



PreK–5 Teacher Views of Professional Development Integrating Common Core Language Arts With Science and Social Studies

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Abstract

Three preK–6 U.S. university methods instructors-researchers (literacy, science, social studies) joined 17 Title I school teachers for collaborative lesson planning and teaching within the preK–5 school setting.

Each team's goal was to create and teach interdisciplinary curriculum units using U.S. English language arts Common Core State Standards with social studies and science. A year-long instrumental case study design was used to examine (a) how teachers perceived collaborative professional development to create interdisciplinary unit plans and (b) how teachers viewed outcomes of teaching interdisciplinary units of their own design. Practice articles regarding Common Core State Standards curricula integration are plentiful; however, this study offers researched insights. Collectively, research from various locations and school cultures benefits those needing to structure realistic professional development designs.

Keywords: *U.S. Common Core Standards; preK–5 education; science education; social studies education; job-embedded professional development; interdisciplinary education*

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Introduction

U.S. school administrators constantly face top-down national, state, district, and schoolwide reform movements, which evolve into policies directly affecting classroom teachers. Policies are loaded with promise and hope that our young students—no matter their background, status, language proficiency, and

so forth—will achieve well on standardized tests and, perhaps, surpass other countries. Reform movements are inevitable in U.S education and have been throughout history.

In the broadest sense, change can be good, though at a **grassroots level, teachers’ professional learning** to implement new standards, curricula, pacing, and technologies is perplexing to say the least. As reforms and policies change, it is difficult to know the most efficient use of time and resources for various professional development (PD) needs. Educational researchers, therefore, depend on experiments with real classroom teachers in attempts to formulate elusive recipes for success.

This discussion describes one such experiment with 17 local Title I school teachers over 1 year. Best practices for PD are espoused in literature, though understandably, they do not aspire to suggest success in every context. School settings can be hectic places – not in a bad way, but in human, unpredictable ways. Geographic locations, within the United States, determine demographics, teaching and learning **environments, assumptions, needs, support, funds, time, teachers’ education, and so forth. Further, all** reform movements require policy change, but not every U.S. state is willing to accept or commit, long-term, to such changes. These are a few reasons why varied, first-hand, experiences from all U.S. areas must be documented.

Each individual experiment or case, especially embedded within the regular school day, helps researchers, educators, administrators, curriculum developers, and those responsible for staff development more deeply understand imperceptible influences within each locale. The following sections, describing this particular study, present background information, relevant literature review, purpose, theoretical framework, methodology, findings, discussion, and conclusions.

Background

At the onset of this project, Highlands **Elementary School’s (pseudonym) principal provided an informal** needs assessment. She met with the authors (three university methods instructors) and discussed **teachers’ insecurities regarding how to unpack and use the English** language arts (ELA) Common Core State Standards (CCSS) when applied to disciplinary content. In brief, CCSS documents require particular **disciplinary content, stating, “Informational reading includes content-rich nonfiction in history/social studies, sciences, technical studies, and the arts. The K–5 standards strongly recommend that texts—both within and across grades—be selected to support students in systematically developing knowledge about the world”** (CCSS Initiative, 2019b, para. 10).

Literature Review

PreK–6 social studies education. The National Council for the Social Studies (1994) defined social studies in this way:

[the] integrated study of the social sciences and humanities to promote civic competence. Within the school program, social studies provides coordinated, systematic study drawing upon such disciplines as anthropology, archaeology, economics, geography, history, law, philosophy, political science, psychology, religion, and sociology, as well as appropriate content from the humanities, mathematics, and natural sciences. (p. 3).

It is generally understood by preK–6 social studies educators that it is the early childhood/elementary **educator’s responsibility** to ensure young students gain understanding of foundational concepts (e.g., citizenship, needs, wants, location, directionality, landforms, government, cultures, and more). Further, skills (e.g., critical thinking, inquiry, debate, evidenced-based decision making, negotiation) are introduced and developed during the early years. It is well documented, though, that social studies has long been marginalized in U.S. schools—many think this is due to focused attention on government mandated tested subjects of which social studies is not included (see Bailey et al., 2006; Christensen et al., 2001; Haas & Laughlin, 2001; Hubbard, 2013). Consequently, there has been little PD, and teachers admit that they do not know how to teach social studies.

PreK–6 Science Education

PreK–6 science education’s vision offers students opportunities to develop and use models, plan and carry out investigations, and engage in argument from evidence. Being science and engineering literate requires one to participate in scientific processes. Young students learn reading comprehension while also **gathering, evaluating, and communicating data; however, this should not be the extent of a student’s** scientific instruction (Huff, 2016). Comparable to preK–6 social studies, state and federal policies marginalize disciplinary science curricula in deference to massive literacy teaching and learning (Cervetti et al., 2006). **Further, many elementary school teachers “... don't like science, they don't feel confident in their knowledge of science, and they don't know how to teach science effectively” (Allen, 2006, para. 1).**

Professional Development Practices

In this project, we believed our PD model aligned with known best practices. Authorities on this topic, Linda Darling-Hammond and colleagues (2017) reviewed PD research for over 30 years. Through this work, they identified commonly shared characteristics of effective PD, which are listed here: (a) content focused, (b) **incorporates teachers’ active learning**; (c) supports collaboration, often in job-embedded contexts; (d) models effective curricular and instructional practice; (e) provides coaching and expert support; (f) time for feedback and reflection; (g) sustained duration; and (h) provides teachers with adequate time to learn, practice, **implement, and reflect upon new strategies (p. v).** **“Providing teachers with real training and templates, not scripts and work sheets, and meaningful opportunities to work together to implement strategies that will improve student learning, are critical components of any strategy to implement the common core” (Phillips & Hughes, 2012, para. 14).** Collaborative PD models for educators are generally widespread and essential for taking teachers out of isolation to learn with and from colleagues.

Current models such as lesson study, observation-assessment, open classrooms, study groups, and **looking at students’ work** are teacher-centered, collaborative, and globally applicable (Burns, 2014). Another popular collaborative model is the professional learning community (PLC; Darling-Hammond et al., 2017; DuFour, 2004). Primarily, educators within a PLC and those who support a PLC will (a) focus on learning versus teaching; (b) recognize that working collaboratively produces dialogue and action needed to achieve the collective purpose of learning for all; (c) remove barriers to success (e.g., give teachers time to analyze and discuss state curriculum documents); (d) focus on results and working together to achieve goals (e.g., results may require educators to change traditional practices, revise assumptions, avoid limiting improvement goals to factors outside the classroom); and (e) persist and commit to improvement and student learning.

Our proposed interdisciplinary PD model contained many of these attributes: job-embedded, collaborative, included demonstration lessons that modeled instruction, centered on evidence-based practices and content, offered time for planning, curriculum implementation with students, reflection,

and focused on discipline-specific curriculum development. Discipline-specific, in this project, meant that science and social studies content, derived from state grade-specific curriculum standards, merged together and also with ELA CCSS.

Curriculum Integration

Differences in disciplinary approaches are defined, within this summary borrowed from Alexander Refsum Jensenius (2012):

1. Intradisciplinary: working within a single discipline.
2. Cross disciplinary: viewing one discipline from the perspective of another.
3. Multidisciplinary: people from different disciplines working together, each drawing on their disciplinary knowledge.
4. Interdisciplinary: integrating knowledge and methods from different disciplines, using a real synthesis of approaches.
5. Transdisciplinary: creating a unity of intellectual frameworks beyond the disciplinary perspectives. (para. 3)

Integration is not new, thus various designs (e.g., interdisciplinary, thematic, multidisciplinary, problem-based) for organizing integrated curricula are well documented. These models serve as guides for teachers who select integrated instruction as an approach for teaching elementary curricula. Integration, simply defined here, means that a unique curriculum is created by crossing disciplines that may share meaningful concepts, ideas, skills, and questions (Ross, 2016). Interdisciplinary integration can be ideal for preK–6 grades, as many classrooms are self-contained. In other words, one teacher may be responsible for teaching all subjects (e.g., science, social studies, reading, writing, mathematics) in one classroom, with the same students all year.

Practical ideas meant to plan and implement lessons using K–6 ELA CCSS with science and social studies content standards are present in the literature, though more actual research studies are needed. For example, Bogan et al. (2012) supported the Bogan differentiated instruction model, which requires the teacher to select a common core standard for reading, science, and social studies and connect them for contextual teaching. The lesson planning format is designed for both interdisciplinary teaching and differentiated instruction. Another practice-oriented model, the explanation framework, is used to advance literacy across science, public speaking, ELA, and social studies. The claim is that this tool helps students communicate explanations based on science phenomena, literacy ideas, historical events, and perspectives (Novak et al., 2016). Primarily, though, existing literature describes teacher-tested pedagogies. For instance, Gregory (2015) offers a lesson plan focused on CCSS reading, writing, listening, and speaking standards integrated with social studies and science to introduce students to various argument concepts. In short, most articles are practice-based (e.g. Joyce & Calhoun, 2015; Kandel & Brew, 2015; West et al., 2016).

When considering CCSS and content integration separately, a few research studies surface. For example, **Denton and Sink's (2015) case study involving elementary teachers and social studies embedded** within other content subjects (not with CCSS) shows integration as the preferred approach, though participants stated that time, limited training, and inadequate resources inhibited their use of effective social studies integration with other disciplines. Nowell (2017) **studied three social studies teachers' perceptions of** CCSS literacy integration in Oklahoma, finding that teachers were most concerned with filling grade-to-

grade, vertical curricular gaps and cultural diversity components lacking in CCSS assessments. Teachers, however, credited PD and teacher PLC networks with planning and implementation successes. Pryor et al. (2016) investigated the beliefs that formed 60 elementary, middle, and secondary teachers' intentions to integrate science, technology, engineering, mathematics content into their social studies instruction. Findings claim the potential to influence teachers' beliefs, attitudes, and intentions to integrate science, technology, engineering, mathematics into social studies, which could ultimately lead to affecting teachers' beliefs about other interdisciplinary possibilities.

Purpose

Overall, this research explored the effects of interdisciplinary unit planning and implementation as a form of collaborative job-embedded PD (JEPD) for K–5 teachers. Science and social studies disciplinary content were extracted from state standards for each grade level. We wanted to understand how teachers viewed planning interdisciplinary lessons and units, on the job, and then teaching their own designed lessons within classrooms to test the lessons' effectiveness with students. In other words, this would be teachers' assessments of the experience. Research questions were:

Research Question 1. How do teachers perceive collaborative PD to create interdisciplinary unit plans?

Research Question 2. How do teachers view outcomes of teaching interdisciplinary units of their own design?

This instrumental case study (Thomas, 2011) employed mixed-methods to answer the research questions. The process emphasized detailed contextual analysis of a limited number of events and conditions and their relationships within a natural school setting. This “inquiry was meant to serve a particular purpose, thus the case study acts as an instrument—a tool” (p. 98). The purpose was to understand a process from teachers' perspectives. The research spanned 1 year, May through May. Data gathering methods and analyses are explained in the methods section, and instruments are appended.

Theoretical Framework

In the broadest sense, curriculum theory drives the investigation. Early conversations emphasized that, in isolation, the theory is valueless, because it is the sequence derived from curriculum theory that finally makes it to the classroom. Curriculum theory leads to learning theory, which leads to instruction theory, and then curriculum development. Morris and Hamm (1976) presented one interpretation of curriculum theory's primary characteristics: (a) the major concern is with process or product knowledge rather than learning, and (b) it deals with alternative intellectual structures to organize what is worth knowing. The real focus is on educational experience. William Pinar (2012) reiterates that curriculum theory is a scholarly effort to understand curriculum, a “complicated conversation” of what knowledge is of most worth (p. 2). Curriculum models, then, should extend access to the best knowledge we have (Young, 2015).

Theoretically, curriculum integration or interdisciplinary curriculum models have capacity to efficiently organize what knowledge is of most worth and methods for how it is taught. James Beane (1997) defines a discipline of knowledge as “a field of inquiry about some aspect of the world—the physical world, the flow of events over time, numeric structures, and so on.” He stated, “...refining relationships between curriculum integration and disciplines of knowledge is easy” (p. 616). However, students must have

opportunities to engage in seeking, acquiring, and using knowledge in organic, holistic, authentic ways to broaden their understanding of themselves, the world, and how to communicate what they know. An **important argument for this research project is that those “complicated conversations” (Pinar, 2012)**, amongst educators, offer insights about refining curricula; thus, teacher collaboration should be ideal for such a challenge.

Method

This research employed mixed methods to answer two research questions. Data gathering methods included pre- and poststudy teacher surveys, pre- and poststudy teacher focus group interviews audio-taped and transcribed, work samples, and teaching observations. Researcher-journals were used to record project processes throughout the year (e.g., meeting notes, PD outcomes, discussions, debriefings).

Setting

The Title I school, Highlands Elementary, serving grades preK–5, is located in a southeastern U.S. county public school district. The non-White population is 80% (state average is 43%), and most are African American. Seventy-three percent of students are eligible for free lunch and 5% for reduced lunch (Public School Review, 2019). **“Despite its limitations, the free/reduced price lunch data are frequently used by education researchers as a proxy for [U.S.] school poverty since this count is generally available at the school level, while the poverty rate is typically not available” (Snyder & Musu-Gillette, 2015, para. 5). Schools, such as Highlands, “...enrolling at least 40 percent of children from low-income families, are eligible to use Title I funds for school wide programs designed to upgrade their entire educational programs to improve achievement for all students, particularly the lowest-achieving students” (U.S. Department of Education, Office of Elementary and Secondary Education, Office of State Support, 2015, para. 2).** Highlands Elementary is over 60 years old, enrolls approximately 320 students per year, and maintains about a 20:1 teacher-to-student ratio.

A large university is located 6 mi from Highlands Elementary School, and a relationship between the two institutions developed over approximately 15 years. Primarily, university preservice practicum teachers and interns are placed with Highlands’s **cooperating teachers**, teacher education program literacy course students often work with small elementary student groups there, and Highlands has hosted several rounds of teacher education program interviews for prospective elementary education majors.

Participants and Procedures

Through discussions with the school’s principal, in May of the first year, we learned that Highlands’s teachers needed PD centered on how to use CCSS English language arts standards with science and social studies content. That summer, we met with the Highlands’s **faculty during a scheduled work day and** presented a proposal to assist teachers in implementing PD on the school site. We described procedures for collaboratively unpacking the CCSS and science and social studies state curriculum standards to plan grade-level lesson plans. After sharing the intended scenario for collaborative PD and goals, we modeled two integrated lessons that included Highlands **faculty’s active interaction; one lesson focused on early childhood social studies and another on fourth-grade science.**

We left a sign-up sheet for teachers, at the school, to indicate their interests in participating in the described PD. The next week, when we retrieved the sign-up sheet, there were 16 volunteers ranging from kindergarten to fifth grades. We scheduled meetings with each grade-level team and, again, described our vision of a collaborative learning community at the school. Teachers who agreed to involve themselves in

the research, signed informed consent. Volunteers, though, were welcomed into teams with or without involvement in the study. We consider the participants a convenience sample because we were invited, by the principal, into their space to assist with PD. Sixteen volunteer K–5 grade teachers worked in teams. One preK teacher chose to join the kindergarten team, making 17 participants in all. Participants ranged in teaching experience from 1 year ($n = 2$), 3–7 years ($n = 8$), 9–13 years ($n = 5$), and 20–22 years ($n = 2$). The principal and a reading coach oversaw the project. As teacher-researchers, we were experienced career educators each having taught over 16 years in various elementary schools within different geographic locations, now university methods instructors.

Data Sources

Prestudy data sources

Participants completed prestudy surveys (Appendix A) regarding their perceptions of planning and implementing lessons using the ELA CCSS to integrate and teach science and social studies. Individuals **were requested to check “yes” or “no”** in areas to indicate their beliefs about needing JEPD for planning purposes. The survey contains 13 questions related to the following: (a) understanding why the approach might be useful; (b) understanding how the approach could be used; (c) developing daily lesson plans; (d) developing long-term units; (e) using engaging strategies; (f) using technological techniques; (g) accommodating individual student needs; (h) time management strategies; (i) incorporating critical thinking; (j) formative and summative assessment; (k) communication with parents, students, and other teachers; (l) creating and fostering collaborative learning communities; and (m) learning about locating resources.

The survey’s second phase directly asked participants to answer five questions primarily about collaborative participation and implementation of lessons with their students. Questions included what their perceived challenges, concerns, questions, perceptions were about their earlier participation in our demonstration lessons. As researchers, we were trying to access their ideas of how lessons integrating ELA CCSS with science and social studies standards, in which they participated, actually affected them. That is, did planning and implementing lessons like these seem feasible and worthwhile? We also wanted **to learn teachers’ perceptions** about participating in JEPD to coplan integrative lessons or units. Prestudy focus group interviews, using six open-ended questions, were used to capture additional data regarding teacher perceptions (see Appendix B).

Collaborative meeting procedures

First, we funded half-day substitute teachers with a small university grant, so participants could co-plan within K–5 teams. With each of the six teams (K–5), we worked to unpack ELA CCSS and science and social studies state standards. We used a lesson plan organizer/template requested by the school principal, and we designed units by weaving objectives, essential questions, concepts, skills, and assessments together. Using websites, standards, and other resources, we brainstormed engaging lesson activities for students. Through discussion, additional curriculum standards guided our growing units. Second, volunteer participants taught new unit lessons to students, as we observed. Third, debriefing meetings, with teachers, followed lesson observations. Before teaching, each teacher was offered \$100 cash to buy materials for implementing one lesson—no formal paperwork requests were required.

Using a lesson study observation protocol (Stepanek et al., 2007), we collected data through classroom observations while teachers taught newly created lessons. We kept researcher journals to record project processes (e.g., meeting notes, PD outcomes, discussions, debriefings). Lesson documents, which eventually evolved into unit plans were supplementary data.

Poststudy data sources

Participants completed poststudy surveys (Appendix C) moderately adapted from the prestudy survey. **Individuals indicated “yes” or “no”** to 13 questions about their perceptions of knowledge gained through project participation (e.g., developing daily lessons, using engaging strategies, time management strategies). For example, Question 3 states, **“Did you gain knowledge about how to develop daily lesson plans that use ELA CCSS to teach social studies and science?”** **A third survey area requested participants to check a box if they believed additional JEPD was needed for any of the 13 criteria.** The poststudy **survey’s phase two contain five questions that**, to an extent, mimic the prestudy survey. Poststudy questions were consistent with data gathering about challenges, concerns, questions, and perceptions. A Likert scale style questionnaire, located on the survey, requested participants to disclose information **about their students’ overall academic achievement, interest/enjoyment, motivation, involvement, curiosity, confusion, and acceptance regarding lessons that their teachers collaboratively planned and implemented with students.** **The survey’s last component asked for additional comments.** A poststudy focus group interview, using seven open-ended questions, was created to collect further data regarding **participants’ perceptions (see Appendix D).**

Data Analysis

Overall, case study research used mixed methods to examine the effects of interdisciplinary unit planning and teaching as a form of collaborative PD for teachers on the job. Data were analyzed using constant comparative methods; the principle of going through data again and again, emerging with themes that summarize the data. Data to answer the first research question primarily derived from pre- and poststudy **teacher surveys and transcribed interviews. We counted and compared teachers’ responses to the distinct survey-like questions, pre- and poststudy.** However, pre- and poststudy teacher surveys also included direct, open-ended questions; therefore, those question responses, along with interview transcriptions, were analyzed using a grounded theory approach (Strauss & Corbin, 1990). During open coding, we divided the data into similar groupings, forming preliminary categories of information about the phenomenon being studied. Next, through axial coding, we began to bring the categories together as themes and then used selective coding to organize and articulate themes for more coherent understanding of the phenomenon (Strauss and Corbin, 1990, 1998). Kimberly Neurendorf, 2002) described interpretative analysis as involving analytical categories, being cumulative, a type of comparative analysis, **and including the formation of categories, wherein “the analyst is in a constant state of discovery and revision” (p. 6).** **The technique was a type of message analysis used, in this study, to further develop themes from the observation of messages and the coding of those messages.**

Findings

Overall, research explored the effects of K–5 interdisciplinary unit planning and implementation as a form of collaborative JEPD for teachers. Fourteen of 17 participants completed the prestudy survey (Appendix A). Survey results revealed all respondents believed they needed PD to help them use ELA CCSS to teach social studies and science. Table 1 displays measures most to least frequently cited. Note that some respondents did not answer every question.

Table 1. *In-Service Teachers’ Prestudy Survey: Perceptions of Job-Embedded Professional Development (PD) to Help Use English Language Arts Common Core States Standards to Teach Social Studies and Science*

Question	Criteria	Respondents, <i>n</i>	Need PD?		Percent Yes
			Yes	No	
Q9	Critical thinking	14	12	2	86%
Q3	Lesson planning	14	11	3	79%
Q12	Learning communities	14	11	3	79%
Q2	Understanding how	12	9	3	75%
Q10	Assessment	14	10	4	71%
Q4, Q5, Q6, Q8	Units, strategies, technology, time management	14	9	5	64%
Q7	Accommodation	14	6	8	43%
Q11	Communication	13	5	8	38%
Q1	Understanding purpose	13	4	9	31%
Q13	Locating resources	8	4	4	50%

Prestudy survey data showed that most participants believed they needed JEPD to learn how to incorporate critical thinking (86%) into integrative lesson plans. Lesson planning, creating learning communities with coworkers, and understanding how to create lessons and assessments using ELA CCSS with social studies and science were average or above (71–79%) in perceived need. Some participants **determined that accommodating students' needs, communication with parents, students, and other teachers about the process were necessary**, though those ranged from a low 31% to 43%.

Prestudy focus group interviews (Appendix B) occurred in four separate sessions with a total of nine volunteer participants. Interviewees were K–3 **teachers, and the school's principal** entered one session and spoke. We coded the interview transcriptions separately, met, and reached agreement at approximately 90%. Table 2 displays major thematic categories for nine participants. Other responses were too few to categorize.

Table 2. *Prestudy In-Service Teachers' Focus Group Interview Categories*

Category	Responses, <i>n</i>
Time anxiety	5
Coverage anxiety	5
Resistance and/or scripted program driven	5
Open to new ideas or change	5
See value/make connections/appreciate freedom	5
Want guidance	4
No time for social studies or science	4
Other (resources, collaboration)	3

These example statements, gathered from focus group interviews, illustrate the issues:

It will give you more time to teach science and social studies because normally science and social studies is on our back burner. Like thirty minutes here, and it's not science AND social studies. It

is science OR social studies. So, with integrating them, it will give you more time to focus on those. (Grade 3, Participant 3)

My concern is just finding the time to get everything in and make sure we do it to fidelity and **that we are teaching them exactly what the state wants, because it's different.** (Grade 3, Participant 1)

I think it kind of goes back to what [Participant 6] was just saying...**making sure we cover everything...umm...you know as a grade level we think it's [CCSS] to do it and keeping up with it, but still you have that fear that you're missing something.** (PreK–K, Participant 4)

I feel much better about it [interdisciplinary lesson planning] right now that I am just meeting so **many more standards in one lesson instead of having reading... and unrelated to what's going on** by season or, you know, how we usually do social studies. (PreK–K, Participant 6)

Resources is something I am worried about. I will admit science and social studies has definitely been on the back burner. I need to work on that, but **finding the materials for science...** [unfinished sentence]. (Grade 1, Participant 8)

...the concerns that you had (nodding to teacher) about will I cover it all...trust me, principals feel the same thing....I know it's a lot of work for you, and I am really concerned about that, but I am also excited to see what is going to come for our kids. That is the reason I am kind of sitting in today. I think it is important for our students. So, thank you for what you are doing. (Principal [visited during Interview 3])

After planning lessons and units with each K–5 team, we sent each teacher (whether they were participants or not) **their team's completed unit via email.** Then, at a Highlands's **school faculty meeting** in early January, we gave each teacher a curriculum unit in booklet form. Each participant received a poststudy survey, and we asked to retrieve the completed surveys the following week. We also left a teaching observation schedule and asked volunteers to sign the schedule with date, time, and whether or not they desired one of us to coteach or help in the classroom.

Five volunteers agreed to classroom observations with two asking for classroom assistance, two said, **"maybe,"** and a fifth participant said, **"no."** All five observations occurred January 14–16. Though 17 teachers volunteered and engaged in half-day JEPD sessions, five teachers implemented unit lessons or parts of lessons with their students. Lesson observations showed mixed results between teachers who struggled with planning and implementing lessons and those who embraced the process. During debriefings, some teachers disclosed beliefs that the content was too difficult for students to comprehend. Four of 17 participants completed the poststudy survey (Appendix C). Table 4 displays a numerical results summary.

Table 4. *In-Service Teachers' Poststudy Survey: Perceptions of Job-Embedded Professional Development (PD) to Help Use English Language Arts Common Core States Standards to Teach Social Studies and Science (Respondents = 4)*

Question	Criteria	Knowledge gained?		More PD needed
		Yes	No	
1	Why integration	4		
2	How integration	4		
3	Daily lesson plans	4		2
4	Long-term units	4		2
5	Strategies	3	2	2
6	Technological techniques	3	2	
7	Accommodation	3	2	
8	Time management	3	2	
9	Critical thinking skills	4		
10	Assessment	3		2
11	Communication	3	1	
12	Learning communities	3	1	
13	Resources	3	1	

A few example quotes from the open-ended survey questions are presented in Appendix E. This poststudy data showed that even though some participants responded to more than one yes/no question, at least, two participants perceived that little knowledge was gained about engaging strategies, technological techniques, accommodations for students with special needs, and time management. While participants responded to open-ended questions (see Appendix C), Mr. Jones, a third-grade teacher, was the only participant who agreed to a poststudy face-to-face interview. We interpreted some limitations of the study (see below) as actual factors causing the lack of participants volunteering for a final interview.

Poststudy teacher perceptions showed that all those responding believed, through their participation, they gained knowledge in various areas related to integrating ELA CCSS with science and social studies (e.g., lesson planning, strategies, time management, critical thinking). Assessment was the one area most noted as a deficit. Poststudy responses continued to name lack of resources and time as primary challenges. Nonetheless, one question still lingers regarding resource and time deficits. Why did 16 of 17 teachers leave funds for resources (\$100 per lesson) and planning time, approved by the principal with substitute teachers (paid with grant funding), on the table?

Discussion

This research examined (a) how teachers perceived collaborative PD to create interdisciplinary unit plans and (b) how teachers viewed outcomes of teaching interdisciplinary units of their own design. All data demonstrated that participating teachers perceived collaborative, interdisciplinary unit planning and teaching outcomes positively, before and after PD sessions, yet they were plagued, primarily, by fears regarding content coverage and time. Teachers never said the process was ineffective, though, what they did not say (omissions) speak volumes.

Consequently, we interpreted the findings as both lessons learned and implications for future research. For example, the prestudy survey showed 50–86% of participants said they needed help with **critical thinking, lesson planning, learning communities, understanding “how to,” assessment, and time management. In hindsight, it was evident that we concentrated on “how to” integrate the three disciplines and their standards more than other categories mentioned above. The “how to” naturally coexists with** lesson planning and locating resources—those areas are inherently dependent on one another. Therefore, **participants’ requests, particularly, for critical thinking (86%) and assessment (71%) needed** more attention. We did work on formative assessments for each lesson, though, perhaps assessments, the participants had in mind, were of a different type. In future research, we will ask participants to define, describe, and explain their needs more specifically before engaging them in curricular planning meetings.

We identified, at least, three crucial steps, in our project, which should have received more responsiveness from us. Participating teachers needed time and opportunities to explicitly voice their expectations before beginning the project. Highlands’s **school principal provided a verbal assessment regarding teachers’** needs for PD; however, real teacher buy-in and shared vision, important to teachers, is crucial for successful PD (see Furco & Moely, 2012; Tucker, 2018; Willis & Templeton, 2017). Second, teachers needed time to actually practice lessons and strategies, they were designing for their students, before moving the lessons into classrooms. Third, there was a lack of long-term, sustainable feedback regarding **teaching progress. Looking back, those actions were critical for nurturing teachers’ acceptance of** curriculum changes and lesson implementation with their students. Finally, this project was not focused on student achievement. There were no before and after comparative achievement tests for students; thus, teacher accountability for improved student achievement scores was not a factor.

When thinking about teachers’ reactions after teaching their lessons, issues of equity emerge. Teachers, who embraced the curriculum and experiences, may continue to provide students with equitable opportunities. For example, one participant, Mr. Jones, asked for more planning time and cash subsidy (from the grant) for third-grade lesson materials. Among other resources, he bought each student a computer flash drive, and he scheduled extensive time in the computer lab, so students could freely progress on their lesson projects. Mr. Jones invited us several times to observe how his students were academically and emotionally thriving while engaged in his curricular unit. In addition, he contacted us for more PD and brought another novice teacher with him. Mr. Jones openly stated he was more **interested in his students’ progress as leaders and academic beings,** rather than as test takers. He wanted these third graders to be challenged and excited about their learning. From our observations and interactions with all his students, we saw evolving autonomous thinkers and children who were proud of their work.

Limitations

It is important to note that between December and February, a difficult situation, beyond anyone’s control, required an interim principal in the school, and by May, a full-time principal was hired. Consequently, during this year-long study, three different principals led Highlands **School’s faculty. The** first principal instigated the project and continued as an advocate, the second principal supported the project though was not at the school long enough to engage in it fully, and the third principal (full-time) did not display interest. Findings from this study are not generalizable; participation, particularly after the first round of collaborative planning sessions, was low. We can only assume that teachers, who began the study with the first of three **principals, did not feel compelled to complete the study. “New leadership** at the school, district, or state level often comes with new agendas and priorities, including for PD, and **education leadership turns over relatively rapidly”** (Tooley & Connelly, 2016, p. 13). The study, though, does offer a rare research example regarding K–5 ELA CCSS, science, and social studies interdisciplinary

integration and one view of a PD model, in action, which aimed to include several elements of best practice supported by research.

Conclusion

We have argued that more experiments with PD models in diverse locations and within different cultural contexts are essential to understand the ever-changing needs and learning expectations for teachers on the job. Thus, one experience situated in a small **southeastern U.S. Title 1 school is reported here. “Many PD programs are not evaluated, nor are their results communicated to other communities”** (Diaz-Maggioli, 2004, para. 12). A learning group should responsibly generate knowledge that enriches the immediate community and also comprehensively extend to the entire teaching profession. The teaching community is not well-served when PD results are left unreported (Diaz-Maggioli, 2004), no matter the outcomes. Assessment of PD outcomes, though, is scarce due to uncertainty about the types of **measurement needed and how to implement outcome measurements. “The result is that, in many locales, almost no data—either on what PD transpired or its effects—are systematically collected at all”** (Tooley & Connolly, 2016, p. 13).

Reading literature on PD best practices and implementing them, to fidelity with real teachers, are two different things. Teachers are, indeed, recipients of changing U.S. school reforms making it difficult to know the most efficient use of time and resources for various PD needs. In this particular case, prioritizing, slowing down, and deeply processing less information over longer periods of time, would have been effective methods. We observed nuanced characteristics, in this particular culture, that inform the next experience. One-on-one conversations and friendship-making—just being more casual—were **needed to foster teachers’ trust and support. Perhaps, those elements may not look or feel the same in different locations.**

Conditions for creating higher level expectations and environments, focused on everyone learning, are particularly interesting for future research. For now, we reflect on the Highlands Elementary PD findings and how to use experiential knowledge, learned from this study, to enhance future approaches. As Diaz-Maggioli (2004) suggested, we wish to responsibly generate knowledge that enriches the immediate community and also comprehensively extends to the entire teaching profession. A one-size-fits-all does not work with teachers, like it does not work with students, so we call for more contextually unique studies, with teachers, to help us perfect techniques. We have seen that understanding deeply ingrained teaching traditions and norms, within the cultural setting, is the first step for successful PD.

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[*Appendices follow*]

Appendix A

Prestudy In-Service Teacher Survey

Please review **the list of topics and check “yes” or “no” on areas in which you believe that you need job-embedded professional development.**

Topic	Yes	No
Understanding <u>why</u> an integrated approach to using English language arts Common Core standards to teach content disciplines such as social studies and science might be useful in your classroom.		
Understanding <u>how</u> English language arts Common Core standards for your grade level can be used to teach social studies and science.		
Developing <u>daily lesson plans</u> for classroom instruction that use English language arts Common Core standards to teach social studies and science.		
Developing <u>long-term lesson units</u> for classroom instruction that use English language arts Common Core standards to teach social studies and science.		
Learning how to use engaging <u>strategies to integrate</u> English language arts Common Core standards with social studies and science.		
Learning how to use <u>technological techniques</u> to integrate English language arts Common Core standards with social studies and science.		
Accommodating <u>individual student needs</u> while using English language arts Common Core standards to teach social studies and science.		
<u>Time management strategies</u> while using English language arts Common Core standards to teach social studies and science.		
Incorporating <u>critical thinking</u> while using English language arts Common Core standards to teach social studies and science.		
Using <u>formative and summative assessments</u> to assess student learning while using English language arts Common Core standards to teach social studies and science.		
Establishing effective <u>communication</u> with parents, students, and other teachers about using Common Core Standards in an integrative approach to teaching various content disciplines.		
Creating <u>learning communities</u> that foster collaboration among co-workers when planning for the use of English language arts Common Core standards while teaching social studies and science.		
Learning more about locating teaching <u>resources</u> when using English language arts Common Core standards to teach social studies and science.		

Answer the following questions concerning implementation of English language arts Common Core standards.

1. Please list/describe challenges you see to implementing English language arts Common Core standards.
2. Please list/describe concerns you have about lesson and unit planning when using English language arts Common Core standards to teach social studies and science.
3. Please list/describe any questions you have about the implementation of English language arts Common Core standards when teaching social studies and science.
4. What are your perceptions about participating in a demonstration lesson (modeled by others) that integrates English language arts Common Core standards with social studies and science?
5. What are your perceptions about participating in job-embedded professional development to co-plan lessons and/or units, for your class, that integrate English language arts Common Core standards with social studies and science?

Appendix B

Prestudy In-Service Teacher Focus Group Interview Questions

What convinced you to participate in this study?

What has been your experience in planning and implementing lessons and/or units with the new state adopted English language arts Common Core standards (College and Career Ready Standards) so far?

Please describe any challenges you anticipate or concerns you have about the implementation of the new state adopted English language arts Common Core standards.

Given your experiences in teaching reading, science, and social studies, how do you see the Common Core Standards impacting those subjects and the way you teach them?

What are your perceptions of job-embedded professional development and how it could help or hinder your success at implementing English language arts Common Core standards?

What are your perceptions of an integrated approach in which English language arts Common Core standards are used to teach science and social studies?

Appendix C

Poststudy In-Service Teacher Survey

After your participation in the job-embedded professional development, please review the list of topics and check areas that represent your current perceptions.

Topic	Yes	No	I need more professional development in this area
Did you gain knowledge about <u>why</u> an integrated approach to using English language arts Common Core standards to teach social studies and science might be useful in your classroom?			
Did you gain knowledge about how English language arts Common Core standards for your grade level can be used to teach social studies and science?			
Did you gain knowledge about how to develop <u>daily lesson plans</u> that use English language arts Common Core standards to teach social studies and science?			
Did you gain knowledge about how to develop <u>long-term lesson units</u> that use English language arts Common Core standards to teach social studies and science?			
Did you gain knowledge about engaging <u>strategies</u> to integrate English language arts Common Core standards with social studies and science?			
Did you gain knowledge about <u>technological techniques</u> to integrate English language arts Common Core standards with social studies and science?			
Did you gain knowledge about how to <u>accommodate individual student's</u> needs while using English language arts Common Core standards to teach social studies and science?			
Did you gain knowledge about <u>time management strategies</u> while using English language arts Common Core standards to teach social studies and science?			
Did you gain knowledge about how to incorporate <u>critical thinking skills</u> while using English language arts Common Core standards to teach social studies and science?			

Did you gain knowledge about <u>assessing student learning</u> while using English language arts Common Core standards to teach social studies and science?			
Did you gain knowledge about ways to effectively communicate with parents, students, and other teachers about using an integrative approach for teaching social studies and science using English language arts Common Core standards?			
Did you gain knowledge about fostering <u>collaborative learning communities</u> among coworkers to plan lessons and/or units using English language arts Common Core standards to teach social studies and science?			
Did you gain knowledge about teaching <u>resources</u> for using English language arts Common Core standards to teach social studies and science?			

After reflecting on your participation in the job-embedded professional development, please answer the following questions concerning your experiences in planning and implementing the English language arts Common Core standards to teach social studies and science.

1. Please list/describe challenges you see to implementing English language arts Common Core standards with your class.
2. Please list/describe concerns you have about lesson and unit planning when using English language arts Common Core standards to teach social studies and science.
3. Please list/describe any questions you have about the implementation of English language arts Common Core standards when teaching social studies and science.
4. What are your perceptions about participating in a demonstration lesson (modeled by others) that integrated English language arts Common Core standards with social studies and science?
5. What are your perceptions about participating in job-embedded professional development to coplan lessons and/or units, for your class, that integrated English language arts Common Core standards with social studies and science?
6. Did your students benefit from the implementation of the integrated lesson or unit that you developed?

	<i>Very much</i>	<i>To some extent</i>	<i>Not much</i>	<i>Not at all</i>
Overall academic achievement				
Student interest/enjoyment				
Student motivation				
Student involvement				
Student curiosity				
Student confusion				
Student acceptance				

Please add additional comments.

Appendix D

Poststudy In-Service Teacher Focus Group Interview Questions

What in particular worked for you when implementing English language arts Common Core standards to teach social studies and science through the integrated approach?

What were challenges or barriers you faced when teaching English language arts Common Core standards with discipline-integrated lessons and/or units? How did you overcome those barriers?

In what ways, if any, has your planning and teaching changed as a result of this particular job-embedded professional development and discipline-integrated planning and teaching?

Do you plan to continue teaching the English language arts Common Core standards with integrated lessons and/or units? If so, what changes will you make? If not, please provide an explanation for why the methodology did not work for you?

How has teaching English language arts Common Core standards using the integrated approach impacted the atmosphere in your classroom?

What changes, if any, have you seen in your students as a result of implementing the integrated approach to teaching English language arts Common Core standards with social studies and science in your classroom?

What are your perceptions of job-embedded professional development to co-plan and implement integrated lessons and units?

Appendix E

Example Quotes From the Open-Ended Survey Questions

- Please list/describe challenges you see to implementing English language arts Common Core standards with your class.
 - Participant 1:* “planning time”
 - Participant 2:* “locating sufficient resources”
 - Participant 3:* “finding engaging literature, although that was expected and will improve as I teach Common Core for years”
 - Participant 4:* “The only challenge I found was materials and time”
- Please list/describe concerns you have about lesson and unit planning when using English Language Arts Common Core Standards to teach social studies and science.
 - Participant 1:* “planning time”
 - Participant 2:* “When teaching ELA Common Core, I have found it better to teach a skill and focus on it. Integration of science and social studies uses lots of reading skills, best left as a review”
- What are your perceptions about participating in job-embedded professional development to coplan lessons and/or units, for your class, that integrated English language arts Common Core standards with social studies and science?
 - Participant 1:* “Unsure”
 - Participant 2:* “professional development would be helpful as common core is put into more and more practice”
 - Participant 3:* “very interested”
 - Participant 4:* “I believe that participating in job-embedded PD is the most effective kind!”
- Did your students benefit from the implementation of the integrated lesson or unit that you developed?

	Very much	To some extent	Not much	Not at all
Overall academic achievement	4			
Student interest/enjoyment	4			
Student motivation	4			
Student involvement	4			
Student curiosity	4			
Student confusion	2			2
Student acceptance	4			

- Please add additional comments.
 - Participant 1:* “You did a great job”
 - Participant 2:* “It was used as a review of several skills as opposed to teaching a new one”
 - Participant 3:* “Yes – everything except student confusion”
 - Participant 4:* “Can we have more please? HaHa [*happy face symbol inserted*]”



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