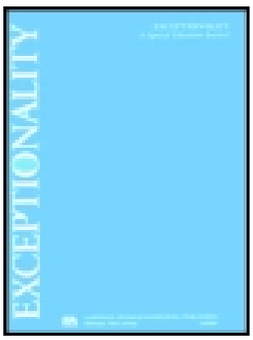

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A survey of the writing instructional practices of Nebraska teachers of students with visual impairments

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ABSTRACT

This paper describes a survey of teachers of students with visual impairments (TVIs) in Nebraska. Questions addressed their preparation to teach writing, writing practices, and beliefs about writing instruction. Twenty-four of 60 TVIs in Nebraska responded to the survey, and 19 answered all questions. Teachers were split on their preparation to teach writing (50% indicated receiving adequate training), but slightly to moderately agreed that they knew how to use writing to support their students' needs. The TVIs unanimously agreed that all writing purposes (e.g., for fun, to demonstrate knowledge, for daily living activities) are appropriate for students who are functionally blind, students who have low vision, and students with multiple disabilities or deaf-blindness. However, they were split on whether writing instruction was their responsibility (47.8% agreed, 52.2% disagreed) and varied in the use of writing practices across different groups of students (e.g., 74% of TVIs felt writing to inform was appropriate for students who are functionally blind, whereas only 42% and 11% felt this was appropriate for students with low vision and multiple-disabilities, respectively). The implications of this study are limited due to the small number of participants, but the results represent 40% of the total number of Nebraska TVIs.

While there is some data on effective writing instruction and assessment (e.g., Graham et al., 2011; Graham & Perin, 2007), as well as data on the writing knowledge and practices of general education teachers in grades K-12 (Brindle et al., 2015; Gillespie et al., 2014; Graham et al., 2014; Kiuhara et al., 2009), little is known about the writing instruction provided to students with VI. The writing needs of students with VI are expected to be different than their peers without VI. In particular, there are differences in how students with VI participate in the writing process (e.g., writing mode, use of optical and non-optical devices) and how instruction is provided (e.g., access and accommodations). Despite these differences, researchers suggest that students with VI be held to the same literacy expectations as their sighted peers, because the fundamental literacy skills are not different (Savaiano & Hebert, 2019; Clark & Stoner, 2008; Edmonds & Pring, 2006; Gompel et al., 2004). Given that expectation, it is possible that many evidence-based practices for writing may benefit this population with appropriate adaptations and accommodations.

In this paper, we present the results of a survey of teachers of students with visual impairments (TVIs) that was designed to examine factors related to writing instruction for students with VI. Most prior research on the writing of students with VI focuses on braille users (e.g., Erin & Wright, 2011). However, students with VI not using braille are likely to have different writing needs than both students who use braille and their sighted peers. Thus, our survey was designed with questions about the use of a variety of writing tools with different subgroups of students with VI (i.e., students who are functionally blind, have low-vision, or have multiple disabilities).

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A lot of work needs to be done to understand the writing of students with VI, and it is especially important to understand the context around how writing instruction is provided to these students. The low-incidence of students with VI has often resulted in misunderstandings and low expectations, because general education teachers lack experience with these students (Ferrell et al., 2014). However, a recent study examined the writing of students with VI across visual categories and writing modes, including students with multiple disabilities (Savaiano & Hebert, 2019). Although this study found that students with VI could perform in the average range compared to the normative population, the sample was small and only included students who were willing to participate in a writing study, which may have biased the results toward students with stronger writing skills.

Misunderstandings about writing skills of the VI student population could also potentially be clarified through collaborations between TVIs and general education teachers. However, the nature of these collaborations is unknown and may lead to confusion or differing beliefs about which teacher (i.e., TVI or general educator) is primarily responsible for literacy instruction if state policy is unclear (Blankenship, 2008; Holbrook, 2008). Therefore, it is also important to understand how TVIs currently collaborate or consult with general education teachers on writing for students with VI.

Finally, instructional context may impact the writing instruction provided by TVIs. Given the variability in employment contexts and survey delivery models across states, the survey for this manuscript focused on TVIs in Nebraska. The authors felt this survey might help them understand how to support TVIs in Nebraska, which has a less-centralized and more autonomous service delivery model than some other states. The survey was also expected to act as pilot data for a national survey.

Factors likely to impact writing

Based on previous research, three factors are likely to impact writing achievement and academic outcomes for students: 1) *preparation to teach writing*, 2) *teacher writing practices*, and 3) *beliefs about writing instruction* (e.g., Brindle et al., 2015; Gillespie et al., 2014; Graham et al., 2014; Kiuhara et al., 2009). These factors have been shown to have associations with writing practices across grade levels, student risk for writing disability, and types of writing practices examined (e.g., evidence-based writing practices, adaptations).

Preparation to teach writing

Many states, including Nebraska, require initial teacher certification prior to the addition of a VI endorsement. An assumption may be that TVIs obtain expertise in teaching writing during their initial teacher certification program because, in general, TVI preparation programs do not include courses on how to teach writing outside of the use of braille. Even when TVI programs leading to initial licensure do include coursework in teaching literacy skills it is unlikely that writing is sufficiently covered. Surveys of elementary, middle, and high school teachers indicate that teachers do not feel well-prepared to teach writing (Brindle et al., 2015; Graham et al., 2014; Kiuhara et al., 2009).

Teacher writing practices

Preparation to teach writing has been shown to impact teacher writing practices. These practices include the quantity of writing instruction in elementary school classrooms (Brindle et al., 2015), evidence-based practices used to teach writing in middle school (Graham et al., 2014), how writing is used to support learning in high school (Gillespie et al., 2014), and the adaptations teachers make in high school (Graham et al., 2014). Because this is true of general education teachers, we would expect that the practices of TVIs are similarly impacted by lack of preparation to teach writing.

This is important because teacher writing practices have been shown to impact writing achievement and academic outcomes for students. Meta-analyses of writing have demonstrated evidence that specific writing practices are related to improved student outcomes (e.g., Graham et al., 2011; Graham & Perin, 2007; Rogers & Graham, 2008), and evidence that writing practices are associated

with improved reading and academic outcomes (Graham & Hebert, 2011; Bangert-Drowns et al., 2004).

Beliefs about writing instruction

Survey data suggest teachers' beliefs about the effectiveness of writing practices for students with disabilities predicted their use of those practices (Gillespie et al., 2014). Teachers' beliefs about the importance of writing also predicted their use of evidence-based writing practices (Graham et al., 2014). And teachers' self-efficacy predicted writing practices used (Brindle et al., 2015; Graham et al., 2014), as well as adaptations and accommodations made for students with disabilities (Graham et al., 2014).

Similarly, beliefs and expectations about writing and students with VI are expected to vary based on TVIs' preparation, their experience teaching writing, and even beliefs about who is responsible for teaching writing to students with VI. TVIs typically receive preparation in teaching the expanded core curriculum (ECC), which include nine areas of instruction necessary for success in school and life for students with VI, including career education, compensatory access, sensory efficiency, assistive technology, orientation and mobility, social interaction, self-determination, recreation and leisure, and independent living (Hatlen, 1996). Based on this preparation, there are differing opinions about the role of the TVI in literacy instruction. One perspective is that TVIs do not have the training necessary to teach reading and writing (Blankenship, 2008). Another perspective is that TVIs are the only people with the requisite knowledge of VI and should be primarily responsible for literacy instruction (Holbrook, 2008). In the area of writing, specifically, these perspectives may extend to whether TVIs view their role as providing instruction or support for writing mechanics (e.g., brailling, handwriting), writing processes (e.g., planning, revising), or specific writing tasks (e.g., persuasive writing, writing descriptions). Ultimately, the perspective of the individual TVI may guide their involvement in writing instruction.

An additional factor that may impact beliefs and expectations for writing is the presence of additional disabilities in students with VI. Around 65% of children born with VI have additional disabilities (Hatton et al., 2013). While many TVIs serve children with multiple disabilities, they are not always prepared to use academic, social, and behavioral interventions specific to other disability areas.

Previous research on writing for students with visual impairments

The Alphabetic Braille and Contracted (ABC) Braille Study examined the writing samples of 29 students with VI (Erin & Wright, 2011). However, they did not explore instructional practices or who was providing instruction in writing and only focused on braille writing. A more recent study examining the writing of students with VI included students with multiple disabilities, and examined students who used a variety of writing modes, including braille, pencil/paper, and computer (Savaiano & Hebert, 2019). However, that study also did not examine the writing instructional practices of TVI or general education teachers.

Data from the Wave 3 Teacher Questionnaire of the Special Education Elementary Longitudinal Study (SEELS), might shed the most light on how teachers are using writing practices with students with VI. In the study, 55% of students with VI completed writing assignments "Often" compared to 72% of students without disabilities, and 20% of students with VI completed writing assignments "Never" or "Rarely" compared to 1% of students without disabilities (Marder, 2009). While we do not know the reason for these differences, or the higher percentage of non-writers, it appears there is substantial heterogeneity in the writing skills of this population and the writing opportunities provided to this population.

Purpose and research questions

The purpose of this study was to survey TVIs in Nebraska to examine their preparation, beliefs and attitudes, and practices related to writing instruction. To extend previous work on writing for students with VI, we included questions to examine students falling into three VI categories: functionally blind (FB), low vision (LV), and students with multiple disabilities or deaf-blindness (MD/DB). We did not specifically define these terms for respondents because they are commonly used terms within the field, but we define them here for readers who might be less familiar with this field. Functionally blind refers to students who do not use vision to accomplish tasks. Typically, these are student with light perception or no light perception. Low vision refers to students who use their vision to accomplish tasks, though they might require magnification or assistive devices. Students with multiple disabilities or deafblindness could be functionally blind or have low vision, but the defining characteristic was the presence of additional disabilities.

Our specific research questions were:

(1) Do TVIs believe writing instruction is their responsibility and are they prepared to teach writing?
(2) What are TVIs' beliefs about the appropriateness of various writing purposes, modes, and activities for each student group?
(3) Which specific practices have the TVIs used in the past year with each student group?
(4) Are the number of writing practices used by TVIs related to their belief about whether writing is their responsibility, when controlling for students on their caseload in each group?

Methods

At the time of the study, there were 60 teachers of students with visual impairments (TVIs) working in Nebraska, according to the directory kept by the Nebraska Center for the Education of Children who are Blind or Visually Impaired. Due to the low numbers, we elected to survey the entire population. We sent an e-mail through the survey website to all TVIs in the state, which included a personalized but anonymous link to complete the survey. This link ensured that participants could not complete the survey more than once. A power analysis suggested that even with less conservative estimates, a sample size of 37 respondents (62% of the population) would be required to make inferences with a 10% margin of error using the finite population correction (Dillman et al., 2014). Based on previous survey research examining writing instruction (e.g., Brindle et al., 2015; Graham et al., 2014), a return rate this large would be unusual. However, the population is finite and describing even a small portion of the population might be useful for understanding these TVIs' preparation to teach writing, writing practices, and beliefs about writing instruction.

Survey instrument

The authors created the survey using Qualtrics (Qualtrics, Provo, UT), an online survey tool. Qualtrics is compatible with any operating system or device (e.g., tablet). Qualtrics also allowed the authors to create survey sections (i.e., demographics, preparation to teach writing, TVI writing practices, and beliefs about writing instruction) and to require forced responses. We modeled the sections after previous surveys of teacher writing practices (e.g., Brindle et al., 2015; Gillespie et al., 2014; Graham et al., 2014; Kiuhara et al., 2009).

Demographics

The first section of the survey included questions about teacher demographics. There were 16 items, including questions about gender, ethnicity, educational level, total number of years of experience teaching, total number of years teaching students with visual impairments, and all endorsement

areas held (i.e., Elementary, Secondary, Special education K-6, Special education 7–12, VI-provisional, VI-full, Other). Questions about employment asked for information about their current position, including whether they were employed by district/educational service unit full-time, employed by district/educational service unit part-time, or a private provider (i.e., self-employed TVIs who contract independently with schools or districts to provide services). The employment section also included questions about the context for service delivery (i.e., one school, multiple schools in one district, multiple schools in multiple districts), total number of students with visual impairment on their caseload, number of students with multiple disabilities or deaf-blindness (MD/DB) on their caseload, and verification status of students on their caseload (i.e., blind, legally blind, partially sighted). This section also included questions about the number of minutes per week, on average, teachers spent driving, providing direct service to students, and providing consultation services.

Responsibility and preparedness

In the next section of the survey, teachers reported their preparedness to teach writing during and after college. For each source of preparation, teachers indicated if they received no, minimal, adequate, or extensive preparation. Teachers who received preparation during college indicated the number of courses they took with a focus on using writing to support students' learning of classroom materials. Teachers further indicated whether they had received training from the National Writing Project and rated their effectiveness as a writer on a six-point scale. Teachers also indicated whether they believed reading instruction and writing instruction (other than braille) were part of their job responsibilities; response choices included definitely yes, probably yes, might or might not, probably not, definitely not.

Beliefs, attitudes, and self-efficacy

In a third section, teachers reported their beliefs about writing by indicating the extent to which they agreed or disagreed with each of 23 statements based on a six-point Likert-type scale (strongly disagree to strongly agree). Three statements related to the impact of instructional time on their use of writing practices, three required teachers to make judgments about their students' skills and attitudes toward writing, and eight required them to make judgments about whether writing was effective for learning classroom material and specifically effective for students in each VI group. They then responded to three statements about whether they believed they had the expertise and resources to use writing practices with their students, two about whether their students' writing provided an accurate representation of their knowledge and ability, and three addressing their collaboration with the classroom teacher. TVIs also indicated whether they were good writers themselves.

Writing practices

In the fourth section, TVIs reported on their writing practices. For this section, the authors considered TVIs might teach different writing skills based on whether their students were FB, had LV, or had MD/DB. Therefore, this section began with questions about whether specific modes of writing (e.g., pencil/paper, braille) were appropriate (yes/no) for each group of students. Next, TVIs reported on whether specific purposes for writing were appropriate (yes/no) for each group of students (e.g., for fun, to demonstrate knowledge, for daily living activities). Finally, the TVIs reported on whether they used 31 different writing activities with their students. The writing activities were chosen from several meta-analyses of writing instruction (Graham & Hebert, 2011; Graham & Perin, 2007), surveys of teachers' writing practices (e.g., Kiuhara et al., 2009), and articles or chapters on content area writing (e.g., Klein & Kirkpatrick, 2010). Activities were selected based on ubiquity and potential accessibility across student groups (i.e., FB, LV, and MD/DB). However, due to the dearth of literature on writing in the VI population, it was uncertain whether there might be additional writing activities for this population, and specifically students with MD/DB, that we

may have inadvertently omitted. Given the variety in their caseloads, it would have been difficult to determine how often they conducted these activities. Therefore, they simply indicated "yes" if they completed the activity during the past school year with any student in each category (i.e., FB, LV, MD/DB), or "no" if they did not. TVIs also had the opportunity to answer three open-ended questions to explain their responses.

Procedures

The authors set up Qualtrics to send the first e-mail at the beginning of May. The e-mail included information about the purpose of the survey, an estimate of the time it would take to complete (20–25 minutes), and an incentive (people who completed the survey received a 5 USD e-gift card). A link brought participants to the first page of the survey, which asked for informed consent. Following consent, participants immediately started the first survey section (demographics). If they did not provide consent, they were thanked for their time.

Two follow-up e-mails were sent to initial non-responders to the survey. The first follow-up e-mail was sent two weeks after the initial e-mail, and the second was sent four weeks after the initial e-mail. Qualtrics automatically collected the data within the database.

Data analysis

The authors downloaded survey results from Qualtrics into a.csv file that could be opened in Excel for the analysis of descriptive statistics. We aggregated the data by category and computed means and standard deviations, provided ranges, and/or provided counts, as deemed appropriate for specific variables.

We examined the reliability of sections of the survey using the omega function from the (psych) package in R which uses estimators suggested by Revelle and Zinbarg (2009). Dunn et al. (2014) suggest that omega makes fewer assumptions than alpha and makes inflation and attenuation less likely. We calculated omega for all scaled items including, beliefs about their job (ω = .83), beliefs about the effectiveness of writing (ω = .97), attitudes about writing (ω = .83), and self-efficacy (ω = .84). However, we did not calculate omega for the section on writing practices used by TVIs because teachers were asked whether or not they used the practices within the current year.

Next, we conducted *t-tests* to determine whether TVIs believed specific writing modes were appropriate or not appropriate for specific groups of students. For these analyses, we conducted comparisons across groups, as all of the TVIs could respond to these questions, regardless of the students on their caseload. We then conducted *t-tests* to examine whether the TVIs actually worked with students in the different groups using specific writing modes during the past school year. In this case, we did not compare across groups, because each TVI had different numbers of students in each group on their caseload, and some TVIs had no students in a particular group. In other words, the results may have been dependent on the number of students from each group on a TVI's caseload. Therefore, we only compared TVIs answers within the student groups to determine whether the percentages reported for the writing modes within each group were statistically different. For all *t-tests*, we made only an orthogonal number of comparisons (e.g., 2 comparisons across 3 groups).

Finally, we conducted Ordinary Least Squares regression analyses using STATA/IC 15 (StataCorp, 2017). Although the sample was small, we wanted to determine whether any of the variance in the number of writing practices used by TVIs with different groups of students could be predicted by the number of students on their caseload and the TVIs' opinions about whether writing instruction was the responsibility of the TVI. To create the total number of practices variable, we simply added all of the practices TVIs reported using for each category of students. Before reporting the models, we examined the assumptions of OLS regression primarily using residual plots. The assumptions tested included linearity (using scatterplots and acprplots), normality (using k-density plots, *P*-P plots, and

Q-P plots), homogeneity of the error variance (using residual versus fitted plots, Cameron & Trivedi's decomposition of IM-test, and Breusch-Pagan test for heteroskedasticity), multi-collinearity (using the variance inflation factor), and model specification using specification link tests and a regression specification error test for omitted variables. Although there were a relatively small number of data points, all three models met the regression assumptions. The residuals appeared linear and normal, and the heterogeneity tests failed to reject the assumption of homogeneity. The variance inflations factors were under 10 for all models, indicating no problems with multi-collinearity, and the results of model specification tests did not indicate the presence of missing variables.

Results

Thirty-two of 60 TVIs (53%) opened the survey. Twenty-four (40%) answered demographics, employment and preparation questions. Nineteen (32%) completed the entire survey. Table 1 includes demographic information about survey respondents, including gender, ethnicity, highest education level, teaching endorsements held, and teaching experience. Table 2 indicates the employment context

Table 1. Participant demographics.

Variable	*n*	%
Gender		
Male	3	12.5
Female	21	87.5
Ethnicity		
White	23	95.8
Other	1	4.2
Highest Education Level		
Bachelor's +	6	25.0
Master's	8	33.3
Master's +	10	41.7
Endorsements Other than VI[1]		
Elementary K-6	14	
Secondary 7–12	2	
Special Education K-6	12	
Special Education 7–12	8	
Early Childhood	1	
Early Childhood Special Education	2	
VI Endorsement		
Full	20	83.3
Provisional	4	16.7
Work Status		
Full Time	19	79.2
Part Time	5	20.8
Private Provider	1	4.2
Work Context		
One School	3	12.5
Multiple Schools in One District	13	54.2
Multiple Schools in Multiple Districts	8	33.3
Number of Years Teaching VI		
1–5	13	54.2
6–10	4	16.7
11–15	2	8.3
16–20	4	16.7
More than 20	1	4.2
Number of Years Teaching Other than VI		
1–5	11	45.8
6–10	2	8.3
11–15	5	20.8
16–20	3	12.5
More than 20	3	12.5

Note: VI = Visual Impairment.
[1]Respondents were able to select more than one option.

Table 2. Employment context for TVIs in the sample.

	Residential School Teachers (*n*= 2)		All Other Teachers (*n*= 22)		Range (All Teachers)	
Variable	*M*	(*SD*)	*M*	(*SD*)	min	max
Number of Students on Caseload						
Blind	9.50	(2.12)	1.77	(2.22)	0	11
Legally Blind	2.50	(3.54)	6.05	(4.65)	0	16
Partial Sight	3.00	(0.00)	11.91	(8.48)	0	31
Multiple Disabilities	15.00	(1.41)	9.18	(7.39)	1	25
Total	15.00	(1.41)	20.55	(12.76)	2	47
Work Apportionment						
Driving Minutes	0.00	(0.00)	295.68	(251.79)	0	900
Instructional Minutes	1665.00	(190.92)	645.59	(470.72)	9	1800
Consulting Minutes	300.00	(424.26)	246.59	(308.82)	0	1200

for the TVIs, including the average number of students on their caseload and work apportionment. Most respondents indicated they work full time as a TVI (*n*= 18, 75%), while five indicated working as TVIs part time (20.8%), and one indicated working as a private provider in schools (4.2%). The majority of TVIs worked in multiple schools, either in a single district (*n*= 13) or across multiple districts (*n*= 8), whereas fewer TVIs indicated working in a single school (*n*= 3; two of which worked at a residential school). Because the TVIs who worked in a residential setting worked in a qualitatively different context and may have worked with a qualitatively different population, we separated their contextual data in Table 2.

Responsibility and preparedness

Of the TVIs who answered the question of whether reading instruction (other than braille instruction) was one of their job responsibilities, 11 responded definitely yes (*n*= 5) or probably yes (*n*= 6), while 12 responded definitely not (*n* = 6) or probably not (*n*= 6), and one responded that it might or might not. Slightly fewer indicated writing instruction (other than braille instruction) was part of their job responsibilities, with 10 responding definitely yes (*n*= 4) or probably yes (*n*= 6), while 12 responded definitely not (*n*= 7) or probably not (*n* = 4), and two responded that it might or might not.

There was a similar split in responses on their preparedness to teach writing, as 12 TVIs reported receiving minimal or no training, and 12 reported receiving adequate training. Ten reported receiving adequate to extensive training during in-service and 15 indicated undertaking their own preparation. One TVI indicated participating in the National Writing Project.

Beliefs, attitudes, and self-efficacy

The purpose of these questions was to determine whether TVIs deemed specific modes or purposes to be appropriate or inappropriate for groups of students with VI, as this might impact how TVIs prepare for writing instruction, or the types of writing they employ with students.

Beliefs about writing purposes

The TVIs unanimously agreed that all writing purposes are appropriate for all student groups included on the survey (i.e., students who are FB, have LV, or have MD/DB). There was no variation in this variable for any of the categories. This indicates that TVIs feel it is appropriate to have students write for any purpose.

Beliefs about writing modes

There was variability in TVIs' beliefs about the appropriateness of some writing modes for students in different groups (i.e., FB, LV, or MD/DB). The results across writing modes and VI classification are presented in Table 3. After examining the means, we tested for statistically significant differences in

Table 3. Beliefs of TVIs about writing modes and writing practices used.

	Functionally Blind	Low Vision	MD/DB
APPROPRIATENESS OF WRITING MODE			
Pencil/paper	55.56	100.00	63.16
Keyboard	100.00	100.00	89.47
Braille	100.00	94.74	63.16
Speech to text	94.74	89.47	100.00
Technology	100.00	100.00	100.00
Dictation to a scribe	88.89	88.99	100.00
SPECIFIC WRITING PRACTICES USED			
Writing instruction	57.89	42.11	27.78
Writing Mechanics			
Handwriting skills	47.37	63.16	26.32
Keyboarding skills	78.95	84.21	47.37
Braille instruction (for writing)	89.47	36.84	16.67
Spelling instruction	84.21	73.68	38.89
Copying written material	63.16	68.42	26.32
Writing Skills/Processes			
Sentence writing	100.00	84.21	36.84
Writing a paragraph	89.47	73.68	21.05
Planning	57.89	44.44	21.05
Revising	57.89	38.89	11.11
Other Writing Tasks			
Story writing	78.95	63.16	21.05
Personal narrative	68.42	47.37	26.32
Persuasive writing	47.37	26.32	0.00
Writing to inform	73.68	42.11	10.53
Writing a 5-paragraph essay	31.58	21.05	0.00
Writing a description	78.95	68.42	26.32
Writing to compare and contrast	47.37	31.58	10.53
Writing about causes and effects	47.37	42.11	15.79
Free writing (includes scribbling)	94.74	84.21	63.16
Writing lists	94.74	68.42	42.11
Labeling	63.16	57.89	36.84
Journal writing	73.68	55.56	21.05
Completing worksheets	78.95	63.16	31.85
Writing an outline	57.89	47.37	0.00
Writing answers to questions	100.00	89.47	31.58
Writing questions	66.67	36.84	10.53
Taking notes while listening	68.42	57.89	10.53
Writing about reading	42.11	26.32	5.26
Taking notes while reading	68.42	63.16	26.32
Writing a book report	63.16	52.63	15.79
Summary writing	73.68	47.37	10.53

Note: MD/DB = multiple disabilities.

TVIs beliefs about using paper/pencil and braille, but did not conduct statistical comparisons for other writing forms because the differences did not seem to have practical importance.

First, we conducted two *t-tests* comparing TVI's beliefs about the appropriateness of writing with paper/pencil for students who have LV compared with other students, as students with LV are most likely to use pencil and paper when writing. There was a significant difference between TVIs' beliefs in the appropriateness of writing with paper pencil for students who are FB versus students with LV (t= −3.79, p< .001), with fewer TVIs indicating it is appropriate for students who are FB. There was also a significant difference in their beliefs about the appropriateness of paper/pencil between students with LV and students with MD/DB (t= −3.24, p= .003), with fewer TVIs indicating it is appropriate for students with MD/DB.

Next, we conducted two *t-tests* comparing TVI's beliefs about the appropriateness of writing in braille. For these comparisons, FB was the comparison group, as those students are most likely to use braille when writing. There was no significant difference in TVIs' beliefs about the appropriateness of

braille for students who are FB and students with LV (t= 1.00, p= .324). There was a significant difference in TVIs beliefs about the appropriateness of writing in braille for students who are FB compared to students with MD/DB (t= −3.24, p= .003), with fewer TVIs indicating this mode is appropriate for students with MD/DB.

Attitudes and self-efficacy

Results for these questions can be found in Table 4. The scale ranged from strongly disagree (−3) to strongly agree (3), meaning a score of zero might indicate that the TVIs, on average, neither agreed nor disagreed with the statement. TVIs moderately agreed that they had self-efficacy as writers and knew how to use and adjust writing to meet the needs of their students, but they were split about their agreement or disagreement on having the resources they need for writing. TVIs slightly to moderately agree that they collaborate with the classroom teacher to develop writing tasks and interpret writing assessment data, but strongly agree that they collaborate with classroom teachers to make accommodations for their students. While they moderately to strongly agree that writing should be used to support learning and that it is an effective tool for learning (for all types of students with VI), they are split on whether students' writing is a good representation of their learning and whether their students have the writing skills to use it as a learning tool. They slightly agree that their students like to write and that their students believe writing is an effective learning tool.

Five questions were asked in the reverse, meaning negative responses indicated positive beliefs. TVIs neither agree nor disagree that writing is not an accurate reflection of their learning. However, they slightly to moderately disagree with barriers to using writing with their students, including that it takes too much time, takes too much time to grade, is not practical, and can have a negative impact on student learning.

Writing practices

We included questions about writing practices across a range of categories, including general writing instruction, writing mechanics, writing skills/processes, and other writing tasks. Similar to the section on writing beliefs, we present the results of TVI responses in terms of three groups of students (FB, LV,

Table 4. TVIs beliefs, self-efficacy, and attitudes about writing.

	M	SD
I am a good writer	1.68	1.00
I know how to use writing to support my students' learning	1.37	1.54
When a student has difficulty with a writing assignment, I am able to adjust it to his/her level	2.11	0.74
I have the resources I need to incorporate writing with my students	0.37	1.86
I collaborate with the classroom teacher to develop writing tasks for students	1.32	1.73
I help interpret writing assessment data for the classroom teacher[1]	1.06	1.86
I collaborate with the classroom teacher to make writing accommodations for my students[1]	2.44	0.70
Writing should be used to support classroom learning in all subjects	1.68	1.06
Writing is an effective tool for learning classroom material	2.42	0.69
Writing is an effective learning tool for students who are partially sighted	2.36	0.76
Writing is an effective learning tool for students who are legally blind	2.26	0.73
Writing is an effective learning tool for students who are blind	2.05	1.27
Writing is an effective learning tool for students with multiple disabilities	1.47	1.39
Writing is an effective learning tool for students who are deafblind	1.94	1.08
Student's writing is a good representation of their academic ability	0.00	1.76
My students have the writing skills needed to use writing as a tool for learning	0.47	1.65
My students like to use writing when we work together	1.00	1.53
My students believe that writing is an effective learning tool	1.00	1.25
*Students' writing does not accurately reflect their knowledge of a topic	−0.11	1.94
*I limit my use of writing as a tool for learning because of the time it takes to grade	−1.58	1.68
*Writing with my students is not practical because it is too time consuming	−1.79	1.44
*Writing about classroom material can have a negative impact on some students' learning	−1.58	1.54
*Assessing students' writing is too time consuming	−1.37	1.58

*Questions were posed as a negative.
[1] n= 18 as these items were answered by only one of the residential school teachers.

and MD/DB). The results for percentage of TVIs who used the writing practices across each type of student are presented in Table 3. It is important to note the percentages represent the percentage of TVIs who responded that they used the practice with *at least one student in the group on their caseload* during the year.

The percentage of TVIs who reported using specific writing practices with students with MD/DB was consistently lower than the percentage who reported using the practices with the other two categories of students. Although we could not make statistical comparisons to other groups, this trend is notable because every TVI indicated having at least one student with MD/DB on their caseload, while this was not the case for the other types of students.

Writing instruction

The first question related to whether the TVIs provided writing instruction to students on their caseload, which was distinguished from completing writing tasks without instruction. Therefore, the percentages for this question in Table 3 represent TVIs who provided some type of writing instruction during the past year.

Mechanics

Next, TVIs responded to questions related to the mechanics of writing, including handwriting, keyboarding, braille, copying written material, and spelling (see Table 3). The percentage of TVIs that reported *using* practices with each student group were lower (respectively) than the percentage of TVIs that indicated paper/pencil, keyboarding, and braille were *appropriate* for each student group (see Table 3).

We conducted t-tests to compare the use of writing practices related to mode of writing (handwriting, keyboarding, and braille) within student categories to determine if TVIs use the modes more often within specific student groups. These results can be contextualized with results from the beliefs about the appropriateness of writing in different modes. As a reminder, we did not make comparisons across groups for these practices due to differences in TVI caseloads. We used keyboarding as the comparison mode, because the TVIs who responded to our survey indicated it was an appropriate writing mode for each student group (refer back to Table 3). We first compared keyboarding to handwriting, and then compared keyboarding to braille (in order to keep the comparisons orthogonal, we did not compare handwriting to braille).

There were no differences in the number of TVIs reporting using keyboarding compared to handwriting with students with LV ($t = 1.48$, $p = .148$) or students with MD/DB ($t = 1.34$, $p = .188$), meaning TVIs were just as likely or unlikely to use both modes. However, there was a significant difference in the number of TVIs who reported using keyboarding compared to handwriting with students who were FB ($t = 2.08$, $p = .045$). This means TVIs used keyboarding more often than handwriting with these students.

There were no differences in the number of TVIs reporting using keyboarding compared to braille with students who were FB ($t = -0.87$, $p = .387$), meaning TVIs were just as likely or unlikely to use both modes with these students. However, there was a significant difference in the number of TVIs who reported using keyboarding compared to braille with students with LV ($t = 3.32$, $p = .002$) and students with MD/DB ($t = 2.05$, $p = .048$). For both groups of students, TVIs used keyboarding more than braille.

Writing skills/processes

We did not make any statistical comparisons for writing processes, so results for this section are descriptive only. Sentence writing was reported as being used most often by TVIs for each student group. Planning and revising were reported by a consistently lower percentage of TVIs for all three categories of students, indicating that the writing process may be used or taught less often than sentence and paragraph writing.

Other writing tasks

TVIs indicated working with students who are FB or have LV across every writing task in this category (see Table 3). Although the percentage of TVIs reporting working with students with MD/DB was lower than 50% for all writing tasks (with the exception of free writing at 63.16%), only persuasive writing, 5-paragraph essays, and outlining were not reported by any TVIs working with students with MD/DB. Descriptively, a consistently higher percentage of TVIs reported using each writing task with students who were FB than those who reported using the same tasks with students with LV or MD/DB. We did not conduct statistical analyses for this, as such analyses may have led to inaccurate inferences; for example, higher percentages of TVIs may have reported using story writing with students who are FB, simply because they had more of those students on their caseload or they worked with them for more instructional minutes.

Overall writing practices

The average number of practices used by TVIs varied across students who were FB (M= 21.42, SD = 8.13), students with LV (M = *16.95, SD* = 9.21) and students with MD/DB (M= 6.84, SD = 7.04). We used regression models to examine whether the number of practices used by TVIs could be predicted by whether they indicated that writing instruction was one of their job responsibilities (ranging from −2 to 2 based on a Likert type scale), while controlling for the number of students on their caseload for that category of student.

In the regression model examining the writing practices used with students with LV, there were no significant predictors.

In the model examining the writing practices used with students who are FB, caseload was not a significant predictor (p= .975), but TVIs feelings about whether writing was part of their responsibility was significant (t= 2.62, p= .019). TVIs indicated they used an average of three more practices with these students if they believed writing instruction was their responsibility.

In the model examining the writing practices used with students with MD/DB, the number of students with MD/DB on TVIs caseloads was a significant predictor of the number of writing practices used with those students (t= 2.52, p= .023), but their beliefs about the responsibility for writing was not (p= .445). The coefficient for caseloads was positive, suggesting that for every additional student on a TVI's caseload, the model predicted an additional .6 writing practices. Students with MD/DB are likely to vary widely in their writing abilities and skill levels.

Discussion

Although we did not have enough respondents to make inferences with a 10% margin of error (Dillman et al., 2014), the context and apportionments of the TVIs who responded to the survey (40% of the TVIs in Nebraska) reflect the diversity of educational contexts in Nebraska. The majority of TVIs worked in multiple schools (n = 21). Due to the rural nature of some areas in Nebraska, it is possible that only one student with VI is enrolled in some schools or school districts. Therefore, some TVIs spend a substantial amount of time driving between schools and districts, which leaves less time available for instruction and consulting (Correa-Torres & Howell, 2004). Because they have less available time, this may lead to less time for writing or fewer writing practices used. Additionally, TVIs who work in multiple districts (n = 8) have to navigate curriculum and resource variation across those districts, which could affect the availability of writing resources for students on their caseloads.

Beliefs about the TVI's role and preparation for writing instruction

The split perception of the role of the TVI in reading and writing instruction (other than braille) needs further investigation. Nebraska does not have an explicit policy on the role of the TVI, so these results may be specific to this sample. For TVIs who believe reading and writing instruction are not part of

their responsibility, there is an assumption that the general educator is providing effective instruction. Similarly, for TVIs who believe reading and writing instruction are part of their responsibility, there is a question of whether the TVI is adequately trained for that role.

Either way, there was an assumption that at least one educator (classroom teacher or TVI) had adequate preparation to teach writing. This assumption might not be valid. Across 53 required literacy courses listed in the undergraduate elementary education programs in Nebraska, no courses were identified as dedicated solely to the instruction of writing. That said, about half of the TVIs in our sample indicated they felt adequately prepared to teach writing through their college program, which is encouraging.

Whether or not TVIs felt prepared to teach writing, many reported they are teaching it with at least some of their students. More than half of the TVIs indicated providing writing instruction to students who were FB, while less than half provided instruction to students with LV or students with MD/DB. The differences reported may be indicative of the roles TVIs, and other educators take on for specific types of students. For example, students with LV may have fewer service minutes with the TVI and general education teachers may feel more equipped to accommodate these students.

Comparing beliefs to practice

The TVIs who responded to the survey differed in their opinions on the mode that should be used by different groups of students. TVIs reported using pencil and paper more often with students with LV and braille more often for students who were blind. However, the mode reported to be used most consistently across all of the groups was keyboarding. It may be that keyboarding is viewed as more appropriate due to the flexibility computers offer for changing color, contrast, and size of print, making this writing mode more accessible for students with VI. However, it is also possible that other technologies, such as optical devices, may be paired with pencil/paper or braille to make these writing modes more accessible. Therefore, we need to interpret these results cautiously and follow up on how technology is used for writing in future research.

Although TVIs indicated writing for different purposes is appropriate for students across all groups, few reported using most of the writing practices with students with MD/DB. It may be TVIs have fewer direct instructional minutes for these students, or that writing instruction is the responsibility of another teacher. On the other hand, more TVIs reported using many writing practices with students who have LV or who are FB. Despite this, only 58% of TVIs reported providing writing instruction to students who were FB, while 42% and 28% reported providing instruction to students with LV and MD/DB, respectively. This indicates the majority of TVIs are supporting writing instruction but not providing it themselves. For the specific writing practices in the survey and table, only two practices were used less frequently with students who were FB (i.e., handwriting skills and copying written material), and all other writing practices were used more frequently with students who were FB than LV and MD/DB. This indicates that the TVIs in this sample were more likely to provide writing instruction and practices to students who are FB than other students.

Overall writing practices

The results of the regression models may further illustrate that TVIs believe writing instruction is more of their responsibility for students who are FB. In the regression model for these students, their beliefs about whether writing instruction was their responsibility predicted the use of more writing practices. However, these beliefs had no impact on the number of practices for students with LV or MD/DB in similar regression models. This suggests there may be nuance to the question of whether TVIs believe writing instruction is their responsibility based on the students they are teaching.

This nuance may also explain the results of the regression model for writing practices used with MD/DB students. The number of students with MD/DB on a TVI's caseload was a significant predictor of the number of writing practices reported being used with these students. This is likely due to the variability in the needs of these students. Depending on the severity of a student's additional disability and VI, TVIs may be more or less responsible for their writing instruction. Some students with MD/DB may not be viewed as being able to participate in writing at all, while writing may be more accessible for others.

Limitations and future research

We are limited by the low overall number of TVIs in this pilot survey, and by the context of conducting the survey in Nebraska. We would be able to detect more trends and have more confidence in our results with a larger sample of TVIs. That said, our results included 40% of the TVIs in the state of Nebraska (and 32% who completed the entire survey), and the variability in responses might be similarly expected across the country, due to the range of abilities, contexts, and needs of this low-incidence population.

Second, our question about whether writing is the responsibility of the TVI was *general*, while questions about beliefs and practices were *specific* to students in three different VI categories. Therefore, we could not tease out whether our respondents believed writing instruction was their responsibility more for some student categories than others. Hence, we could not examine whether these nuances might impact practices used with different groups of students. Similarly, our preparedness questions did not ask TVIs about preparedness for teaching writing to students in different VI categories, which may also play a role in the practices used. Another of our questions simply asked whether the TVIs had provided writing instruction during any part of the school year. However, we did not define writing instruction, outside of separating it from braille instruction; some TVIs may have interpreted writing instruction broadly, to include skills such as the use of optical and assistive technology devices, while others may not have. Finally, our questions about students with low vision included the use of paper/pencil, whereas many may typically use darker writing implements. We don't expect that this would have confused the TVIs, because it is a generalization of writing types. Nevertheless, the writing instruction items should be interpreted with these potential limitations in mind. Future researchers may want to better address these nuances in a national survey.

Because we based our selection of writing activities primarily on writing surveys of general teacher populations, we also may not have captured writing activities that are regularly used with students with VI, especially those with MD/DB. Future research should examine whether there are writing activities or strategies used with this population that do not fit into the categories we identified. Observational, interview, and open-ended survey research could help identify any additional activities.

This survey only included TVIs, and does not include the perspectives of general educators, special educators, or administrators. The instructional practices used by TVIs may be influenced by other educators or district policies. Other educators may take on the responsibility for writing instruction for certain students, or administrators and IEP teams may place emphasis on skills other than writing for some students (e.g., ECC or life skills). Future research should examine perspectives of other educators about the TVI role in writing instruction.

The survey included two TVIs who worked in a residential setting. We examined their responses to some items in comparison to other teachers and did not note any qualitative differences. Because of this, and because there were only two TVIs in residential contexts, we did not separate their responses from the others. However, future researchers may want to examine whether TVIs in residential settings have different views, beliefs, and practices concerning writing for students with VI.

Implications for practice and future research

The scope of this survey is too limited to provide strong implications for practice. One recommendation for practicing TVIs is to try to work with all students on the caseload using multiple writing

practices. The overwhelming majority of TVIs in this sample believed that all types of writing purposes were appropriate for all students, but a lower percentage of TVIs reported using the writing practices with students with MD/DB. Writing is an essential form of communication, and any writing experiences provided for these students have the potential to help these students communicate more effectively.

More research needs to be conducted to understand the expectations and role TVIs play in writing instruction for different types of students with VI. A large national survey and/or in-depth contextual study needs to be conducted. This pilot study provides a jumping off point for the design of such a survey. The sections on beliefs about their job, effectiveness of writing, attitudes about writing, and self-efficacy all resulted in high reliability, suggesting that these questions may be valid for a national survey. Beliefs about whose responsibility it is to teach writing, and attitudes and self-efficacy may also vary by state or region of the country, making these questions a priority for a national survey.

On the other hand, the lack of variability in TVIs responses to items related to beliefs about writing purposes suggests that these questions may not need to be asked, or that they may need to be revised to ask more nuanced questions about which writing purposes TVIs feel might be most important for the population. Similarly, questions about whether the teacher has used a writing practice with any student on their caseload may need to be revised to examine how often they use these writing practices with students, or the percentage of students they use these practices with on their caseload.

One limitation of survey data is that it relies solely on self-report, so a study that involving observations and interviews could provide a stronger understanding of: (a) how writing is used by TVIs, (b) whether and how instruction occurs for students with VI, and (c) communication between TVIs and other writing instruction providers.

Conclusions

This survey included TVIs from the state of Nebraska. Although the number of overall responses was small (24 completed demographics and 19 completed the entire survey), this represented 40% and 32% of the TVIs in the state, respectively. It appears there are mixed opinions about whether writing instruction is the responsibility of the TVI, but most TVIs believed writing was appropriate for all students. Many factors may have impacted whether the TVIs used writing practices with students (e.g., the amount of direct instructional minutes they have with the student and IEP goals). We did not have enough power in this study to test all potential factors. However, the demographics seem relatively varied across our sample and representative of the state of Nebraska. Therefore, we were not surprised to see the variety in contexts reflected in the beliefs and practices used across TVIs.

We were encouraged by the number of practices used by TVIs overall and hypothesize that the variability in beliefs and practices used in our sample is likely to be representative of TVIs across the United States. Therefore, more work needs to be done to examine the context of writing instruction across different populations of students with VI (e.g., when and why specific types of writing practices are employed by TVIs). Future survey, interview, and observational research should focus on these questions.

Disclosure statement

No potential conflict of interest was reported by the authors.

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