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Selecting and Using Mathematics Methods Texts: Nontrivial Tasks

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Mathematics methods textbooks/texts are important components of many courses for preservice teachers. Researchers should explore how these texts are selected and used. Within this paper we report the findings of a survey administered electronically to 132 members of the Association of Mathematics Teacher Educators (AMTE) in order to answer the following research questions: What criteria do mathematics teacher educators use when they select texts? How do they use the texts in their methods courses? What strategies (e.g., literacy strategies, reflection strategies, etc.) do mathematics teacher educators use in order to help preservice teachers engage with the texts? Findings suggest that mathematics teacher educators use varied criteria to select methods texts and they use texts in a variety of ways. Some use texts to show and tell about standards-based practices and some want to help preservice teachers use texts to shape their own visions of standards-based practices. Additionally, results indicate that mathematics teacher educators ask preservice teachers to participate in discussions about the texts they select and use in their courses. We propose additional research related to the literacy strategies that mathematics teacher educators use in their methods courses in order to help preservice teachers engage with the texts that they select and use.

Methods instructors struggle with the problem of choosing textbooks, as illustrated in the survey response:

> There seems to be very little agreement about what should constitute a methods course, so choosing a text is a non-trivial problem. I like books that give me a sense of structure without being too constraining. (Response to survey Question 10; 11/4/13)

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As mathematics teacher educators, we struggle with the selection of textbooks and texts for our methods courses and with the role they should play in helping to shape preservice teachers' learning. (Henceforth, we use the word texts to include textbooks as well as supplemental and/or other resources.) We expect our preservice teachers to engage in the text assignments and reflect upon what they learn; yet, anecdotally, quite a few have told us that they do not like to read. Some have admitted that they "scanned" the texts or did not find time to read them. Preservice teachers not reading or merely scanning text assignments is problematic for several reasons. It contributes to preservice teachers' loss of opportunities for learning and reflecting on the assigned texts. Furthermore, it creates undesirable learning environments when all preservice teachers are not actively engaged in the in-class activities and whole-class conversations based on the assigned texts. Additionally, when preservice teachers devalue texts, the purposes of literacy courses, required by many teacher preparation programs, might also be devalued.

As Mesa and Griffiths (2012) noted, "textbooks remain a ubiquitous course component with various implications for the teaching and learning of mathematics at a tertiary level" (p. 86) and while there are several studies about mathematics content texts at the collegiate-level (McCrory & Stylianides, 2014; Mesa & Griffiths, 2012; Weinberg & Wiesner, 2011; Weinberg, Wiesner, Benesh, & Boester, 2012), the same cannot be said of mathematics methods texts. We posit that mathematics methods texts, typically focused on pedagogical strategies and pedagogical content knowledge (Hill, Ball, & Schilling, 2008), are also important. Therefore, researchers should explore the implications of how these texts are selected and used by mathematics teacher educators.

It is equally critical that we investigate the ways in which mathematics teacher educators implement strategies that help preservice teachers engage with the texts they select and use in their methods courses. Ideally, in mathematics methods courses, mathematics teacher educators should model and use literacy-based and reflection strategies. Draper (2002) supported this notion when she noted "every content-area teacher should also

be a teacher of reading and writing" (p. 358). Draper analyzed nine top-selling methods texts—three focused on mathematics pedagogy, three focused on science pedagogy, and three focused on social studies pedagogy—with a lens toward how the texts supported teachers teaching literacy. Unfortunately, Draper's findings suggested, "The authors of these methods texts have legitimized for content-area teachers the policy of denying literacy for all students" (p. 381). Furthermore, she noted that, perhaps, the writers of methods texts do not see how reading and writing can be infused into their content instruction (Draper, 2002). We suggest that, perhaps, mathematics teacher educators also struggle with visions of how to facilitate the infusion of teaching literacy—reading, writing, speaking, and listening—into their methods courses.

Literacy research has consistently indicated that content-area teachers (excluding English language arts) believe that it is the English teacher's responsibility to teach reading and writing (Vacca & Vacca, 2002). Furthermore, content-area teachers report that they lack the skills or training to teach reading and writing and there is no time to teach reading and writing in conjunction with teaching their own discipline (Vacca & Vacca, 2002). Again, it is possible that these findings resonate with mathematics teacher educators' perceptions of their roles related to literacy instruction as well.

A review of literature confirmed the need to delve deeper into these issues. Thus, we created a survey for mathematics teacher educators who were members of the Association of Mathematics Teacher Educators (AMTE). The following research questions were addressed:

1. What criteria do mathematics teacher educators use when they select texts?
2. How do they use the texts in their methods courses?
3. What strategies (e.g., literacy strategies, reflection strategies, etc.) do mathematics teacher educators use in order to help preservice teachers engage with the texts?

Literature Review

In this section we discuss relevant literature within two areas: mathematics methods textbook selection (first research question), and use of texts and literacy strategy research in mathematics (second and third research questions).

Mathematics Methods Textbook Selection

Research is sparse. In fact, despite the tensions we personally feel about mathematics methods text selection and use, we found only two articles related to this topic, one dissertation (Smitherman, 2006) and one monograph (California Association of Mathematics Teacher Educators, Kidd [CAMTE], 2008). Smitherman (2006) analyzed six "conventional" (i.e., Hatfield, Edwards, Bitter, & Morrow, 2005; Kennedy, Tipps, & Johnson, 2004; Reys, Lindquist, Lambdin, Smith, & Suydam, 2004; Sheffield & Cruikshank, 2005; Troutman & Lichtenberg, 2003; Van de Walle, 2004) and four "unconventional" mathematics methods texts (i.e., Borich, 2004; Hiebert et al., 1997; Ronis, 1999; Wheatley & Reynolds, 1999). In all but one of these 10 texts, the authors "exhibit modern, rationalist, ideas in mathematics education" (Smitherman, 2006, p. 61). For Smitherman, this result suggested the preservice teachers' notions of what it meant to teach mathematics were shaped by the authors' philosophies that "scientific methods will hold true, no matter the context or situation" (pp. 62–63). In the CAMTE monograph, Kidd (2008) found that an analysis of 16 secondary mathematics methods course syllabi revealed that only two instructors used textbooks "exclusively" (p. 2), meaning 14 instructors used textbooks and/or other course readings. Kidd also reported that the Huetinck and Munshin (2004) methods textbook was used by four instructors and the Brahier (2008) methods textbook was used by two instructors.

Taylor and Ronau (2006) analyzed 58 syllabi submitted by mathematics educators after a "Syllabus Exchange" session at the AMTE Annual Conference in 2004. Common categories emerged. These included: (a) class participation, (b) tests and

quizzes, (c) case analyses, (d) lessons and lesson planning, (e) readings and critiques, and (f) reflections and journals. All of these syllabi categories require the use of literacy and texts. Researchers found rare instances where the written goals and assignments listed in the syllabi seemed connected (Taylor & Ronau, 2006). They advocated for a collective discussion among mathematics teacher educators regarding the content and methods used in mathematics methods courses. More recently, AMTE's former president, Fran Arbaugh, drew upon "anecdotally-supported" evidence to conclude that she has "come to believe that we currently have strikingly different foci in our methods courses" (2014, p. 1). Instructors emphasize various topics and themes related to content and pedagogy depending on their own philosophies of teaching and learning and what they deem as the needs of their preservice teachers, leading to these "strikingly different foci." It is no wonder that text selection is a nontrivial task.

Use of Texts and Literacy Strategy Research in Mathematics

Although studies exist that focus on literacy and mathematics connections in mathematics classrooms, no studies were found that describe the strategies that mathematics teacher educators model and/or use to help preservice teachers engage with their methods texts. Therefore, our intent in this section is to describe studies that might help mathematics teacher educators think about implications of teaching mathematics methods courses within a literacy framework.

For example, two educational researchers, Draper, in literacy, and Siebert, in mathematics, participated in cooperative inquiry, where they cycled through phases of shared experience and hypothesis generation and testing to "develop a shared vision of learning and literacy" (Draper & Seibert, 2004, p. 927). Draper collected data in Siebert's inquiry-based mathematics classroom. Key to this shared vision was the notion that texts play a critical role in the learning of mathematics because mathematics is "created, communicated, and negotiated" (p. 953) through texts. They came to see that all mathematics

learning events were also literacy events and vice versa. Four years later, Draper (2008) worked with professors in music and theater education and subsequently reconsidered her earlier conceptions of literacy education. In this self-study, she began to question the "generic" strategies such as think-pair-share and others advocated by literacy educators. Literacy educators need to reconsider how the communities of practice for each content area determine what texts should be used, how to use those texts, and then be prepared to "discuss 'literacy as a lens' for viewing content instruction and instructional problems within content-area classrooms" (Draper, 2008, p. 79).

Similar to Draper (2008), Manzo, Manzo, and Estes (2001) also questioned the use of generic literacy strategies in mathematics classrooms and found that some generic literacy strategies may do more harm than good. For example, when teachers focus on helping students identify key words in "story problems" in order to identify operations and set up equations, teachers fail to convey the notion that mathematicians make sense of problems through reasoning, creativity, and logic (Manzo et al., 2001). The key word strategy takes the thinking away from the process. Some authors discuss the de-emphasis of key words in story problems in mathematics methods texts, yet other than this study by Manzo, Manzo, and Estes (2001), we found no research studies about teaching mathematics methods and specific literacy strategies.

Although research related to mathematics educators' use of literacy strategies in methods courses does not exist, we include two studies about preservice teachers' use of literacy strategies in mathematics courses because these studies reveal the complexities of using literacy strategies when teaching mathematics. Because mathematics educators have typically been mathematics teachers, this same struggle might, in fact, impact mathematics educators as they teach methods courses. Bean (1997) analyzed the literacy strategies that preservice mathematics teachers used in a "microteaching" assignment for a required content-area literacy course and in subsequent practicums. Bean interviewed two preservice teachers—Jeremy and Lea—after their practicum field experiences. Jeremy felt pressure to cover the content and only used one strategy (i.e., a

"verbal-visual" word association strategy). Lea used "context redefinition" when she described asking students to translate mathematics vocabulary into their own words. The demands of the practicum took precedence over creating lessons and using methods suggested in the required content-area literacy course (Bean, 1997).

Developers of a professional development program for middle school mathematics teachers and literacy coaches focused on how to help the teachers learn to integrate mathematics and literacy concurrently (Phillips, Bardsley, Bach, & Gibb-Brown, 2009). Sessions concentrated on helping teachers and coaches understand the "overlap" (Barton & Heidema, 2002) of definitions common to English language but different in mathematics and on the challenges inherent in reading mathematics writing because of its succinctness. Teachers and coaches, at the end of the program, emphasized the notion that they did not want to teach strategies "in addition to" the already existing curriculum; they wanted to teach literacy while also teaching mathematics and teach mathematics while also teaching literacy (Phillips et al., 2009).

As previously noted, studies exist that focus on literacy and mathematics connections in mathematics classrooms; however, we found no studies that described the literacy strategies that mathematics teacher educators' model and use in their courses for preservice teachers. Within this paper, we describe mathematics teacher educators' self-reported criteria for selection of texts, their text usage, and the strategies they use to help preservice teachers engage with the texts.

Methodology

Participants

Participants in this study (N = 132) taught mathematics methods courses and were members of the AMTE. As an organization, AMTE is "devoted to the improvement of mathematics teacher education [and] includes over 1,000 members devoted to the preservice education and professional development of K-12 teachers of mathematics" (AMTE, 2014).

We selected members of AMTE as participants because a large portion of AMTE members teach mathematics education or mathematics content courses to preservice and inservice teachers. Additionally, AMTE is "the largest professional organization devoted to the improvement of mathematics teacher education" (AMTE, 2014), and its members have reported and reflected on aspects of methods courses in the past (Arbaugh, 2014; Taylor & Ronau, 2006).

Data Collection

For this study we asked participants to volunteer to complete a survey in an electronic format (see Appendix). No incentives were offered for participation. All 132 surveys were analyzed, yet the participants' responses were not necessarily representative of all 941 AMTE members who received the survey. The survey, developed by the researchers, was composed of 10 questions with a mixture of multiple-answer, semi-closed-ended questions (i.e., participants could select as many responses as needed and one option was "other" which allowed participants to write explanations) and open-ended questions (Creswell, 2012). In developing the survey we attempted to adhere to Creswell's (2012) steps for survey instrument design: Write different types of questions (e.g., personal, attitudinal, behavioral, and both closed-ended and open-ended), and use strategies for good question construction (e.g., clear language, options do not overlap, questions applicable to all participants).

Demographic information about the types of methods courses and students taught were gathered from the initial questions in the survey. These questions were followed by ones pertaining to the texts instructors used, the reasoning behind why those texts were selected, the opinions about beneficial features of texts, and the uses of the texts in methods courses. For the purposes of this report, we focused on questions pertaining to text selection and use (Question 4–Question 9 in the survey).

We did not perform a pilot test but completed a test of the survey electronically before we distributed it to AMTE members; these data were not included in the results with the

other participants. Data were collected during November 2013. Members of the AMTE were emailed a link to the electronic survey, which was completed anonymously. At the time of our study, there were 941 members who we emailed as potential participants. Eleven emails were returned as undeliverable. About one month was given until the time we closed the survey. The response rate was about 14%. Participants could skip questions if they wished.

Data Analysis

Data analysis for the semi-closed-ended, multiple-answer questions (i.e., Questions 1, 2, 4, 5, and 8) consisted of us reporting the numbers noted on the report we received from the online polling service utilized for the survey. Additionally, working separately we analyzed the "other" responses for each of these questions and put them into categories. We then compared our results during several researcher meetings, agreeing on both the categories and the numbers within each. For the open-ended questions (i.e., 3, 6, 7, 9, and 10) we again individually created categories that emerged from the responses and recorded the numbers of times the participants mentioned the categories. Next, during several additional virtual researcher meetings, we compared our categories for each question and combined some of our individual categories into more broad themes while also recording numbers of responses within each theme. For example, if our category names were different but similar in meaning, or one was a subset of the other, or one was more nuanced than the other, then we created a broad theme to encompass more responses.

Results

Demographic Data

Demographic data were collected with participant responses to semi-closed-ended, multiple-answer questions. Participants were directed to choose as many options as needed to indicate the methods course(s) taught (survey Question 1). They reported

teaching mathematics methods for preservice elementary school teachers (n = 75), preservice secondary school teachers (n = 67), preservice middle school teachers (n = 57), and "other" students (n = 12), which they indicated included early childhood, practicing teachers, and special education teachers. Some participants taught mathematics methods courses in more than one of the specified programs or categories. For survey Question 2, participants were asked, "What students make up your methods course(s)? (Choose as many as needed.)" Choices included "Undergraduate students," "Graduate students," "Alternative Licensure students," and "Other." Most participants taught undergraduate methods courses (n = 115). Seventy participants worked with graduate students in mathematics methods courses and 21 participants indicated working with students seeking alternative teaching licensure. Due to differences in programs and staffing needs, a participant could teach mathematics methods courses to a variety of students and in a variety of courses.

Textbook Choice

Seventy participants reported using at least one book written by Van de Walle and his co-authors in response to open-ended Question 3: "Please name the text(s) that you use in your methods course(s)." Books by Van de Walle et al., perhaps, made up the majority of responses when one considers the focus of these methods textbooks is on teaching Pre-Kindergarten through 8th grade mathematics. Results were not as conclusive for participants' use of textbooks in secondary mathematics methods courses. Use of the secondary mathematics methods textbooks by Brahier was mentioned 11 times, the most mentioned secondary mathematics methods textbook. All other textbooks that participants reported using were only mentioned five times or less. Of note here is the different purposes for these two textbooks. It seems as though the Van de Walle et al. textbook authors place emphasis on both the mathematics and the pedagogy for teaching whereas Brahier gives more attention to the pedagogy for teaching. Perhaps this finding could mean the methods instructors for elementary and middle school

courses place more consideration on helping preservice teachers make sense of the mathematics while concurrently considering pedagogy.

Criteria Used in Text Selection

We chose Questions 4, 6, and 7 in order to analyze the criteria that participants used when they selected texts. We analyzed responses to Question 4 ("Why did you choose this/these texts?") to determine the reasons particular texts were chosen. Because texts can be selected for several reasons outside of the participants' realms of control (e.g., texts mandated by institutions), we examined their responses to Question 6 ("What features/information are most important to you in a text?") and Question 7 ("In your opinion, what topics are most important for pre-service teachers to read about?") to examine the criteria used in text selection. We felt the responses provided to these questions reflected participants' personal viewpoints on and criteria for text selection regardless of reason(s) and/or the level of control that existed for them in the selection process.

When indicating why particular texts were chosen (semi-closed-ended Question 4), participants responded that they looked for specific features of the text that were important for the course (n = 80, see Figure 1). A large number of participants also made decisions about what texts to use based on which texts fit best for the courses they taught (n = 76). Some participants chose texts based on the recommendations of colleagues (n = 46), did not use texts (n = 20), or selected texts based on institutional requirements (n = 13). One participant noted:

> I do not use typical 'methods textbooks' because they are primarily a survey of information and don't go deep enough into instructional strategies to be useful at a practical level. (Response to survey Question 4; 11/4/13)

Why did you choose this/these text(s)? (Choose as many as needed.)	
Provided choices	**Number of responses**
Included features that are important for the course	80
Best fit for the course	76

Recommended/used by colleague(s)	46
I don't use a required test in my course	20
Text selected by institution	13

Figure 1. Responses to Question 4

Participants looked for specific features of texts and for specific information discussed in texts as criteria for selection. They most frequently included information about different teaching standards in their responses to open-ended Question 6: "What features/information are most important to you in a text?" Twenty-six participants mentioned standards as important information, with many participants specifically describing looking for standards framed by the National Council of Teachers of Mathematics and the Common Core State Standards – Mathematics (see Figure 2). However, concerning the information about standards included in texts, one participant noted, "I don't like texts … too constricting with respect to how fast things have changed such as standards" (Response to survey Question 6; 11/29/13).

Additionally, participants looked for methods texts that were based on current research (n = 23); included accurate, rich content and tasks (n = 21); and, incorporated examples from the classroom through case studies, vignettes, and/or videos (n = 21). In contrast to the majority of responses as indicated above, another participant wrote,

> Deep conceptual understanding of topics directly related to the level the preservice teachers will be teaching. I think far too many texts try to please everybody by having a wide range of ideas but little depth. (Response to survey Question 6; 11/4/13)

What features/information are most important to you in a text?	
Common Features/Information	**Number of Responses**
Connections to Standards	26
Based on research	23
Accurate, rich content and tasks	21
Case studies, vignettes, videos	21
Source for activities	21
Readability/Accessibility	19

Figure 2. Responses to Question 6

Participants also indicated what topics they believed were the most important for preservice teachers to read about in their methods courses in response to open-ended Question 7 (i.e., In your opinion, what topics are most important for pre-service teachers to read about?). Reading about instructional strategies was mentioned most frequently ($n = 41$, see Figure 3). However, one participant delved deeper into the question:

> I think there are many important topics to read about, but I am not sure that reading is helpful to them or that they feel it should be attended to. They seem most moved by the preparation for the act of teaching. If they need to read to build or gain insight into the construction of a lesson, they tend to be more interested in reading (but this is not globally true). Because they have very little experience with mathematics of children they have difficulty imagining the children sharing the insights that are in readings. They often see these as anomalies or have difficulty making sense of them. This is, not unlike my own experience reading about various ways of thinking that I have not experienced. While I believe the authors, I'm not sure I can really understand or Really [*sic*] see what is happening until I actually see evidence of the reasoning in the field. Yet I continue to read in preparation for those moments. That said, the way I want to know and see is not really predicated on being in continuous action as a teacher. I can understand why they seem not very interested in reading about the 'act' of teaching. (Response to survey Question 7; 11/5/13)

More succinct and less personal responses to Question 7 also included assessment ($n = 32$), information about how students think and learn about mathematics ($n = 26$), and equity ($n = 26$) as important topics for preservice teachers to read about in methods courses. These results and other common responses are shown in Figure 3.

In your opinion, what topics are most important for pre-service teachers to read about?	
Common Topics	**Number of Responses**
Instructional Strategies	41
Assessment	32
How students learn/understand/think about math	26
Equity	26
Standards	26
Mathematical Content	23
Lesson Planning	21
Discussion/Communication/Discourse	21
Problem Solving and Problem-Based Instruction	17

Figure 3. Responses to Question 7

How Mathematics Teacher Educators Use Texts

Texts serve different purposes in different classes. Semi-closed-ended, multiple-answer Question 8 asked participants how they used texts in their methods courses. The most common use was to stimulate in-class discussion (n = 106, see Figure 4). Participants used texts as sources for activities for preservice teachers to explore in the methods courses and for preservice teachers to use in field placements (n = 101), as background information (n = 97), and as examples of more contemporary teaching and curriculum (n = 73).

How are texts used in your methods course(s)? (Choose as many as needed)	
Provided Choices	**Number of Responses**
To stimulate in-class discussion	106
As a source for activities (for preservice teachers to use in class and in field placements)	101
For background information	97
For examples of more contemporary teaching/curriculum	73

Figure 4. Responses to Question 8

When asked about the different strategies participants used to help their students engage with the texts—open ended Question 9, "What strategies do you use (e.g., literacy strategies, reflection strategies, etc.) to help preservice teachers engage with the texts/readings?"—they responded that discussion was

used most frequently (n = 64, see Figure 5). However, most participants were not specific with what they meant by discussion or "class discussion." There were small subsets of participants who mentioned specific kinds of discussions such as online, small group, and student-led. There were also participants who indicated they used reflection (n = 61) to help students engage with texts. As with discussion, many participants' responses were rather vague. There were, however, some participants who indicated they used written reflections, reflection questions or prompts, and journals with preservice teachers.

What strategies do you use (literacy strategies, reflection strategies, etc.) to help preservice teachers engage with the texts/readings?	
Common Responses	**Number of Responses**
Discussion (64 total responses)	
Discussion (not specific and/or whole-class)	35
Online discussion	13
Small/Group discussion	12
Student-led discussion	4
Refection strategies (61 total responses)	
Reflection (not specific)	37
Written reflection	8
Reflection questions/prompts	8
Journals	8
Literacy strategies (30 total response)	
Jigsaw	11
Think-pair-share (and variations)	7
Literacy strategies (not specific)	6
Graphic organizers	3
Other specific strategies	3
Make connections to reading (25 total responses)	
Connection to video	9
Connection to task or in-class activity	7
Connection to field placement	6
Connection to student (PK-12) work	3
Questions to guide/answer from reading (19 total responses)	

Figure 5. Responses to Question 9

In addition to using discussions and reflections to help preservice teachers engage with the texts, participants also indicated that they used specified literacy strategies such as the jigsaw technique (n = 11), think-pair-share and some of its

variations (n = 7), and graphic organizers (n = 3). The jigsaw technique focuses on cooperative learning. Students are placed in heterogeneous "expert" groups. Expert groups are assigned different chapters or sections of text and tasked with discussing and mastering the reading. Students move from expert groups to "home" groups where they teach other students about the chapter or section that they mastered. Think-pair-share is a method to encourage students to think about a question, pair up with another student, talk about their thinking with their partner and then share their thinking in a whole group conversation. Graphic organizers are visual representations that help students make connections between facts, ideas, and concepts. There were three individual mentions of different, specific strategies. The remaining six mentions were from participants indicating they used literacy strategies without being specific about the particular strategies.

Participants also encouraged preservice teachers to engage with the readings by making personal connections to the readings (n = 25). Reading connections were also made to videos (n = 9), to a task or in-class activity (n = 7), to the students' field placements (n = 6), and to Pre-Kindergarten to 12th grade student work (n = 3). Furthermore, participants indicated that they provided questions to students to guide their reading of the texts and/or questions for them to answer based on the readings. Out of the 19 mentions of questions being used as an engagement strategy with the text, five specified that they used questions generated by the preservice teachers.

Discussion

The survey revealed several considerations used by mathematics methods instructors when selecting and using texts. Survey participants indicated that the most used criteria for text selection included whether the text included features important for the course (n = 80) or that the text was the best fit for the methods course (n = 76). These two criteria represented the overwhelming majority of responses for Question 4 of the survey. Yet, when asked about the features/information that were most important in a text (Question 6), participants' various

responses were given (connections to standards, $n = 26$; based on research, $n = 23$; accurate, rich content and tasks, $n = 21$; case studies/vignettes/videos, $n = 21$; source for activities, $n = 21$; etc.) without any of these responses providing a clear consensus about what most participants believed were the most important features/information. Perhaps this result should not have been surprising given the results of studies of mathematics methods course syllabi (Kidd, 2008; Taylor & Ronau, 2006).

Similarly, there were also several responses given to open-ended Question 7: "In your opinion, what topics are most important for preservice teachers to read about?" Responses again included several topics with different foci. With the exception of instructional strategies ($n = 41$), the number of responses for the eight other common topics suggested by participants ranged from 17 (problem solving and problem-based instruction which could be considered a sub-category of instructional strategies) to 32 (assessment). If mathematics course purposes and content maintain some influence on methods course instructors' selection of texts, then the survey results also provide support to Arbaugh's (2014) belief that mathematics methods courses have "strikingly different foci."

Another disconnect seemed to occur between Questions 6 and 7. Participants indicated that case studies, vignettes, and/or videos ($n = 21$) were important features in a text but their responses to Question 7 only mentioned these features six times as important for preservice teachers to "read about." This disconnect can, perhaps, be explained by the notion that one does not "read" about videos and may have been a flaw of the survey design. We also suggest that this disconnect could have resulted from an implied and limited view of texts within the survey questions instead of a multi-faceted view of texts as tools for learning that help us characterize, express, and mediate meaning (Sebeok & Danesi, 2000) through viewing, listening, symbolizing, interpreting, and other processes.

Most participants used discussion to engage preservice teachers with texts. This result was evident in the responses to both Question 8 and Question 9. Participants indicated they used texts in their methods courses to stimulate in-class discussions ($n = 106$) in Question 8. Similarly, when asked about the

strategies used to help preservice teacher engage with texts in Question 9, discussion was indicated as the most common strategy ($n = 64$). This continuity in responses existed even with the different question formats on the survey (semi-closed, multiple-answer and open-ended). Yet, only some of the participants mentioned dimly nuanced descriptions of discussion, which included online, small group, and student-led. Participants also noted that they used reflection ($n = 61$), but only some gave more detail and identified written reflections, reflection questions or prompts, and journals.

Again, the survey design contributed to the lack of specificity in participants' responses for Question 9 and a limitation of the study. Question 9 mentioned "literacy strategies, reflection strategies, etc." as examples without indicating to participants that we expected them to describe *specific* literacy and reflection strategies. Despite this shortcoming, some participants included descriptions in their responses. They listed three common literacy strategies: jigsaw techniques ($n = 11$), think-pair-share ($n = 7$), and graphic organizers ($n = 3$). Therefore, perhaps as Bean (1997) noted, for participants in this study the demands of the methods curriculum took precedence over helping their students engage with the texts that they used. Or, conceivably, mathematics methods survey participants did not know how to orchestrate teaching methods while also helping preservice teachers use literacy as a tool for learning (Fisher & Ivey, 2005). We suggest that content-specific literacy strategies may be unknown to our participants, as we found little research in this area. Participants may be comfortable using generic or well-known literacy strategies and have little experience with literacy strategies that can be used specifically to help their preservice teachers engage with mathematics methods texts.

Additional and Future Research

As a result of this study, we wanted to gain insight into preservice and first-year teachers' perceptions and use of mathematics methods texts. We interviewed 16 such participants from two regionally different universities in the United States

(Harkness & Brass, 2017) and attempted to answer the following research questions: What strategies do preservice teachers use to make meaning of mathematics methods texts? What recommendations do preservice teachers suggest for instructors about the usage of texts?

In regards to the study reported in this article, there are several issues that warrant more study as revealed in participants' responses and the nontrivial tasks of choosing and using mathematics methods texts. We suggest a deeper examination of mathematics teacher educators' use of methods texts, perhaps through data in the form of interviews rather than surveys. We also call for further research focused on the connections between text selection and the purposes and content of method courses. Other questions abound. Do differences in text choice and use result when mathematics teacher educators teach methods courses for elementary preservice teachers as compared to secondary preservice teachers? Or when they teach undergraduate preservice teachers as compared to graduate-level preservice teachers? What *specific* literacy strategies do mathematics teacher educators teach, how do they teach them, and which do they find most effective for helping their preservice teachers engage with text assignments?

Conclusion

> Texts seem to want to convey a message to students rather than help the students shape their own thinking. It seems as if there should be a provocative journal that students work with to create their own texts. These would then contain activities they find and insights they gain. This self development seems more useful. That is not to say that the students don't need or want me to help them. They would rather talk with me about their work or with children than read about talking with children. (Response to survey Question 10; 11/5/13)

Helping preservice teachers "shape their own thinking" is critical and this participant raised an essential issue. Based on survey results reported here, some mathematics teacher

educators appear to use texts to show and tell about standards-based practices and, like this participant indicated, some seem to want to use texts to help preservice shape their own visions of standards-based practices. It follows that texts we choose are based on visions of our own work and what we want preservice teachers to take away from our courses.

Mathematics teacher educators indicated that they help preservice teachers engage with texts by asking them to read case studies, watch videos, and then participate in discussions, which are texts, about these other texts. Mathematics teacher educators may not use specific literacy strategies like jigsaw, think-pair-share, or graphic organizers but we recommend the need to rethink notions of literacy events (Draper & Seibert, 2004) and view "literacy as a lens" (Draper, 2008) for shaping preservice teachers' visions of teaching and learning *and*/*or* helping them shape their own visions for teaching and learning. Every aspect of our work with preservice teachers involves literacy. To expand on Draper's and Siebert's (2004) suggestion that all mathematics learning events should be considered literacy events and vice versa we argue that all mathematics *methods* learning events should be considered literacy events and vice versa.

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Appendix

Survey Questions

This survey is for instructors of methods courses. We are interested in knowing more about the textbooks required in methods courses and how they are used. We appreciate your responses to this short, 10-question survey.

1. Do you teach methods to (choose as many as needed):
   - o Elementary Pre-Service Teachers
   - o Middle School Pre-Service Teachers
   - o Secondary Pre-Service Teachers
   - o Other: _____
2. What students make up your methods course(s)? (Choose as many as needed.)
   - o Undergraduate students
   - o Graduate students
   - o Alternative Licensure students
   - o Other: _____
3. Please name the text(s) that you use in your methods course(s).
4. Why did you choose this/these text(s)? (Choose as many as needed.)
   - o Text selected by institution; it was not up to you
   - o Recommended/used by colleague(s)
   - o Included features that are important for the course
   - o Best fit for the course
   - o I don't use require a text in my course.
   - o Other: _____
5. Do you use any of the following supplementary texts in your methods course(s)? (Choose as many as needed.)
   - o Articles from professional journals
   - o Professional books (e.g., *Empowering the Beginning Teacher*)
     - o Please specify:

       _____
   - o Other
     - o Please specify:

       _____
   - o I do not use any supplementary texts in my course(s).

6. What features/information are most important to you in a text?
7. In your opinion, what topics are most important for pre-service teachers to read about?
8. How are texts used in your methods course(s)? (Choose as many as needed.)
    - To stimulate in-class discussions
    - As a source for activities (for pre-service teachers to explore in class or for them to use in field placements)
    - For background information
    - For examples of more contemporary teaching/curriculum
    - Other:_____
9. What strategies do you use (literacy strategies, reflection strategies, etc.) to help pre-service teachers engage with the texts/readings?
10. Is there anything else you'd like to share about your use of texts in a methods course?

Thank you. We appreciate your responses.