Learning Disabilities: A Contemporary Journal 15(2), 225-238, 2017

Integrating Literacy and the Content Curriculum to Support Diverse Learners

Nicole S. Fenty
Binghamton University, State University of New York, USA

Melissa Brydon
Regis University, USA

This study explored the impact of training special education teacher candidates to implement content literacy strategy instruction on the teacher candidates' feelings of self-efficacy, beliefs, and practice. The study also explored the impact of implementing content literacy interventions on the content knowledge of elementary age students with or at risk for learning disabilities in reading. Results indicated that teacher candidates believed that despite barriers such as time, content literacy instruction promotes student interest and engagement. Analysis of teacher candidates' lesson plans indicated a focus on integrating comprehension and vocabulary skills across content areas. Student content assessment data indicated overall increases in content knowledge based on average pre- and post-assessment scores. Social validity data revealed that students believed the project increased their knowledge and interest in their respective content areas. A discussion surrounding implications for teacher education, limitations, and future research is also included.

Keywords: **Content Literacy, Teacher Candidates, Beliefs, Reading Disabilities**

Introduction

Literacy can be connected to all content areas partly because subject-specific texts include identifiable vocabulary and structures that contribute to comprehension. Complex vocabulary, text structures, and length of text are all factors that can impact the ability of learners with disabilities in literacy to access text and content (Spadorcia, 2005). These students require instructional strategy supports to increase access to content information and would benefit from purposeful integration of literacy and content area instruction through the use of informational text (Brozo, 2010).

Content literacy is grounded in the premise that success in a particular content area requires success with literacy skills that are important across content areas such as comprehension and vocabulary. Relatedly, general literacy (e.g., in comprehension and vocabulary) strategies can be implemented across a variety of content areas (Fisher & Frey, 2015). Especially in the context of the struggling readers in content area classrooms, some researchers have argued that training teachers to implement targeted and explicit content literacy strategies is important to supporting student success (Fisher & Frey, 2015). The research on teacher preparation related to integrating literacy and content instruction, however, indicates that teachers at the elementary level may possess knowledge of research based literacy practices, but lack preparation in how to incorporate that knowledge into content area instruction

*Please send correspondence to: Nicole S. Fenty, Ph.D, Department of Teaching Learning and Educational Leadership College of Community and Public Affairs, State University of New York at Binghamton, Academic Building B, Room 236, PO Box 6000, Binghamton, NY, USA, Phone: 607-777-7330, EMail: nfenty@binghamton.edu.

(Moss, 2005). A small amount of research does exist that shows when teachers receive preparation in content literacy instruction, there have been increases in reading comprehension and comprehension of texts at a deeper level for elementary age students (Curwen, Miller, White-Smith, & Caltee, 2010).

To effectively prepare teacher candidates in the area of content literacy, teacher preparation programs must provide clinically rich field based practice paired with coursework and multiple opportunities to collaborate with other teachers during field based practice (Helfrich & Bean, 2011). Sailors, Keehn, Martinez, and Harmon (2005) found that 90% of the teacher candidates they surveyed reported that the field experiences they participated in during their coursework were the most valuable learning experiences toward preparing them to be effective reading teachers. Similarly, other researchers (e.g., DeGraff, Schmidt & Waddell, 2015; Helfrich & Bean, 2011; Sayeski, Gormley-Budin, & Bennett, 2015) found that teacher preparation programs that emphasized clinical practice embedded within coursework resulted in more successful teacher candidates than those that did not.

Another trend that was visible in the research surrounding teacher preparation in content literacy was the power of collaboration in providing opportunities to include modeling of instructional strategies and feedback during field practice. DeGraff et al., (2015) notes that when teacher candidates were able to observe effective strategy instruction and then dialogue about what they observed with other teacher candidates, their learning became socially constructed based on these authentic experiences. This notion was confirmed by the work of Scales (2013) who found that teacher candidates' vision of content literacy instruction was dramatically shaped by the socially constructed learning that took place during their teacher preparation programs. Relatedly, Draper, Broomhead, Jensen & Nokes (2012) found that teacher candidates benefit from collaboration with other teachers because of the different perspectives that often emerge. Further, when field experiences are paired with collaborative experiences, teacher candidates are able to learn content literacy strategies at a deeper level and develop confidence in their ability to incorporate literacy in the content areas (Lipp & Helfrich, 2016).

Few studies have attempted to investigate effective strategies that assist students in developing the domain knowledge associated with learning science, social studies, and mathematics content. Connor et al., (2016) explored the use of discussion and comprehension strategies on second graders in a science classroom. They found that differentiating literacy strategies was needed during lesson planning because not every student benefited from the implementation of the same strategies. The study also capitalized on student interest and background knowledge in science and social studies elementary classrooms, Connor et al., (2016), used a modified direct and inferential mediation strategy to help students to make connections to content area texts. This strategy encouraged the use of inference and text connections so that students learned how to learn the vocabulary associated with content areas. Halvorsen et al., (2012) explored the use of project based learning (PBL) with second graders in social studies. The study found that PBL helped increase students' interest and background knowledge in social studies. The aforementioned studies also found that students experienced gains in content area knowledge from pre- to post-assessments. They suggest that developing children's domain knowledge at an

early age leads to greater success in later schooling and improves general vocabulary, fluency, and motivation to read.

The current study extends the literature surrounding preparing teacher candidates in content literacy instruction by engaging in a more comprehensive examination of the impact of incorporating collaborative clinically rich field experiences on both teacher candidates and their students. The purpose of the study was to first explore the impact of training teacher candidates to implement content (i.e., social studies, science, and mathematics) literacy strategy instruction on the teacher candidates' feelings of self-efficacy, beliefs, and practice surrounding content literacy. Second, the study explored the impact of implementing content literacy interventions on the content knowledge of elementary age students with or at risk for learning disabilities in reading.

The research questions guiding this study include the following: (1) What is the impact on teacher candidates' feelings of self-efficacy, beliefs, and practice after engaging in targeted small group content literacy instruction with students with or at risk for reading disabilities? (2) What is the impact of targeted small group content literacy instruction on students at risk or diagnosed with learning disabilities in reading?

Method

Research Design

This was an exploratory mixed methods study. Researchers conducted focus group interviews with teacher candidate participants and analyzed their lesson plans. Additional data collected for the study included descriptive statistics in the form of average pre and post content assessment scores and social validity scores from student participants.

Project Settings and Participants

Two elementary schools/districts located in the Northeast served as sites for the study. A prior relationship existed between the researchers and each school. Both schools had identified literacy as an area in need of improvement, especially for students with or at risk for learning disabilities in their strategic plans. School A was located in a suburban area. The majority of students in School A are Caucasian (91%). About 30% of students receive free or reduced lunch. School B was located in a rural area. The majority of students in School B are Caucasian (92%). About 50% of students receive free or reduced lunch.

This project involved partnering 36 teacher candidates majoring in early childhood and/or elementary special education with 47 third through fifth grade students who were either at risk or diagnosed with learning disabilities in reading. The majority of teacher candidates were female (89%) and 94% were Caucasian. Additional teacher candidate demographic information is presented in *Table 1*. A small majority of the participating students were male (53%). A large majority of students were Caucasian (96%) and approximately 68% were in fifth grade. Additional student demographic information is presented in *Table 2*.

Table 1. ***Teacher Candidate Demographic Information (N=36)***

Demographic	n	Percent
Gender		
Female	32	89%
Male	4	11%
Race		
Asian	1	3
Black/African American	1	3
Caucasian	34	94
Hispanic/Latino	0	0
Other	0	0
Program Focus		
In-service	12	33
Pre-service	24	67

Table 2. ***Student Demographic Information (N=47)***

Demographic	n	Percent
Gender		
Female	22	47
Male	25	53
Race		
Asian	0	0
Black/African American	0	0
Caucasian	45	96
Hispanic/Latino	1	2
Other	1	2
Grade Level		
Third	7	15
Fourth	8	17
Fifth	32	68

Project Procedures and Materials

The teacher candidates in this study were enrolled in three required special education instructional methods courses across three different semester cohorts. The culminating assignment for the courses required that they engage in content literacy assessments and implement content literacy strategy instruction after school. First, researchers collaborated with the two participating schools/districts to determine the classroom curriculum across social studies, science, and mathematics content areas. Using district feedback, researchers generated a list of options for teacher candidates and allowed them to choose their content discipline and topic area. Teacher candidates, with researcher guidance, then created pre-assessments that corresponded to the topic areas chosen. Researchers also worked with teacher candidates to use content and literacy standards as a guide to create and implement a differentiated content literacy mini unit accompanied by six to eight lessons. The initial preparation process took an average of four three-hour class sessions. In co-teaching pairs, teacher candidates conducted content pre-assessments during their first meeting with students. Instructional sessions lasted six to eight weeks, depending on the semester. Content post-assessments and social validity questionnaires were administered during the last meeting between teacher candidates and students.

Teacher candidates used a variety of informational texts during their instructional sessions. They borrowed sets of books from study researchers and from local public libraries. In addition, they downloaded content focused texts from online sources such as *Reading A-Z*. Teacher candidates also used materials connected to instructional strategies discussed during class sessions such as KWL charts and anticipation guides.

Data Sources and Collection Procedures

The following data sources were used to evaluate the project: (1) Teacher candidate focus group interviews, (2) Teacher candidate lesson plans, (3) Student content pre- and post-assessment data, and (4) Student social validity questionnaires. Additionally, all co-teachers were observed for at least 30% of the instructional sessions.

Teacher candidates were interviewed in cohorts at the end of each semester in small focus groups. The interview protocol included open-ended questions about respondents' experiences during the project and their current sense of efficacy in content literacy. Some examples of the kinds of questions incorporated on the protocol include the following: "What barriers exist to incorporating literacy and content area instruction?" and "What kinds of supports do you think are necessary to successfully incorporate literacy and content area instruction in your future classroom?" Teacher candidates were required to work in co-teaching pairs to submit content literacy unit plans and accompanying lesson plans. A total of 240 lesson plans were submitted across the three cohorts. Plans involved a structured protocol that required details such as content literacy goals and differentiation strategies.

The purpose of the tutoring project was to support the curriculum content that was introduced during the regular school day in an after school setting. Also, the tutoring project occurred across multiple cohorts, semesters and with multiple school districts. This resulted in variation in content focus across the small groups.

Each co-teaching pair was allowed to create their own content assessment, which was based on the focus of their mini unit.

Students also completed a researcher created social validity questionnaire on the last day of tutoring. The purpose of the questionnaire was to determine whether students found value and learned from the tutoring experience. Students were asked whether they disagreed, were neutral, or agreed with six statements. Statements varied slightly depending on content area group. *Table 4* provides further details about the questionnaire.

Data Analysis

Focus Groups and Lesson Plans

Interviews conducted with the teacher candidates involved constant comparative analysis. The researchers working on the study independently and continuously compared and contrasted interviews to determine initial emerging codes. A second round of analysis was conducted and similar initial codes were merged. A third round of analysis was conducted to determine emerging themes. The researchers engaged in extensive conversation, review, and discussion of their individual findings at the end of each round of analysis. Sample codes that emerged during analysis of interviews conducted with teacher candidates include *time*, *reading ability*, *informational text*, and *student interest.*

Researcher one/the first author engaged in an initial analysis of the lesson plans to determine common themes in literacy goals and methods of differentiation. Researcher two/the second author engaged in a secondary analysis of the lesson plans to establish inter-rater reliability. Analysis of lesson plans involved visual analysis and comparison of the types of content literacy goals and methods of differentiation used across plans.

Content Assessments and Social Validity

Content assessment data was organized in a table according to each co-teaching small group. Averages were calculated for pre-assessment and post-assessment scores overall and by content area. Social validity data was organized in a table. The number of students who disagreed, were neutral, or who agreed with each statement was tabulated.

Treatment Integrity

Treatment integrity was evaluated by the researcher/first author using a researcher created observer rating scale to ensure that instructional content was delivered consistently and as originally intended. The rating scale examined whether components such as differentiated assessments and literacy integration were implemented with full, moderate, low, or no fidelity. Teachers were observed for appropriately 30% of instructional intervention sessions. The average treatment fidelity score was 92%. The rating scale is available from the authors upon request.

Results

Teacher Candidates Focus Groups

Three major themes emerged during focus groups with teacher candidates.

Theme one: Incorporating content and literacy instruction provides more practice in literacy. Many teacher candidates suggested that incorporating literacy and content area instruction would lead to increased opportunities to practice literacy skills. Jim, a pre-service teacher candidate, stated: "It provides more exposure to reading and writing through the different content areas." Jake, an in-service teacher candidate, agreed with the connection to writing by stating: "With every subject you can use literacy through writing with maybe writing an essay or writing a quick sentence response is another way it is incorporated." Sally, a pre-service teacher candidate, added: "Different content areas involve different vocabulary words. You have to know the vocabulary to understand the content" Fran, a pre-service teacher candidate, shared: "In math you could include [literacy] practice just in explaining your reasoning for answers, too. Like, if you have to make a claim on, like, 'this is what the answer is' and 'this is how I got to it'."

Theme two: Planning time and ranges in student literacy skills are barriers to incorporating literacy and content instruction. Some teacher candidates focused on time as a barrier to incorporating literacy and content instruction. Jake, an in-service teacher candidate, stated: "There is pressure to have the literacy and math scores increase. So there may not be time to plan to integrate a content area." Frank, another in-service teacher candidate, agreed: "The time issue, it just frustrates things." Barbara, a pre-service teacher candidate, added: "It takes more work and time to plan to integrate literacy and content." Edgar, another pre-service teacher, similarly stated: "Time/the district, like, trying to push ELA and math. It takes away from a focus on other things."

Other teacher candidates focused on ranges in student literacy skills as a barrier. Fran, a pre-service teacher candidate, stated: "The different levels that each child is at, as far as reading levels might make it hard for a teacher to incorporate reading and a content area." Jane, another pre-service teacher, agreed: "So many students with so many different levels of ability especially with reading texts, like, I know in my placement, the kids don't all read at a 5th grade level, it's such a wide range that it's hard to find something that everyone can do, so, I can see that being an issue." Jan, a pre-service teacher candidate, echoed a similar sentiment: "Not every kid has the same skillset, and not every kid has the same background knowledge so I could see that as a barrier." Ben, an in-service teacher, added: "I think sometimes the areas of literacy that a student is lacking in aren't always best suited for content areas that you are trying to work with." Lara, another in-service teacher, shared: "Comprehension--no problem, you can get that in a history lesson but if they are lacking in say decoding and fluency it is a lot tougher."

Theme three: Incorporating content and literacy instruction increases student interest and engagement. Some teacher candidates believed that they could use content area topics to help boost interest in English/language arts. Noelle, an in-service teacher candidate, stated: "It ties into student's interests. If they are frustrated with ELA but they like history or they love math then you can use those subjects

that they like but also sneak in the literacy instruction." Edgar, a pre-service teacher, echoed a similar point when he stated: "Exposure to literacy in different content areas, they might actually get, um, like become a little bit more interested in it." Jessica, an in-service teacher candidate, agreed: "Especially with, like, content like social studies, it's really fun and engaging for the kids so, instead of just reading for, like, an hour, it's meaningful, engaging and fun for the kids." Cay, a pre-service teacher candidate, shared: "My personal belief too is that through social studies and science it is easier to make personal connections. So when these students can read and learn about someone in history for example that they can relate to, all the more power to them. If they find an interest they can keep moving with that."

Other teacher candidates believed that they could use English/language arts to promote interest in other content areas. Cara, an in-service teacher, stated: "[Incorporating literacy] could get them, um, really interested in the subject which they can carry on throughout school and then just continue their love, like, create like a passion for learning about the content areas, I guess." Fran, a pre-service teacher candidate, agreed: "Using literacy as a vessel maybe, might spark an interest in other content areas and keep the student motivated." Sally, another pre-service teacher candidate, also agreed: "There are kids who like to hear stories. They may also like to hear teachers do a read aloud about science and social studies topics."

Teacher Candidate Lesson Plans

Lesson plan analysis involved an examination of content literacy goals and differentiation methods. The themes that emerged during this analysis are presented.

Content Literacy Goals

The literacy components most commonly included across lesson plans were comprehension and vocabulary. Content literacy goals in comprehension were represented across content areas. Almost all social studies and science lesson plans incorporated informational text during instruction. Subsequently, a majority of plans focused on having students make predictions about text in an effort to support comprehension. One example of a content literacy goal focused on making predictions stated: "Students will use pictures and captions from the text *You Wouldn't Want to be a Civil War Soldier* to make predictions about the causes of the civil war." Most lesson plans also focused on the use of discussion as a method of demonstrating comprehension of content. One example of a goal that focused on the use of discussion stated: "Students will engage in a discussion about the three types of levers." Mathematics lesson plans were most often focused on comprehension of word problems. One example of a content literacy goal focused on understanding word problems stated: "Students will use key words to understand word problems."

Vocabulary was also widely represented across content area lesson plans. Lesson plans in science and social studies often incorporated word walls to support student understanding of key terms. One example of a goal that focused on the use of word walls stated: "Students will add the key terms *temperance*, *suffrage*, and *equality* to the daily word wall and refer to the word wall during discussions to demonstrate understanding of the women' suffrage movement." Lesson plans in mathematics were most often focused on identifying key words and phrases in word problems. One

example of a goal surrounding identifying key words stated: "Students will recognize and apply the key terms *difference* and *less* when completing word problems about adding and subtracting decimals."

Differentiation Methods

Co-teachers were expected to address differentiated assessment and instruction throughout each lesson plan. When addressing differentiated assessment, many lesson plans included recording options for their students. Specifically, a majority of plans included choices for students to either provide oral or written responses to pre- and post-assessment questions. Most lesson plans also presented a one-teach-one-observe-model during pre-assessments and allowed one teacher to solely focus on observations during pre-assessments to determine how best to differentiate instruction. Finally, a large number of lessons incorporated games (e.g., vocabulary matching games) during post-assessments as a way to engage students and allow them to move at their own pace.

One common method used to differentiate instruction across lesson plans was choral and partner reading. Teachers used these methods across a variety of types of passages including short books, short passages, and word problems. This helped to reduce the impact that the level at which texts were written had on students' comprehension of the text. A majority of teachers also incorporated hands on activities during instruction such as *creating visual representations of the moon phases* or *creating a class constitution.* This allowed students to use multiple modalities to interact and engage with content and increase the likelihood that students would remember content information. Finally, most lesson plans indicated the use of organizers such KWL charts and anticipation guides during instruction. Both of the aforementioned charts were used overwhelmingly across all three content areas. Teacher candidates used a variety of strategies such as differentiating the amount of writing required for the organizers.

Student Content Assessments

Across content areas, students averaged scores of 53% on pre-assessments and 75% on post-assessments. There was an average overall change from pre to post assessments of 22%. There were some differences across pre-assessment scores for each content area. Average pre-assessment scores across the science and social studies small groups were both approximately 54%. The average pre-assessment score across the mathematics small groups was closer to 57%. Average post-assessment scores ranged from 72% in the mathematics groups to 78% in the social studies groups. Average changes from pre- to post-assessment were similar across the mathematics and science groups (21%). Students receiving tutoring in social studies and literacy experienced a slightly higher average increase (24%). The specific content area topic that experienced the largest change from pre- to post-assessment was a unit surrounding the *Civil War.* The students in that small group experienced an average improvement from pre- to post-assessment of 31%. The specific content area topic that experienced the smallest change from pre- to post-assessment was a unit surrounding the *Ecosystem.* The students in that small group experienced an average improvement from pre- to post-assessment of 16%. Content assessment results are further outlined

in *Table 3.*

Table 3. ***Average Pre/Post Content Assessment Scores***

	Pre	Post	Change
Overall	53%	75%	22%
Content			
Math	51%	72%	21%
Science	54%	75%	21%
Social Studies	53%	78%	25%
Cohort			
1	53%	75%	22%
2	56%	81%	25%
3	51%	70%	19%

Student Social Validity

A majority of students agreed that "working after school has helped me understand" my respective subject area better. One hundred percent of math and literacy, 86% of science and literacy, and 90% of social studies and literacy students agreed with the aforementioned statement. Most students also agreed with the statement: "I think working after school has made me more interested in" my respective subject area. One hundred percent of students receiving math and literacy, 86% of science and literacy, and 70% of social studies and literacy students agreed with the statement.

Students receiving tutoring in mathematics and literacy were most positive about the tutoring project. Ninety percent believed the project helped them read better and 60% believed the project helped them write better. Students receiving tutoring in science and literacy were least likely to see the connection between literacy and their content area. Only 33% believed that the after school project helped them write better and only 6% believed that the project made them more interested in writing. *Table 4* illustrates the most salient social validity data.

Table 4. ***Social Validity: Percent of Students in Agreement Across Content Areas***

	Mathematics	Science	Social Studies
I think working after school has helped me read better.	90%	60%	30%
I think working after school has helped me write better.	60%	33%	40%
I think working after school has helped me understand _____ better.	100%	86%	90%
I think working after school has made me more interested in reading.	40%	46%	60%
I think working after school has made me more interested in writing.	50%	6%	60%
I think working after school has made me more interested in _____.	100%	86%	70%

Discussion

Main Findings

The purpose of the current study was to explore the impact of implementing content literacy instruction on special education teacher candidates' feelings of self-efficacy, beliefs, and practice. This study also explored the impacts on student's content knowledge. It is similar to previous studies because of a focus on the use of clinically rich field experiences to support the beliefs and practices of teacher candidates surrounding content literacy (e.g., Scales, 2013; Draper, Broomhead, Jensen, & Nokes, 2012). Some of the previous literature takes a more global look at content literacy in teacher preparation programs (e.g., Sailors, Keehn, Martinez, & Harmon, 2005). Other studies examined the impacts of content literacy interventions on either teacher candidates or students (DeGraff et al., 2015; Connor et al., 2016). This study extends the literature by engaging in a more in-depth exploration surrounding the impact content literacy teacher training on both teacher candidates and their students.

Two patterns that emerged during interviews with teacher candidates surrounding integrating content and literacy instruction is that it yields more practice in literacy and it increases student interest and engagement. Teacher candidates' beliefs surrounding the importance of literacy in the content areas were evident in their

lesson plans. The majority of lesson plans made consistent connections to a variety of different components of literacy. Across content areas, lesson plans most often included connections to comprehension and vocabulary and focused on informational text and word problems. Previous research also found that teachers focused on comprehension and vocabulary strategies when engaging in content literacy instruction (e.g., Connor et al., 2016). Interestingly, although students agreed that there were positive impacts on their content area knowledge and interest, students were less likely to make connections to benefits in literacy. This makes sense given the heavy focus on content and the fact that literacy was in many ways seamlessly integrated during instruction.

Another important result of the study is the average increase in student scores from pre- to post-assessment across content areas. This may have occurred as a result of some of the differentiation strategies used across lessons. Allowing students the flexibility to choose to respond in oral or written form or to access text with the support of a more fluent model may have helped support students in accessing and retaining content information (Kulich, 2009). Interestingly, students receiving tutoring in mathematics made fewer gains than students in the science and social studies groups. However, students receiving tutoring in mathematics and literacy reported the most positive opinions about a majority of the items on the social validity questionnaire. Some of the mathematics co-teachers suggested that especially in mathematics students appeared to appreciate learning the content in smaller groups and at a slower pace.

Implications for Teacher Education

The previous literature suggested that teacher candidates benefited (through increase feelings of self-efficacy and depth of knowledge) from working directly with students with or at risk for disabilities (e.g., Scales, 2013; Draper, Broomhead, Jensen, & Nokes, 2012). In the current study, teacher candidates expressed an appreciation for extended experiences working with students that were directly connected to course content. This suggests a need for clinically rich experiences during teacher preparation programs that are directly connected to course content. In addition, the after school tutoring project was seen as beneficial by school district personnel, teacher candidates, and students. However, the length and intensity of the project was impeded by the confines of implementation during the regular school year. Another implication of the project is to further explore extended year options. This may be most beneficial for both teacher candidates and students. Extended year clinical experiences could provide more extensive and intensive interventions for students and provide teacher candidates with more opportunities to practice instructional interventions. Relatedly, teacher candidates in previous studies (Connor et al., 2016) and in this study stated that variations in student ability were a barrier to incorporating content and literacy instruction. This suggests a need for additional training and practice that focuses on differentiation in the context of small group instruction. Given that teacher candidates had consistently incorporated differentiation techniques throughout the project, extended year experiences may help to rectify some of the issues teacher candidates continued to experience at the end of the brief project.

Limitations

This exploratory study yielded results with implications for teacher preparation, however, several limitations should be addressed in future research. First, this study focused on 36 teacher candidates and 47 students. The inclusion of additional teacher candidate and student participants would help to gain a more complete understanding of study implications. Also, the timeframe for the instructional sessions across cohorts was limited by the fact that instructional sessions occurred after school. Teacher candidates were only able to work with students during the time that the instructional methods course was offered because they were signed up for other courses on other days of the week. Incorporating instruction during the school day or during extended year experiences may help to rectify this issue. Finally, because the study was conducted across multiple content areas, grade levels, and school districts, it was not possible to engage in statistical analyses and make claims about the results of the study. An extensive and intensive focus on one grade level, content area and school district would have helped to bolster study analyses.

Implications for Future Research

Based on the data sources included in this study, there are several possible areas for future research. First, future research should involve a large-scale examination of the impact of incorporating content area and literacy instruction. This should include examining a larger number of teacher candidates and students in one content area over an extended period of time. In addition, this study's focus on teacher practice and beliefs should be extended in future research to focus on teacher candidate knowledge in content literacy strategy instruction. When teacher candidates' beliefs, practice, and knowledge are impacted during teacher preparation, they are most likely to incorporate this into their future practice (Ball & Forzani, 2009; Sayeski, Gormley-Budin, & Bennett, 2015). Also, both the teacher candidates and the students in this study suggested that study participation impacted student content interest and engagement. Future research should examine which components (e.g., small group instruction, differentiation strategies, or incorporating literacy) actually impact students' interest and engagement. Finally, some participants in the current study and many participants in previous studies (e.g., DeGraff et al., 2015; Lipp & Helfrich, 2016) have suggested that co-teaching experiences have beneficial impacts on their future practice. Future research should engage in a more in-depth examination of the impact of co-teaching experiences during teacher preparation to determine impacts on feelings of self-efficacy, beliefs, knowledge, and practice.

References

Ball, D.L, & Forzani, F.M. (2009). The work of teaching and the challenge for teacher education. *Journal of Teacher Education, 60,* 497-511.

Brozo, W.G. (2010). The role of content area literacy in an effective RTI program. *The Reading Teacher, 64*, 147-150.

Connor, C.M., Dombek, J., Crowe, E.C., Spencer, M., Tighe, E.L., Coffinger, S., Zargar, E., Wood, T., & Petscher, Y. (2016). Acquiring science and social studies knowledge in kindergarten through fourth grade: Conceptualization, design, implementation, and efficacy testing of content area literacy instruction (CALI). *Journal of Educational Psychology, 109*, 301-320.

Curwen, M.S., Miller, R.G., White-Smith, K.A., & Caltee, R.C. (2010). Increasing teachers' metacognition develops students' higher learning during content area literacy instruction: Findings from the read-write cycle project. *Issues in Teacher Education*, *19*, 127-151.

DeGraff, T.L., Schmidt, C.M., & Waddell, J.H. (2015). Field-based teacher education in literacy: Preparing teachers in real classroom contexts. *Teaching Education, 26*, 366-382.

Draper, R.J., Broomhead, P., Jensen, A.P., & Nokes, J.D. (2012). Reimaging literacy and teacher preparation through collaboration. *Reading Psychology, 33,* 367-398.

Fisher, D. & Frey, N. (2015). Revisiting content area literacy instruction. *Principal Leadership*, *15*, 54-57.

Halvorsen, A.L., Duke, N.K., Brugar, K.A., Block, M.K., Strachan, S.L., Berka, M.B., & Brown, J.M., (2012). Narrowing the achievement gap in second grade social studies and content area literacy: The promise of a project-based approach. *Theory and Research in Social Education, 40*, 198-229.

Helfrich S.R., & Bean, R.M. (2011). What matters: Preparing teachers of reading. *Reading Horizons, 50*, 241-262.

Kulich, L.S. (2009). Making the batter better: Using the fluency development lesson as a recipe for success. *Illinois Reading Council Journal*, *37*, 26-36.

Lipp, H., & Helfrich, S. (2016). Pre-service teachers; growth in understandings of best practice literacy instruction through paired course and field experience. *Reading Horizons, 55*, 45-63.

Moss, B. (2005). Making a case and a place for effective content area literacy instruction in the elementary grades. *The Reading Teacher, 59*, 46-55.

Sailors, M., Heehn, S., Martinez, M., & Harmon, J. (2005). Early field experiences offered to and valued by pre-service teachers at sites of excellence in reading teacher education. *Reading Research Quarterly, 43*, 252-288.

Sayeski, K.L., Gormley-Budin, S.E., Bennett, K. (2015). Promising practices in the preparation of special educators to provide reading instruction. *Intervention in School and Clinic, 51*, 82-89.

Scales, R. (2013). Examining the sustainability of pre-service teachers' visions of literacy instruction in their practice. *Professional Educator, 37*, 1-10.

Spadorcia, S. (2005). Examining high-interest, low-level books. *Reading and Writing Quarterly*, *21*, 33-59.