpert (0.397) and certain knowledge (0.532). Effort and process was statistically and significantly related to authority or expert (0.587), whereas authority or expert was statistically and significantly related to certain knowledge (0.338).

Teaching Writing

In step 1 of the regression analysis, five control variables (attitude towards writing, innate or fixed, effort and process, authority or expert, and certain knowledge) accounted for a statistically nonsignificant 12.5% of the variability ($p = .382$) in how frequently teachers reportedly taught writing to DHH students. Teacher self-efficacy, when entered at step 2, explained an additional statistically significant 12.5% of the variance ($p = .019$). Statistically

significant unique predictors (see Table 4), controlling for all other variables in the model, included only teacher self-efficacy.

Supporting Writing

In step 1 of the regression analysis, five control variables (i.e., attitude towards writing, innate or fixed, effort and process, authority or expert, and certain knowledge) accounted for a statistically nonsignificant 8.6% of the variability (p = .616) in how frequently teachers supported DHH students as they wrote. Teacher self-efficacy, when entered at step 2, explained an additional statistically significant 18.7% of the variance (p = .038). Statistically significant unique predictors (see Table 5), controlling for all other variables in the model, included only teacher self-efficacy.

Discussion

Teachers who are more efficacious about their teaching capabilities are better teachers, more committed to teaching, and positively impact students' achievement (Aloe et al., 2014; Midgley et al., 1989; Tschannen-Moran et al., 1998; Zee & Koomen, 2016). Unfortunately, little is known about the teaching self-efficacy of teachers of DHH students. A single study by Garberoglio et al. (2012) reported that these teachers expressed a high degree of self-efficacy for managing the classroom, promoting student engagement, and using instructional strategies. The current study adds to this previous work by: (1) examining teachers of DHH students self-efficacy for teaching writing; (2) determining if self-efficacy for teaching writing predicts teachers' reported classroom practices; (3) providing needed information on how writing is taught to elementary grade DHH students; (4) exploring if teachers of DHH students like or dislike writing as well as what they believe about writing development and knowledge.

Teacher Beliefs

As expected, teachers in this study were slightly positive about their capabilities to teach writing, with five out of every six teachers indicating agreement; at least to some degree, they were efficacious teachers of writing. As a result, elementary grade teachers of DHH students are similar to their general education counterparts, as both groups are positive about their self-efficacy to teach writing, but not highly positive about these capabilities (Brindle et al., 2016; Cutler & Graham, 2008; De Smedt et al., 2016; Gilbert & Graham, 2010; Hsiang & Graham, 2016; Rietdijk et al., 2018). While it is important to conduct additional research to replicate our finding about self-efficacy to teach writing, it must be noted that 80% of the teachers participating in this study indicated their preparation to teach writing was adequate to exceptional. This level of preparation is high (see Graham, 2019), raising questions as to why these teachers were not more positive about their self-efficacy to teach writing. Future research should explore the linkages between self-efficacy, education, and preparation to teach writing by teachers of DHH students.

Also, as anticipated, teachers of DHH students were slightly positive about writing, with two out of every three teachers expressing this sentiment to some degree. The participating teachers' attitude towards writing mirrored those of their general education peers, who also expressed slightly positive beliefs about writing in previous investigations (Brindle et al., 2016; Hsiang & Graham, 2016; Hsiang et al., 2018; Hsiang et al., 2020). The finding that teachers of DHH students are generally positive about writing needs to be replicated in future research. Their general education peers commonly agree they enjoy teaching writing (Cutler & Graham, 2008; Gilbert & Graham, 2010; Hsiang & Graham, 2016; Hsiang et al., 2020).

Participating teachers' epistemological beliefs about writing were generally consistent with our predictions. As a group, they slightly agreed that learning to write involves effort and

process, and moderately disagreed that writing development is innate or fixed. They slightly disagreed that knowledge about writing is certain, but contrary to our hypotheses, they were ambivalent about whether writing knowledge comes from authorities and experts. In all studies conducted to date (Graham et al., 2020; Hsiang et al., 2020), including this one, teachers in the United States and the Greater China Region agreed that writing development requires effort and process and that writing knowledge is not certain. However, teachers in the present study were more adamant than general education teachers in previous studies that writing development was not innate or fixed, and they were ambivalent about whether they or experts were better sources of writing knowledge. If these findings are replicated, it is important for future research to determine why teachers of DHH students place less faith in the knowledge of authorities and experts than general education counterparts, and why they place less credence in the concept that learning to write is an innate or fixed ability. Such differences in beliefs are likely related to their experiences in teaching DHH students, their preparation to teach writing, and the writing capabilities of the students they teach. Teaching writing to DHH students is challenging due to their unique and diverse language needs (Dostal et al., 2019). This may color their teachers' views on how writing is acquired and the adequacy of different sources of knowledge about writing and teaching it. These differences may also be related to differences in the epistemological beliefs and philosophies of the teacher education programs that prepares these two groups of teachers. This needs to be examined in future research.

In summary, teachers of DHH students were slightly positive about their self-efficacy to teach writing and their attitude towards teaching this skill. They slightly agreed that learning to write involves effort and process, but moderately disagreed that writing development is fixed. They were ambivalent about the idea that writing knowledge comes from experts and authorities,

but slightly disagreed with the concept that knowledge about writing is certain. With two exceptions, these outcomes were consistent with findings from prior research with elementary grade teachers in the United States and China (Graham et al., 2020; Hsiang et al., 2020). One, while teachers in the current study moderately disagreed that writing development was innate or fixed, general education teachers in the United States slightly agreed this was the case and teachers in China (Hsiang et al., 2020) slightly disagreed with this idea (Graham et al., 2020). A second difference was that teachers of DHH students in this study were ambivalent about the source of knowledge in writing, but general education teachers in the United States and China in the two prior studies slightly agreed that writing knowledge resided in authorities and experts.

Writing Practices

Although 80% of participating teachers were positive about their preparation to teach writing, 86% indicated they were confident about their self-efficacy to teach writing, 64% were positive about their own writing capabilities, and 84% believed that writing development depended on effort and process, they did not frequently teach DHH students writing skills, processes, or knowledge nor did they apply activities to support students' writing very often. As predicted, most teachers used the instructional practices queried at least some time during the school year, but they applied these activities relatively infrequently (once a month on average). Some activities, however, did occur (on average) more often than this. Teachers reported they provided praise/reinforcement for writing daily. They also indicated they assigned independent writing, set goals and provided feedback for students' writing, asked students to complete prewriting activities before writing, and taught planning, grammar, and the differences between ASL and English grammar at least weekly. While these findings differ in terms of how often specific procedures such as planning instruction were applied, their reports are similar to

elementary grade general education teachers' reports on how they teach writing in the United States (e.g., Cutler & Graham, 2008; Gilbert & Graham, 2010).

The basic picture of writing instruction for DHH students that emerges from the current study is that they write independently at least weekly and teachers commonly use several procedures to facilitate this process (goals, feedback, and prewriting activities). Writing instruction mostly focuses on teaching grammar and how to plan compositions (this was also evident in teachers in a business as usual group in an intervention study by Wolbers et al., 2018). However, it is possible that the emphasis placed on teaching planning in this study was inflated because six of the teachers had formerly applied a program that placed considerable emphasis on this practice. In any event, additional research is needed to replicate these findings and to determine if they generalize to a random selection of elementary grade teachers of DHH students. This includes querying teachers about more than just the 22 writing instructional activities studied here. Just as importantly, research is needed to determine if a similar pattern of findings is obtained when teachers' writing instruction is observed and not surveyed. Teachers also need to be interviewed to determine why and how often they apply specific writing instructional procedures.

Teacher Self-efficacy Predicts Reported Writing Instructional Practices

As expected, teacher self-efficacy predicted teacher-reported writing practices after first controlling for attitude towards writing and epistemological beliefs about writing development and writing knowledge. Participating teachers' confidence in their ability to teach writing accounted for a unique 12.5% of the variance in how often they reported teaching writing using specific practices and 18.7% of the unique variance in how frequently they reported using specific activities to support students as they write. These findings are consistent with other

studies with general education teachers showing that self-efficacy predicts how writing is taught (e.g., Bañales et al., 2020; Brindle et al., 2016; De Smedt et al., 2016; Gilbert & Graham, 2016; Reitdijk et al., 2018). This is the first study to our knowledge examining if teacher self-efficacy predicts the writing practices of teachers working with DHH students. It is only the second study examining if teacher self-efficacy predicts writing practices after first controlling for attitude towards writing and epistemological beliefs (Hsiang et al., 2020). Both this and the prior study found this to be the case.

Contrary to predictions, we did not find that attitude towards writing or teachers' epistemological beliefs about writing were unique and statistically significant predictors of teachers' writing practice. This stands in contrast to a study conducted by Hsiang et al. (2020) with grades one to three general education teachers in Taiwan where these beliefs did predict how writing was reportedly taught. There are many possible reasons for the different outcomes in these two investigations. The studies differed in terms of grade level (later elementary grades vs primary grades), type of teacher (teachers of a special population vs general education teachers), culture (United States vs Greater China Region), sample selection (convenience vs random sample), sample size (44 teachers v 782 teachers), and writing practices assessed (22 activities vs 46 activities). The study in Taiwan also controlled for other writing beliefs, including attitude toward teaching writing, instructional orientation towards teach writing, and judgements about students' progress, not assessed in the present investigation due to sample size. One or more of these variables and/or in combination with other factors (e.g., teachers' knowledge about writing) may be responsible for the conflicting findings.

Additional research is needed to replicate and extend the findings from this study. This includes conducting an investigation with a larger sample of teachers of DHH students,

expanding the number of writing activities assessed, and applying a broader range of teacher beliefs as predictors, control variables, or both. Further, observing teacher practices instead of surveying them would strengthen any future investigation, but this is also likely to constrain which and how many teachers participate in the study.

Limitations and Implications

While we were able to include teachers from 15 different states in this study, our sample size was relatively small ($N = 44$). The participating teachers were also highly educated, as 84% of them had at least a Master's degree. This needs to be taken into account when interpreting the findings of our investigation. Moreover, the 15 States represented in this study are not necessarily representative of all areas in the United States. While this is not ideal, most of the States in the United States have similar curricular goals for writing, as the Common Core State Standards were adopted by close to 90% of all States. Further two-thirds of the participating teachers supported bilingual education. Thus, it is not clear how generalizable these findings are, and they should be interpreted accordingly.

This study was further based on the assumption that teachers are aware of how they teach and, consequently, they can accurately answer questions about their instructional practices. While independent observation of teacher practices is preferred, there is evidence that teachers can accurately answer questions about how they teach literacy (e.g., Bridge & Heibert, 1985). Even so, it is possible that in self-reporting their instructional practices teachers painted a more positive picture of their classroom writing instruction. This may have directly influenced the relationship between teachers' self-efficacy and their writing practices. Future research is needed to determine if the same relationships are observed when teachers' practices ar e observed and not self-reported.

We further assumed that teachers understood the basic concepts underlying each item in our survey. While we cannot guarantee that this was always the case, virtually all of the items on the survey administered in this study had been previously field tested and applied in other studies without problems.

Caution must always be applied when drawing implications for practice from descriptive and correlational data. Even so, we think the following implications are warranted. First, teacher self-efficacy is an important teacher characteristic that directly and indirectly influences teachers' practices (Zee & Koomen, 2016). While most teachers in this study indicated they were confident in their capabilities to teach writing, there was considerable room for growth. Self-efficacy is a malleable construct (e.g., Dillard, 2014; Oh, 2011), and teachers' self-efficacy for writing should become a focal point in both preservice and inservice preparation for teachers of DHH students.

Second, it is unlikely that the instructional procedures that teachers reportedly applied in this study were adequate for ensuring that elementary grade DHH students develop the writing skill needed for school, occupational, and community success. These students commonly experience significant difficulties learning to write (e.g. Strassman & Schirmer, 2012; Williams & Mayer, 2015), and a more intensive and extensive writing program is needed if we are to maximize their development as writers.

While most of the items that asked teachers about their writing practices have been shown to be effective with typically developing students (Graham et al., 2012), this is not the case with all of them (e.g., grammar instruction). More importantly, there is little data on which of these practices are specifically effective with DHH students, and we only asked about 22 writing practices. Additional research is needed to determine what constitutes optimal writing

instructional practices for DHH students.

It is also possible that the epistemological beliefs and reported writing practices of teachers in this study differed between and within schools. We were unable to analyze this statistically, as most school include only one teacher. Further, the ICCs for schools and class were zero. Future research, however, must remain open to assessing differences within and between schools, as there is good reason theoretically for such differences to exist as specified in the WWC model (Graham, in press).

Finally, it is possible that the language approach used for teaching DHH students is related to teachers' epistemological beliefs and reported writing practices. This was noted by one of the reviewers of this study. However, we did not find such an association in post-hoc analyses we completed examining if type of language approach applied in schools accounted for statistically significant variance in beliefs or writing practices (all *p's* . 0.41). It is possible that such relationships would emerge in studies with a larger number of teachers, so we encourage researchers to investigate this possibility in the future.

In summary, self-efficacy to teach writing in the current study predicted the writing practices of teachers of DHH students. Teaching self-efficacy is a malleable belief which has been shown to enhance students' academic performance (Zee & Kooman, 2016). In preparing teachers of DHH students, it may be useful to provide some focus on methods to enhance their efficacy for teaching writing, especially since the teachers in this investigation provided relatively limited writing instruction to their students. Efforts to enhance teachers' self-efficacy to teach writing and improve how they teach writing is likely to have a positive impact on the writing of students identified as DHH.

References

Akamatsu, C. T. (1988). Summarizing stories: The role of instruction in text structure in learning to write. *American Annals of the Deaf, 133*, 294–302. https://doi.org/10.1353/aad.2012.0641

Aloe, A. M., Amo, L. C., & Shanahan, M. E. (2014). Classroom management self-efficacy and burnout: A multivariate meta-analysis. *Educational Psychology Review*, *26* (1), 101–126. https://doi.org/10.1007/s10648-013-9244-0

Antia, S. D., Jones, P. B., Reed, S., & Kreimeyer, K. H. (2009). Academic status and progress of deaf and hard-of-hearing students in general education classrooms. *The Journal of Deaf Studies and Deaf Education, 14*(3), 293-311. https://doi.org/10.1093/deafed/enp009

Antia, S. D., Reed, S., & Kreimeyer, K. H. (2005). Written language of deaf and hard-of-hearing students in public schools. *Journal of Deaf Studies and Deaf Education*, *10*(3), 244-255. https://doi.org/10.1093/deafed/eni026

Bañales, G., Ahumada, S., Graham, S., Puente, A., Guajardo, M., & Muñoz, I. (2020). Teaching Writing in Grades 4-6 in Urban Schools in Chile: A National Survey. *Reading and Writing: An Interdisciplinary Journal*, *33*, (10), 2661–2696. https://doi.org/10.1007/s11145-020-10055-z

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. *Psychological Review, 84*(2), 191-215. https://doi.org/10.1037/0033-295X.84.2.191

Bandura, A. (1981). Self-referent thought: A developmental analysis of self-efficacy. In J. Flavell & L. Ross. (Eds.), *Social cognitive development frontiers and possible futures* (pp. 200-239). Cambridge University Press.

Berent, G., Kelly, R., Aldersley, S., Schmitz, K., Khalsa, B., Panara, J., & Keenan, S. (2007).

Focus-on-form instructional methods promote deaf college students' improvement in English grammar. *Journal of Deaf Studies and Deaf Education, 12,* 8–24. https://doi.org/10.1093/deafed/en1009

Bridge, C., & Heibert, E. (1985). A comparison of classroom writing practices, teachers' perceptions of their writing instruction, and textbook recommendations on writing practices. *Elementary School Journal, 86* (2), 155-172. https://doi.org/10.1086/461440

Brindle, M., Graham, S., Harris, K. R., & Hebert, M. (2016). Third and fourth grade teacher's classroom practices in writing: a national survey. *Reading and Writing: An Interdisciplinary Journal, 29*(5), 929-954. https://doi.org/10.1007/s11145-015-9604-x

Chan, K., & Elliott, R. G. (2004). Relational analysis of personal epistemology and conceptions about teaching and learning. *Teaching and Teacher Education, 20*(8), 817-831. https://doi.org/10.1016/j.tate.2004.09.002

Cochran-Smith, M., & Zeichner, K. (Eds.) (2005). *Studying teacher education: The report of the AERA Panel on research and teacher education*. Routledge.

Cutler, L., & Graham, S. (2008). Primary grade writing instruction: A national survey. *Journal of Educational Psychology, 100*(4), 907-919. https://doi.org/10.1037/a0012656

De Smedt, F., van Keer, H., & Merchie, E. (2016). Student, teacher, and class-level correlates of Flemish late elementary school children's writing performance. *Reading & Writing: An Interdisciplinary Journal, 29*(5), 833- 868. https://doi.org/10.1007/s11145-015-9590-z

Dillard, S. (2004). *A study of the impact of the Mississippi Writing Project Summer Institute on teacher efficacy in writing* (Publication No. 0496115049) [Doctoral Dissertation, Mississippi State University]. ProQuest Dissertations Publishing.

Dockrell, J., Marshall, C., & Wyse, D. (2016). Teachers' reported practices for teaching writing

in England. *Reading & Writing, 29,* 409-434. https://doi.org/10.1007/s11145-015-9605-9

Dostal, H., Wolbers, K., & Kilpatrick, J. (2019). The language zone: Differentiating writing instruction who are d/Deaf and hard of hearing. *Writing & Pedagogy, 11*(1), 1-22. https://doi.org/10.1558/wap.30045

Ekholm, E., Zumbrunn, S., & De-Busk-Lane, M. (2018). Clarifying an elusive construct: A systematic review of writing attitudes. *Educational Psychology Review, 30*(3), 827-856. https://doi.org/10.1007/s10648-017-9423-5

Fives, H., & Buehl, M. M. (2012). Spring cleaning for the 'messy" construct of teachers' beliefs: What are they? Which have been examined? What can they tell us? In K. R. Harris, S. Graham, and T. Urdan (Eds.), *APA Educational Psychology Handbook: Vol 2. Individual differences and cultural and contextual factors* (pp. 471-499). American Psychological Association.

Garberoglio, C., Gobble, M., & Cawthon, S. (2012). A national perspective on teachers' efficacy beliefs in deaf education. *Journal of Deaf Studies and Deaf Education, 17* (3), 367-383. https://doi.org/10.1093/deafed/ens014

Gilbert, J., & Graham, S. (2010). Teaching writing to elementary students in grades 4 to 6: A national survey. *Elementary School Journal, 110*(4), 494-518. https://doi.org/10.1086/651193

Graham, S. (in press). Writer(s)-Within-Community model of writing as a lens for studying the teaching of writing. In R. Horrowitz (Ed.), *The Routledge Handbook of International Research on Writing, Vol. II.*

Graham, S. (2019). Changing how writing is taught. *Review of Research in Education, 43,* 277-303. https://doi.org/10.3102/0091732X18821125

Graham, S. (2018a). A writer(s) within community model of writing. In C. Bazerman, V. Berninger, D. Brandt, S. Graham, J. Langer, S. Murphy, P. Matsuda, D. Rowe, & M. Schleppegrell, (Eds.), *The lifespan development of writing* (pp. 271-325). National Council of English.

Graham, S. (2018b). A Revised writer(s)-within-community model of writing. *Educational Psychologist, 53*(4), 258-279. https://doi.org/10.1080/00461520.2018.1481406

Graham, S., Harris, K. R., Fink, B., & MacArthur, C. (2001). Teacher efficacy in writing: A construct validation with primary grade teachers. *Scientific Study of Reading, 5*(2), 177-202. https://doi.org/10.1207/S1532799Xssr0502_3

Graham, S., Hsiang, T., Ray, A., & Zheng, G. (2020). *Do teachers' epistemological beliefs, attitudes, and perceptions of student progress predict teacher efficacy?* Paper submitted for publication.

Graham, S., Kiuhara, S., McKeown, D., & Harris, K.R. (2012). A meta-analysis of writing instruction for students in the elementary grades. *Journal of Educational Psychology, 104*, 879-896. https://doi.org/10.1037/a0029185

Graham, S., Skar, G., & Falk, D. (in press). Teaching writing in the primary grades in Norway: A national survey. *Reading and Writing: An Interdisciplinary Journal.*

Hsiang, T. P., & Graham, S. (2016). Teaching writing in grades 4-6 in urban schools in the Greater China Region. *Reading and Writing: An Interdisciplinary Journal, 29*(5), 869-902. https://doi.org/10.1007/s11145-015-9597-5

Hsiang, T. P, Graham, S., & Wong, P. (2018). Teaching writing in grades 7-9 in urban schools in Chinese Societies in Asia. *Reading Research Quarterly, 53*(4), 473-507. https://doi.org/10.1002/rrq.213

Hsiang, T., Graham, S., & Yang, Y. (2020). Teachers' practices and beliefs about teaching writing: A national survey of grades 1 to 3 teachers. *Reading and Writing: An Interdisciplinary Journal,* 33 (10), 2511–2548. https://doi.org/10.1007/s11145-020-10050-4

Klassen, R., Tze, V., Betts, S., & Gordon, K. (2011). Teacher efficacy research 1998-2009: Signs of progress or unfulfilled promise. *Educational Psychology Review, 23*(1), 21-43. https://doi.org/10.1007/s10648-010-9141-8

Kluwin, T. N., & Kelly, A. B. (1991). The effectiveness of dialogue journal writing in improving the writing skills of young deaf writers. *American Annals of the Deaf, 136,* 284–291. https://doi.org/10.1353/aad.2012.0436

Margarida, A., Simao, V., Malpique, A., Frison, L., & Marques, A. (2016). Teaching writing to middle school students in Portugal and in Brazil: An exploratory study. *Reading & Writing: An Interdisciplinary Journal, 29,* 955-979. https://doi.org/10.1007/s11145-015-9606-8

Midgley, C., Feldlaufer, H., & Eccles, J. (1989). Change in teacher efficacy and student self- and task-related beliefs in mathematics during the transition to junior high school. *Journal of Educational Psychology*, *81*(2), 247–258. https://doi.org/10.1037/0022-0663.81.2.247

Oh, S. (2011). Preservice teachers' sense of efficacy and its source. *Psychology, 2*(3), 235-240. https://doi.org/10.4236/psych.2011.23037

Parker, K., Hannah, E., & Topping, K. (2006). Collective teacher efficacy, pupil attainment and socio-economic status in primary school. *Improving Schools*, *9*(2), 111-129. https://doi.org/10.1177/1365480206064965

Rietdijk, S., van Weijen, D., Jassen, T, van den Bergh, H., & Rijlaarsdam, G. (2018). Teaching

writing in primary education: Classroom practice, time, teachers' beliefs and skills. *Journal of Educational Psychology, 110*(5), 640-663. https://doi.org/10.1037/edu0000237

Rogers, L., & Graham, S. (2008). A meta-analysis of single subject design writing intervention research. *Journal of Educational Psychology, 100,* 879 - 906. https://doi.org/10.1037/0022-0663.100.4.879

Ross, J., Cousins, B., & Gadalla, T. (1996). Within-teacher predictors of efficacy. *Teaching & Teacher Education, 12*(4), 385-400. https://doi.org/10.1016/0742-051X(95)00046-M

Schirmer, B. R., Bailey, J., & Fitzgerald, S. M. (1999). Using a writing assessment rubric for writing development of children who are deaf. *Exceptional Children, 65,* 383–397. https://doi.org/10.1177/001440299906500308

Schirmer, B. R., & Ingram, A. L. (2003). Using online chat to foster the written language development of students who are deaf. *Reading Online, 7*(1), n1. http://www.readingonline.org/articles/art_index.asp?HREF=schirmer/index.html

Schrank, F.A., McGrew, K.S., Mather, N., & Woodcock, R.W. (2014). *Woodcock-Johnson IV*. Riverside Publishing.

Schraw, G., & Olafson, L. (2003). Teachers' epistemological world views and educational practices. *Journal of Cognitive Education and Psychology, 3*(2), 178-235. https://doi.org/10.1891/194589503787383109

Strassman, B., & Schirmer, B. (2012). Teaching writing to deaf students: Does research offer evidence for practice. *Remedial & Special Education, 34* (3), 166-179. https://doi.org/10.1177/0741932512452013

Tschannen-Moran, M., & Barr, M. (2004). Fostering student learning: The relationship of

collective teacher efficacy and student achievement. *Leadership and Policy in Schools, 3*(3), 189-209. https://doi.org/10.1080/15700760490503706

Tschannen-Moran, M., Hoy, A., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research, 68*(2), 202-248. https://doi.org/10.3102/00346543068002202

Wilcox, K., Jeffrey, J., & Gardner-Bixler, A. (2016). Writing to the Common Core: Teachers' response to changes in standards and assessments for writing in elementary schools. *Reading & Writing: An Interdisciplinary Journal, 29*, 903-928. https://doi.org/10.1007/s11145-015-9588-6

Williams, C. & Mayer, C. (2015). Writing in young deaf children. *Review of Educational Research, 85*(4), 630-666. https://doi.org/10.3102/0034654314564882

Wolbers, K. (2008a). Strategic and interactive writing instruction (SIWI): Apprenticing deaf students in the construction of English. *ITL-International Journal of Applied Linguistics, 156*, 299–326. https://doi.org/10.2143/ITL.156.0.2034441

Wolbers, K. (2008b). Using balanced and interactive writing instruction to improve the higher order and lower order writing skills of deaf students. *Journal of Deaf Studies and Deaf Education, 13*(2), 255-277. https://doi.org/10.1093/deafed/enm052

Wolbers, K. (2010). Using ASL and print-based sign to build fluency and greater independence with written English among deaf students. *Educational Studies in Language and Literature, 10*, 99–125. https://doi.org/10.1093/deafed/enm052

Wolbers, K., Dostal, H., & Bowers, L. (2012). ‘‘I was born full deaf.’’ Written language outcomes after 1 year of Strategic and Interactive Writing Instruction. *Journal of Deaf Studies and Deaf Education, 17*, 19–38. https://doi.org/10.1093/deafed/enr018

Wolbers, K., Dostal, H., Graham, S., Branum-Martin, L., & Holcomb, L. (2021). *Specialized writing instruction for deaf students: A randomized controlled trial.* Manuscript submitted for publication.

Wolbers, K., Dostal, H., Graham, S., Branum-Martin, L., Kilpatrick, J. & Saulsburry, R. (2018). Strategic and Interactive Writing Instruction: An efficacy study in grades 3-5. *Journal of Educational and Developmental Psychology, 8*(1), 99-117. https://doi.org/10.5539/jedp.v8n1p99

Yildirim, S. (2012) Teacher support, motivation, learning strategy use, and achievement: A multilevel mediation model. *The Journal of Experimental Education, 80*(2), 150-172. https://doi.org/10.1080/00220973.2011.596855

Zee, M., & Koomen, H. M. Y. (2016). Teacher self-efficacy and its effects on classroom processes, student academic adjustment, and teacher well-being: A synthesis of 40 years of research. *Review of Educational Research, 86*(4), 981-1015. https://doi.org/10.3102/0034654315626801

Table 1
Means, Standard Deviations, and Percent of Responses for Each Point on the Scale for the Teacher Belief Measures

Belief	Strongly Disagree	Moderately Disagree	Slightly Disagree	Slightly Agree	Moderately Agree	Strongly Agree	Mean	SD
Writing self-efficacy	2.5%	4.0%	10.4%	32.3%	31.8%	18.9%	4.41	0.68
Attitude towards writing	4.9%	9.0%	8.7%	22.7%	30.3%	24.2%	4.37	1.00
Writing development (innate or fixed)	37.9%	34.1%	9.5%	9.5%	7.2%	1.1%	2.13	0.69
Writing development (effort and process)	2.2%	2.9%	8.4%	20.8%	44.8%	20.8%	4.61	0.69
Writing knowledge (source)	7.2%	16.3%	24.6%	28.0%	20.0%	3.8%	3.53	0.81
Writing knowledge (certainty)	14.0%	20.8%	33.0%	17.4%	10.6%	4.2%	2.92	0.64

Note: Scores ranged from 1 (strongly disagree) to 6 (strongly agree; SD = standard deviation

Table 2

Means, Standard Deviations, and Percent of Responses for Each Point on the Teaching Writing and Supporting Writing Scales

Teaching Writing	Never	Several Times Per Year	Once Every Two Months	Monthly	Weekly	Several Times a Week	Daily	Several Times a Day	M	SD
Teach planning	0%	2.3%	11.4%	15.9%	27.3%	34.1%	9.1%	0%	5.07	1.25
Teach revising	2.3%	6.8%	9.1%	34.1%	13.6%	27.3%	6.8%	0%	4.59	1.45
Teach self-regulation	9.1%	11.4%	11.4%	25.0%	20.5%	18.2%	4.5%	0%	4.09	1.67
Teach vocabulary	9.1%	18.2%	15.9%	15.9%	18.2%	13.6%	9.1%	0%	3.93	1.82
Teach paragraphs	6.8%	4.5%	22.7%	27.3%	18.2%	18.2%	2.3%	0%	4.09	1.48
Teach editing	9.1%	13.6%	13.6%	18.2%	27.3%	9.1%	6.8%	2.3%	4.07	1.78
Teach genre	11.4%	13.6%	36.4%	11.4%	15.9%	4.5%	6.8%	0%	3.48	1.64
Teach grammar	9.1%	6.8%	4.5%	2.3%	15.9%	25.0%	36.4%	0%	5.30	2.00
Models of writing	11.4%	18.2%	11.4%	25.0%	15.9%	11.4%	4.5%	2.3%	3.80	1.81
Formative assessment	4.5%	13.6%	4.5%	18.2%	20.5%	20.5%	18.2%	0%	4.70	1.80

Independent writing	0%	4.5%	9.1%	4.5%	40.9%	18.2%	15.9%	6.8%	5.34	1.48
ASL & English grammar	6.8%	6.8%	6.8%	6.8%	27.3%	22.7%	9.1%	13.6%	5.14	1.98
Total	6.4%	10.3%	13.7%	17.0%	22.6%	17.7%	10.8%	2.8%	4.49	0.94

Supporting Writing	Never	Several Times Per Year	Once Every Two Months	Monthly	Weekly	Several Times a Wek	Daily	Several Times a Day	M	SD
Praise/positive reinforcement	0%	0%	0%	2.3%	4.5%	31.8%	29.5%	31.8%	6.84	1.01
Feedback	0%	0%	4.5%	4.5%	31.8%	22.7%	27.3%	9.1%	5.91	1.25
Writing goals	0%	4.5%	11.4%	18.2%	22.7%	22.7%	20.5%	0%	5.09	1.46
Peer collaboration	20.5%	18.2%	18.2%	20.5%	13.6%	9.1%	0%	0%	3.16	1.61
Pre-writing	0%	6.8%	9.1%	20.5%	34.1%	15.9%	13.6%	0%	4.84	1.38
Collaborative decisions	11.4%	6.8%	15.9%	20.5%	18.2%	20.5%	4.5%	2.3%	4.18	1.81
Multiple drafts	0%	13.6%	20.5%	20.5%	29.5%	13.6%	2.3%	0%	4.16	1.35
Teacher editing	29.5%	15.9%	20.5%	13.6%	15.9%	4.5%	0%	0%	2.84	1.60

Student goals	31.8%	13.6%	18.2%	15.9%	18.2%	2.3%	0%	0%	2.82	1.59
Plan & write with teacher	6.8%	0%	15.9%	25.0%	22.7%	25.0%	4.5%	0%	4.50	1.49
Total	10.0%	7.9%	14.4%	16.2%	21.0%	16.8%	10.2%	4.3%	4.49	0.88

Note: Scores ranged from 1 (never) to 8 (several times a day); M = mean; SD = standard deviation.

Table 3

Correlations between Reported Writing Practices, Teacher Efficacy, Attitude towards Writing, Epistemological Beliefs, and Years Teaching

	1	2	3	4	5	6	7	8	9
1. Teaching writing	-								
2. Supporting writing	.763**	-							
3. Teacher self-efficacy	.325*	.361*	-						
4. Attitude towards writing	.243	.215	.319*	-					
5. Innate or fixed	.109	.146	.083	-.132	-				
6. Effort and process	.007	.088	.554**	.239	.032	-			
7. Authority or expert	.087	.056	.321**	.143	.399**	.587**	-		
8. Certain knowledge	-.105	.042	.091	-.087	.532**	-.007	.338*	-	

*$p < .05$. **$p < .01$

Table 4

Multiple Regression Analysis for Teaching Writing

	B	*SE*	***β***	*T*	*p*
Model 1					
Constant	4.139	1.301		3.180	.003
Attitude towards writing	.252	.149	.268	1.690	.099
Innate or fixed	.318	.260	.234	1.222	.229
Effort and process	-.183	.273	-.134	-.670	.507
Authority or expert	.134	.254	.115	.526	.602
Certain knowledge	-.362	.271	-.245	-1.135	.190
Model 2					
Constant	3,527	1.248		2.826	.008
Attitude towards writing	.161	.145	.171	1.113	.273
Innate or fixed	.270	.245	.198	1.101	.278
Effort and process	-.523	.292	-.381	-1.792	.081
Authority or expert	.189	.240	.162	.789	.435
Certain knowledge	-.431	.256	-.292	-1.681	.101
Teacher self-efficacy	.607	.247	.439	2.457	.019

Note. Coefficients are standardized; Model 1 accounted for 12.5% of the variance (p =.382); Model 2 accounted for an additional 12.3% of the variance (*sig f change* = .019)

Table 5

Multiple Regression Analysis for Supporting Writing

	B	*SE*	***β***	*T*	*p*
Model 1					
Constant	2.936	1.239		2.370	.023
Attitude towards writing	.209	.142	.239	1.474	.149
Innate or fixed	.295	.248	.233	1.189	.242
Effort and process	.118	.260	.092	.453	.653
Authority or expert	-.127	.242	-.117	-.525	.603
Certain knowledge	-.030	.258	-.022	-.117	.908
Model 2					
Constant	2.418	1.208		2.002	.053
Attitude towards writing	.132	.140	.151	.944	.351
Innate or fixed	.254	.238	.200	1.069	.292
Effort and process	-.170	.282	-.133	-.601	.552
Authority or expert	-.080	.232	-.074	-.344	.732
Certain knowledge	-.088	.248	-.064	-.357	.723
Teacher self-efficacy	.514	.239	.399	2.150	.038

Note. Coefficients are standardized; Model 1 accounted for 8.6% of the variance (p =.616); Model 2 accounted for an additional 18.7% of the variance (*sig f change* = .038).